

Table of Contents

- SECTION A: ACTIVITY INFORMATION 6**
- 1. PROPOSAL OR DEVELOPMENT DESCRIPTION 6
- Major Stormwater System 11
- Minor Stormwater System 12
- 2. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES 15
- Description of compliance with the relevant legislation, policy or guidelines: 19
- 3. ALTERNATIVES..... 19
- Proposal - Infill development location (preferred) 22
- 5. SITE ACCESS..... 25
- 6. LAYOUT OR ROUTE PLAN 26
- 7. SITE PHOTOGRAPHS 27
- 8. FACILITY ILLUSTRATION 27
- SECTION B: DESCRIPTION OF RECEIVING ENVIRONMENT 27**
- 1. PROPERTY DESCRIPTION 28
- 2. ACTIVITY POSITION 28
- 3. GRADIENT OF THE SITE 29
- 4. LOCATION IN LANDSCAPE 29
- 5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE 30
- 6. AGRICULTURE 30
- 7. GROUNDCOVER 31
- 8. LAND USE CHARACTER OF SURROUNDING AREA..... 33
- 9. SOCIO-ECONOMIC CONTEXT 47
- 10. CULTURAL/HISTORICAL FEATURES 53
- SECTION C: PUBLIC PARTICIPATION (SECTION 41) 59**
- 1. LOCAL AUTHORITY PARTICIPATION..... 59
- 2. CONSULTATION WITH OTHER STAKEHOLDERS..... 59
- 3. GENERAL PUBLIC PARTICIPATION REQUIREMENTS 60
- 4. APPENDICES FOR PUBLIC PARTICIPATION 60
- SECTION D: RESOURCE USE AND PROCESS DETAILS..... 61**
- 1. WASTE, EFFLUENT & EMISSION MANAGEMENT 61
- 2. WATER USE 63
- 3. POWER SUPPLY 64
- 4. ENERGY EFFICIENCY 64

| | |
|--|------------|
| SECTION E: IMPACT ASSESSMENT | 65 |
| 1. ISSUES RAISED BY INTERESTED & AFFECTED PARTIES | 65 |
| 2. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION & OPERATIONAL PHASE | 65 |
| 3. IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING & CLOSURE PHASE – NOT APPLICABLE..... | 88 |
| 4. CUMULATIVE IMPACTS | 89 |
| 5. ENVIRONMENTAL IMPACT STATEMENT | 89 |
| 6. IMPACT SUMMARY OF THE PROPOSAL OR PREFERRED ALTERNATIVE | 90 |
| 7. SPATIAL DEVELOPMENT TOOLS..... | 91 |
| 8. RECOMMENDATION OF THE PRACTITIONER..... | 92 |
| 9. THE NEEDS AND DESIRABILITY OF THE PROPOSED DEVELOPMENT | 96 |
| 10. THE PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED | 99 |
| 11. ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR) | 99 |
| SECTION F: APPENDIXES | 100 |

Basic Assessment Report in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014 (Version 1)

Kindly note that:

1. This **Basic Assessment Report** is the standard report required by GDARD in terms of the EIA Regulations, 2014.
2. This application form is current as of 8 December 2014. It is the responsibility of the EAP to ascertain whether subsequent versions of the form have been published or produced by the competent authority.
3. **A draft Basic Assessment Report must be submitted, for purposes of comments within a period of thirty (30) days, to all State Departments administering a law relating to a matter likely to be affected by the activity to be undertaken.**
4. **A draft Basic Assessment Report (1 hard copy and two CD's) must be submitted, for purposes of comments within a period of thirty (30) days, to a Competent Authority empowered in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended to consider and decide on the application.**
5. Five (5) copies (3 hard copies and 2 CDs-PDF) of the final report and attachments must be handed in at offices of the relevant competent authority, as detailed below.
6. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
7. Selected boxes must be indicated by a cross and, when the form is completed electronically, must also be highlighted.
8. An incomplete report may lead to an application for environmental authorisation being refused.
9. **Any report that does not contain a titled and dated full colour large scale layout plan of the proposed activities including a coherent legend, overlain with the sensitivities found on site may lead to an application for environmental authorisation being refused.**
10. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the application for environmental authorisation being refused.
11. No faxed or e-mailed reports will be accepted. Only hand delivered or posted applications will be accepted.
12. Unless protected by law, and clearly indicated as such, all information filled in on this application will become public information on receipt by the competent authority. The applicant/EAP must provide any interested and affected party with the information contained in this application on request, during any stage of the application process.
13. Although pre-application meeting with the Competent Authority is optional, applicants are advised to have these meetings prior to submission of application to seek guidance from the Competent Authority.

DEPARTMENTAL DETAILS

Gauteng Department of Agriculture and Rural Development
Attention: Administrative Unit of the of the Environmental Affairs Branch
P.O. Box 8769
Johannesburg
2000

Administrative Unit of the of the Environmental Affairs Branch
Ground floor Diamond Building
11 Diagonal Street, Johannesburg

Administrative Unit telephone number: (011) 240 3377
Department central telephone number: (011) 240 2500

(For official use only)

NEAS Reference Number:

File Reference Number:

Application Number:

Date Received:

| | | | | | |
|-----------------------------|--|--|--|--|--|
| | | | | | |
| GAUT 002/19-20/E2464 | | | | | |
| | | | | | |
| | | | | | |

If this BAR has not been submitted within 90 days of receipt of the application by the competent authority and permission was not requested to submit within 140 days, please indicate the reasons for not submitting within time frame.

| |
|----------------|
| Not Applicable |
|----------------|

Is a closure plan applicable for this application and has it been included in this report?

| |
|----|
| No |
|----|

if not, state reasons for not including the closure plan.

| |
|----------------|
| Not Applicable |
|----------------|

Has a draft report for this application been submitted to a competent authority and all State Departments administering a law relating to a matter likely to be affected as a result of this activity?

| |
|-----|
| Yes |
|-----|

Is a list of the State Departments referred to above attached to this report including their full contact details and contact person?

| |
|-----|
| Yes |
|-----|

| |
|----------------------------|
| Refer to Annexure E |
|----------------------------|

If no, state reasons for not attaching the list.

| |
|----------------|
| Not Applicable |
|----------------|

Have State Departments including the competent authority commented?

| |
|----|
| No |
|----|

If no, why?

| |
|---|
| The Draft Basic Assessment Report will be sent to the Departments including competent authority, comments received on Draft BAR will be included on the Final Basic Assessment. |
|---|

1.2 Development Description

1. Proposed development

It is the intention of AccHost (Pty) Ltd (applicant) to establish mixed-use development consisting of Residential 3, Business 2, Educational and Private open space to be known as Eldoraigue X87 on Portion 195 & 237, Remainder of Portion 10 and part of remainder of Portion 187 of the farm Zwartkop 356 JR, within The City of Tshwane, Gauteng Province.

Proposed land uses

The township will comprise of the following erven, subject to the restrictive measures listed below:

Proposed Erf 1

| Use Zone | Residential 3 |
|------------------|------------------------------------|
| Uses Permitted | Duplex Dwelling and Dwelling units |
| Definitions | Clause 5 |
| Density | 85 units per hectare |
| Coverage | 60% |
| Height | 4 storeys (15 metres) |
| Floor area ratio | 1.0 |

Proposed Erf 2

| Use Zone | Business 2 |
|------------------|--|
| Uses permitted | Business Building, Dwelling Units, Guest House, Institution, Light Industries subject to Schedule 10, Motor Dealership, Parking Garage subjection to Schedule 10, Parking Site subject to Schedule 1, Shop, Place of Refreshment, Residential Buildings excluding boarding house, Hostel and Block of Tenements, Retail Industry, Vehicle Sales Mart subject to Schedule 10, Vehicle Sales Showroom, Veterinary Clinic and Place of Amusement. |
| Definitions | Clause 5 |
| Density | n/a |
| Coverage | 70% |
| Height | 4 storeys (15 metre) |
| Floor area ratio | Gross leasable floor area (excluding gymnasium) restricted to 12 000 m ² . Gymnasium limited to 2 000 m ² . |

Proposed Erf 3

| Use Zone | Educational |
|--------------------|---|
| Uses permitted | Place of childcare, place of instruction, place of public worship, social halls and sport and recreational hub. |
| Definitions | Clause 5 |
| Density | n/a |
| Coverage | 50% |
| Height | 3 storeys (13 metres) |
| Floor area ratio | 0.5 |
| Other restrictions | School limited to a maximum of 1700 learners |

Proposed Erf 4

| Use Zone | Private open space |
|------------------|---------------------------|
| Uses permitted | Private Open Space |
| Definitions | Clause 5 |
| Density | n/a |
| Coverage | 10% |
| Height | 1 storey |
| Floor area ratio | 0.1 |

Residential

Residential densification will be the focus of the residential component of the proposed development.

Business

A Business centre (neighbourhood shopping centre) will be provided at the main access road into the town to serve the community and will be zoned as "Business 2". This is located on two high order roads (Wierda Road and Old Johannesburg Road).

Open Areas

Open areas are not only essential to biodiversity, but also to be utilized by the communities for recreational purposes.

A "Private Open Space" erf is provided within the township in which a wetland and 32 metre buffers is located. According to Regulation 44 of the Town Planning and Townships Regulations, 186, the following provision of Land for Open Spaces or Parks needs to be provided:

"Residential 3" units - 18 m² per unit

The proposed township will consist of the following:

355 "Residential 3" units - Thus requires parks with an area of (355 X 18 m²)
= 6 390 m².

The total open space that is provided within the township is 31 284 m² in extent. As the "Private Open Space" erf is 31 284 m², it is evident that a larger "Open Space" area is provided than what is actually required.

Institutional / Educational Facilities

Educational facilities primarily refer to primary- and high schools. Provision has been made in the development, to ensure all children have access to schools.

Refer to **Annexure I1** for the Township memorandum



Figure 2: Layout Plan (Source: VDO Consulting CC)

2. Associated Services

These are the services that will be required as part of the proposed project:

A. Sewage services and Water Services

- **Existing sewer reticulation**

The master plan indicates that the proposed development falls within the Hennops river drainage area, which drains to the Sunderland Ridge WWTW. There is an existing 1200dia outfall sewer pipe available on the northern boundary of the proposed development. A GLS report was done, and it was confirmed that there are enough capacities to accommodate the proposed development. Refer to **Annexure I3a for GLS Report**.

- **Proposed new infrastructure**

No new external infrastructure will be required to accommodate the proposed new development. A new internal sewer network will be required to drain the erven within the township

- **Indicative sewage flow calculations**

Sewer discharge figures are based on the design criteria for CTMM guidelines for the design and construction of water and sanitation system manual

Flow calculation based General Business, Sewer outflow

Erf 1

Residential 3: 85 Units/ha x 2.4ha = 355 Units @ 1.2kl/unit = 426kl

Erf 2

Business 2: Retail: $12\,500\text{m}^2/100 \times 0.8\text{kl} = 100\text{kl}$
Gymnasium: $2000\text{m}^2/100 \times 2.4\text{kl} = 48\text{kl}$

Erf 3

Educational: 1700 students @ 0.06kl/student/day = 102kl
Total = $676\,000/24 \times 3600 = 7.82\text{ l/s}$
Peak daily factor = $7.82\text{ l/s} \times 3.0 = 23.47\text{ l/s}$

Materials and construction

- The proposed materials, construction and testing of the sewage reticulation complies with the SABS 1200 specification.
- Sewer pipes and fittings are HDPE, PN 12.5, PE100
- Manholes are 1 050 mm internal diameter, precast concrete manholes, constructed of dolomite aggregate (SABS 1294), with step irons (BS 1247). Type 2A (SABS 558) manhole covers will be used for carriageways and Type 4 (SABS 558) for servitudes.

Estimated: Cost/kl/day water: $\text{R}9\,563.40 \times 676\text{ kl} = \text{R}6\,464\,858.40$

Water Reticulation

• Existing water reticulation

The proposed development falls within the Bakenkop reservoir zone. There is an existing 75dia water pipe available in Jan street CTMM confirmed that the network does not have sufficient capacity to accommodate the development, and that further upgrades in the network will be required.

Refer to **Annexure I3a GLS report**.

• Proposed new infrastructure

- Upgrades as agreed by CTMM for this development.
- Upgrades to be offset against bulk contribution are Items: BKR.24; BKR.25a; BKR.25b; BKR.25c; BKR.25d; = R4 755 300.00
- New pipes that cannot be offset against bulk contributions are Items: BKR.F1a & BKR.F1b = R593 700.00
- A new water connection will however be required as an erf connection to the proposed development.

Water Demand

Water discharge figures are based on the design criteria for CTMM guidelines for the design and construction of water and sanitation systems manual.

Flow calculation based on General Business:

Water demand:

Erf 1

Residential 3: $85\text{ Units/ha} \times 2.4\text{ha} = 355\text{ Units} @ 1.2\text{kl/unit} = 426\text{kl}$

Erf 2

Business 2: Retail: $12\,500\text{m}^2/100 \times 0.8\text{kl} = 100\text{kl}$
Gymnasium: $2000\text{m}^2/100 \times 2.4\text{kl} = 48\text{kl}$

Erf 3

Educational: 1700 students @ 0.06kl/student/day = 102kl
Total = $676\,000/24 \times 3600 = 7.82\text{ l/s}$
Peak daily factor = $7.82\text{ l/s} \times 3.0 = 23.47\text{ l/s}$
Fire flow Business moderate = 50 l/s

Materials and construction

It is proposed that the materials, construction and testing of the water reticulation comply with the SABS 1200 series of specifications.

The more important materials may be summarized as follows:

| | | |
|----------|---|--|
| Pipe | - | HDPE, PN12.5, PE100 |
| Bends | - | HDPE, WELDED |
| Fitting: | - | HDPE, WELDED |
| Valves | - | Class 16 gate valve SABS 664, non-rising spindle, anticlockwise closing, flanged |

Estimated: Cost/kl/day water: R4 172.14 x 676 kl = R2 820 366.64

As agreed with Semakaleng V. Dlavani from Tshwane, both sewer & water contributions will be used to offset against the water upgrades. Therefore, the total bulk less the total estimated construction cost off upgrades to be offset:

B. Roads

• Existing Roads

The nearest roads constructed to full standards are Ruimte main route (R114) to the south, Old Johannesburg road (K101) to the east, Wierda road (K103) to the north, and Janet street to the west of the proposed township.

• Proposed new infrastructure

A full TIA report was done by Dr Hermann Joubert from TIQ traffic engineers. Refer to the attached TIA for upgrades required, as well as the approvals.

In summary the following intersections will be upgraded.

Intersection 1: Wierda (K103) and Campbell/Saxby roads

Intersection 2: Old JHB (K101) and Wierda (K103) roads

Intersection 3: Old JHB (K101) and Ruimte main (R114) roads

Intersection 4: Jan and Ruimte main (R114) roads

New Access: From Wierda (K103) into the township

Bulk service contributions

The contribution in terms of internal and external services will be calculated by Tshwane according to the latest policy. The offset of bulk contributions is still to be agreed with Tshwane.

C. STORMWATER DRAINAGE – Status and technical requirements

• Existing stormwater reticulation

The proposed township drains towards the northern boundary into the Hennopsriver. No existing stormwater connection or field inlets are currently available. Two existing stormwater servitudes are registered over the farm portion, which will be re-routed.

• Proposed new infrastructure

Major Stormwater System

The major storm flow will surface discharge into the natural stream on the northern boundary of the township.

Minor Stormwater System

New field inlet connections will have to be constructed to drain the minor storm discharging into the natural stream by means of a headwall and energy dissipaters. The internal system will be designed to convey the 1:2-year flood. The design will be in accordance with the requirements of the Tshwane Metropolitan Municipality.

Materials and construction

- The materials, construction and testing of the stormwater drainage system complies with the SABS 1200 specification.
- Concrete pipes with ogee joints will be used for the work done in the servitude and road reserve. KI's manufactured to the Municipality's specification will be used.
- Brick junction boxes with concrete floor and cover slabs will be constructed according to the CTMM standard details.

Bulk service contributions

The stormwater system will be services will be calculated by Tshwane according to the latest policy.

D. Electrical Service report.

Watson mattheus Consulting Electrical Engineers (Pty) Ltd confirmed that an electricity supply of 2 137Kva can be made available to the proposed development from an adjacent City of Tshwane Distribution Substation.

The allocation of supplies to the various portions of the Development will be as follows

Retail component -1216 kva
Residential - 621kva
Educational - 300kva
Estimated Total - 2137kva

Refer to **Annexure I2** for a confirmation from WM Electrical that there is sufficient electrical capacity in the area to provide the proposed development.

E. Refuse removal

The refuse removal will be attended to by the City of Tshwane.

3. Floodlines

The hydrological and hydraulic parameters of the catchments contributing towards the proposed site of development were calculated. Peak flow rates were determined along the watercourse in order to carry out the hydraulic modelling for the proposed development site. SCIP Engineering Group was appointed by City of Tshwane (CoT) to set up a hydrological model taking into account flood attenuation for the section of river between the ARC Weir and Centurion Lake, under the appointment of CB117/2011 (Centurion Lake). The attenuated peak values based on the above study were used to calculate the 1:50 year and 1:100-year flood levels within the site. The peak flow data and other relevant information were entered into the backwater model HECRAS to produce the results on the flooding extent along the riverbanks in the vicinity of the proposed development site.

Findings

- Approximately 25 % of the proposed development site is affected by the 1:50 and 1:100-year floodlines;
- Only 12.5 % of the proposed development site will be affected if a 3.8 m wide x 2.1 m Height culvert is constructed along the Wierda Road close to the existing bridge.

Recommendations

- The floodline information to be used to ensure that no new developments at Remainder of Portion 187 of the Farm Zwartkop 356-JR are situated within the 1:100-year floodline;
- The floodlines be revised should watercourse/control structures be modified in the future;
- 32m wide x 2.1 m Height Culvert may be constructed along the Wierda Road close to the existing bridge to increase the development potential of the proposed development area.

List of the annexures used in this section:

Annexure I1: Township Memorandum
 Annexure I2: Electricity Confirmation
 Annexure I3: Service Report
 Annexure I3a: GLS Report
 Annexure I4: Floodlines Study Report
 Annexure I6: Traffic Impact Assessment

Select the appropriate box

The application is for an upgrade of an existing development

 n/a

The application is for a new development

 X

Other, specify

 n/a

Table1: NEMA EIA Regulations, 2014 as amended – Listed Activities to be Authorised

Indicate the number of the relevant Government Notice: **Activity No (s) (relevant notice):** **Describe each listed activity as per the wording in the listing notices**
 e.g. Listing notices 1, 2 or 3

| | | |
|--|---------------------------------------|---|
| GNR 983, 8 December 2014 as amended by GNR 327, 7 April 2017 | Listing Notice 1 Activity 9 | The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water— (i) with an internal diameter of 0,36 metres or more (ii) with a peak throughput of 120 litres per second or more |
| GNR 983, 8 December 2014 as amended by GNR 327, 7 April 2017 | Listing Notice 1 Activity 10 | The development and related operation of infrastructure exceeding 1 000 metres in length for the bulk transportation of sewage, effluent, process water, wastewater, return water, industrial discharge or slimes – (i) with an internal diameter of 0,36 metres or more (ii) with a peak throughput of 120 litres per second or more |

| | | |
|--|---|--|
| <p>GNR 983, 8 December 2014 as amended by GNR 327, 7 April 2017</p> | <p>Listing Notice 1 Activity 12</p> | <p>The development of infrastructure or structures with a physical footprint of 100 square metres or more.</p> <p>Where such development occurs –</p> <p>(a) Within a watercourse (b) In front of a development setback, or (c) If no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.</p> |
| <p>GNR 983, 8 December 2014 as amended by GNR 327, 7 April 2017</p> | <p>Listing Notice 1 Activity 19</p> | <p>The infilling or depositing of any material of more than 5 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-</p> <p>(i) a watercourse;</p> |
| <p>GNR 983, 8 December 2014 as amended by GNR 327, 7 April 2017</p> | <p>Listing Notice 1 Activity 27</p> | <p>The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation</p> |
| <p>GN 985 of 8 Dec 2014 as amended by GN R324 of 7 April 2017</p> | <p>Listing Notice 3 Activity 12</p> | <p>The clearance of an area of 300 square meters or more of indigenous vegetation.</p> <p>c. Gauteng</p> <p>ii. Within any critically biodiversity areas of ecological support areas identified in the Gauteng conservation plan or bioregion plans</p> |
| <p>GN 985 of 8 Dec 2014 as amended by GN R324 of 7 April 2017</p> | <p>Listing Notice 3 Activity 14</p> | <p>The development of—</p> <p>(x) buildings exceeding 10 square metres in size (xii) infrastructure or structures with a physical footprint of 10 square metres or more where such development occurs—</p> <p>(a) within a watercourse; (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse measured from the edge of a watercourse;</p> <p>Gauteng</p> <p>iv. Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng conservation plan or bioregional plans.</p> |

Does the activity also require any authorisation other than NEMA EIA authorisation?

| | |
|-----|----|
| YES | NO |
|-----|----|

If yes, describe the legislation and the Competent Authority administering such legislation

The WULA Application will be sent to The Department of Water and Sanitation

If yes, have you applied for the authorisation(s)? yes for the DWS

| | |
|-----|-----------|
| YES | NO |
| YES | NO |

If yes, have you received approval(s)? (attach in appropriate appendix)

2. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations:

| Title of legislation, policy or guideline: | Administering authority: | Promulgation Date: | Description of compliance |
|---|---|--------------------|--|
| Constitution of the Republic of South Africa (Act No 108 of 1990) | Government of South Africa | 18 December 1996 | Obligation to ensure that the proposed development will not result in pollution and ecological degradation; and Obligation to ensure that the proposed development is ecologically sustainable, while demonstrating economic and social development. The proposed project can be considered as a sustainable development that will prevent pollution and ecological degradation whilst promoting justifiable economic and social development. |
| National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended). | Department of Environmental Affairs (DEA) and Gauteng Department of Agriculture and Rural Development (GDARD) | 27 November 1998 | The National Environmental Management Act (Act No. 107 of 1998) (NEMA) is the overarching framework for environmental legislation as well as the Regulations for Environmental Impact Assessment. It sets out the principles that 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. The application considers the environmental and socio-economic conditions in compliance with the NEMA principles. |
| Regulations GN. R. 982, 983, 984 and 985 promulgated under Chapter 5 of the National Environmental Management Act (NEMA, Act 107 of 1998) in Government Gazette 38282 on 4 December 2014 as amended by Regulations GN. R. 324, 324, 325, 326 and 327 of 7 April 2017. | Gauteng Department of Agriculture and Rural Development (GDARD) | 7 April 2017 | GDARD is the provincial mandated authority to implement the Regulations for Environmental Impact Assessment in Gauteng. This application is made in terms of the regulations and will be submitted to GDARD for consideration. |
| National Water Act (Act No 36 of 1998) | Department of Water Affairs (DWA) | 26 August 1998 | The Act provides for the management of South Africa's water resources. It aims to ensure that the Republic's water resources are protected, used, developed, conserved and controlled. According to the Act, any proposed water uses must be specified and registered and/or licensed. Similarly, any modifications to |

| | | | |
|---|---|---------------|---|
| | | | drainage lines on site must be investigated in terms of water use requirements. A WULA will be sent to Department of Water and Sanitation |
| National Heritage Resources Act No 25 of 1999 (Act No 25 of 1999 as amended) | South African Heritage Resources Agency (SAHRA) | 28 April 1999 | A heritage assessment was completed; and Paleontological Assessment and it was found to have a low Paleontological Sensitivity. |
| The Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) | National -Department of Agriculture Forestry and Fisheries (DAFF) | 27 April 1983 | This act is not applicable since the area is not an important agricultural area. |
| Gauteng Environmental Management Framework | Gauteng DARD | 2017 | <p>The aim of the EMF is to guide protection and enhancement of environmental assets and natural resources along with development patterns to ensure sustainable environmental management and development patterns within and around the Gauteng Province.</p> <p>The proposed site is situated within Zone 3: High control zone outside urban development zone. The framework requires protection of environmental sensitivities such a ridge and its associated fauna and flora of concern.</p> |
| <ul style="list-style-type: none"> i. Companion Guideline on the Environmental Impact Assessment Regulations, 2010 ii. Environmental Management Framework Guidelines, 10 October 2012. iii. Public Participation Guideline, 10 October, 10 October 2012. iv. Fee Regulations Guidance Document, April 2014 v. Guideline on need and desirability in terms of the Environmental Impact Assessment Regulations, 2010 | Gauteng DARD | Various dates | Guidelines have informed this Application for Environmental Authorisation procedures and project / BAR. |

| | | | |
|--|---|---------------|--|
| vi. EIA Listed Activities and Timelines (January 2015) Section 24G and Similar Listings (January 2015) | | | |
| All relevant Provincial regulations, Municipal by-laws and ordinances This includes: <ul style="list-style-type: none"> • Gauteng Provincial Environmental Management Framework GPEMF 2015 • SPLUMA Bylaws of COT • The Gauteng Draft Red Data Policy • The Gauteng Draft Ridges Policy • Protection of Agricultural Land in Gauteng Revised Policy (June 2006) • City of Tshwane Municipality Spatial Development Framework (SDF) • City of Tshwane Metropolitan Municipality's Open Space Framework • Gauteng Transport Infrastructure Act | Provincial and Local - Gauteng Department of Agriculture and Rural Development (GDARD) and the City of Tshwane Metropolitan Municipality Application made to GDARD and Tshwane. | Various dates | Guidelines have informed this Application for Environmental Authorisation procedures and project / BAR |

DESCRIPTION OF COMPLIANCE WITH THE RELEVANT LEGISLATION, POLICY OR GUIDELINES:

3. ALTERNATIVES

Describe the proposal and alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished. The determination of whether the site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment.

The no-go option must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. **Do not include the no go option into the alternative table below.**

Note: After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Please describe the process followed to reach (decide on) the list of alternatives below

The concept of integrated Environmental Management suggests that an Environmental Impact Assessment process, to determine the possible impact of the proposed activity, should incorporate the consideration of feasible alternatives. A reasonable number of possible proposals or alternative, to achieve the same objective should be assessed. The identification, description, evaluation and comparison of alternatives are important for ensuring a sound environmental impact assessment process.

Alternatives should be considered as norm within the Environmental Process. These should include, if applicable:

- Site Alternatives;
- Location alternatives;
- Activity alternatives;
- Technology alternatives; and
- The No-Action alternatives (NO-GO).

For any alternative to be considered feasible, the alternative must meet the need and purposes of the development proposal without presenting significantly high associated impacts. Alternatives are typically distinguished into discrete or incremental alternatives. Discrete alternatives are overall development options, which are typically identified during the pre-feasibility, feasibility and / or Basic Assessment process. Incremental alternatives typically identified arise during the Assessment process and are usually suggested as a means of addressing / mitigating identified impacts (e.g.: waste management, noise reduction measure, contamination management, etc.) These alternatives are closely linked to the identification of migration measure and therefore are not specifically identified as distinct alternative. The types of alternatives considered for this project are presented below.

Provide a description of the alternatives considered

| No. | Alternative Type | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------|---|---|----------|---------------|----------------|------------------------------------|-------------|----------|---------|----------------------|----------|-----|--------|-----------------------|------------------|-----|----------|------------|----------------|---|-------------|----------|---------|-----|----------|-----|--------|----------------------|------------------|--|----------|-------------|----------------|---|-------------|----------|---------|-----|----------|-----|
| 1. | PROPOSED ACTIVITY: (Preferred Alternative) | <p>It is the intention of AccHost (Pty) Ltd (applicant) to establish mixed-use development consisting of Residential 3, Business 2, Educational and Private open space to be known as Eldoraigue X87 on Portion 195 & 237, Remainder of Portion 10 and part of remainder of Portion 187 of the farm Zwartkop 356 JR, within The City of Tshwane, Gauteng Province.</p> <p>Proposed land uses The township will comprise of the following erven, subject to the restrictive measures listed below:</p> <p>Proposed Erf 1</p> <table border="1" data-bbox="486 683 1449 963"> <tr> <td>Use Zone</td> <td>Residential 3</td> </tr> <tr> <td>Uses Permitted</td> <td>Duplex Dwelling and Dwelling units</td> </tr> <tr> <td>Definitions</td> <td>Clause 5</td> </tr> <tr> <td>Density</td> <td>85 units per hectare</td> </tr> <tr> <td>Coverage</td> <td>60%</td> </tr> <tr> <td>Height</td> <td>4 storeys (15 metres)</td> </tr> <tr> <td>Floor area ratio</td> <td>1.0</td> </tr> </table> <p>Proposed Erf 2</p> <table border="1" data-bbox="486 1041 1528 1706"> <tr> <td>Use Zone</td> <td>Business 2</td> </tr> <tr> <td>Uses permitted</td> <td>Business Building, Dwelling Units, Guest House, Institution, Light Industries subject to Schedule 10, Motor Dealership, Parking Garage subject to Schedule 10, Parking Site subject to Schedule 1, Shop, Place of Refreshment, Residential Buildings excluding boarding house, Hostel and Block of Tenements, Retail Industry, Vehicle Sales Mart subject to Schedule 10, Vehicle Sales Showroom, Veterinary Clinic and Place of Amusement.</td> </tr> <tr> <td>Definitions</td> <td>Clause 5</td> </tr> <tr> <td>Density</td> <td>n/a</td> </tr> <tr> <td>Coverage</td> <td>70%</td> </tr> <tr> <td>Height</td> <td>4 storeys (15 metre)</td> </tr> <tr> <td>Floor area ratio</td> <td>Gross leasable floor area (excluding gymnasium) restricted to 12 000 m². Gymnasium limited to 2 000 m².</td> </tr> </table> <p>Proposed Erf 3</p> <table border="1" data-bbox="486 1785 1516 2016"> <tr> <td>Use Zone</td> <td>Educational</td> </tr> <tr> <td>Uses permitted</td> <td>Place of childcare, place of instruction, place of public worship, social halls and sport and recreational hub.</td> </tr> <tr> <td>Definitions</td> <td>Clause 5</td> </tr> <tr> <td>Density</td> <td>n/a</td> </tr> <tr> <td>Coverage</td> <td>50%</td> </tr> </table> | Use Zone | Residential 3 | Uses Permitted | Duplex Dwelling and Dwelling units | Definitions | Clause 5 | Density | 85 units per hectare | Coverage | 60% | Height | 4 storeys (15 metres) | Floor area ratio | 1.0 | Use Zone | Business 2 | Uses permitted | Business Building, Dwelling Units, Guest House, Institution, Light Industries subject to Schedule 10, Motor Dealership, Parking Garage subject to Schedule 10, Parking Site subject to Schedule 1, Shop, Place of Refreshment, Residential Buildings excluding boarding house, Hostel and Block of Tenements, Retail Industry, Vehicle Sales Mart subject to Schedule 10, Vehicle Sales Showroom, Veterinary Clinic and Place of Amusement. | Definitions | Clause 5 | Density | n/a | Coverage | 70% | Height | 4 storeys (15 metre) | Floor area ratio | Gross leasable floor area (excluding gymnasium) restricted to 12 000 m ² . Gymnasium limited to 2 000 m ² . | Use Zone | Educational | Uses permitted | Place of childcare, place of instruction, place of public worship, social halls and sport and recreational hub. | Definitions | Clause 5 | Density | n/a | Coverage | 50% |
| Use Zone | Residential 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Uses Permitted | Duplex Dwelling and Dwelling units | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Definitions | Clause 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Density | 85 units per hectare | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coverage | 60% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Height | 4 storeys (15 metres) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Floor area ratio | 1.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Use Zone | Business 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Uses permitted | Business Building, Dwelling Units, Guest House, Institution, Light Industries subject to Schedule 10, Motor Dealership, Parking Garage subject to Schedule 10, Parking Site subject to Schedule 1, Shop, Place of Refreshment, Residential Buildings excluding boarding house, Hostel and Block of Tenements, Retail Industry, Vehicle Sales Mart subject to Schedule 10, Vehicle Sales Showroom, Veterinary Clinic and Place of Amusement. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Definitions | Clause 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Density | n/a | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coverage | 70% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Height | 4 storeys (15 metre) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Floor area ratio | Gross leasable floor area (excluding gymnasium) restricted to 12 000 m ² . Gymnasium limited to 2 000 m ² . | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Use Zone | Educational | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Uses permitted | Place of childcare, place of instruction, place of public worship, social halls and sport and recreational hub. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Definitions | Clause 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Density | n/a | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coverage | 50% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| No. | Alternative Type | Description | | | | | | | | | | | | | | | | | | | | |
|--------------------|--|--|--------|-----------------------|------------------|-----|--------------------|--|----------|--------------------|----------------|--------------------|-------------|----------|---------|-----|----------|-----|--------|----------|------------------|-----|
| | | <table border="1" data-bbox="488 215 1525 338"> <tr> <td>Height</td> <td>3 storeys (13 metres)</td> </tr> <tr> <td>Floor area ratio</td> <td>0.5</td> </tr> <tr> <td>Other restrictions</td> <td>School limited to a maximum of 1700 learners</td> </tr> </table> <p data-bbox="488 376 660 409">Proposed Erf 4</p> <table border="1" data-bbox="488 416 1525 696"> <tr> <td>Use Zone</td> <td>Private open space</td> </tr> <tr> <td>Uses permitted</td> <td>Private Open Space</td> </tr> <tr> <td>Definitions</td> <td>Clause 5</td> </tr> <tr> <td>Density</td> <td>n/a</td> </tr> <tr> <td>Coverage</td> <td>10%</td> </tr> <tr> <td>Height</td> <td>1 storey</td> </tr> <tr> <td>Floor area ratio</td> <td>0.1</td> </tr> </table> <p data-bbox="488 734 616 768">Residential</p> <p data-bbox="488 775 1469 842">Residential densification will be the main focus of the residential component of the proposed development.</p> <p data-bbox="488 891 595 925">Business</p> <p data-bbox="488 931 1493 1043">A Business centre (neighbourhood shopping centre) will be provided at the main access road into the town to serve the community and will be zoned as “Business 2”. This is located on two high order roads (Wierda Road and Old Johannesburg Road).</p> <p data-bbox="488 1081 624 1115">Open Areas</p> <p data-bbox="488 1122 1493 1189">Open areas are not only essential to biodiversity, but also to be utilized by the communities for recreational purposes.</p> <p data-bbox="488 1238 1501 1350">A “Private Open Space” erf is provided within the township in which a wetland and 32 metre buffer is located. According to Regulation 44 of the Town Planning and Townships Regulations, 186, the following provision of Land for Open Spaces or Parks needs to be provided:</p> <p data-bbox="488 1391 871 1424">“Residential 3” units - 18 m² per unit</p> <p data-bbox="488 1431 1031 1464">The proposed township will consist of the following:</p> <p data-bbox="488 1471 1302 1538">355 “Residential 3” units - Thus requires parks with an area of (355 X 18 m²) = 6 390 m².</p> <p data-bbox="488 1545 1525 1657">The total open space that is provided within the township is 31 284 m² in extent. As the “Private Open Space” erf is 31 284 m², it is evident that a larger “Open Space” area is provided than what is actually required.</p> <p data-bbox="488 1697 887 1731">Institutional / Educational Facilities</p> <p data-bbox="488 1738 1525 1805">Educational facilities primarily refer to primary- and high schools. Provision has been made in the development, to ensure all children have access to schools.</p> | Height | 3 storeys (13 metres) | Floor area ratio | 0.5 | Other restrictions | School limited to a maximum of 1700 learners | Use Zone | Private open space | Uses permitted | Private Open Space | Definitions | Clause 5 | Density | n/a | Coverage | 10% | Height | 1 storey | Floor area ratio | 0.1 |
| Height | 3 storeys (13 metres) | | | | | | | | | | | | | | | | | | | | | |
| Floor area ratio | 0.5 | | | | | | | | | | | | | | | | | | | | | |
| Other restrictions | School limited to a maximum of 1700 learners | | | | | | | | | | | | | | | | | | | | | |
| Use Zone | Private open space | | | | | | | | | | | | | | | | | | | | | |
| Uses permitted | Private Open Space | | | | | | | | | | | | | | | | | | | | | |
| Definitions | Clause 5 | | | | | | | | | | | | | | | | | | | | | |
| Density | n/a | | | | | | | | | | | | | | | | | | | | | |
| Coverage | 10% | | | | | | | | | | | | | | | | | | | | | |
| Height | 1 storey | | | | | | | | | | | | | | | | | | | | | |
| Floor area ratio | 0.1 | | | | | | | | | | | | | | | | | | | | | |
| 2. | Alternative 1: Single use Low density residential | This option will make provision for the subdivision into “Residential 1” erven only. The result of such a development will be a high-income exclusive development where no social responsibility or economic sustainability and job creation can be considered. | | | | | | | | | | | | | | | | | | | | |

| No. | Alternative Type | Description |
|-----|---------------------------------|---|
| 3. | Alternative 2: No Go | <p>This implies that the site be left as is and that no development or alteration be done. If this alternative is pursued the sites existing habitat will be retained. This option has the following drawbacks:</p> <ul style="list-style-type: none"> • The potential to provide housing, educational facilities, supply retail and leisure will be lost • A very viable opportunity to create jobs and income for the local market during the construction and operational phase will be negated • The area will fall further in disrepair and the protection and appropriate management of the ecological significant areas will be negated; or • Illegal squatters or vagrants may inhabit the site. <p>Given the fact that the site will eventually degenerate if left unmanaged, and the fact that it is most likely unsuitable to be utilized for grazing or agricultural purposes due to its location, it is reasonable to state that the no-go option is less favorable than some of the other options presented. Furthermore, should this property not be developed it would be left as an isolated and disconnected land due to all the surrounding areas.</p> |

| No. | Alternative type, - Location alternatives | Description |
|-----|---|---|
| 1 | Proposal - Infill development location (preferred) | <p>This is the most preferred location type due to the balance achievable between social, environmental and economic requirements:</p> <p>A property of dwelling located at the right address and near access routes (to those residents who would like to commute to other areas of Tshwane and Gauteng)</p> <ul style="list-style-type: none"> • The market has increased due to the ease access to major routes in the area the site is located on the intersection of two “Mobility Roads”, which makes the development of a small neighbourhood shopping centre and a school very attractive in combination with a higher density residential development. • The proposed location Promote the availability of residential and employment opportunities near each other (employees at the shopping centre and school can reside in close proximity to their work); • There has been an increased demand for residential dwelling units in the area as it is seen as one of the old established suburbs in Tshwane where large single residential stands exist with opportunities for densification. • Values of families and their concerns for safety of their families (where smaller dwellings within a complex give a better sense of security) the protection of the environment and the feeling of peace exuded by a secluded home while maintaining the ease of accessibility of same. • It is well located in relation to major roads, transport routes and places of employment. • The proposed development will have no impact on any adjoining or surrounding property as it is large enough to allow for the proposed density, height, landscaping and parking, without it impacting on any adjoining property. • Situated within the urban realm adjacent to existing and proposed urban infrastructure, service and amenities. • Socially inclusive due to its location to numerous communities and along public transport routes. |

| | | |
|----|--|--|
| 2 | Alternative 1 – Inner City Location | An inner-city location would be environmentally and socially feasible, however economically unviable, provided that the same area extent of land be found available for development as inner-city resources are very scarce. Furthermore, the inner-city location is not socially, environmentally or economically feasible due to the following: <ul style="list-style-type: none"> • Not situated adjacent to primary movement corridors • Not accessible to a range of socio-economic population groups • Isolated nature of development and therefore not inclusive • Contrasting densities and heights regarding the mixed-use nodal development • Availability of land at an affordable cost minimal |
| 3. | Alternative 2 – Suburban location | Not socially, environmentally or economically feasible due to the following: <ul style="list-style-type: none"> • Not situated adjacent to primary movement corridors • Not accessible to a range of socio-economic population groups • Isolated nature of development and therefore not inclusive • Contrasting densities and heights regarding the mixed-use nodal development • Availability of land at an affordable cost minimal |

| No. | Alternative type, Technology | Description |
|-----|------------------------------|--|
| 1. | Proposal Technology | Responsible construction equipment will be used during the construction phase. The appropriate Green Building bylaws will be implemented measures will put in place to make the development as ecologically responsible as possible such as the installation of: <ul style="list-style-type: none"> • Energy efficient light bulbs • Solar heating units, • Low flow water taps • Use local labour • Use local materials |
| 2. | Alternative 1 | Standard construction equipment will be used during the construction phase. |

No-Go Alternative

This option assumes that a non-development approach would ensure that the environment is not impacted upon any more than is currently the case. It is important to state that this assessment is informed by the current condition of the area. Should the GDARD decline the application, the 'No-Go' option will be followed, and the status quo of the site will remain.

This option is not recommended since the land portion is large and the upkeep is a strain on the landowners.

In the event that no alternative(s) has/have been provided, a motivation must be included in the table below.

Not applicable as alternatives are proved.

4. PHYSICAL SIZE OF THE ACTIVITY

Indicate the total physical size (footprint) of the proposal as well as alternatives. Footprints are to include all new infrastructure (roads, services etc), impermeable surfaces and landscaped areas:

Size of the activity:

Proposed activity

| |
|--|
| Total Area: 21.3469 ha. |
| Development footprint: 18.2185 ha |
| |
| |

Alternatives:

Alternative 1 (if any)

| |
|-----|
| n/a |
|-----|

Alternative 2 (if any)

| |
|-----|
| n/a |
|-----|

| |
|-----|
| n/a |
|-----|

| |
|--|
| |
|--|

or, for linear activities:

Length of the activity:

Proposed activity

| |
|-----|
| n/a |
|-----|

Alternatives:

Alternative 1 (if any)

| |
|-----|
| n/a |
|-----|

Alternative 2 (if any)

| |
|-----|
| n/a |
|-----|

m/km

Indicate the size of the site(s) or servitudes (within which the above footprints will occur):

Size of the site/servitude:

Proposed activity

| |
|--|
| |
| |
| |

Alternatives:

Alternative 1 (if any)

| |
|-----|
| n/a |
|-----|

| |
|-----|
| n/a |
|-----|

| |
|-----|
| n/a |
|-----|

| |
|-----|
| n/a |
|-----|

Alternative 2 (if any)

Ha/m²

5. SITE ACCESS

Proposal

Does ready access to the site exist, or is access directly from an existing road?

| | |
|-----|----|
| YES | NO |
|-----|----|

If NO, what is the distance over which a new access road will be built

| |
|-----|
| n/a |
|-----|

Describe the type of access road planned:

Access to the proposed development will be from three public roads namely:

- Janet Road, which will allow access to the school (proposed Erf 3).
- Proposed Lesea Boulevard, which links Wierda Road to the existing Jan Road via a traffic circle. Lesea Boulevard will allow access to the proposed Erf 2 (Shopping Centre)
- The existing Jan Road which allows access to the school (proposed Erf 3) and the sectional title residential village (proposed Erf 1).

These access roads will link to each other by means of another traffic circle at the southern boundary of the site.

Include the position of the access road on the site plan (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

Alternative 1

Does ready access to the site exist, or is access directly from an existing road?

| | |
|-----|----|
| YES | NO |
|-----|----|

If NO, what is the distance over which a new access road will be built

| |
|-----|
| n/a |
|-----|

Describe the type of access road planned:

Same as above.

Include the position of the access road on the site plan. (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

Alternative 2

Does ready access to the site exist, or is access directly from an existing road?

| | |
|-----|----|
| YES | NO |
|-----|----|

If NO, what is the distance over which a new access road will be built

| |
|-----|
| n/a |
|-----|

Describe the type of access road planned:

No additional development would occur and therefore access to the site would not be required

Include the position of the access road on the site plan. (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

PLEASE NOTE: Points 6 to 8 of Section A must be duplicated where relevant for alternatives

Section A 6-8 has been duplicated

| |
|---|
| 0 |
|---|

Number of times

(only complete when applicable)

6. LAYOUT OR ROUTE PLAN

| |
|----------------------------|
| Refer to Annexure A |
|----------------------------|

A detailed site or route (for linear activities) plan(s) must be prepared for each alternative site or alternative activity. It must be attached to this document. The site or route plans must indicate the following:

- the layout plan is printed in colour and is overlaid with a sensitivity map (if applicable);
- layout plan is of acceptable paper size and scale, e.g.
 - A4 size for activities with development footprint of 10sqm to 5 hectares;
 - A3 size for activities with development footprint of > 5 hectares to 20 hectares;
 - A2 size for activities with development footprint of >20 hectares to 50 hectares);
 - A1 size for activities with development footprint of >50 hectares);
- The following should serve as a guide for scale issues on the layout plan:
 - A0 = 1: 500
 - A1 = 1: 1000
 - A2 = 1: 2000
 - A3 = 1: 4000
 - A4 = 1: 8000 (±10 000)
- shapefiles of the activity must be included in the electronic submission on the CD's;
- the property boundaries and Surveyor General numbers of all the properties within 50m of the site;
- the exact position of each element of the activity as well as any other structures on the site;
- the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, sewage pipelines, septic tanks, storm water infrastructure;
- servitudes indicating the purpose of the servitude;
- sensitive environmental elements on and within 100m of the site or sites (including the relevant buffers as prescribed by the competent authority) including (but not limited thereto):
 - Rivers and wetlands;
 - the 1:100 and 1:50 year flood line;
 - ridges;
 - cultural and historical features;
 - areas with indigenous vegetation (even if it is degraded or infested with alien species);
- Where a watercourse is located on the site at least one cross section of the water course must be included (to allow the position of the relevant buffer from the bank to be clearly indicated).

FOR LOCALITY MAP (NOTE THIS IS ALSO INCLUDED IN THE APPLICATION FORM REQUIREMENTS)

- the scale of locality map must be at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map;
- the locality map and all other maps must be in colour;
- locality map must show property boundaries and numbers within 100m of the site, and for poultry and/or piggery, locality map must show properties within 500m and prevailing or predominant wind direction;

- for gentle slopes the 1m contour intervals must be indicated on the map and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the map;
- areas with indigenous vegetation (even if it is degraded or infested with alien species);
- locality map must show exact position of development site or sites;
- locality map showing and identifying (if possible) public and access roads; and
- the current land use as well as the land use zoning of each of the properties adjoining the site or sites.

7. SITE PHOTOGRAPHS

| |
|---------------------|
| Refer to Annexure B |
|---------------------|

Colour photographs from the center of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under the appropriate Appendix. It should be supplemented with additional photographs of relevant features on the site, where applicable.

8. FACILITY ILLUSTRATION

| |
|---|
| Refer to the layout plan on Annexure A2 |
|---|

A detailed illustration of the activity must be provided at a scale of 1:200 for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity to be attached in the appropriate Appendix.

SECTION B: DESCRIPTION OF RECEIVING ENVIRONMENT

Note: Complete Section B for the proposal and alternative(s) (if necessary)

Instructions for completion of Section B for linear activities

- 1) For linear activities (pipelines etc.) it may be necessary to complete Section B for each section of the site that has a significantly different environment.
- 2) Indicate on a plan(s) the different environments identified
- 3) Complete Section B for each of the above areas identified
- 4) Attach to this form in a chronological order
- 5) Each copy of Section B must clearly indicate the corresponding sections of the route at the top of the next page.

Section B has been duplicated for sections of the route

| |
|-----|
| n/a |
|-----|

times

Instructions for completion of Section B for location/route alternatives

- 1) For each location/route alternative identified the entire Section B needs to be completed
- 2) Each alternative location/route needs to be clearly indicated at the top of the next page
- 3) Attach the above documents in a chronological order

Section B has been duplicated for location/route alternatives n/a times (complete only when appropriate)

Instructions for completion of Section B when both location/route alternatives and linear activities are applicable for the application

Section B is to be completed and attachments order in the following way

- All significantly different environments identified for Alternative 1 is to be completed and attached in a chronological order; then
- All significantly different environments identified for Alternative 2 is to be completed and attached chronological order, etc.

Section B - Section of Route

n/a (complete only when appropriate for above)

Section B – Location/route Alternative No.

n/a (complete only when appropriate for above)

1. PROPERTY DESCRIPTION

Property Description:
(Including Physical Address and Farm name, portion etc.)

The subject property is located on Portion 195 & 237 on Portion 10 and Part of remainder of Portion 187 of the farm Zwartkop 356 JR. The site is situated just to the south of the Wierda Road/Old Johannesburg Road intersection
The application site is located just to the south of the Wierda Road / Old Johannesburg Road. The site falls under the jurisdiction of Tshwane Metropolitan Council

2. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in decimal degrees. The degrees should have at least six decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

Alternative:

1. Project Proposal Ptn 195
2. Project Proposal Ptn 237
3. Project Proposal R/10
4. Project Proposal R/187
5. Alternative 1

| Latitude (S): | Longitude (E): |
|----------------------|-----------------------|
| 25°49'48.21"S | 28°09'25.84"E |
| 25°49'46.88"S | 28°09'23.34"E |
| 25°49'44.92"S | 28°09'26.44"E |
| 25°49'47.84"S | 28°09'13.44"E |
| n/a | n/a |

In the case of linear activities:

Alternative:

- Starting point of the activity
- Middle point of the activity
- End point of the activity

Latitude (S):

Longitude (E):

| | |
|-----|-----|
| n/a | n/a |
| n/a | n/a |
| n/a | n/a |

For route alternatives that are longer than 500m, please provide co-ordinates taken every 250 meters along the route and attached in the appropriate Appendix

Addendum of route alternatives attached

The 21digit Surveyor General code of each cadastral land parcel

| | | | | | | | | | | | | | | | | | | | | | |
|------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ptn 195 | T | O | I | R | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 5 | 6 | 0 | 0 | 1 | 9 | 5 |
| | 1 | 2 | | | 3 | | | 4 | | | | | 5 | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | |
|------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ptn 237 | T | O | I | R | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 5 | 6 | 0 | 0 | 2 | 3 | 7 |
| | 1 | 2 | | | 3 | | | 4 | | | | | 5 | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | |
|----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R/1 0 | T | O | I | R | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 5 | 6 | 0 | 0 | 0 | 1 | 0 |
| | 1 | 2 | | | 3 | | | 4 | | | | | 5 | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | |
|-----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R/1 87 | T | O | I | R | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 5 | 6 | 0 | 0 | 1 | 8 | 7 |
| | 1 | 2 | | | 3 | | | 4 | | | | | 5 | | | | | | | | |

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

| | | | | | | |
|------|-------------|-------------|--------------------|--------------|-------------|------------------|
| Flat | 1:50 – 1:20 | 1:20 – 1:15 | 1:15 – 1:10 | 1:10 – 1:7,5 | 1:7,5 – 1:5 | Steeper than 1:5 |
|------|-------------|-------------|--------------------|--------------|-------------|------------------|

4. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site.

| | | | | | | |
|-----------|---------|--------------------------|--------|--------------|----------------------------|-------------|
| Ridgeline | Plateau | Side slope of hill/ridge | Valley | Plain | Undulating plain/low hills | River front |
|-----------|---------|--------------------------|--------|--------------|----------------------------|-------------|

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

a) Is the site located on any of the following?

| | | |
|--|-----|----|
| Shallow water table (less than 1.5m deep) | YES | NO |
| Dolomite, sinkhole or doline areas | YES | NO |
| Seasonally wet soils (often close to water bodies) | YES | NO |
| Unstable rocky slopes or steep slopes with loose soil | YES | NO |
| Dispersive soils (soils that dissolve in water) | YES | NO |
| Soils with high clay content (clay fraction more than 40%) | YES | NO |
| Any other unstable soil or geological feature | YES | NO |
| An area sensitive to erosion | YES | NO |

(Information in respect of the above will often be available at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by Geological Survey may also be used).

b) are any caves located on the site(s)

| | |
|-----|----|
| YES | NO |
|-----|----|

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

Latitude (S): **Longitude (E):**

| | |
|-----|-----|
| n/a | n/a |
|-----|-----|

c) are any caves located within a 300m radius of the site(s)

| | |
|-----|----|
| YES | NO |
|-----|----|

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

Latitude (S): **Longitude (E):**

| | |
|-----|-----|
| n/a | n/a |
|-----|-----|

d) are any sinkholes located within a 300m radius of the site(s)

| | |
|-----|----|
| YES | NO |
|-----|----|

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

Latitude (S): **Longitude (E):**

| | |
|-----|-----|
| n/a | n/a |
|-----|-----|

If any of the answers to the above are "YES" or "unsure", specialist input may be requested by the Department

6. AGRICULTURE

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)?

| | |
|-----|----|
| YES | NO |
|-----|----|



Figure 3: Gauteng Agricultural Potential Atlas (Source: GDARD Map)

Please note: The Department may request specialist input/studies in respect of the above.

7. GROUNDCOVER

To be noted that the location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Indicate the types of groundcover present on the site and include the estimated percentage found on site.

| | | | | |
|--|---|--|--|--------------------------------|
| Natural veld - good condition % = 60 | Natural veld with scattered aliens % = | Natural veld with heavy alien infestation % = | Veld dominated by alien species % = 20 | Landscaped (vegetation) % = |
| Sport field % = | Old Cultivated land % = | Paved surface (hard landscaping) % = | Building or other structure % = 20% | Bare soil % = |

Please note: The Department may request specialist input/studies depending on the nature of the groundcover and potential impact(s) of the proposed activity/ies.

A geotechnical investigation of the site has been undertaken by Holland Muter & Associates CC. A summary of the report is presented below, the complete report may be found in **Annexure G1**.

The proposed development is underlain by chert and dolomite of the Monte Christo Formation. The detail gravity of the area indicates that the gravity highs and the widely spaced contours marks relatively narrow ridges of dolomite which dominate the central and eastern portions of the terrain while gravity lows occur primarily on the western part of the site. The gravity contours reflect shallow dolomite bedrock conditions which are confirmed by the percussion drilling of thirty-two boreholes of the terrain.

After the first phase of drilling which was done to correlate the gravity survey results with the bedrock elevations, a second phase of drilling was performed to delineate the shallow bedrock more accurately as well as to detect whether narrow slots or dykes exist on the site which could have a stability risk on the proposed structures, Honeycomb structures and air loss were encountered during drilling in some of the boreholes while the head of the dolomite bedrock was obtained between 1m and 33m below the surface. Some of the boreholes indicated the presence of a waddy clay while the penetration rates throughout the drilling process were variable. Red clay was found intercalated with the chert in only one borehole. From drilling exercise, it seems that the weathering process has not developed to such a degree to create a geological environment which will prohibit the total developability of the terrain. During the trial pitting it was noted that chert occurred as compacted slabs over the greater part of the terrain which together with the relative steep surface slope towards the southwest, will prevent water ingress of eroding the subsurface conditions.

During the evaluation and classification scenario of the terrain it was assumed that receptacles of a disseminated nature are present in the boreholes where no honeycomb structures, low density zones or cavities were encountered. even though it was assumed that 100 percent of overburden materials could be received in the receptacles, the sizes of the sinkholes calculated to potentially occur remain between small and medium expect for two boreholes in the western part of the terrain. The average mobilization potential of the overburden materials ranges between high and medium. Since the protective horizon or thickness of the overburden are on average less than 15m and in certain areas than 4m it has been recommended than an engineered soil mattress be utilized to found on.

Taking the results of the geological conditions which occur on the terrain into account, an acceptable development risk exists to allow the development of the proposed structures intended buyers of residential units must accept the a 100 percent risk free situation for the occurrence of sinkholes and subsidence's is not possible for development on dolomite. Although precautionary measures were prescribed in the report to prevent the occurrence or triggering of any unstable conditions on the site as far as possible, it is important that all residents accept responsibility of preventing the accumulation of surface water on the terrain.

Are there any rare or endangered flora or fauna species (including red list species) present on the site

| | |
|-----|----|
| YES | NO |
|-----|----|

If YES, specify and explain:

It is unlikely that Red data flora species will occur on site due to the altered habitats recorded in the grassland and riverine areas. One Orange listed species namely *Hypoxis hemerocallidae* occurred in the Disturbed grassland. This species can be removed out of harm's way and successfully re-established in the adjacent floodplain grassland.

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.

| | |
|-----|----|
| YES | NO |
|-----|----|

If YES, specify and explain:

Not Applicable

Are there any special or sensitive habitats or other natural features present on the site?

| | |
|-----|----|
| YES | NO |
|-----|----|

If YES, specify and explain:

The ecological sensitivity of the site according to GIDS relates to the sensitive habitats on site, dolomite, as well as the riverine habitats associated with the Sesmylspruit. The assessment indicated that the grassland and riverine vegetation has lost its sensitivity due to mainly historic farming.

Was a specialist consulted to assist with completing this section

| | |
|-----|----|
| YES | NO |
|-----|----|

If yes complete specialist details

| | | | |
|-------------------------------------|--|-------|-----|
| Name of the specialist: | ECO Assessments (Christa Custers) | | |
| Qualification(s) of the specialist: | MSc (Bot Ecology) Pri.Sci Nat (400003/03) | | |
| Postal address: | P.O. Box 441037, LINDEN | | |
| Postal code: | 2104 | | |
| Telephone: | 0117823428 | Cell: | n/a |
| E-mail: | info@ecoassessments.co.za | Fax: | n/a |
| | | YES | NO |

8. LAND USE CHARACTER OF SURROUNDING AREA

Using the associated number of the relevant current land use or prominent feature from the table below, fill in the position of these land-uses in the vacant blocks below which represent a 500m radius around the site

| | | | | |
|---|---|---|--|---|
| 1. Vacant land | 2. River, stream, wetland | 3. Nature conservation area | 4. Public open space | 5. Koppie or ridge |
| 6. Dam or reservoir | 7. Agriculture | 8. Low density residential | 9. Medium to high density residential | 10. Informal residential |
| 11. Old age home | 12. Retail | 13. Offices | 14. Commercial & warehousing | 15. Light industrial |
| 16. Heavy industrial ^{AN} | 17. Hospitality facility | 18. Church | 19. Education facilities | 20. Sport facilities |
| 21. Golf course/polo fields | 22. Airport ^N | 23. Train station or shunting yard ^N | 24. Railway line ^N | 25. Major road (4 lanes or more) ^N |
| 26. Sewage treatment plant ^A | 27. Landfill or waste treatment site ^A | 28. Historical building | 29. Graveyard | 30. Archeological site |
| 31. Open cast mine | 32. Underground mine | 33. Spoil heap or slimes dam ^A | 34. Small Holdings | |
| Other land uses (describe): | | 35. | | |

NOTE: Each block represents an area of 250m X 250m, if your proposed development is larger than this please use the appropriate number and orientation of hashed blocks

NORTH

| | | | | | | |
|-------------|---|---|---|---|---|-------------|
| | 9 | 9 | 9 | 1 | 9 | |
| | 9 | 1 | 9 | 2 | 9 | |
| WEST | 9 | 1 | 9 | 2 | 9 | EAST |
| | 9 | 1 | 9 | 1 | 9 | |
| | 9 | 9 | 9 | 1 | 9 | |

= Site

SOUTH

Note: More than one (1) Land-use may be indicated in a block

Please note: The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed activity/ies. Specialist reports that look at health & air quality and noise impacts may be required for any feature above and in particular those features marked with an "A" and with an "N" respectively.

Have specialist reports been attached

| | |
|-----|----|
| YES | NO |
|-----|----|

If yes indicate the type of reports below

Ecology– ECO Assessments cc was appointed to conduct an Ecological Assessment on the subject property. A summary is presented here, and the complete report may be found in **Annexure G2**

The Biophysical Environment

The site is located just south of the suburb of Valhalla and north of Wierdapark, in Centurion, Tshwane (Pretoria). The R101 (old Johannesburg/Pretoria road) and the M10 (Wierda RD) major roads borders the eastern and northern part of the site. The surrounding land uses included a mixture of residential areas and open spaces associated with the Zwartkop Nature Reserve northwest of the site, the Zwartkop Country Club Golf course east of the site, the open spaces along the Sesmylspruit as well as the open land associated with the Airforce Base Swartkop north east of the site. The only infrastructure on the site are farmhouses with outbuildings. Besides the Sesmylspruit along the northern boundary, no obvious natural features such as rocky outcrops, ridges or caves occur on the site.

Methodology

The following methods were used during the assessment of the study site:

- The study site was assessed on foot and all ecological units assessed & described. The site was assessed on 12 March 2019;
- A desktop photographic assessment (dating back 10 years) was undertaken to determine the historical status and sensitivity of the site;
- The present ecological status and sensitivity of each vegetation unit/habitat were described;
- The different faunal habitats were described. All signs of faunal activity were noted;
- The IUCN categories used in the report includes Critically Endangered (CR), Endangered (EN), Vulnerable (V), Near Threatened (NT), Critically Rare, Rare and Declining;
- Habitats were evaluated based on certain criteria.

Vegetation Type

The site is located within the Carltonville Dolomite Grassland vegetation type according to Mucina and Rutherford (2006). The status of this vegetation type is Vulnerable as only a small extent is statutorily conserved and almost a quarter has already been transformed for cultivation, urban sprawl and mining.

Ecological units

(a). Riverine exotic woodland and Spanish reed

Environmental factors

Location: Along the Sesmylspruit

Soil: Brown

Rocks: None

Disturbance: Exotic vegetation, litter



Figure 4: Riverine exotic woodland and Spanish reed (Source: ECO Assessments cc)

Ecological factors

The Sesmylspruit runs through the northern part of the study area. It was characterized by predominantly exotic trees (non-native/non-indigenous) interspersed with singular indigenous trees here and there. The exotic woodland was found to be dominated by *Celtis sinensis** (Nettle/hackberry trees), *Cestrum parqui** (Chilean cestrum) and *Robinia pseudo-acacia**, but also included a range of other exotic trees typically growing in disturbed and riverine areas of Gauteng. These trees have largely replaced the indigenous vegetation. Singular indigenous tree species such as *Combretum erythrophyllum* (River bushwillow), *Gymnosporia buxifolia* (Common spikethorn) and *Celtis africana* (White stinkwood) were observed in between the exotic trees. On the eastern side of the study area, along the stream, a patch of the invasive *Arundo donax* (Spanish reed) and *Pennisetum clandestinum* (kikuyu) were observed. These species are known to invade and alter natural habitats. The conservation status of the stream vegetation is considered to be Low. The value that the stream however has as natural corridor through urban areas, is High.

(b). Altered Grassland

Environmental factors

Location: Open flat parts of the site

Soil: Brown

Rocks: None

Disturbance: Historic ploughing and grazing



Figure 5: Altered Grassland (Source: ECO Assessments cc)

Ecological factors

The flatter grassland areas have largely been cultivated and grazed before, which changed the natural structure and composition of the original grassland. Subsequently the species that re-established here were characterized by patches of monocultures (same species) spread through the area in a mosaic pattern. Patches consisted of *Melinis nerviglumis*, *Eragrostis spp.*, *Heteropogon contortis*, *Cynodon dactylon*, *Aristida congesta var barbicollis*, *Pseudognaphalium luteoalbum**, *Conyza albida** and *Zinnia peruviana**. Agriculture has a negative impact on natural grassland which was characteristic of the poor species richness that was observed. The conservation status is subsequently considered to be Low.

(c). Exotic woodland

Environmental factors

Location: Several large patches across the site

Soil: Brown

Rocks: Gravel

Disturbance: Farming, exotic trees



Figure 6: Exotic Woodland (Source: ECO Assessments cc)

The site supported several bush clumps consisting of predominantly exotic trees. In the central areas *Cestrum parqui** (Chilean cestrum) and *Robinia pseudo-acacia** dominated the trees, while several other mostly exotic garden trees species occurred around the farmhouses. Along the roads, *Eucalyptus sp* (blue gum) dominated. The conservation status of these areas is considered to be Low.

(d). Disturbed grassland

Environmental factors

Location: Along the stream on northern part of site

Soil: Brown

Rocks: Gravel

Disturbance: Historic farming



Figure 7: Disturbed Grassland (Source: ECO Assessments cc)

Ecological factors

A section of land along the riverine area, supported more natural grassland species, indicating that this area has not been farmed as intensely as the other grassland areas. Where natural forb species were mostly absent in the altered grassland, several forb species were present here such as *Cucumis zeyheri* and *Ledebouria* spp. Other interesting species recorded here included *Gladiolus permeabilis* and *Hypoxis hemerocallidae*, the latter species being heavily harvested for its medicinal value. While this area resembled the original grassland vegetation, the species richness was found to be significantly lower than natural grassland. The area is also relatively small. Its conservation status is therefore considered to be Moderate to Low.

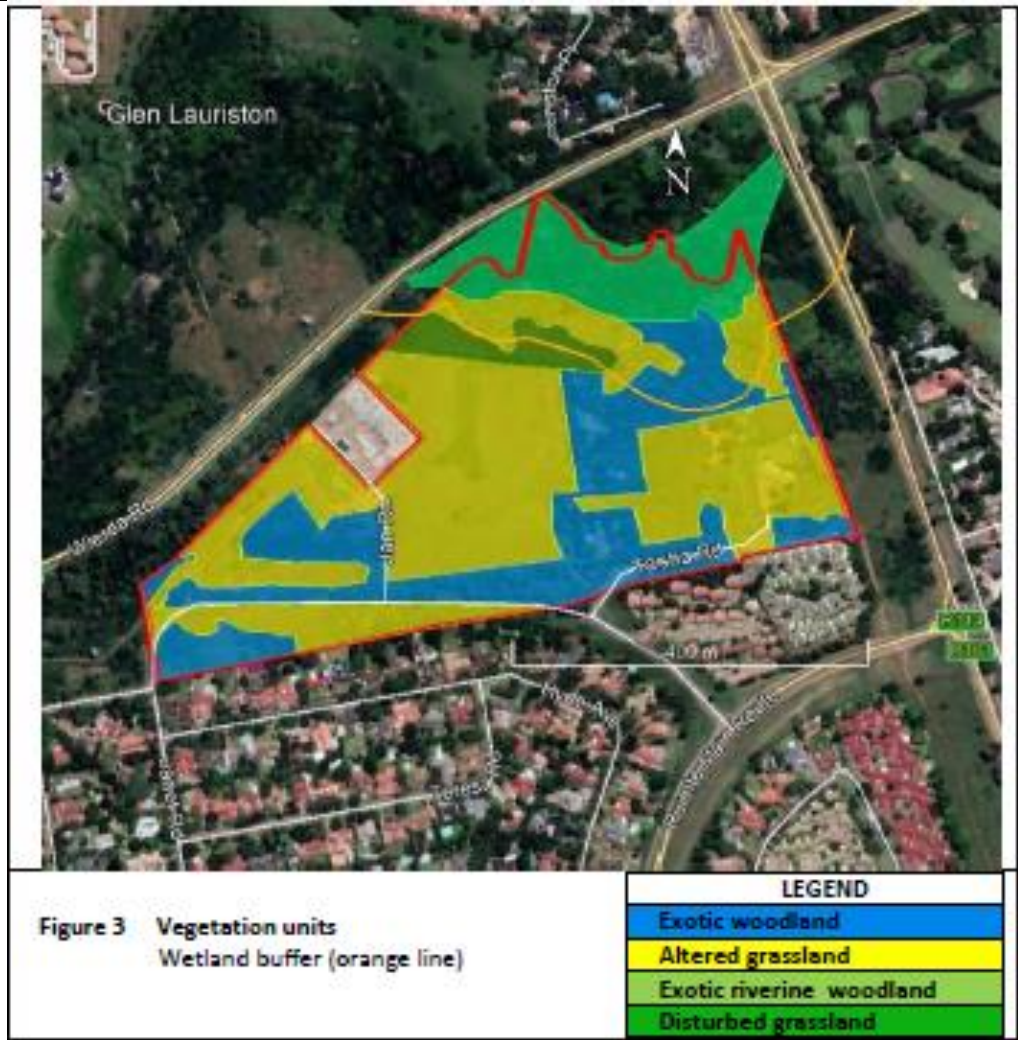


Figure 8: (Figure 3 of the Ecological report) - **Vegetation units** (Source: ECO Assessments cc)

NEMBA: Red Data Flora

According to GDARD:

There are no recorded Red Data flora species recorded for the site or in the vicinity of the site; four (4) species have however been recorded from the farm on which the study site is situated or within 5km of the study site, A further set of sensitive species have been recorded from the 1 in 50 000 grid on which the property is situated. It is unlikely that Red data flora species will occur on site due to the altered habitats recorded in the grassland and riverine areas. One Orange listed species namely *Hypoxis hemerocallidae* occurred in the Disturbed grassland. This species can be removed out of harm's way and successfully re-established in the adjacent floodplain grassland.

Endangered Ecosystems (as per Section 52 NEMBA)

In Notice GN 1002 in section 52 of National Environmental Management Biodiversity Act (No 10 of 2004), a national list of ecosystems that are threatened and in need of protection, are listed. Several categories were created to classify these threatened ecosystems starting from A1, A2, B, C, D1, E and ending at F. The Carletonville Dolomite Grassland on which the site is located, is Not classified as an Endangered Ecosystem.

Faunal Assessment

Birds

The habitat presented on the site for birds includes mostly grassland, with some tree habitat in the form of indigenous and exotic trees as well as an exotic riverine woodland habitat. Grassland is known to support a wide variety of species including larks, pipits, Korhaans, lapwings and the like. No sensitive species have been recorded for the grasslands in the pentad* area (9kmX9km area) of the site (2545_2905) (SABAP2). In the pentad area just south of the site (2550_2805), the Secretarybird (*Sagittarius serpentarius*) was last recorded in 2011. The Lesser Kestrel (*Falco naumanni*) was last recorded in the area more recently (2018) and can therefore be assumed to still be present in the area.

The Lesser Kestrel is a light and graceful flyer. It arrives in southern Africa in October and is more commonly seen in the highveld grasslands than in the lowveld. The Lesser Kestrel roosts in huge communal flocks, often near towns. They are known to seek out the tallest trees such as bluegums or pines for roosting. It has a low reporting rate of below 1% for the pentad area south of the study site and is therefore not considered a concern for the proposed development. It is unlikely that sensitive bird species may utilize the site as an optimal habitat due to the disturbance's notes.

Mammals

Limited signs of mammal species were recorded on site. It can however be expected that a range of common smaller mammal species such as mongoose, rats and mice will be present due to site consisting of open land and being connected to other open land via the Sesmylspruit. Larger nocturnal animals can also potentially move through the area along the Sesmylspruit. Three species specifically listed by GDARD that is of conservation concern are *Chrysospalax villosus*, *Lutra maculicollis* and *Dasymys incomtus*. Literature indicates that these species prefer more natural and undisturbed habitats. Their habitats are described as follows:

Rough haired Golden mole (*Chrysospalax villosus*)

The rough-haired Golden Mole occurs in sandy soils in grassland, meadows and along edges of marshes in savannah and grassland biomes of South Africa.

Spotted-necked otter (*Lutra maculicollis*)

The spotted-necked Otter inhabits freshwater habitats where water is un-silted, unpolluted, and rich in small to medium sized fishes.

African Marsh rat (*Dasymys incomtus*)

African Marsh Rats are dependent on intact rivers and wetland ecosystems, as they have not been found in artificial or degraded wetlands and are thus patchily distributed within the assessment region.

Given the poor quality of the habitats in the grassland and the stream area and the historic encroachment of urban development, the habitats observed on site is unlikely to be optimal habitat for these listed sensitive species.

Reptiles and amphibians

Reptiles

Habitats on site where reptiles can potentially be found, includes farm buildings, trees, storage areas, gardens and crevices. 41 species are listed for the 1:50 000 grid area according to the Animal Demographic Unit (UCT) database. No species of concern is listed for the Gauteng province.

Amphibians

Fourteen species are listed for the area including common species such as Red toad, Bubbling Kassina and Guttural Toad. The only species with conservation rating is the Giant Bull Frog (*Pyxicephalus adspersus*) with a Near Threatened status. No sensitive amphibian

Site sensitivity

Allocating the site sensitivity, the following characteristics were considered:

- Quality of the vegetation,
- The extent of habitats,
- Habitat diversity provided and
- Function of the habitat.

Riverine habitats are critical habitats for species movement in urban areas, and therefore allocated a High sensitivity despite the high levels of disturbance noted during the site assessment. The largest part of the site consisted of grassland that has been *altered* from its natural and original structure and is therefore allocated a Low sensitivity. Similarly, the patches of exotic trees on site was allocated a Low conservation value. A small section of *disturbed grassland* was mapped in the site. This was allocated a Moderate to Low sensitivity due to its relatively small extent, moderate to low species richness and signs of disturbance.



Figure 9: (Figure 5 of the Ecological report) **Sensitivity Map** (Source: ECO Assessments cc)

Recommended Management & Mitigation Measures

- removing exotic vegetation from the site;
- retaining large non-invasive trees such as bluegum trees on the edges of the property;
- systematically removing exotic trees from the stream and allowing indigenous trees to establish;
- plant indigenous trees in the stream area such as *Acacia karroo* (Sweet Thorn), *Combretum erythrophyllum* (River bushwillow), *Leucosidea sericea* (Ouhout), *Rhamnus prinoides* (Dogwood) and *Salix mucronata* (Wild Willow);
- Retain grassland areas adjacent to riverine woodland areas;

- Should any fauna be encountered on site during development, they must be appropriately relocated into the neighbouring floodplain area. Species that could be encountered include snakes and hedgehogs;
- The Orange listed plant should be removed from the development zone and re-established in the floodplain grassland adjacent to this area;
- The floodplain area must be fenced off before construction starts;
- Berms should be established to prevent silt runoff during the construction phase;
- Impacts associated with vehicle movement, dust and noise should be mitigated according to standards set for these impacts;
- High security fencing between the developable areas of the site and the stream may hinder faunal species to disperse into the stream area. In the early stages of development, as land is cleared, the phasing in of the fencing should be considered;
- A rehabilitation plan should be drawn up for the stream area to ensure effective and systematic removal of exotic trees without causing erosion;
- Before construction starts, construction workers should be educated with regards to littering and animal trapping;
- Both the construction and the operational phases must include storm water management strategies that address potential impacts on the site ecology;
- No unplanned vehicle movement must be allowed in the stream and wetland buffer areas.

Conclusions

The ecological sensitive elements of the site according to GIDS are the natural habitats on site, dolomite, as well as the riverine habitats associated with the Sesmyspruit. This assessment indicates that the grassland and riverine vegetation has lost its sensitivity due to mainly historic farming and unchecked invasion by exotic trees. The protection of the stream with a large buffer and floodplain as natural habitat during construction, will mitigate the impact on the area, and should provide for this portion of the land to continue as an Ecological Support Area for the regional ecology. Efforts should therefore be not to just protect the area during construction, but to rehabilitate it to an ecological functioning state. This could be done by systematically removing exotic trees and replacing indigenous vegetation, managing the litter problem from upstream sources and taking ownership of this part of the Sesmyspruit. There is a low likelihood that sensitive plants or animals will utilize the site as an optimal habitat due to altered habitats observed. In summary, there is no ecological fatal flaw that prevents the development from taking place subject to the recommendations included in this report being implemented.

Wetland– Limosella consulting was appointed to conduct a Wetland Assessment on the subject property. A summary is presented here, and the complete report may be found in **Annexure G3**

Description of the Receiving Environment

A review of available literature and spatial data formed the basis of a characterisation of the biophysical environment in its theoretically undisturbed state and consequently an analysis of the degree of impact to the ecology of the study site in its current state. Quaternary Catchments and Water Management Area (WMA): As per Macfarlane *et al*, (2009) one of the most important aspects of climate affecting a wetland's vulnerability to altered water inputs is the ratio of Mean Annual Precipitation (MAP) to Potential Evapotranspiration (PET) (i.e. the average rainfall compared to the water lost due to the evapotranspiration that would potentially take place if sufficient water was available). The site is situated in Quaternary A21B. In this catchment, the precipitation rate is lower than the evaporation rate with a Mean Annual Precipitation (MAP) to Potential Evapotranspiration (PET) of 0.31. Consequently, watercourses in this area are sensitive to changes in regional hydrology, particularly where their catchment becomes transformed and the water available to sustain them becomes redirected. Quaternary Catchment A21B is located in the first water management area (WMA), the Limpopo Major WMA

(Government Gazette, 16 September 2016). In this WMA the Major river include the Limpopo, Matlabas -, Mokolo -, Lephala -, Mogalakwena -, Sand -, Nzhelele -, Mutale -, and Luvuvhu River. The Sesmyspruit River forms the northern boundary of the site. This watercourse forms part of the Hennops River. This river decants into the Crocodile River approximately 21.30km to the west of the site. The Crocodile River flows north to decant into the Limpopo River. The Limpopo River finally drains into the Indian Ocean in Mozambique.

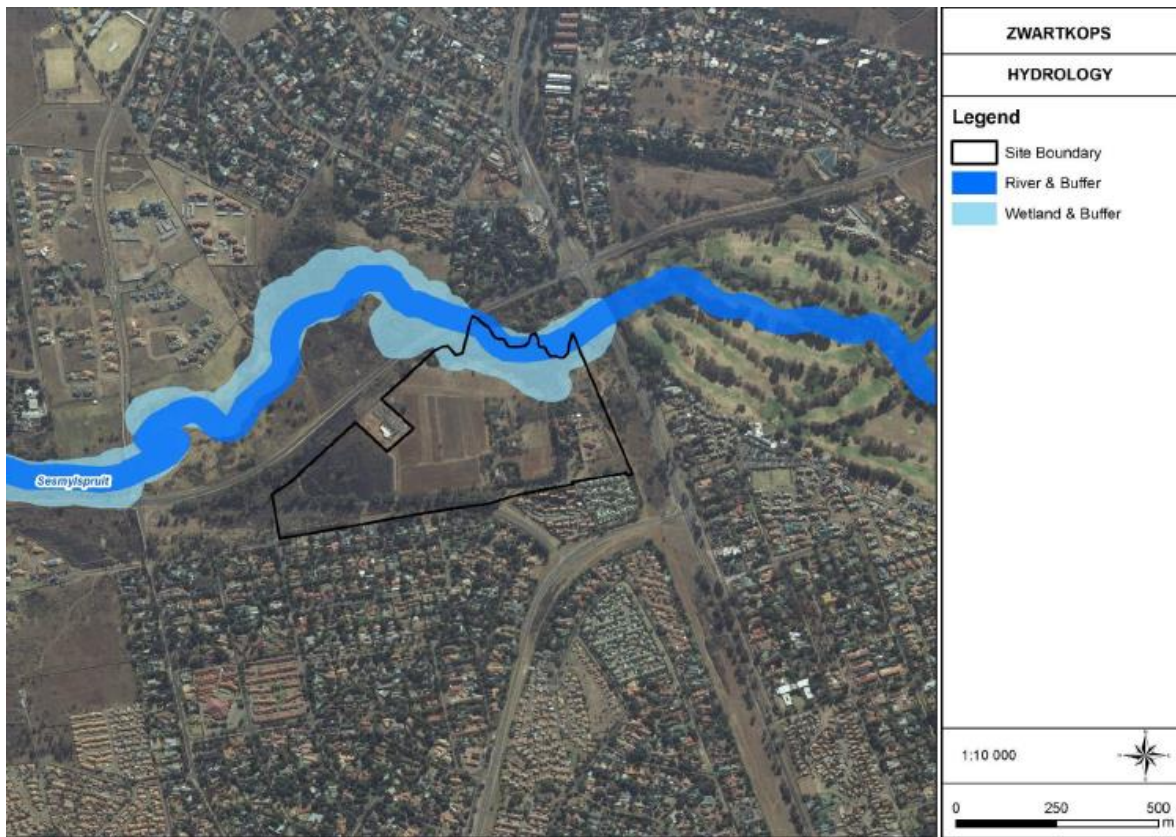


Figure 10: Hydrology of the study site relative to regional hydrological systems (Source: Limosella consulting)

Methodology

A handheld Garmin Montana 650 was used to capture GPS co-ordinates in the field. 1:50 000 cadastral maps and available GIS data were used as reference material for the mapping of the preliminary watercourse boundaries. These were converted to digital image backdrops and delineation lines and boundaries were imposed accordingly after the field survey.

Wetland and Riparian Delineation

Wetlands are delineated based on scientifically sound methods, and utilizes a tool from the Department of Water and Sanitation 'A practical field procedure for identification and delineation of wetlands and riparian areas' (DWAF, 2005) as well as the "Updated manual for identification and delineation of wetlands and riparian areas" (DWAF, 2008). The delineation of the watercourses presented in this report is based on both desktop delineation and ground truthing.

Desktop Delineation

A desktop assessment was conducted with wetland and riparian units potentially affected by the proposed activities identified using a range of tools, including:

- 1: 50 000 topographical maps;
- S A Water Resources;

- Recent, relevant aerial and satellite imagery, including Google Earth.

All areas suspected of being wetland and riparian habitat based on the visual signatures on the digital base maps were mapped using google earth.

Ground Truthing

Wetlands were identified based on one or more of the following characteristic attributes (DWAf, 2005)

- The Terrain Unit Indicator helps to identify those parts of the landscape where wetlands are more likely to occur;
- The presence of plants adapted to or tolerant of saturated soils (hydrophytes);
- Wetland (hydromorphic) soils that display characteristics resulting from prolonged saturation; and
- A high-water table that results in saturation at or near the surface, leading to anaerobic conditions developing within 50 cm of the soil surface.

Results

Land Use, Cover and Ecological State

The study site was previously farmed and currently lies fallow. Residential infrastructure extends to the southern boundary of the site. A road network with the large R101 and M10 lie to the north and east. Consequently, the remaining natural habitat is fragmented and to some degree isolated from other remaining patches. The river and riparian habitat therefore constitute an important corridor for migration of fauna.

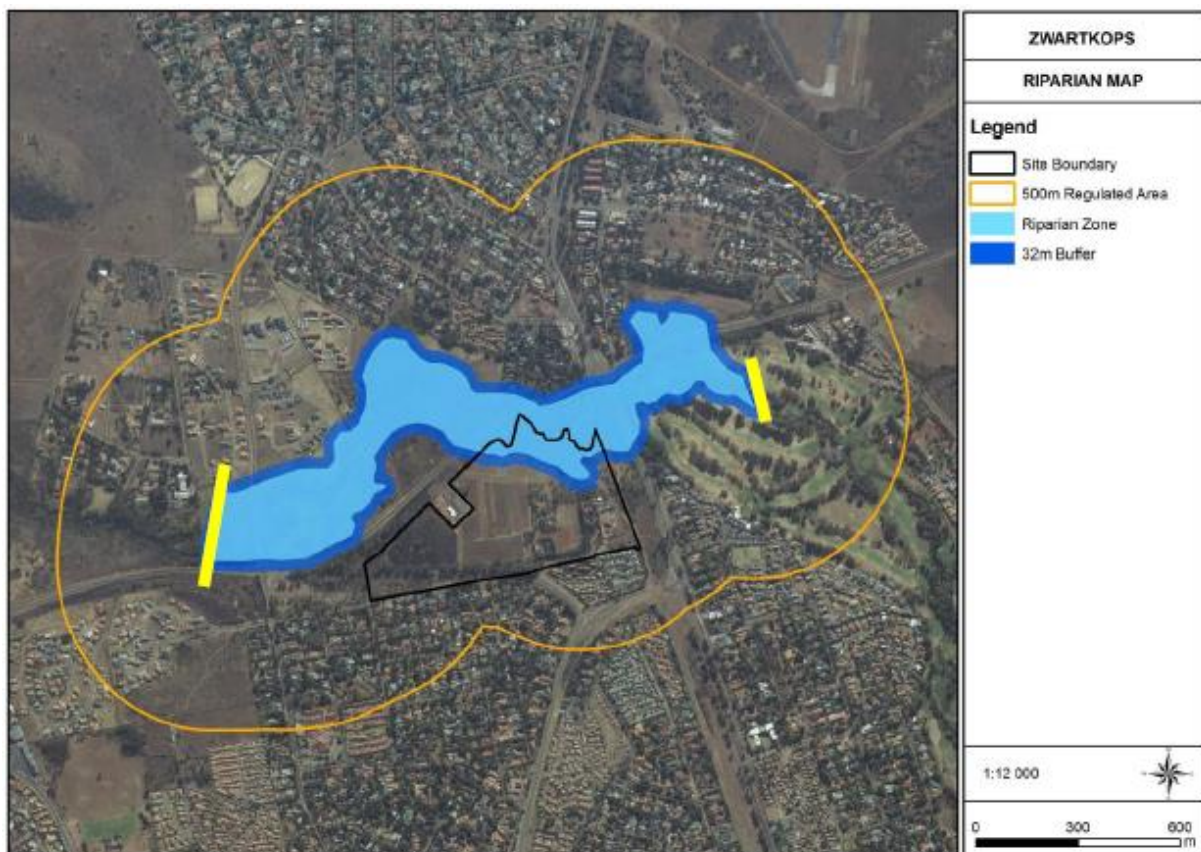


Figure 11: Delineated riparian area together with the associated generic buffer zone. (Source: Limosella consulting)

Soil characteristics reflect alluvial deposits. No mottling or gleying was recorded on the site. This reflects the high energy water flows associated with a river rather than a wetland since water does not saturate the soil for long enough to form redoximorphic features or support plants that are adapted to growing in saturated soil. Rather, the dense trees growing

along the river are able to grow taller and denser than in dryland conditions because of water received through overtopping of the banks. Species composition included a mix of invasive species and indigenous species.

Wetland/Riparian Classification and Delineation

The watercourse associated with the site is classified as a riparian area rather than a wetland since it is characterised by high energy water flow rather than slow water flows that seep into the soil. This section of the river has macro channel banks with infrequently flooded terrace, channel banks and an active channel.

Wetland/Riparian Function and Integrity Assessment

Riparian Vegetation Response Assessment Index (VEGRAI) & Quick Habitat Integrity (QHI)

A VEGRAI and the Quick Habitat Integrity (QHI) assessment were done to determine the Ecological Category (EC) of the riparian area associated with the study area: An EC of D was calculated: D - Largely modified. A large loss of natural habitat, biota and basic ecosystem functions has occurred.

Conclusion and Recommendations

The Sesmylspruit which forms a section of the Hennops River forms the northern boundary of the study site. This watercourse is classified as a riparian area rather than a wetland since it is characterised by high energy water flow rather than slow water flows that seep into the soil. This section of the river has macro channel banks with infrequently flooded terrace, channel banks and an active channel. It is further characterised by a high density of alien invasive plants. Table below provide a summary of important findings presented in this report.

DWS (2016) Risk Assessment

Two activities fall in the Medium risk class since the risk of spreading alien invasive plants onto and downstream of the site is considered significant due to the high density of invasive species that occur along the riverbanks. Although it is possible to mitigate this impact it is not a simple operation on this site and will require particular attention. The risk to downstream areas is considered significant. Furthermore, the potential for sewage spills during the operational phase is also considered significant and will also have a significant impact to downstream users. These activities should be authorised through a Water Use License from the Department of Water and Sanitation.

The specialist supports the development; however, care should be taken to manage potential negative impacts on the site and also to downstream users. The most significant impacts are expected to be the mobilization of alien invasive seeds downstream of the site, and the pollution from sewage spills during the operational phase.

Recommendations

The following mitigation measures, amongst others are to be noted:

- Design of structures should aim to have the least impact on habitat quality and hydrology of the river and should include attenuation structures to contribute to regional flood control
- Maintain sewage infrastructure to ensure that leaks do not enter the watercourse
- Implement the principles of Sustainable Urban Drainage
- Control of alien invasive plants should form part of the maintenance plan

Paleontological Assessment - The Paleontological Impact Assessment: Desktop Study was undertaken by BM Geological services (**Completed report may be found in Annexure G4**) as this is a desktop study the season has no influence on the outcome (Appendix 6 of Act, 1(d)), and the following is reported:

Geology and fossil potential

The project area is entirely underlain by Palaeoproterozoic carbonate sedimentary rocks of the Malmani Subgroup, Chuniespoort Group. A layer of Cainozoic regolith is interpreted to be present throughout the majority of the project area. A brief description of the geological units underlying the project area and their palaeontological potential is provided below.

Malmani Subgroup

Geology

The Palaeoproterozoic rocks of the Malmani Subgroup (Transvaal Supergroup) are up to 2000 m thick and form part of the basin infill sequence of the Transvaal Basin. The unit is subdivided into five formations based on their chert content, stromatolite morphology, intercalated shales and erosion surfaces (Eriksson *et. al.*, 2006). The formations that comprise the Malmani Group (in ascending stratigraphic order) are the Oaktree, Monte Cristo, Lyttelton, Eccles and the Frisco Formations (Eriksson *et. al.*, 2006). The Malmani carbonates reflect three major transgressive-regressive macrocycles, upon which are superimposed a number of subordinate cycles. Each macrocycle commences with a chert breccia at the base of a thin carbonaceous shale and is capped by a thick succession of carbonates. The chert-breccia residues mark important regressive phases when the carbonates were subjected to intense chemical weathering and are believed to mark regional disconformities. The fundamental subdivisions of the Malmani Subgroup are based on the recognition of two main lithofacies. The first is a pale grey, chert-rich dolomite (Eccles and Monte Cristo Formations) and the second is dark grey to black, chert poor, fine-grained dolomites and limestones, often in association with higher than normal amounts of clastic sediment (the Frisco, Lyttelton and Oaktree Formations). The particular formation(s) that underly the proposed project infrastructure is unknown to the author.

Palaeontological potential

The only synsedimentary macrofossil types known to occur within the Malmani Subgroup are stromatolites, but these occur throughout the succession. The pale chert-rich units are believed to comprise tidal-flat and shallow subtidal environments whereas the dark grey to black, chert-poor units are deeper water subtidal deposits, as indicated by the large size of some of the stromatolitic mounds. As indicated, variation has been observed in the size and morphology of the stromatolites assemblages across the Transvaal Basin. However, from the author's personal observations, where stromatolites occur within the Malmani Subgroup in any particular area they tend to be prolific, but morphologically uniform.

It is evident that the project area lies approximately 25 km east of the Cradle of Humankind World Heritage Site. The rocks of the Malmani Subgroup that underly the project area is a lateral extension of the same unit which form the central portion of the world heritage site. It may, therefore, be expected that the same fossiliferous Cainozoic cave-infill and fissure-infill deposits (karst-fill deposits) that underpinned the declaration of the world heritage site may be present within the project area. However, the rocks of the project area and the wider surrounding environs have historically been subjected to intense geological investigation and to the author's knowledge no such fossiliferous Karst deposits have been identified in the environs of the project area.

Cainozoic Regolith

Geology

Examination of Google earth imagery reveals that the land surface throughout the central portion of the developable area appear to have been cultivated (ploughed) for the production of crops. The ploughing of the surface evinces the presence of a Cainozoic regolith cover in that area. Similarly, examination of Google earth imagery of the developable area shows that areas that have not been cleared for construction or ploughed for cultivation are extensively covered by grassland vegetation. The presence of the vegetation cover also implies the presence a coverage of Cainozoic regolith horizon, although the thickness of the regolith may not be as thick in the areas that have been cultivated and, thus, unsuitable for cultivation.

Paleontological Potential

The genesis of the regolith is interpreted as being the result of *in situ* decomposition of the immediately underlying bedrock. The underlying Malmani Subgroup is potentially fossiliferous; if the regolith is indeed derived from *in situ* decomposition of the underlying bedrock no fossil materials could be inherited from the underlying unfossiliferous units by the regolith. The probability of the regolith horizon being fossiliferous is considered to be negligible. There is no indication of the presence of potentially fossiliferous fluvial terraces or overbank sediments in the area.

Palaeontological heritage impact statement

The project area is entirely underlain by Palaeoproterozoic carbonate sedimentary rocks of the Malmani Subgroup, Chuniespoort Group. A layer of Cainozoic regolith is interpreted to be present throughout the majority of the project area. The only macrofossil types known to occur within the Malmani Subgroup are prolific occurrences of stromatolites that are present throughout the succession. The probability of the proposed project impacting upon the palaeontological heritage of this unit is accordingly assessed as being high. The significance of any negative impact upon the palaeontological heritage of a small area of the Malmani Group is assessed as being low. The nearby (approx. 25 km to the west) Cradle of Humankind World heritage Site was designated to protect fossil assemblages (fossil homonins and associated mammal faunas) of high scientific and cultural significance that occur within Cainozoic karst-fill deposits. The Malmani Subgroup of the project area is a lateral extension of the same unit that occurs within the world heritage area and there is a significant host to these karst-fill deposits. It is accordingly to be suspected that these karst-fill deposits may be present within the Malmani Subgroup strata within the project area. However, the area has historically been extensively geologically examined and no such deposits have been located. It is assumed, herein, that the fossiliferous karst-fill deposits are not present within the project area.

The Cainozoic regolith is interpreted to be probably unfossiliferous. Accordingly, the probability of the project resulting in any negative impact upon the palaeontological heritage of the regolith is assessed as being negligible. The significance of any negative impact is also assessed as being negligible. The extent of the area of potential impact caused by the project is categorised as local (i.e., restricted to the project site). The anticipated duration of the identified impact is assessed as potentially long term to permanent. No damage mitigation protocols are required to preserve the palaeontological heritage of this area and none are suggested herein.

Heritage Impact Assessment

Heritage Assessment was undertaken but no sites, features or objects of cultural heritage significance were identified in the study area. The complete report may be found in **Annexure G5**.

9. SOCIO-ECONOMIC CONTEXT

Describe the existing social and economic characteristics of the area and the community condition as baseline information to assess the potential social, economic and community impacts.

The proposed development falls within the City of Tshwane Metropolitan

The City of Tshwane is the capital of South Africa and is the largest municipality, as measured by land mass. Tshwane is amongst the six largest metropolitan municipalities in South Africa and the second largest in Gauteng, as measured by Gross Domestic Product (GDP). The Tshwane region covers 6 368km² of Gauteng's 19 055km² and houses approximately 2,9million residents. Tshwane consists of seven regions with 105 wards and 210 councilors.

The City has a vibrant and diverse economy, which enables it to contribute at least 26,8% of the Gauteng Province's GDP and 9,4% of the GDP of the national economy. Tshwane is the administrative capital of South Africa and is home to the Union Buildings with government-related business playing an important role in the local economy. As a result, the city is taking active measures to firmly position itself as Africa's leading capital city of excellence. The municipality's main economic sectors are community services and government, followed by finance and manufacturing. Metal products, machinery and household products are the largest sub-sectors within manufacturing. The City has a well-established manufacturing sector, with the automotive industry representing the most significant component.

The city faces a big challenge in terms of unemployment, which is one of the major problems facing South Africa as a whole. Overall, the City's unemployment rate in 2011 was 24,2%

• **Population**

According to the census 2011 the population of the City of Tshwane is 2,921,488. The population growth in the region is projected as follows:

- African: 75.4%
- White: 20.1%
- Coloured: 2.0%
- Asian: 1.8%

The proposed dwelling units will benefit the residents who need proper homes for their families within a suburb area. The proposed project is envisaged to provide temporal and permanent jobs for the local community. The job creation and employment opportunity will boost the socio-economic status of the community and lead to increase quality of life. Local economic development through engagement of local SMMEs will also be a positive impact to the community. It is estimated that the project will provide jobs.

Retail study – Urban Studies was appointed to conduct a retail study on the subject property. A summary is presented here, and the complete report may be found in **Annexure I5**.

The south-western part of Greater Tshwane is characterised by strong residential growth as well as a large number of well-established households. There is a mixture of existing and new houses in the area. Recently the east-west arterial route along Wierda Road opened with on- and off-ramps from the N14, increasing the accessibility to the broader area.

Retail Supply

The below section gives an indication of the current retail facilities in the area. Note the following:

- In total just more than 23 000 m² of retail space;
- Most of the centres are in the category of local and neighbourhood centres;
- Further to the south and south-east are much larger small-regional, regional and lifestyle centres;
- Most of the retail supply are neighbourhood centres located further to the south;

The area is well represented with Spar, Shoprite and Woolworths stores.

Table 1: Existing Shopping Centre Supply – Primary Trade Area

| Centre | GLA in m ² | No. of Shops | Tenants* |
|-------------------------------|-----------------------|--------------|---|
| Eldoraigine Village SC | 9 000 | 34 | Spar, Woolworths Food, Clicks, FNB, Ocean Basket, Ackermans, Total Garage |
| Eldo Square | 3 697 | 25 | Woolworths, Clicks |
| Shoprite Centre - Wierda Park | 3 585 | 7 | Shoprite |
| Thaba Tshwane Centre | 3 200 | 11 | Spar, Engen Garage |
| Wierda Mall Building | 2 617 | 15 | PJC Sport, JLC Dental Lab |
| Saxby Centre | 955 | 10 | St Elmo's Café & General Dealer |
| | 23 054 | | |

Source: SACSC Shopping Centre Directory, 2015 (updated annually by Urban Studies)

*Subject to change

Shopping Behaviour

The following graphs give an indication of the shopping behaviour of the residents from primary research that Urban Studies conducted in the area.

- Pick n Pay and Checkers are well represented in the broader area;
- Centurion Lifestyle Centre with the Pick n Pay Hypermarket is very important and of the smaller centres Jean Crossing is the most important.

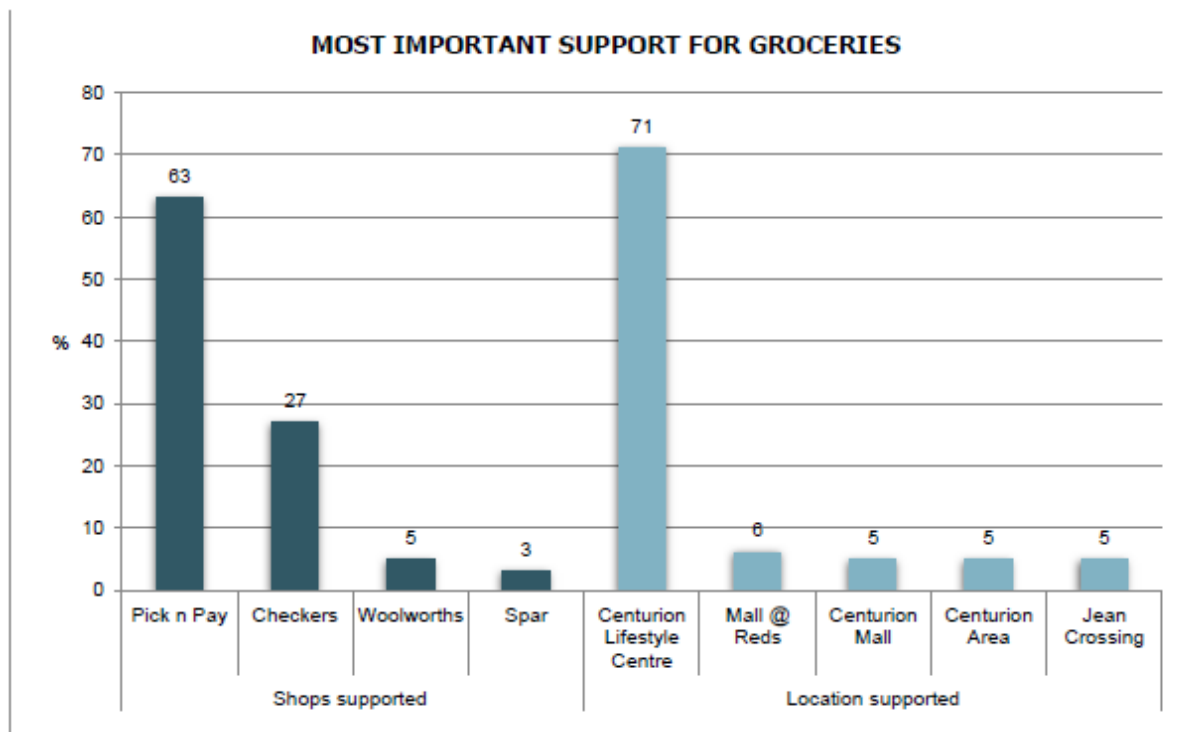


Figure 12: Most Important Support for Groceries (Source: Urban Studies)

It is important to note that clothing is mainly shared between three centres namely Centurion Mall, Centurion Lifestyle Centre and Mall @ Reds.

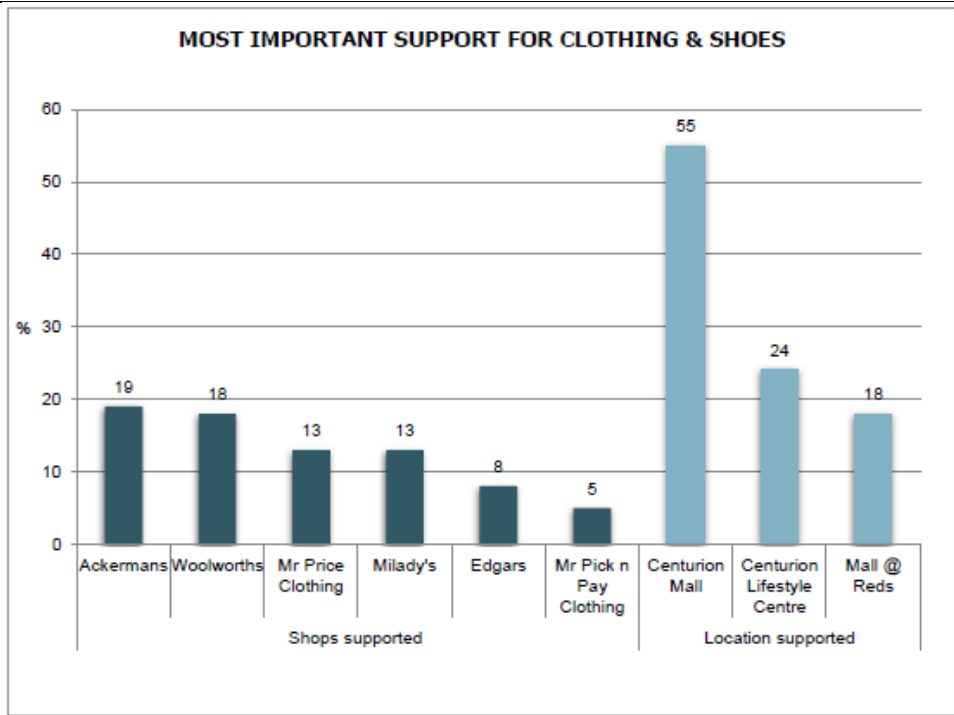


Figure 13: Most Important Support for Clothing & Shoes (Source: Urban Studies)

Health & beauty stores are also shared amongst a large number of centres including Centurion Lifestyle Centre with the Dis-Chem, Centurion Mall, Mall @ Reds, Jean Crossing and Raslow Lifestyle Centre.

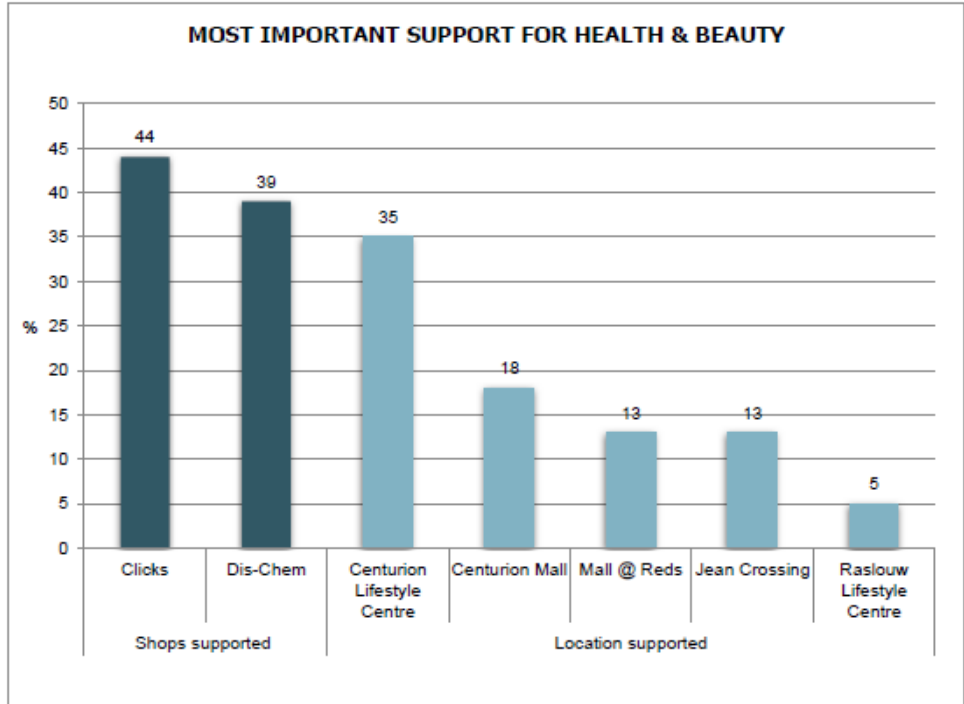


Figure 14: Most Important Support for Health and Beauty (Source: Urban Studies)

The retail facilities are supplied on various levels, confirming the convenience nature of these centres.

Site Evaluation

The following table shows the location rating for various different land uses at the proposed development.

- Good accessibility and visibility
- Competition to the south of the site;
- No major changes during the next 3-5 years;
- A good LSM profile and
- Medium volumes of traffic passing the site.

The current rating of **73%** will most probably increase to **75%** with more residential units in the immediate vicinity.

The development potential will be determined by the following:

- A catchment area including the isolated suburb of Valhalla. It is of utmost importance to attract more shoppers from Valhalla and to be certain of their loyal support;
- 15 000 households which will increase to 16 000 by 2024/5;
- An upper socio-economic profile;
- The absence of large neighbourhood centres in the immediate vicinity;
- The strong presence of Pick n Pay, Spar and Woolworths stores in the existing centres;
- Average growth prospects for the area during the medium term.

Based on all this information, the market potential for a shopping centre for the proposed location is as follows:

- A centre of 11 500m² by 2022;
- An expected turnover of R 390 million once the centre reaches maturity;

Table 2: Retail Development Potential

| Product Categories | 2019 | | 2022 | |
|---|-----------------------|------------|-----------------------|------------|
| | Warranted Space (GLA) | % of Total | Warranted Space (GLA) | % of Total |
| Groceries | 3 924 | 39 | 4 316 | 38 |
| Clothing and shoes | 593 | 6 | 652 | 6 |
| Household goods | 903 | 9 | 994 | 9 |
| Restaurants and take-aways | 685 | 7 | 753 | 7 |
| Health & Beauty | 914 | 9 | 1 005 | 9 |
| Other (incl. hardware) | 2 669 | 26 | 2 935 | 26 |
| Banks/Services | 500 | 5 | 800 | 7 |
| Total area warranted (m²) | 10 187 | 100 | 11 455 | 100 |
| Annual Turnover | R 265 617 000 | | R 292 178 700 | |

Table below shows the market share model for the proposed retail development.

Table 3: Retail Market Share

| Year | Total Primary Market Retail Spend | Total Market Demand (m ²) | Market Share (excl. secondary inflow) | Primary Market Share (%) |
|-------------|-----------------------------------|---------------------------------------|---------------------------------------|--------------------------|
| 2018 | R1 684 452 000 | 62 226 | R265 617 000 | 16% |

Conclusion and Recommendations

Potential exists for a neighbourhood/small community centre of 11 500m² by 2022. The following should be noted:

- To make sure the support from Valhalla is maximised. The road linkages from this suburb should be improved;
- To offer something attractive for the surrounding households;

- To capitalise on the fact that no major retail facilities exist in the area;
- To provide a strong national grocery store, focussing on especially an attractive new style Checkers;

To stimulate new residential growth in the area because of attractiveness to work opportunities in Centurion and Pretoria West. This is one of the key success factors for the proposed centre in future;

Make use of the existing trees and foliage should be incorporated in the design to offer something unique with an attractive centre atmosphere.

Traffic Impact assessment – Tech IQ consulting engineers was appointed to conduct a retail study on the subject property. A summary is presented here, and the complete report may be found in **Annexure I6**

Based on site visits, perusal of provincial road planning and the Tshwane road master plan, traffic counts, discussions with officials of the City of Tshwane Metropolitan Municipality, members of the professional team and the client, a traffic analysis and capacity analysis and the requirements of TMH16, South African Traffic Impact and Site Traffic Assessment Manual, as well as the GTIA and the relevant policies of Gautrans, it is concluded that the proposed residential, educational, retail and related facilities on Portions 195 and 237 and parts of Remainder of Portion 187 and Remainder of Portion 100 of the farm Zwartkop 356 JR can be accommodated on the road network, provided that an additional road link between Ruimte Road and Wierda Road be constructed by the applicant and that a number of existing intersections be upgraded as discussed in the report.

It is further concluded that the existing section of Jan Road where it traverses the application site results in unwanted external traffic through the residential area, which should rather make use of the proposed new minor arterial road and that this section of Jan Road should be permanently closed. From a traffic engineering point of view, it is recommended that the application for township establishment for Eldoraigne X87 should be granted, subject to an engineering services agreement for roads that stipulates the responsibility for the upgrading of the road network and the off-set of road improvements by the applicant against the engineering service contributions for roads payable by the applicant in terms of the tariff policy of the Municipality.

The required road improvements are listed below.

1. Intersection of Saxby Avenue and Wierda Road

- Exclusive right turn lane on east approach of Wierda Road
- Exclusive right turn lane on west approach of Wierda Road
- Left turn lane on west approach of Wierda Road
- Extend lane and taper on Wierda Road downstream in eastbound direction
- Extend lane and taper on Wierda Road downstream in westbound direction
- Exclusive left turn lane on south approach of Saxby Avenue
- Improved traffic signal control.

2. New intersection on Wierda Road at new link road to Ruimte Road

- Install traffic signal control
- Exclusive left turn slip lane on new arterial link
- Exclusive right turn lane on new arterial link
- Exclusive right turn lane on Wierda Road west approach
- Shared left and straight lane on Wierda Road east approach plus an additional
- exit lane.

3. *New three-leg roundabout at main entrance to the shopping centre*

- Single circulatory lane
- One approach lane on all approaches.

4. *New four-leg roundabout on new minor arterial road between Ruimte Road and Wierda Road at the access to the school and residential development plus secondary access to the shopping centre*

- Single circulatory lane
- One approach lane on all approaches.

5. *Intersection of Jan Road and Ruimte Road*

- Install traffic signals when warranted (SARTSM)
- New left turn lane on Jan Road
- Amend lane marking to indicate exclusive right turn lane on east approach and shared left and straight through approach lane on the west approach of Ruimte Road.

6. *Intersection of R101 and Wierda Road*

- New right turn lane in existing median on R101 (north)
- New right turn lane in existing median on R101 (south)
- Exclusive right turn lane on east approach of Wierda Road
- Exclusive right turn lane on west approach of Wierda Road
- Upgrade traffic signal phasing.

7. *Intersection of R101 and Ruimte Road*

- Upgrade signal phasing to provide split phase in east-west direction.

10. CULTURAL/HISTORICAL FEATURES

Please be advised that if section 38 of the National Heritage Resources Act 25 of 1999 is applicable to your proposal or alternatives, then you are requested to furnish this Department with written comment from the South African Heritage Resource Agency (SAHRA) – Attach comment in appropriate annexure

38. (1) *Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorized as-*

- (a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
- (b) the construction of a bridge or similar structure exceeding 50m in length;*
- (c) any development or other activity which will change the character of a site-*
 - (i) exceeding 5 000 m² in extent; or*
 - (ii) involving three or more existing erven or subdivisions thereof; or*
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or*
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resource authority;*
- (d) the re-zoning of a site exceeding 10 000 m² in extent; or*

(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

Are there any signs of culturally (aesthetic, social, spiritual, environmental) or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or close (within 20m) to the site?

| | |
|-----|----|
| YES | NO |
|-----|----|

If YES, explain:

Not Applicable

If uncertain, the Department may request that specialist input be provided to establish whether there is such a feature(s) present on or close to the site.

Briefly explain the findings of the specialist if one was already appointed:

HCAC was appointed to conduct a Heritage Impact Assessment and the summary of the report is presented below. The complete Heritage Impact Assessment Report can be found under **Annexure G5**.

Archaeology of the area

Stone Age

South Africa has a long and complex Stone Age sequence of more than 2 million years. The broad sequence includes the Later Stone Age, the Middle Stone Age and the Earlier Stone Age. Each of these phases contain sub-phases or industrial complexes, and within these we can expect regional variation regarding characteristics and time ranges. The three main phases can be divided as follows;

- Later Stone Age; associated with Khoi and San societies and their immediate predecessors. Recently to ~30 thousand years ago
- Middle Stone Age; associated with Homo sapiens and archaic modern humans. 30-300 thousand years ago.
- Earlier Stone Age; associated with early Homo groups such as Homo habilis and Homo erectus. 400 000-> 2 million years ago.

Stone Age sites are usually associated with stone artefacts found scattered on the surface or as part of deposits in caves and rock shelters. No previously recorded Stone Age sites are on record for the study area. Remains dating to all three of these phases were identified by Mason at the Boulders shopping Centre site, MSA and LSA material was also recorded at Glenn Ferness cave. The Iron Age of the region consists of Tswana speaking people who settled in the area from the early 16th century.

Iron Age

Interestingly, it seems that the study area is located about 32 km north of the Melville Koppies, which is a Middle Stone-Age site. (Bergh 1999: 4) This area was also important to Iron Age communities, since these people had smelted and worked iron ore at the Melville Koppies site since the year 1060, by approximation. (Bergh 1999: 7, 87) Regarding the Iron Age, the Smelting Site at Melville Koppies requires further mention. The site was excavated by Professor Mason from the Department of Archaeology of WITS in the 1980's. Extensive Stone walled sites are also recorded further South at Klipriviers Berg Nature reserve belonging to

the Late Iron Age period. A large body of research is available on this area. These sites (Taylor's Type N, Mason's Class 2 & 5) are now collectively referred to as Klipriviersberg (Huffman 2007). These settlements are complex in that aggregated settlements are common, the outer wall sometimes includes scallops to mark back courtyards, there are more small stock kraals, and straight walls separate households in the residential zone. These sites date to the 18th and 19th centuries and was built by people in the Fokeng cluster. In this area, the Klipriviersberg walling would have ended at about AD 1823, when Mzilikazi entered the area (Rasmussen 1978). This settlement type may have lasted longer in other areas because of the positive interaction between Fokeng and Mzilikazi.

Historical Background

The Difaqane (Sotho), or Mfekane ("the crushing" in Nguni) was a time of bloody upheavals in Natal and on the Highveld, which occurred around the early 1820's until the late 1830's. (Bergh 1999: 10). It came about in response to heightened competition for land and trade and caused population groups like gun carrying Griquas and Shaka's Zulus to attack other tribes. (Bergh 1999: 14; 116-119) It seems that, in 1827, Mzilikazi's Ndebele started moving through the area where Johannesburg is located today. This group went on raids to various other areas in order to expand their area of influence. (Bergh 1999: 11).

During the time of the Difaqane, a northwards migration of white settlers from the Cape was also taking place. Some travellers, missionaries and adventurers had gone on expeditions to the northern areas in South Africa, some already as early as the 1720's. It was however only by the late 1820's that a mass-movement of Dutch speaking people in the Cape Colony started advancing into the northern areas. This was due to feelings of mounting dissatisfaction caused by economical and other circumstances in the Cape. This movement later became known as the Great Trek.

This migration resulted in a massive increase in the extent of that proportion of modern South Africa dominated by people of European descent. (Ross 2002: 39) By 1939 to 1940, farm boundaries were drawn up in an area that includes the present-day Johannesburg and Krugersdorp. (Bergh 1999: 15). The first settlers moved in the Midrand area in the 1820s, this included hunters, traders, missionaries and other travellers. Voortrekker farmers such as Frederik Andries Strydom and Johannes Elardus Erasmus established the farms Olifantsfontein and Randjesfontein respectively around the 1840's and this indicated permanent occupation of the area by white settlers. These early white settlers and their descendants were often buried on their farms and formal and informal graves and graveyards can be expected anywhere on the landscape (Van Schalkwyk 1998).

The Anglo-Boer War (1899-1902) had an impact on the Midrand area, and for a short period the area was a focus for the British war effort, when the British forces under Lord Roberts advanced through Midrand from Johannesburg en route to Pretoria. Pretoria was occupied on 5 June 1900. Some British military units were stationed close to the study area this includes the Escom Training Centre as well as Bibury Grange. No major battles took place in Midrand. Incidents in the area mostly focused on the Boer attempts to sabotage the railway line as well as attacks on troop trains. A notable incident was the successful Boer demolition of the railway culvert near the Pinedene Station. The railway had to be completely rebuilt by the Imperial Military Railways in 1901 (Van Schalkwyk 1998).

Findings of the survey

The survey area consists of multiple open fields, residential yards, the old Apostolic church centurion and a large power station. Some areas were inaccessible due to dense vegetation and a small residential area inside the study area consisting of a modern house and a small cleared field. Illegal dumping also occurs in parts of

the study area. Features recorded on site consist of informal shelters, modern residential dwellings, the Apostolic church Centurion and 1 structure of heritage significance.

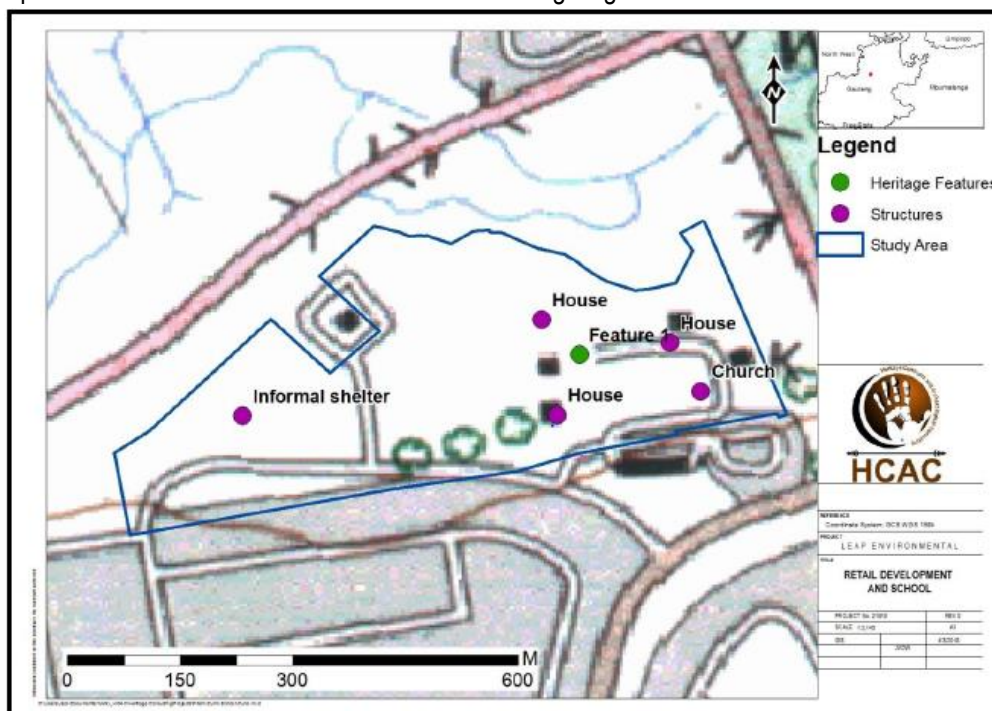


Figure 15: Identified sites in the study area (Source: HCAC Heritage Consultants)

Description of Identified Heritage Resources (NHRA Section 34 - 36):

HCAC - Heritage Consultants

Built Environment (Section 34 of the NHRA)

Feature 1 consists of an old farmhouse that has fallen to ruin. The original stable and livestock holding pens are attached to this structure. The structures' potential to contribute to aesthetic, historic, scientific and social aspects are non-existent, and it is therefore of low heritage significance.

Archaeological and paleontological resources (Section 35 of the NHRA)

No archaeological sites or material was recorded during the survey. Therefore, no further mitigation prior to construction is recommended in terms of the archaeological component of Section 35 for the proposed development to proceed. Based on the SAHRIS Paleontological Sensitivity Map the area is of high paleontological significance. This aspect will have to be addressed prior to construction.

Burial Grounds and Graves (Section 36 of the NHRA)

In terms of Section 36 of the Act no burial sites were recorded. However, if any graves are located in future they should ideally be preserved *in-situ* or alternatively relocated according to existing legislation.

Cultural Landscapes, Intangible and Living Heritage.

Long term impact on the cultural landscape is considered to be negligible as the surrounding area consists of a densely developed zone. Visual impacts to scenic routes and sense of place are also considered to be low due to the extensive developments in the area.

Battlefields and Concentration Camps

There are no battlefields or related concentration camp sites located in the study area.

Recommendations and conclusion

HCAC was appointed to conduct a Heritage Impact Assessment and in terms of the built environment, several structures occur within the study area of which one structure could be older than 60 years. The structures' potential to contribute to aesthetic, historic, scientific and social aspects are low, and it is therefore of low heritage significance apart from its age that could meet the 60-year threshold of the Act. If impacted on the age of the structure should be confirmed and if older than 60 years a destruction permit will be required from the Provincial Heritage Resources Agency Gauteng (PHRAG).

No archaeological sites or material was recorded during the survey and based on the SAHRIS Paleontological Sensitivity Map; the area is of high paleontological significance. Therefore, no further mitigation prior to construction is recommended for the archaeological component in terms of Section 35 for the proposed development to proceed. However, a paleontological study should be conducted prior to development.

In terms of Section 36 of the Act no burial sites were recorded. However, if any graves are identified they should ideally be preserved *in-situ* or alternatively relocated according to existing legislation. No public monuments are located within or close to the study area. The study area is surrounded by industrial and residential developments and road infrastructure developments and the proposed residential development will not impact negatively on significant cultural landscapes or views. During the public participation process conducted for the project no heritage concerns were raised.

Due to the lack of significant heritage resources in the study area the impact of the proposed project on heritage resources is considered low and impacts can be mitigated to an acceptable level. It is therefore recommended that the proposed project can commence on the condition that the following recommendations are implemented as part of the EMP and based on approval from SAHRA:

If impacted on the age of the structure, it should be confirmed prior to development. If the structure is older than 60 years and impacted on a destruction permit will be required from the Provincial Heritage Resources Agency Gauteng (PHRAG).

Chance Find Procedures

The possibility of the occurrence of subsurface finds cannot be excluded. Therefore, if during construction any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped and a qualified archaeologist must be contacted for an assessment of the find and therefore chance find procedures should be put in place as part of the EMP. A short summary of chance find procedures is discussed below. This procedure applies to the developer's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. The aim of this procedure is to establish monitoring and reporting procedures to ensure compliance with this policy and its associated procedures. Construction crews must be properly inducted to ensure they are fully aware of the procedures regarding chance finds as discussed below.

If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager. It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area. The senior on-site Manager will inform the ECO of the

chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA.

Reasoned Opinion

From a heritage perspective, the proposed project is acceptable. If the above recommendations are adhered to and based on approval from SAHRA, HCAC is of the opinion that the development can continue as the development will not impact negatively on the heritage record of the area.

Will any building or structure older than 60 years be affected in any way?

| | |
|-----|-----------|
| YES | NO |
| YES | NO |

Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

If yes, please attached the comments from SAHRA in the appropriate Appendix

No comments received.

SECTION C: PUBLIC PARTICIPATION (SECTION 41)

Note: The Environmental Assessment Practitioner must conduct public participation process in accordance with the requirement of the EIA Regulations, 2014.

1. LOCAL AUTHORITY PARTICIPATION

Local authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of the application at least thirty (30) calendar days before the submission of the application to the competent authority.

Was the draft report submitted to the local authority for comment?

| | |
|-----|----|
| YES | NO |
|-----|----|

If yes, has any comments been received from the local authority?

| | |
|-----|----|
| YES | NO |
|-----|----|

Not Applicable since the Draft report is only now being submitted to review.

If "YES", briefly describe the comment below (also attach any correspondence to and from the local authority to this application):

Not Applicable, the comments will be included on the final BAR

If "NO" briefly explain why no comments have been received or why the report was not submitted if that is the case.

The public participation report is attached as **Annexure E**.

As part of the initial assessment and viability of the proposed development the City of Tshwane Metropolitan Municipality - Environmental Management Department was invited to participate.

The Ward councillor of the area; Cindy Billson (Ward 69) received emails including documents like the Background Information Document. Comment from the municipality on the Draft BA will be included in the Public participation report of this Final Basic Assessment.

2. CONSULTATION WITH OTHER STAKEHOLDERS

Any stakeholder that has a direct interest in the activity, site or property, such as servitude holders and service providers, should be informed of the application at least **thirty (30) calendar days** before the submission of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders?

| | |
|-----|----|
| YES | NO |
|-----|----|

If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

Additional Information

- Newspaper notices were placed in the local newspaper.
- On-site notices were placed on site on at the same time and at the main entrance of the site, and along the sides of the property.
- Adjacent landowners were informed of the proposed activity by faxing, e-mailing and/or mailing a BID (Background Information Document) to them explaining the proposed activity and the location of the site. They were also encouraged to respond to the BID in order to compile an I&AP list with all relevant issues and concerns.
- The Ward Councillor was informed of the proposed road development by e-mail.
- I&AP's were invited to arrange for individual meetings to discuss details should you wish to.
- Refer to **Annexure E** for issues raised by the I&APs.

If "NO" briefly explain why no comments have been received

Not Applicable

3. GENERAL PUBLIC PARTICIPATION REQUIREMENTS

The Environmental Assessment Practitioner must ensure that the public participation process is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees and ratepayers associations. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was flawed.

The EAP must record all comments and respond to each comment of the public / interested and affected party before the application report is submitted. The comments and responses must be captured in a Comments and Responses Report as prescribed in the regulations and be attached to this application.

4. APPENDICES FOR PUBLIC PARTICIPATION

All public participation information is to be attached in the appropriate Appendix. The information in this Appendix is to be ordered as detailed below:

Annexure E provides details of the public consultation process that will be followed during the project.

Appendix 1 - Proof of site notices

Appendix 2 - Written notices issued; Emails, Faxes, Letters & BID

Appendix 3 - Proof of newspaper advertisements

Appendix 4,7,8,10 - Communications to and from registered I&APs

Appendix 5 - Minutes of any public and or stakeholder meetings

Appendix 6 - Comments and Responses Report

Appendix 9 - Copy of the I&AP Register

Appendix 11 -Other

SECTION D: RESOURCE USE AND PROCESS DETAILS

Note: Section D is to be completed for the proposal and alternative(s) (if necessary)

Instructions for completion of Section D for alternatives

- 1) For each alternative under investigation, where such alternatives will have different resource and process details (e.g. technology alternative), the entire Section D needs to be completed.
- 2) Each alternative needs to be clearly indicated in the box below.
- 3) Attach the above documents in a chronological order.

Section D has been duplicated for alternatives times
(complete only when appropriate)

Section D Alternative No. (complete only when appropriate for above)

1. WASTE, EFFLUENT & EMISSION MANAGEMENT

Solid Waste Management

Will the activity produce solid construction waste during the construction/initiation phase?

| | |
|-----------------------|-----------|
| YES | NO |
| Unknown at this stage | |

If yes, what estimated quantity will be produced per month?

How will the construction solid waste be disposed of (describe)?

The building rubble and solid construction waste (such as sand, gravel, concrete and waste material) that cannot be used for filling and rehabilitation and other litter and waste generated during the construction phase will be removed from site and be disposed of safely and responsibly at a licensed landfill site, i.e. a landfill licensed in terms of NEM:WA.

Where will the construction solid waste be disposed of (describe)?

All non-recycled general waste will be removed by a registered waste Contractor and taken to the licensed Landfill Site.

Will the activity produce solid waste during its operational phase?

| | |
|-----------------------|-----------|
| YES | NO |
| Unknown at this stage | |

If yes, what estimated quantity will be produced per month?

How will the solid waste be disposed of (describe)?

Solid waste during the operational phase will be picked-up by the local municipality and discarded at a registered landfill site. Refuse is brought to these areas and removed on a weekly basis by Council or as necessary.

Has the municipality or relevant service provider confirmed that sufficient air space exists for treating/disposing of the solid waste to be generated by this activity?

| | |
|------------|-----------|
| YES | NO |
|------------|-----------|

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

Waste will feed into the City of Tshwane Metropolitan Municipality's waste stream.

Note: If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?

| | |
|-----|----|
| YES | NO |
|-----|----|

If yes, inform the competent authority and request a change to an application for scoping and EIA.

Is the activity that is being applied for a solid waste handling or treatment facility?

| | |
|-----|----|
| YES | NO |
|-----|----|

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Describe the measures, if any, that will be taken to ensure the optimal reuse or recycling of materials:

Recycling facilities for paper and glass will be available within the small waste transfer station on the property.

General Waste Management

- Litter and rubble on the construction site and in the construction, camp will be monitored strictly by a dedicated housekeeping team.
- All waste generated on site will be separated into metal, paper, plastic, glass & contaminated paper, glass, plastic and polystyrene and will be recycled.

Construction rubble

- All rubble from activities will be used on site as part of the existing development or will be taken off the construction site and disposed at an appropriate landfill.
- No material shall be left on site that may harm man or animals. Broken, damaged and unused nuts, bolts and washers shall be picked up and removed from site.
- Surplus concrete will not be dumped indiscriminately.
- Concrete water will be re-used in the batching process

Operational waste

- Waste is to be sorted and recycled at source.

Liquid Effluent (other than domestic sewage)

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

| | |
|-----|----|
| YES | NO |
|-----|----|

If yes, what estimated quantity will be produced per month?

| |
|-----|
| n/a |
|-----|

If yes, has the municipality confirmed that sufficient capacity exists for treating / disposing of the liquid effluent to be generated by this activity(ies)?

| | |
|-----|-----|
| n/a | n/a |
|-----|-----|

Will the activity produce any effluent that will be treated and/or disposed of onsite?

| | |
|-----|----|
| Yes | NO |
|-----|----|

If yes, what estimated quantity will be produced per month?

| |
|-----|
| n/a |
|-----|

If yes describe the nature of the effluent and how it will be disposed.

Not Applicable

Note that if effluent is to be treated or disposed on site the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA

Will the activity produce effluent that will be treated and/or disposed of at another facility?

| | |
|-----|----|
| YES | NO |
|-----|----|

If yes, provide the particulars of the facility:

| | | | |
|-----------------|-----|-------|-----|
| Facility name: | n/a | | |
| Contact person: | n/a | | |
| Postal address: | n/a | | |
| Postal code: | n/a | | |
| Telephone: | n/a | Cell: | n/a |
| E-mail: | n/a | Fax: | n/a |

Describe the measures that will be taken to ensure the optimal reuse or recycling of wastewater, if any:

No wastewater will be produced for this proposed activity.

Liquid Effluent (Domestic Sewage)

Will the activity produce domestic effluent that will be disposed of in a municipal sewage system?

| | |
|-----|----|
| YES | NO |
|-----|----|

If yes, what estimated quantity will be produced per month?

| |
|-----------------------|
| Unknown at this stage |
|-----------------------|

If yes, has the municipality confirmed that sufficient capacity exists for treating / disposing of the domestic effluent to be generated by this activity(ies)?

| | |
|-----|----|
| YES | NO |
|-----|----|

Will the activity produce any effluent that will be treated and/or disposed of onsite?

| | |
|-----|----|
| YES | NO |
|-----|----|

If yes describe how it will be treated and disposed of.

Not Applicable

Emissions into the Atmosphere

Will the activity release emissions into the atmosphere?

| | |
|-----|----|
| YES | NO |
|-----|----|

If yes, is it controlled by any legislation of any sphere of government?

| | |
|-----|----|
| YES | NO |
|-----|----|

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the emissions in terms of type and concentration:

Emissions during construction will mostly be in the form of dust and smoke.

The EMPr attached in **Annexure H** of the Basic Assessment Report indicates various ways in which these emissions will be minimized and controlled.

2. WATER USE

Indicate the source(s) of water that will be used for the activity

| | | | | | |
|------------------|---------------------------|-------------|----------------------------|-------|---------------------------------|
| Municipal | Directly from water board | groundwater | river, stream, dam or lake | other | the activity will not use water |
|------------------|---------------------------|-------------|----------------------------|-------|---------------------------------|

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month

:

| |
|----------------|
| Not Applicable |
|----------------|

If Yes, please attach proof of assurance of water supply, e.g. yield of borehole, in the appropriate Appendix

Does the activity require a water use permit from the Department of Water Affairs?

| | |
|-----|----|
| YES | NO |
|-----|----|

If yes, list the permits required

| |
|----------------|
| Not Applicable |
|----------------|

If yes, have you applied for the water use permit(s)?

| | |
|-----|----|
| YES | NO |
|-----|----|

If yes, have you received approval(s)? (attached in appropriate appendix)

| | |
|-----|----|
| YES | NO |
|-----|----|

3. POWER SUPPLY

Please indicate the source of power supply e.g. Municipality / Eskom / Renewable energy source

| |
|--------------|
| Municipality |
|--------------|

If power supply is not available, where will power be sourced from?

| |
|-----------|
| See above |
|-----------|

4. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

| |
|---|
| <p>The following energy savings methods shall be investigated for possible implementation for the proposed development:</p> <ul style="list-style-type: none"> • Use of energy efficient lighting, • Use of day light wherever possible in lieu of artificial lighting, • Use of renewable solar powered lighting for external lighting, • Switching off of all electrical appliances at night and times not in use, • Use of high-efficient HVAC systems, • Possibility of co-generation in co-operation with the supply authority, • Use of solar water heating, • Setting thermostats of water heaters at the most efficient level, • Insulation of hot water pipes and hot water storage tanks, • Use of low-flow shower heads, • Use of high-efficient electric motors, • Use of variable speed drives on electric motors, • Use of appropriate conductor size to reduce distribution losses, • Use of control methods to reduce maximum demand and exploit off peak electricity tariffs, • Insulation of windows, walls, ceilings and roofs. |
|---|

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

| |
|--|
| <p>The design intent is to make use of renewable solar powered lighting for external lighting. The Developer will adhere to the energy efficiency requirements as applicable e.g. Building Regulations, energy saving lighting, etc.</p> |
|--|

SECTION E: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts as well as the impacts of not implementing the activity (Section 24(4)(b)(i)).

1. ISSUES RAISED BY INTERESTED & AFFECTED PARTIES

Summarize the issues raised by interested and affected parties.

Comments received from the interested and affected parties includes the following:

- People residing within the proposed site want to be informed about the proposed development and timeframes.
- Feasibility studies of the proposed development “retail development and school”.
- Traffic Congestion and road safety,
- Economic feasibility of the proposed development
- Bulk services and Waste management
- Interaction of the proposed development
- Ecological sensitivity of the site
- Noise pollution
- Property valuation issues

Refer to **Annexure E** for comments raised by I&APs.

Summary of response from the practitioner to the issues raised by the interested and affected parties (including the manner in which the public comments are incorporated or why they were not included)

(A full response must be provided in the Comments and Response Report that must be attached to this report):

See feedback in Attached as **Annexure E**.

2. IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION & OPERATIONAL PHASE

Briefly describe the methodology utilized in the rating of significance of impacts.

A combination of the following methods was used to identify impacts during the Basic Assessment:

2.1. Specialist Study Findings
A minimum of legally responsible specialist studies is conducted (as usually required by the relevant authority). These usually include a red data fauna & flora assessment and heritage impact assessment. The findings of such specialist studies will highlight potential impacts on protected or endangered species or environments.

2.2. Site Inspection
The EAP and specialists conduct several site visits and identified potential sensitive environments. These areas are then red flagged to be investigated further and excluded from development if necessary.

2.3 Technical / Desktop Studies
Technical and specialist reports such as the geotechnical and agricultural assessments are used to identify those areas and aspects that may be impacted on, but that will not be identified through the other specialists’ studies.

2.4 Public Participation

Conducting public participation produces an issues list. Such a list needs to be screened for relevant impacts which then need to be addressed by specialist studies or identified for further investigation.

2.5 GDARD Policies, Review / Terms of Reference

GDARD C-Plan 3 as well as the policies provides the red flags that must be investigated by the specialists. Furthermore, the GDARD officials and the different sub-directorates within the department review the application and give comments to the relevant environmental officer. The issues identified are forwarded to the environmental consultant and these issues are addressed or translated as impacts.

5.5 Methodology to determine significance of impacts

The significance of the identified impacts will be determined using the approach outlined below. This incorporates two aspects or assessing the potential significance of impacts (terminology from the Department of Environmental Affairs and Tourism Guideline document on EIA Regulations, April 1998), namely occurrence and severity, which are further sub-divided as follows:

Table 3: Methodology to Assess Impacts

| Occurrence | | Severity | |
|---------------------------|------------------------|--------------------------------|--------------------------|
| Probability of occurrence | Duration of occurrence | Magnitude (severity) of impact | Scale / extent of impact |

To assess each of these factors for each impact, the following four ranking scales are used:

| Probability | Duration |
|-------------------------|---|
| 5 – Definite/don't know | 5 – Permanent |
| 4 – Highly probable | 4 – Long-term |
| 3 – Medium probability | 3 –Medium-term (8-15 years) |
| 2 – Low probability | 2 – Short-term (0-7 years) (impact ceases after the operational life of the activity) |
| 1 – Improbable | 1 – Immediate |
| 0 – None | |
| Scale | Magnitude |
| 5 – International | 10 – Very high/don't know |
| 4 – National | 8 – High |
| 3 – Regional | 6 – Moderate |
| 2 – Local | 4 – Low |
| 1 – Site only | 2 – Minor |
| 0 – None | |

Once these factors are ranked for each impact, the significance of the two aspects, occurrence and severity, is assessed using the following formula:

SP (significance points) = (probability + duration + scale) x magnitude

The maximum value is 150 significance points (SP). The impact significance will then be rated as follows:

| | | |
|--------|--|--|
| SP >75 | Indicates high environmental significance | An impact which could influence the decision about whether or not to proceed with the project regardless of any possible mitigation. |
|--------|--|--|

| | | |
|------------|--|---|
| SP 30 – 75 | Indicates moderate environmental significance | An impact or benefit which is sufficiently important to require management, and which could have an influence on the decision unless it is mitigated. |
| SP <30 | Indicates low environmental significance | Impacts with little real effect and which should not have an influence on or require modification of the project design. |

Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the construction phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

Refer to Table 4,5 and Table 6 below:

2.1 Significance scores of expected impacts

Preferred Alternative – Proposed mixed-use development to be known as Eldoraigue Extension 87 on Portion 195 & 237, Remainder of Portion 10 and part of Remainder of Portion 187 of the Farm Zwartkop 356 JR, within the City of Tshwane, Gauteng Province

Table 4: Identification of Potential Impact of the Preferred Alternative

| Potential Impact | Scale | Duration | Probability | Magnitude | Significance Points | Impact Significance | Confidence |
|--|---------------|-----------------|------------------------|--|---------------------|-------------------------------------|------------|
| Construction phase | | | | | | | |
| ISSUE: AIR QUALITY | | | | | | | |
| 1.1 Dust/Air pollution - The generation of fugitive dust associated with construction activities & earthworks. | Site only (1) | Long term (4) | Highly probable (4) | Moderate (6) | 54 | Moderate environmental significance | High |
| 2. ISSUE TOPOGRAPHY | | | | | | | |
| 2.1 Visual Impacts Topographical features contribute to the landscape character and sense of place of an area. Visual scarring due to cutting and embankments and areas devoid of vegetation are most obvious when located on elevated areas in the landscape | Local (2) | Long term (4) | Highly probable (4) | Moderate (6) - Situated within an area that has already been developed | 60 | Moderate environmental significance | High |
| 2.2 Bulk earthworks: Deep cuttings, high embankments, disposal of soil and excavations cause local changes to topography | Site only (1) | Long term (4) | Highly probable (4) | Moderate (6) | 54 | Moderate environmental significance | High |
| 3. ISSUE GEOLOGY AND SOILS | | | | | | | |
| 3.1 Soil erosion, loss of topsoil, deterioration of soil quality | Site only (1) | Medium term (4) | Highly Probable (4) | Moderate (6) | 54 | Moderate environmental significance | High |
| 3.2 Soil pollution | Site only (1) | Immediate (3) | Medium probability (3) | Moderate (6) | 42 | Moderate environmental significance | High |
| 4. ISSUE FAUNA AND FLORA | | | | | | | |
| 4.1 Degradation, destruction of habitats/ ecosystem | Site only (1) | Long term (4) | Medium Probable (3) | Moderate (6) | 48 | Moderate environmental significance | High |
| 4.2 Impacts on fauna and flora | Site only (1) | Long term (4) | Medium Probable (3) | Moderate (6) | 48 | Moderate environmental significance | High |
| 5. ISSUE HYDROLOGY | | | | | | | |
| 5.1 Stormwater flow and drainage- Developments cause the modification of drainage patterns. Stormwater may be | Local (2) | Long term (4) | Medium Probability (3) | Moderate (6) | 54 | Moderate environmental significance | High |

| Potential Impact | Scale | Duration | Probability | Magnitude | Significance Points | Impact Significance | Confidence |
|--|---------------|-----------------|------------------------|--------------|---------------------|-------------------------------------|------------|
| concentrated at certain points, increasing the velocity of flow in one area and reducing flow in another. This may contribute to flooding, soil erosion, sedimentation, scouring and channel modification downstream of the development. | | | | | | | |
| 5.2 Impact on wetlands and water quality | Local (2) | Short term (2) | Medium probability (3) | Moderate (6) | 42 | Moderate environmental Significance | Medium |
| SOCIO-ECONOMIC AND CULTURAL HISTORICAL ENVIRONMENT | | | | | | | |
| 6. ISSUE AESTHETICS, LANDSCAPE CHARACTER AND SENSE OF PLACE | | | | | | | |
| 6.1 Noise/ vibration | Site only (1) | Immediate (1) | Highly probable (4) | Moderate (6) | 36 | Moderate environmental significance | High |
| 6.2 Visual impact | Site only (1) | Medium term (3) | Medium probability (3) | Moderate (6) | 42 | Moderate environmental significance | High |
| 7. ISSUE SOCIAL WELL-BEING AND QUALITY OF THE ENVIRONMENT | | | | | | | |
| 7.1 Safety and Security | Local (2) | Short term (2) | Low probability (2) | Moderate (6) | 36 | Moderate environmental significance | High |
| 7.2 Job opportunities | Region (3) | Long term (4) | Highly Probable (4) | Moderate (6) | 66 | Moderate Environmental significance | Medium |
| 8. ISSUE HISTORICAL ENVIRONMENT | | | | | | | |
| 8.1 Destruction of cultural / heritage sites | Site only (1) | Immediate (1) | Low Probability (2) | Minor (2) | 8 | Low Environmental Significance | Medium |
| 9. ISSUE INFRASTRUCTURE AND SERVICES/WASTE | | | | | | | |
| 9.1 Waste | Site only (1) | Short time (2) | Medium probability (3) | Minor (2) | 14 | Low environmental significance | High |
| 9.1 Pressure on existing infrastructure and services | Local (2) | Long term (4) | Low probability (2) | Moderate (6) | 48 | Moderate environmental significance | Medium |
| 10. ISSUE DESIGN AND LAYOUT | | | | | | | |
| 10.1 Functional design of Residential development | Local (2) | Long term (4) | Low Probability (2) | Minor (2) | 16 | Low environmental significance | Medium |

| Potential Impact | Scale | Duration | Probability | Magnitude | Significance Points | Impact Significance | Confidence |
|---------------------------|-------|----------|-------------|-----------|---------------------|---------------------|------------|
| Operational phase | | | | | | | |
| ISSUE: AIR QUALITY | | | | | | | |

| Potential Impact | Scale | Duration | Probability | Magnitude | Significance Points | Impact Significance | Confidence |
|---|---------------|-----------------|------------------------|--|---------------------|-------------------------------------|------------|
| 1.1 Dust/Air pollution - The generation of fugitive dust associated with construction activities & earthworks. | Site only (1) | Long term (4) | Highly probable (4) | Moderate (6) | 54 | Moderate environmental significance | High |
| 2. ISSUE TOPOGRAPHY | | | | | | | |
| 2.1 Visual Impacts Topographical features contribute to the landscape character and sense of place of an area. Visual scarring due to cutting and embankments and areas devoid of vegetation are most obvious when located on elevated areas in the landscape | Local (2) | Long term (4) | Highly probable (4) | Moderate (6) - Situated within an area that has already been developed | 60 | Moderate environmental significance | High |
| 2.2 Bulk earthworks: Deep cuttings, high embankments, disposal of soil and excavations cause local changes to topography | Site only (1) | Long term (4) | Highly probable (4) | Moderate (6) | 54 | Moderate environmental significance | High |
| 3. ISSUE GEOLOGY AND SOILS | | | | | | | |
| 3.1 Soil erosion, loss of topsoil, deterioration of soil quality | Site only (1) | Medium term (4) | Highly Probable (3) | Moderate (6) | 48 | Moderate environmental significance | High |
| 3.2 Soil pollution | Site only (1) | Immediate (3) | Medium probability (2) | Moderate (6) | 36 | Moderate environmental significance | High |
| 4. ISSUE FAUNA AND FLORA | | | | | | | |
| 4.1 Degradation, destruction of habitats/ ecosystem | Site only (1) | Long term (4) | Medium Probable (2) | Moderate (8) | 56 | Moderate environmental significance | Medium |
| 4.2 Impacts on fauna and flora | Site only (1) | Long term (4) | Medium Probable (2) | Moderate (8) | 56 | Moderate environmental significance | Medium |
| 5. ISSUE HYDROLOGY | | | | | | | |
| 5.1 Stormwater flow and drainage- Developments cause the modification of drainage patterns. Stormwater may be concentrated at certain points, increasing the velocity of flow in one area and reducing flow in another. This may contribute to flooding, soil erosion, sedimentation, scouring and channel modification downstream of the development. | Local (2) | Long term (4) | Medium Probability (3) | Moderate (6) | 54 | Moderate environmental significance | High |
| 5.2 Impact on wetlands and water quality | Site only (1) | Immediate (1) | Low probability (2) | Minor (2) | 8 | Low environmental Significance | Medium |
| SOCIO-ECONOMIC AND CULTURAL HISTORICAL ENVIRONMENT | | | | | | | |
| 6. ISSUE AESTHETICS, LANDSCAPE CHARACTER AND SENSE OF PLACE | | | | | | | |

| Potential Impact | Scale | Duration | Probability | Magnitude | Significance Points | Impact Significance | Confidence |
|--|---------------|-----------------|------------------------|--------------|---------------------|-------------------------------------|------------|
| 6.1 Noise/ vibration | Site only (1) | Immediate (1) | Highly probable (4) | Moderate (6) | 36 | Moderate environmental significance | High |
| 6.2 Visual impact | Site only (1) | Medium term (3) | Medium probability (3) | Moderate (6) | 42 | Moderate environmental significance | High |
| 7. ISSUE SOCIAL WELL-BEING AND QUALITY OF THE ENVIRONMENT | | | | | | | |
| 7.1 Safety and Security | Local (2) | Short term (2) | Low probability (2) | Moderate (6) | 36 | Moderate environmental significance | High |
| 7.2 Job opportunities | Region (3) | Long term (4) | Highly Probable (4) | Moderate (6) | 66 | Moderate Environmental significance | Medium |
| 8. ISSUE HISTORICAL ENVIRONMENT | | | | | | | |
| 8.1 Destruction of cultural / heritage sites | Site only (1) | Immediate (1) | Low Probability (2) | Minor (2) | 8 | Low environmental significance | Medium |
| 9. ISSUE INFRASTRUCTURE AND SERVICES/WASTE | | | | | | | |
| 9.1 Waste | Site only (1) | Short time (3) | Medium probability (3) | Minor (2) | 14 | Low environmental significance | High |
| 9.1 Pressure on existing infrastructure and services | Local (2) | Long term (4) | Low probability (2) | Moderate (6) | 48 | Moderate environmental significance | Medium |
| 10. ISSUE DESIGN AND LAYOUT | | | | | | | |
| 10.1 Functional design of Residential development | Local (2) | Long term (4) | Low Probability (2) | Minor (2) | 16 | Low environmental significance | Medium |

Alternative 1 – Single use low density residential

Table 5: Identification of Potential Impact of the Alternative 1

| Potential Impact | Scale | Duration | Probability | Magnitude | Significance Points | Impact Significance | Confidence |
|--|---------------|---------------|---------------------|---|---------------------|-------------------------------------|------------|
| Construction phase | | | | | | | |
| ISSUE: AIR QUALITY | | | | | | | |
| 1.1 Dust/Air pollution - The generation of fugitive dust associated with construction activities & earthworks. | Site only (1) | Long term (4) | Highly probable (4) | Moderate (6) | 54 | Moderate environmental significance | High |
| 2. ISSUE TOPOGRAPHY | | | | | | | |
| 2.1 Visual Impacts | Local (2) | Long term (4) | Highly probable (4) | Moderate (6) - Situated within an area that has | 60 | Moderate environmental significance | High |

| Potential Impact | Scale | Duration | Probability | Magnitude | Significance Points | Impact Significance | Confidence |
|--|---------------|-----------------|------------------------|------------------------|---------------------|-------------------------------------|------------|
| Topographical features contribute to the landscape character and sense of place of an area. Visual scarring due to cutting and embankments and areas devoid of vegetation are most obvious when located on elevated areas in the landscape | | | | already been developed | | | |
| 2.2 Bulk earthworks: Deep cuttings, high embankments, disposal of soil and excavations cause local changes to topography | Site only (1) | Long term (4) | Highly probable (4) | Moderate (6) | 54 | Moderate environmental significance | High |
| 3. ISSUE GEOLOGY AND SOILS | | | | | | | |
| 3.1 Soil erosion, loss of topsoil, deterioration of soil quality | Site only (1) | Medium term (4) | Highly Probable (3) | Moderate (6) | 48 | Moderate environmental significance | High |
| 3.2 Soil pollution | Site only (1) | Immediate (3) | Medium probability (2) | Moderate (6) | 36 | Moderate environmental significance | High |
| 4. ISSUE FAUNA AND FLORA | | | | | | | |
| 4.1 Degradation, destruction of habitats/ ecosystem | Site only (1) | Long term (4) | Medium Probable (2) | Moderate (8) | 56 | Moderate environmental significance | High |
| 4.2 Impacts on fauna and flora | Site only (1) | Long term (4) | Medium Probable (2) | Moderate (8) | 56 | Moderate environmental significance | High |
| 5. ISSUE HYDROLOGY | | | | | | | |
| 5.1 Stormwater flow and drainage- Developments cause the modification of drainage patterns. Stormwater may be concentrated at certain points, increasing the velocity of flow in one area and reducing flow in another. This may contribute to flooding, soil erosion, sedimentation, scouring and channel modification downstream of the development. | Local (2) | Long term (4) | Medium Probability (3) | Moderate (6) | 54 | Moderate environmental significance | High |
| 5.2 Impact on wetlands and water quality | Site only (1) | Immediate (1) | Low probability (2) | Minor (2) | 8 | Low environmental Significance | Medium |
| SOCIO-ECONOMIC AND CULTURAL HISTORICAL ENVIRONMENT | | | | | | | |
| 6. ISSUE AESTHETICS, LANDSCAPE CHARACTER AND SENSE OF PLACE | | | | | | | |
| 6.1 Noise/ vibration | Site only (1) | Immediate (1) | Highly probable (4) | Moderate (6) | 36 | Moderate environmental significance | High |
| 6.2 Visual impact | Site only (1) | Medium term (3) | Medium probability (3) | Moderate (6) | 42 | Moderate environmental significance | High |
| 7. ISSUE SOCIAL WELL-BEING AND QUALITY OF THE ENVIRONMENT | | | | | | | |

| Potential Impact | Scale | Duration | Probability | Magnitude | Significance Points | Impact Significance | Confidence |
|--|---------------|----------------|------------------------|--------------|---------------------|-------------------------------------|------------|
| 7.1 Safety and Security | Local (2) | Short term (2) | Low probability (2) | Moderate (6) | 36 | Moderate environmental significance | High |
| 7.2 Job opportunities | Region (3) | Long term (4) | Highly Probable (4) | Moderate (6) | 66 | Moderate Environmental significance | Medium |
| 8. ISSUE HISTORICAL ENVIRONMENT | | | | | | | |
| 8.1 Destruction of cultural / heritage sites | Site only (1) | Immediate (1) | Low Probability (2) | Minor (2) | 8 | Low Environmental Significance | Medium |
| 9. ISSUE INFRASTRUCTURE AND SERVICES/WASTE | | | | | | | |
| 9.1 Waste | Site only (1) | Short time (3) | Medium probability (3) | Minor (2) | 14 | Low environmental significance | High |
| 9.1 Pressure on existing infrastructure and services | Local (2) | Long term (4) | Low probability (2) | Moderate (6) | 48 | Moderate environmental significance | Medium |
| 10. ISSUE DESIGN AND LAYOUT | | | | | | | |
| 10.1 Functional design of Residential development | Local (2) | Long term (4) | Low Probability (2) | Minor (2) | 16 | Low environmental significance | Medium |

| Potential Impact | Scale | Duration | Probability | Magnitude | Significance Points | Impact Significance | Confidence |
|--|---------------|---------------|---------------------|--|---------------------|-------------------------------------|------------|
| Operational phase | | | | | | | |
| ISSUE: AIR QUALITY | | | | | | | |
| 1.1 Dust/Air pollution - The generation of fugitive dust associated with construction activities & earthworks. | Site only (1) | Long term (4) | Highly probable (4) | Moderate (6) | 54 | Moderate environmental significance | High |
| 2. ISSUE TOPOGRAPHY | | | | | | | |
| 2.1 Visual Impacts Topographical features contribute to the landscape character and sense of place of an area. Visual scarring due to cutting and embankments and areas devoid of vegetation are most obvious when located on elevated areas in the landscape | Local (2) | Long term (4) | Highly probable (4) | Moderate (6) - Situated within an area that has already been developed | 60 | Moderate environmental significance | High |
| 2.2 Bulk earthworks: Deep cuttings, high embankments, disposal of soil and excavations cause local changes to topography | Site only (1) | Long term (4) | Highly probable (4) | Moderate (6) | 54 | Moderate environmental significance | High |
| 3. ISSUE GEOLOGY AND SOILS | | | | | | | |

| Potential Impact | Scale | Duration | Probability | Magnitude | Significance Points | Impact Significance | Confidence |
|--|---------------|-----------------|------------------------|--------------|---------------------|-------------------------------------|------------|
| 3.1 Soil erosion, loss of topsoil, deterioration of soil quality | Site only (1) | Medium term (4) | Highly Probable (3) | Moderate (6) | 48 | Moderate environmental significance | High |
| 3.2 Soil pollution | Site only (1) | Immediate (3) | Medium probability (2) | Moderate (6) | 36 | Moderate environmental significance | High |
| 4. ISSUE FAUNA AND FLORA | | | | | | | |
| 4.1 Degradation, destruction of habitats/ ecosystem | Site only (1) | Long term (4) | Medium Probable (2) | Moderate (8) | 56 | Moderate environmental significance | Medium |
| 4.2 Impacts on fauna and flora | Site only (1) | Long term (4) | Medium Probable (2) | Moderate (8) | 56 | Moderate environmental significance | Medium |
| 5. ISSUE HYDROLOGY | | | | | | | |
| 5.1 Stormwater flow and drainage- Developments cause the modification of drainage patterns. Stormwater may be concentrated at certain points, increasing the velocity of flow in one area and reducing flow in another. This may contribute to flooding, soil erosion, sedimentation, scouring and channel modification downstream of the development. | Local (2) | Long term (4) | Medium Probability (3) | Moderate (6) | 54 | Moderate environmental significance | High |
| 5.2 Impact on wetlands and water quality | Site only (1) | Immediate (1) | Low probability (2) | Minor (2) | 8 | Low environmental Significance | Medium |
| SOCIO-ECONOMIC AND CULTURAL HISTORICAL ENVIRONMENT | | | | | | | |
| 6. ISSUE AESTHETICS, LANDSCAPE CHARACTER AND SENSE OF PLACE | | | | | | | |
| 6.1 Noise/ vibration | Site only (1) | Immediate (1) | Highly probable (4) | Moderate (6) | 36 | Moderate environmental significance | High |
| 6.2 Visual impact | Site only (1) | Medium term (3) | Medium probability (3) | Moderate (6) | 42 | Moderate environmental significance | High |
| 7. ISSUE SOCIAL WELL-BEING AND QUALITY OF THE ENVIRONMENT | | | | | | | |
| 7.1 Safety and Security | Local (2) | Short term (2) | Low probability (2) | Moderate (6) | 36 | Moderate environmental significance | High |
| 7.2 Job opportunities | Region (3) | Long term (4) | Highly Probable (4) | Moderate (6) | 66 | Moderate Environmental significance | Medium |
| 8. ISSUE HISTORICAL ENVIRONMENT | | | | | | | |
| 8.1 Destruction of cultural / heritage sites | Site only (1) | Immediate (1) | Low Probability (2) | Minor (2) | 8 | Low environmental significance | Medium |
| 9. ISSUE INFRASTRUCTURE AND SERVICES/WASTE | | | | | | | |

| Potential Impact | Scale | Duration | Probability | Magnitude | Significance Points | Impact Significance | Confidence |
|--|---------------|----------------|------------------------|--------------|---------------------|-------------------------------------|------------|
| 9.1 Waste | Site only (1) | Short time (3) | Medium probability (3) | Minor (2) | 14 | Low environmental significance | High |
| 9.1 Pressure on existing infrastructure and services | Local (2) | Long term (4) | Low probability (2) | Moderate (6) | 48 | Moderate environmental significance | Medium |
| 10. ISSUE DESIGN AND LAYOUT | | | | | | | |
| 10.1 Functional design of Residential development | Local (2) | Long term (4) | Low Probability (2) | Minor (2) | 16 | Low environmental significance | Medium |

Table 6: Assessment of potential impacts and proposed mitigation measures

| Potential Impacts | Significance rating of impacts before mitigation | Proposed mitigation | Significance rating of impacts after mitigation |
|---|--|---|---|
| <p>1.1 ust /Air pollut ion The genera tion of dust associ ated with constr uction activiti es & earthw orks</p> | <p>Moderate</p> | <ul style="list-style-type: none"> • The building area is to be physically screened off with a shade cloth fence at least 1.8m in height, to prevent dust from being blown onto the road or neighbouring properties. • Dust generation should be kept to a minimum. • Dust must be suppressed on access roads and construction areas during dry periods by the regular application of water or a biodegradable soil stabilization agent. • Speed limits must be implemented in all areas, including public roads and private property to limit the levels of dust pollution. • It is recommended that the clearing of vegetation from the site should be selective and done just before construction so as to minimize erosion and dust. • Should construction in areas that have been stripped not be commencing within a short period of time the exposed areas shall be re-vegetated or stabilized. Soil stabilizing measures could include rotovating in straw bales (at a rate of 1 bale/20 m²), applying mulching or brush packing, or creating windbreaks using brush or bales. • Excavating, handling or transporting erodable materials in high wind or when dust plumes are visible shall be avoided. • All materials transported to site must be transported in such a manner that they do not fly or fall off the vehicle. This may necessitate covering or wetting friable materials. • No burning of refuse or vegetation is permitted. | <p>Low</p> |
| <p>2.1 Visual Impact s -</p> | <p>Moderate</p> | <ul style="list-style-type: none"> • The site area is to be physically screened off with a shade cloth fence at least 1.8m in height. • The site must be managed appropriately, and all rubbish and rubble removed to a recognized waste facility. • Excess soil and bedrock should be disposed of at an appropriate facility. • A certificate of disposal must be obtained for any waste that is disposed of. • Waste must not remain on site for more than 2 weeks. • Refuse bins must be provided by the Contractor for rubbish to be used by staff. • Excess concrete must be disposed of correctly and at an appropriate facility. • No waste may be placed in any excavations on site. • The construction camp must be located as far from other properties as possible. • Light pollutions should be minimized. • The construction footprint must be minimized. • Construction / management activities must be limited to the daylight hours between 7:00am and 5:30pm weekdays; 7:00am and 1:30pm on Saturdays. | <p>Low</p> |

| Potential Impacts | Significance rating of impacts before mitigation | Proposed mitigation | Significance rating of impacts after mitigation |
|---|--|--|---|
| | | <ul style="list-style-type: none"> • Lighting on site is to be sufficient for safety and security purposes, but shall not be intrusive to neighboring residents, disturb wildlife, or interfere with road traffic. • Should overtime/night work be authorized, the Contractor shall be responsible to ensure that lighting does not cause undue disturbance to neighbouring residents. • In this situation, low flux and frequency lighting shall be utilised. • The site is in an extremely disturbed state with existing properties that are not well maintained. • Structures that are to be erected should be aesthetically pleasing and blend into the area as far as possible to minimise the visual impact. • Buildings are to reflect and residential scale and design with finishes matching the existing styles and finishes. Buildings must adhere to the local zoning code. • Buildings must be maintained in good standing at all times | |
| 2.2 Bulk earthworks | Moderate | <ul style="list-style-type: none"> • Avoid development on excessively steep slopes. • Avoid cutting steep embankments • Provide the necessary erosion protection measures. | Low |
| 3.1 Soil erosion, loss of topsoil, deterioration of soil quality | Moderate | <ul style="list-style-type: none"> • Appropriate erosion and stormwater management structures must be installed around the construction site. • All construction vehicles, plant, machinery and equipment must be properly maintained to prevent leaks. • Plant and vehicles are to be repaired immediately upon developing leaks. Drip trays shall be supplied for all repair work undertaken on machinery on site or campsite area. • Drip trays are to be utilised during daily greasing and re-fueling of machinery and to catch incidental spills and pollutants. • Drip trays are to be inspected daily for leaks and effectiveness and emptied when necessary. This is to be closely monitored during rain events to prevent overflow. • Vehicles to be used during the construction phase are to be kept in good working condition and should not be the source of excessive fumes. • Fuels and chemicals must be stored in adequate storage facilities that are secure, enclosed and banded. • All excavations and foundations must be inspected regularly. • Once earthworks are complete, disturbed areas are to be stabilized with mulch, straw or other approved method. | Low |

| Potential Impacts | Significance rating of impacts before mitigation | Proposed mitigation | Significance rating of impacts after mitigation |
|--|---|--|---|
| 3.2 Soil Pollution | Moderate | <ul style="list-style-type: none"> • Ensure correct position of construction caps, equipment yards, refueling depots, concrete batching plant etc. to avoid areas susceptible to soil and water pollution. • Ensure appropriate handling of hazardous substances • Remediate polluted soil. • The maintenance of vehicles and equipment used for any purpose during the development will take place only in the maintenance yard. Any breakdown in the field requires the presence of a spill treatment team and equipment. This team must prevent and mitigate any spills that occur in this situation. • Equipment used in the development process must be adequately maintained so that during operations it does not spill oil, diesel, fuel, or hydraulic fluid. • In the event of spills from vehicles, the area should be cleaned immediately using a bioremediation product, such as <i>Petro-Clean™</i>. The absorbent and soil must be placed in a bin and removed from the site by a certified company and disposed of as a hazardous waste at a licensed commercial facility. No Hydrocarbons may escape into the environment. A spill recovery kit must be on site, along with trained personnel. | Low |
| 4.1 Degradation, destruction or elimination of habitats/ecosystems | <p>High – Moderate</p> <p>The proposed development site and can therefore be mitigated through observing the ecological sensitivity map.</p> | <ul style="list-style-type: none"> • Red data plant species that occur on will be fenced off from proposed development. • No development will occur within the 32m buffer zone of any drainage line. • Site clearing is to be limited to only the area necessary for carrying out the specified works and the destruction of vegetation should be minimised. • No littering by construction workers is permitted. Any litter will be collected and removed off-site to a registered waste site. • Cleared indigenous vegetation can be stockpiled for possible reuse in later rehabilitation or landscaping, or as a brush pack for erosion prevention. • Stockpiles of vegetation are only to be located in areas approved by the ECO and may not exceed 2m in height. Methods of stacking must take cognisance of the possible creation of a fire hazard. • No burning of stockpiled vegetation is permitted. • All alien plants that occur in South Africa. None of these species may be introduced and they must all be controlled. • Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas. (Particular attention must be paid to imported material). • Alien vegetation re-growth must be controlled throughout the entire site during the construction period. • Remaining indigenous trees (naturally occurring in the area) should be retained wherever possible • The wetland area including the buffer zone should be fenced-off during the construction phase. | Moderate |

| Potential Impacts | Significance rating of impacts before mitigation | Proposed mitigation | Significance rating of impacts after mitigation |
|--------------------------------|--|---|---|
| | | <ul style="list-style-type: none"> • Currently very few alien plants occur within this plant community (excluding the wattle bush). • Areas which have been disturbed will be quickly colonised by invasive alien species. An ongoing management plan must be implemented for the clearing/eradication of alien species. • Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge. • Avoid planting of exotic plant species in public areas or home gardens, use indigenous species. • Use indigenous plant species in all gardens | |
| 4.2 Impacts on fauna and flora | High | <ul style="list-style-type: none"> • One orange species was observed on the site which is <i>Hypoxis hemerocallidae</i> • Orange data plant species that occur on will be fenced off from proposed development. • No sensitive plants were observed during assessment • The contractor must ensure that no fauna species are disturbed, trapped, hunted or killed during the construction phase. • Disturbance to birds, animals and reptiles and their habitats should be prevented at all times. • The illegal hunting or capture of wildlife will not be tolerated. Such matters will be handed over to the relevant authorities for prosecution. • These species should then be relocated to a natural habitat. • During the construction phase, artificial lighting must be restricted to areas under construction only. Where lighting is required for safety or security reasons, this should be targeted at the areas requiring attention. Yellow sodium lights or Compressed Fluorescent Bulbs (CFL"s) should be prescribed as they do not attract as many invertebrates (insects) at night and will not disturb the existing wildlife. Sodium lamps require a third less energy than conventional light bulbs. • Ideally fences should not restrict the natural migratory movements of certain animals. The site offers limited suitable migratory habitat. Electric fences have a negative impact on certain animal species including Bush babies, geckoes, chameleons, bullfrogs and tortoises. Palisade fencing with adequate gaps is recommended for the conserved public open spaces. • Before any vegetation is removed, a suitably qualified person (i.e. on ECO request of a vegetation specialist) shall inspect the study area for any plant/ grass/ tree species that could be transplanted to other similar/ suitable areas. This includes all Red Data or Protected, or rare plants that may be found during the flora site assessment or during construction operations. • There is a high likelihood that a red listed plant will occur on the site or on neighbouring properties, however, should any medicinal/ protected/ Red Data flora that will have to be removed shall be removed by a suitably | Low |

| Potential Impacts | Significance rating of impacts before mitigation | Proposed mitigation | Significance rating of impacts after mitigation |
|---|--|--|---|
| | | <p>qualified specialist and relocated. The applicable responsible person at the provincial department must be notified in the event of such plants being identified, who will then advise the ECO regarding what steps need to be taken and who will be responsible for the relocation and transplantation processes.</p> <ul style="list-style-type: none"> • All invader or exotic plant species must be removed from the site and disposed of at a landfill site. • All Declared Weeds and invaders must be removed from the site. • Where herbicides are used to clear vegetation, specimen-specific chemicals should be applied to individual plants only. General spraying should be prohibited. • Only indigenous floral species (preferably using endemic or local species from the area), which are water wise and require minimal horticultural practices may be used during landscaping and rehabilitation. • Remaining indigenous trees (naturally occurring in the area) should be retained wherever possible • The body corporate should be encouraged to plant indigenous non-invasive plants. The attention of property owners must be drawn to the most recent Declared Weeds List (2001) in the <i>Conservation of Agricultural Resources Act</i> 43 of 1983 and the associated penalties and prohibitions • The least environmentally damaging insecticides, to manage invertebrate pests, must be applied. Pyrethroids and Phenylpyrazoles are preferable to Acetylcholines. Use insecticides that are specific to the pest (species specific) in question. The lowest effective dosages must be applied. The supplier's advice should always be sought. Do not irrigate for 24 hours after applying insecticides in areas where there is a chance of contaminating watercourses or dams, fungal pathogens should be used in preference to chemical insecticides. | |
| 5.1 Storm water flow, drainage and increased runoff due to hardened surfaces | Low | <ul style="list-style-type: none"> • Natural storm water must flow freely, either as sheet flow or where necessary in open grass swales, to allow for infiltration and retention. Natural veld grass must be left undisturbed as far as possible, to allow natural drainage. • Drainage channels must be constructed along access roads every 50m to divert runoff during construction period. • Energy dissipaters (gabions/grass bales etc.) must be installed at all potential large flow volume areas, especially during the construction phase where large areas will be open soil. • Where feasible the use of vegetated swales should be used to accommodate surface runoff, in order to increase infiltration into the soil. The swales should be vegetated with indigenous, riparian vegetation in order to provide habitat for bird life and other aquatic and semi-aquatic species. Where feasible, the swales should be provided adjacent to the property boundaries along the natural gradient | Low |

| Potential Impacts | Significance rating of impacts before mitigation | Proposed mitigation | Significance rating of impacts after mitigation |
|---|--|--|---|
| | | <ul style="list-style-type: none"> • The cross-section of the swale should be parabolic or trapezoidal in shape with side slopes no steeper than 1:3, to maximize the wetted channel perimeter. It is recommended that the longitudinal slope not exceed 2% where possible and that a maximum slope of 4% be used. Where a 4% slope must be exceeded, check dams should be provided at a minimum interval of 17m. As a rule of thumb, the total surface area of the swale must be 1% of the area that drains into the swale. The surface of the swale must be carefully constructed, to avoid compaction, which will inhibit dense vegetation growth and effective runoff infiltration. The installation of vegetated filter strips parallel to the top of the channel banks can help to treat sheet flows entering the swale. • Maintenance of the swale should include periodic mowing of the grass (never shorter than the design flow depth of the channel). Bare areas should be re-seeded, and debris and blockages regularly removed. Sediment depositions should be regularly removed from the swale, to prevent pollution of the runoff from contaminants contained therein. • Please note that the recommendations for the design of the swales are guidelines only and that the designs of the swales, sedimentation ponds and check dams must be done by a hydrological engineer. • Permeable paving should be used to reduce runoff and increase infiltration and ground water recharge. • As much as possible water should be retained on site to be reused again for irrigation and habitat creation. • Both storm water and excess effluent intended for irrigation must be purified according to DWS standards. | |
| 5.2 Impacts on adjacent Drainage line and water quality | Low | <ul style="list-style-type: none"> • Utilize proper waste management practices. • Cover any wastes that are likely to wash away or contaminate storm water • Ensure handling, transport and disposal of hazardous substances are adequately controlled and managed. • Provide containment areas for potential pollutants at construction camps, refueling depot and concrete batching plants. • Fuel storage shall be within the construction camp, and within a bunded area with at least 110% of the volume of the amount of fuel stored, as per agreement and approval of the ECO. No storage of any fuel will be allowed on site, other than what is approved by the applicable provincial government departments. • Drip trays (min 10cm deep) are to be placed under all vehicles if they stand for more than 3 hours. The drip tray must be able to contain 110% of the total amount/ volume of oil in the vehicle. Spill kits must be available in all vehicles that transport hydrocarbons for dispensing to other vehicles on the site. The dispensing devices (pump heads) must be compatible with the vehicles to which they are dispensing. In addition, the dispensing devices | Low |

| Potential Impacts | Significance rating of impacts before mitigation | Proposed mitigation | Significance rating of impacts after mitigation |
|---------------------|--|---|---|
| | | <p>must be fitted with the necessary valves/ apparatus that will ensure that the nozzles do not drip fuel after pumping has stopped.</p> <ul style="list-style-type: none"> • Cement mixing shall be done only at specifically selected sites. After construction activities ended the cement shall be crushed and removed from the site. This mixing area shall then be ripped and rehabilitated. • Limit the construction footprint and support areas (e.g. temporary access servitudes) as far as possible; • No indiscriminate destruction of wetland vegetation should be allowed; • Make use of geotextiles within disturbed areas of steeper topography to avoid erosion through surface water runoff; • Stormwater management along informal roadways to reduce gulley erosion formation; • Construct within the low-flow (dry) period; • Correct site reinstatement and landscaping following any disturbances will abate channel and gulley formation; • Proper re-instatement of soils and landscaping to limit erosion gulley formation. • Soil layers within wetland zones are to be stored in their respective layers and replaced after entrenching has occurred in reverse order i.e. the original soil layering must be retained should entrenching within wetland habitat found to be necessary. Provision for this should be detailed within a rehabilitation plan and the site reinstatement should be audited by suitably qualified personnel. • No dumping of any excess building material or other wastes or litter should be allowed within any wetland and buffer areas; • Subsistence hunting or harvesting of fauna or flora within the wetland zones should be prohibited; | |
| 6.1 Noise/vibration | High | <ul style="list-style-type: none"> • Noise levels shall be kept within acceptable limits, and construction crew must abide by National Noise Laws and local by-laws regarding noise. • If work is to be undertaken outside of normal work hours permission, must be obtained. Prior to commencing any such activity, the Contractor is also to advise the potentially affected neighbouring residents. Notification could include letter-drops. • No sound amplification equipment such as sirens, loud hailers or hooters are to be used on site except in emergencies and no amplified music is permitted on site. • Construction / management activities involving use of the service vehicle, machinery, hammering etc, must be limited to the hours between 7:00am and 5:30pm weekdays; 7:00am and 1:30pm on Saturdays; no noisy activities may take place on Sundays or Public Holidays. • Activities that may disrupt neighbours (e.g. delivery trucks, excessively noisy activities etc) must be preceded by notice being given to the affected neighbours at least 24 hours in advance. | Low |

| Potential Impacts | Significance rating of impacts before mitigation | Proposed mitigation | Significance rating of impacts after mitigation |
|-------------------------|--|--|---|
| | | <ul style="list-style-type: none"> Equipment that is fitted with noise reduction facilities (e.g. side flaps, silencers etc) must be used as per operating instructions and maintained properly during site operations | |
| 7.1 Safety and Security | Moderate | <ul style="list-style-type: none"> A fence will be constructed around the site prior to commencement of construction The Applicant will be in contact with the local security firms. Signs should be erected on all entrance gates indicating that no temporary jobs are available, thereby limiting opportunistic labourers and crime. The site and crew are to be managed in strict accordance with the Occupational Health and Safety Act (Act No. 85 of 1993) and the National Building Regulations All structures that are vulnerable to high winds must be secured (including toilets). Potentially hazardous areas such as trenches are to be cordoned off and clearly marked at all times. The Contractor is to ensure traffic safety at all times and shall implement road safety precautions for this purpose when works are undertaken on or near public roads. Necessary Personal Protective Equipment (PPE) and safety gear appropriate to the task being undertaken is to be provided to all site personnel (e.g. hard hats, safety boots, masks etc.). All vehicles and equipment used on site must be operated by appropriately trained and / or licensed individuals in compliance with all safety measures as laid out in the Occupational Health and Safety Act (Act No. 85 of 1993) (OHSA). An environmental awareness training programme for all staff members shall be put in place by the Contractor. Before commencing with any work, all staff members shall be appropriately briefed about the EMP and relevant occupational health and safety issues. All construction workers shall be issued with ID badges and clearly identifiable uniforms. Access to fuel and other equipment stores is to be strictly controlled. Emergency procedures must be produced and communicated to all the employees on site. This will ensure that accidents are responded to appropriately and the impacts thereof are minimised. This will also ensure that potential liabilities and damage to life and the environment are avoided. Adequate emergency facilities must be provided for the treatment of any emergency on the site. The nearest emergency service provider must be identified during all phases of the project as well as its capacity and the magnitude of accidents it will be able to handle. Emergency contact numbers are to be displayed | Low |

| Potential Impacts | Significance rating of impacts before mitigation | Proposed mitigation | Significance rating of impacts after mitigation |
|---|--|--|---|
| | | <p>conspicuously at prominent locations around the construction site and the construction crew camps at all times.</p> <ul style="list-style-type: none"> • The Contractor must have a basic spill control kit available at each construction crew camp and around the construction site. The spill control kits must include absorptive material that can handle all forms of hydrocarbon as well as floating blankets / pillows that can be placed on water courses. • The Contractor shall make available safe drinking water fit for human consumption at the site offices and all other working areas. • Washing and toilet facilities shall be provided on site and in the Contractors camp. • Adequate numbers of chemical toilets must be maintained in the Contractors camp to service the staff using this area. At least 1 toilet must be available per 20 workers using the camp. Toilet paper must be provided. • The chemical toilets servicing the camp must be maintained in a good state, and any spills or overflows must be attended to immediately. • The chemical toilets must be emptied on a regular basis. • The Contractors site must be located on the high side of the site, so any leakages or spillages will be contained on site. • HIV AIDS awareness and education should be undertaken by all Contractor staff. | |
| 7.2 Economic opportunities | Low | <ul style="list-style-type: none"> • Make use of local labour. • Provide clear and realistic information regarding employment opportunities and other benefits for local communities in order to prevent unrealistic expectations. • Provide skills training for construction workers. • Provide job opportunities at one of the few areas that will provide work in the area. • Skills training and transfer. | Moderate positive |
| 8.1 Destruction of cultural / heritage sites No sites of cultural or | Low | <ul style="list-style-type: none"> • Ensure that construction staff members are aware that heritage resources could be unearthed and the scientific importance of such finds. • Ensure that heritage objects are not to be moved or destroyed without the necessary permits from the South African Heritage Resources Agency (SAHRA) in place. | Low |

| Potential Impacts | Significance rating of impacts before mitigation | Proposed mitigation | Significance rating of impacts after mitigation |
|--|--|---|---|
| heritage importance were found during the Heritage Impact Assessment | | | |
| 9.1 Waste | Low | <ul style="list-style-type: none"> • Adequate number of waste disposal receptacles are to be positioned at strategic locations within the development. • Temporary waste storage points on site shall be determined. These storage points shall be accessible by waste removal trucks and these points should not be located in areas highly visible from the properties of the surrounding landowners/tenants/in areas. These areas should also be already disturbed. The storage of solid waste on site, until such time that it may be disposed of, must be in the manner acceptable to the relevant Authority. • No waste materials shall at any stage be disposed of in public areas or adjacent properties, or where the wind direction will carry bad odors across the properties of adjacent tenants or landowners. The piling of any material that could rot and release unpleasant smells into the air will not be permitted. Burning of waste is not permitted. Spot fines of up to R100 may be administered if the employees are found to be polluting the area in any way. • Several waste bins must be provided and clearly marked or colour coded according to industry standards to allow for recycling of waste into: <ul style="list-style-type: none"> ○ Paper ○ Biodegradable ○ Glass ○ Plastics ○ General • No burning of waste. • Wayleaves required for all disposed waste. • The waste bins shall be cleared by municipal services on a weekly basis. During municipal strikes special arrangements must be made to have the waste removed via private waste removal services. | Low |
| 9.2 Existing | Medium | <ul style="list-style-type: none"> • Integrity of existing services to be ensured. • Adherence to Service Report | Medium-low |

| Potential Impacts | Significance rating of impacts before mitigation | Proposed mitigation | Significance rating of impacts after mitigation |
|------------------------|--|--|---|
| g infrastructure | | <ul style="list-style-type: none"> Adherence to Traffic Impact Study requirements. The service systems are to be designed according to the minimum requirements of and submitted to the City of Tshwane Metropolitan Municipality for approval. No construction activities must commence on site prior to obtaining the necessary approval. Underground services should be designed in such a way so as to require minimum maintenance to avoid disturbance of the underground and superficial environment. | |
| 10.1 Functional design | Medium | <ul style="list-style-type: none"> Scale and design must fit with adjacent land uses Areas where services infrastructure has been installed must be rehabilitated with indigenous vegetation on completion. | Low |

NO GO:

No-Go Alternative

This option assumes that a conservative approach would ensure that the environment is not developed. It is important to state that this assessment is informed by the current condition of the area. Should the Competent Authority decline the application, the 'No-Go' option will be followed, and the status quo of the site will remain. The site is large and the maintenance and upkeep of the site is significant; it is thus proposed that with minimal development, the responsibility of the upkeep can lie with the new owners who will pay a levy for the maintenance and removal of the alien vegetation on the site.

List any specialist reports that were used to fill in the above tables. Such reports are to be attached in the appropriate Appendix.

Annexure G1: Geotechnical Report
Annexure G2: Ecological Impact Assessment
Annexure G3: Wetland Impact Assessment
Annexure G4: Paleontological Impact Assessment
Annexure G5: Culture Heritage Impact Assessment

Describe any gaps in knowledge or assumptions made in the assessment of the environment and the impacts associated with the proposed development.

- Assumptions**
In undertaking this BAR, it has been assumed that:
 - All requirements from the local authority will be met by the proponent as a separate undertaking to the EIA process;
 - The information provided by the proponent and the project planning team / specialists is accurate and discloses all information relevant to EIA, proposed project and possible impacts.
 - Where supporting or baseline information was unavailable, a precautionary approach is adopted.

- **Gaps in Knowledge**

All specialist studies are conducted to certain levels of confidence, but in all instances known methodologies have been used and confidence levels are generally high. This means that in most cases the situation described in the pre-construction environment is accurate at high certainty levels, but there exists a low probability that some issues have not been identified during the studies. Furthermore, statistical analyses and mathematical models are merely tools which assist the researcher in assessing field observations and have innate assumptions which can reduce objectivity of the results obtained. This is not seen as a major flaw but should always be considered when assessing results.

Gaps in knowledge known to LEAP at this time, includes:

- Predicting the impact to the socio-economic and bio-physical environment for the life cycle of the proposed project (i.e. 25-50 years) although it is expected to be positive since the social contribution will be high.

3. IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING & CLOSURE PHASE – NOT APPLICABLE

Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the decommissioning and closure phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

The decommissioning or closure of the proposed project is not anticipated.

Proposal

| Potential impacts: | Significance rating of impacts (positive or negative): | Proposed mitigation: | Significance rating of impacts after mitigation: | Risk of the impact and mitigation not being implemented |
|--------------------|--|----------------------|--|---|
| Not Applicable | | | | |

Alternative 1

| Potential impacts: | Significance rating of impacts (positive or negative): | Proposed mitigation: | Significance rating of impacts after mitigation: | Risk of the impact and mitigation not being implemented |
|--------------------|--|----------------------|--|---|
| Not Applicable | | | | |

Alternative 2

| Potential impacts: | Significance rating of impacts (positive or negative): | Proposed mitigation: | Significance rating of impacts after mitigation: | Risk of the impact and mitigation not being implemented |
|--------------------|--|----------------------|--|---|
| Not Applicable | | | | |

List any specialist reports that were used to fill in the above tables. Such reports are to be attached in the appropriate Appendix.

| |
|----------------|
| Not Applicable |
|----------------|

Where applicable indicate the detailed financial provisions for rehabilitation, closure and ongoing post decommissioning management for the negative environmental impacts.

| |
|----------------|
| Not Applicable |
|----------------|

4. CUMULATIVE IMPACTS

Describe potential impacts that, on their own may not be significant, but is significant when added to the impact of other activities or existing impacts in the environment. Substantiate response:

Cumulative impacts are assessed with the combination effects of the Project with current and future development in the immediate area of the Project site. The cumulative impacts assessed depend on the status of other projects and the level of data available to characterise the magnitude of the impacts.

Cumulative Impacts

- **Litter and Waste**

Activities associated with use of the site results in littering. Similarly, the building process generates wastes that could pollute the site and its surrounds. For this reason, it is important that a waste management plan must be developed. The litter will reduce as the construction phase ends. This will not result in a cumulative impact.

- **Vegetation and Fauna**

The proposed development will partially transform the site and will lead to the partial loss of habitat for any potential plant or animal species. This is an impact of low significance as the largest portion of the development will occur on the low sensitive areas. The buildings are raised above the ground and constructed on columns to allow for free flow below the buildings, thus reducing the impact of the development. The cumulative impact is thus low. No development will take place in the sensitivity area.

- **Surface Water Pollution**

Spillages of oil, lubricants and fuel from construction vehicles, plant and machinery has the potential to contaminate surface water bodies.

- **Ground Water Pollution**

The construction phase could result in increased infiltration of contaminants into the ground water and soil. The clearing of the site could result in exposed soil surfaces which may be prone to erosion, creation of dust and sedimentation of water bodies. Spillages of oil, lubricants and fuel from construction vehicles, plant and machinery has the potential to contaminate the soil and groundwater. Cement mixing, and the storage of fuel must be conducted so as to prevent contamination of the soil and groundwater.

- **Increased Stormwater Runoff**

The development of hard surfaces will give rise to greater volumes and velocity of runoff waters during high peak flows. This water will drain into the roads and storm water management system. Localised flooding may result on negative impacts on bed and banks of the stream course due to the cumulative effects.

- **Social benefits**

The proposed development will meet the rapid growing population in the City of Tshwane and the high rate of unemployment and create job opportunities. Traffic in the area is regulated by stop signs and without improvements to the traffic conditions the development will have an impact. It is thus recommended that all minimal improvements be installed as required by the COT traffic and roads departments.

5. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that sums up the impact that the proposal and its alternatives may have on the environment after the management

and mitigation of impacts have been taken into account with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Proposal: Proposed Mixed-use Development

The identified impacts in both the construction and the operational phase are those usually experienced with urban development. The negative impacts identified, however, are not considered highly significant and with appropriate mitigation can be reduced to a lower significance. The positive impacts are considerable in that the proposed development will provide employment opportunities.

Alternative 1:

None, since the landowners gave consent to the proposed development.

Alternative 2: No – Go (Compulsory)

Not Applicable

This implies that the site be left as is and that no development or alteration be done. If this alternative is pursued the remainder of the site’s existing habitat will be retained. This option has the following drawbacks:

- The potential to provide educational facilities, residential, retail and leisure facilities to surrounding community will be lost
- The proposed site is mostly vacant, which poses a great risk in the possibility of illegal invasion, resulting in un-planned occupation.
- A very viable opportunity for creating jobs (for example maintenance and construction, etc.) and income for the local market will be negated;
- The potential to provide additional housing and the thinking of the local municipality to the population, will be lost
- The remaining undeveloped area will fall further in disrepair and the protection and appropriate management of the ecological significant areas will be negated;
- Given the fact that the site will eventually degenerate further if left unmanaged, it is reasonable to state that the no-go option is less favourable than the proposal.
- The potential to propose gymnasium and banks to surrounding communities will be lost
- The approval will ensure that an EMP be implemented and that the sensitive areas on the site will be managed and that any floral and faunal species which could be hunted illegally be moved to natural habitat and be protected.

6. IMPACT SUMMARY OF THE PROPOSAL OR PREFERRED ALTERNATIVE

Having assessed the significance of impacts of the proposal and alternative(s), please provide an overall summary and reasons for selecting the proposal or preferred alternative.

In accordance with GN No. 982, the Environmental Impact Phase is aimed at identifying and assessing potential impacts caused by the proposed development. The ability to mitigate any of the identified impacts are also addressed and summarised into a working / dynamic Environmental Management Programme (EMP) for consideration by I&APs and ultimately by the GDARD.

Table 7: Proposed Activity: Impact Summary

| | Before Mitigation | After Mitigation |
|--|----------------------------|----------------------------|
| BIOPHYSICAL ENVIRONMENT | | |
| 1.1 Dust/Air pollution - The generation of fugitive dust associated with construction activities & earthworks. | Moderate | Low |
| 2.1 Visual Impacts: Topographical features contribute to the landscape character and sense of place of an area. Visual scarring due to cutting and embankments and areas devoid of vegetation are most obvious when located on elevated areas in the landscape. | Moderate | Low |
| 2.2 Bulk earthworks: Deep cuttings, high embankments, disposal of soil and excavations cause local changes to topography | Moderate | Moderate |
| 3.1 Soil erosion, loss of topsoil, deterioration of soil quality | Moderate | Low |
| 3.2 Soil pollution (due to hydrocarbon spillages) | Moderate | Low |
| 4.1 Degradation, destruction of habitats/ ecosystem and impact on connectivity – classified as a Critical Biodiversity Area (CBA) | High | Moderate |
| 4.2 Impacts on fauna and flora | High | Moderate |
| 5.1 Stormwater flow and drainage- Developments cause the modification of drainage patterns. Stormwater may be concentrated at certain points, increasing the velocity of flow in one area and reducing flow in another. This may contribute to flooding, soil erosion, sedimentation, scouring and channel modification downstream of the development. | Low | Low |
| 5.2 Impact on water quality (due to hydrocarbon spillages) | Moderate | Low |
| SOCIO-ECONOMIC ENVIRONMENT | | |
| 6.1 Noise/ vibration | Low | Low |
| 7.1 Safety and Security | Low | Low |
| 7.2 Employment opportunities | Moderate (Positive) | High (Positive) |
| 8.1 Destruction of paleontological resources | High | Moderate |
| 9.1 Waste | Low | Low |
| 9.2 Existing infrastructure | Low | Low |
| 10.1 Functional design | Low (Positive) | Moderate (Positive) |

7. SPATIAL DEVELOPMENT TOOLS

Indicate the application of any spatial development tool protocols on the proposed development and the outcome thereof.

This application complies with the development principles as stated in Section 7 of Act No. 16 of 2013 (SPLUMA), as follows:

These principles apply throughout the Republic of South Africa. Not all the general principles are usually applicable to a particular case and the applicant contends that the following apply to the application at hand:

Spatial sustainability

It is believed that this application will further the objective of promoting land development in locations that create sustainable human settlements and limit urban sprawl. The proposed development will optimise the use of existing resources (bulk infrastructure and roads).

Efficiency

The principle of efficiency is being promoted this proposed development will promote land development that makes optimum use of existing resources and promote the principle of the sharing of costly infrastructure through the principle of intensifying land uses.

Spatial Resilience

This application seeks to adhere to the principles of flexibility and resilience by promoting land use densification, which directly increase urban resilience.

Good administration

As the proposed land use application is prepared in terms of the provisions of the City of Tshwane Land Use Management By-Law, 2016 read with the Spatial Planning and Land Use Management Act, 2013 the principle of good administration will be adhered to.

The development proposal will therefore be commensurate with the general principles for land development laid down by SPLUMA, as applicable to the present situation.

Refer to **Annexure I1** for the motivating memorandum

8. RECOMMENDATION OF THE PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the Environmental Assessment Practitioner as bound by professional ethical standards and the code of conduct of EAPASA).

| | |
|-----|----|
| YES | NO |
|-----|----|

If “NO”, indicate the aspects that require further assessment before a decision can be made (list the aspects that require further assessment):

Not Applicable

If “YES”, please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

Should the project applicant obtain the necessary environmental authorisation for proposed activities, an Environmental Management Programme (EMPr) must be implemented for the construction phase of the development.

The design, construction and operation of the proposed development must be accordance with the specifications of City of City Tshwane Municipality.

It is recommended that the Proposed Activity is authorized.

The recommendations to include, if the authorization of the Proposed Activity is granted, are amongst others:

General:

- The availability of developable land in an already well-established township such as Zwartkop is extremely rare.
- The applicant agrees that in general terms the ecologically significant areas should be managed in a manner that enhance and improve the ecological functionality as far as possible.
- For the development, the monitoring of the construction site must be carried out by a professionally qualified Environmental Compliance Officer (ECO) with proven expertise in the field to ensure compliance to the Environmental Management Programme (EMPr).
- All mitigation measures listed in the BAR as well as the EMPr must be implemented and adhered to.
- rehabilitated as soon as possible and revegetated with indigenous species.
- The species should be indigenous to the specific area and the composition of the vegetation should reflect the natural vegetation
- The species used in rehabilitation of the proposed development should be indigenous to lessen the impact of exotic plant species on existing fauna and flora systems.
- The protected plant must be protected in situ and it will thus be necessary to adjust the building footprints to avoid any orange listed plant species.
- Specific recommendations by the specialist include:
- Control alien plants and replace with indigenous pioneer species. It is important to note that on this site, alien plant control will be an ongoing effort since seeds from invasive species will continually was downstream.
- Designs should consider soil properties, slopes and runoff energy.
- No activities should take place in the watercourses and associated buffer zone.
- A temporary fence or demarcation must be erected around No-Go Areas outside the proposed works area prior to any construction taking place as part of the contractor planning phase when compiling work method statements to prevent access to the adjacent portions of the watercourse.
- Implement best practice throughout the development and monitored. A rehabilitation plan should be put into action should any degradation be observed as a result from stormwater or sediment input, including erosion or bank instability

Ecology:

- Removing exotic vegetation from the site;
- Retaining large non-invasive trees such as bluegum trees on the edges of the property;
- Systematically removing exotic trees from the stream and allowing indigenous trees to establish;
- Plant indigenous trees in the stream area such as *Acacia karroo* (Sweet Thorn), *Combretum erythrophyllum* (River bushwillow), *Leucosidea sericea* (Ouhout), *Rhamnus prinoides* (Dogwood) and *Salix mucronata* (Wild Willow);
- Retain grassland areas adjacent to riverine woodland areas;

- Should any fauna be encountered on site during development, they must be appropriately relocated into the neighbouring floodplain area. Species that could be encountered include snakes and hedgehogs;
- The Orange listed plant should be removed from the development zone and re-established in the floodplain grassland adjacent to this area;
- The floodplain area must be fenced off before construction starts;
- Berms should be established to prevent silt runoff during the construction phase;
- Impacts associated with vehicle movement, dust and noise should be mitigated according to standards set for these impacts;
- High security fencing between the developable areas of the site and the stream may hinder faunal species to disperse into the stream area. In the early stages of development, as land is cleared, the phasing in of the fencing should be considered;
- A rehabilitation plan should be drawn up for the stream area to ensure effective and systematic removal of exotic trees without causing erosion;
- Before construction starts, construction workers should be educated with regards to littering and animal trapping;
- Both the construction and the operational phases must include storm water management strategies that address potential impacts on the site ecology;
- No unplanned vehicle movement must be allowed in the stream and wetland buffer areas.

Wetland:

Changes in sediment entering and exiting the system impact ratings

- Consider the various methods and equipment available and select whichever method(s) that will have the least impact on watercourses.
- Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area (DWAF, 2005).
- Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover.
- Rehabilitation plans must be submitted and approved for rehabilitation of damage during construction and that plan must be implemented immediately upon completion of construction.
- Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access.
- During the construction phase measures must be put in place to control the flow of excess water so that it does not impact on the surface vegetation.
- Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas.
- Runoff from the construction area must be managed to avoid erosion and pollution problems.
- Implementation of best management practices
- Maintain buffer zones to trap sediments
- Monitoring should be done to ensure that sediment pollution is timeously addressed

Introduction and spread of alien vegetation impact ratings

- Prioritise removal of Category 1 species, according to the CARA legislation eg *Solonum mauritianum* before construction commences or as set out in an Alien Plant Management Plan.
- Treatment methods should be in alignment with the National Working for Water Herbicide policy.

- Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area and returning it where possible afterwards.
- Monitor the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish.
- An ongoing Alien Plant Control Plan should be implemented as part of the maintenance program of the development
- Rehabilitate or revegetate disturbed areas

Loss and disturbance of watercourse habitat and fringe vegetation impact ratings

- The development layout should be excluded from the delineated riparian area and its associated buffer zone. This includes paving and recreational areas.
- Demarcate the watercourse areas and buffer zones to limit disturbance, clearly mark these areas as no-go areas
- Ongoing weed control in buffer zone
- Monitor rehabilitation and the occurrence of erosion twice during the rainy season for at least two years and take immediate corrective action where needed.
- Monitor the establishment of alien invasive species within the areas affected by the construction and take immediate corrective action where invasive species are observed to establish
- Operational activities should not take place within watercourses or buffer zones, nor should edge effects impact on these areas
- Operational activities should not impact on rehabilitated or naturally vegetated areas

Changes in water quality due to foreign materials and increased nutrients impact ratings

- Provision of adequate sanitation facilities located outside of the watercourse/riparian area or its associated buffer zone.
- Implementation of appropriate stormwater management around the excavation to prevent the ingress of run-off into the excavation and to prevent contaminated runoff into the watercourse.
- During decommissioning activities, workers are not allowed to use watercourse and associated buffers as ablution facilities.
- Provision of adequate sanitation facilities located outside of the wetland/riparian area or its associated buffer zone
- The development footprint must be fenced off from the watercourse and no related impacts may be allowed into the watercourse e.g. water runoff from cleaning of equipment, vehicle access etc.
- After construction, the land must be cleared of rubbish, surplus materials, and equipment, and all parts of the land shall be left in a condition as close as possible to that prior to use.
- Maintenance of construction vehicles / equipment should not take place within the watercourse or watercourse buffer.
- Control of waste discharges
- Maintenance of buffer zones to trap sediments with associated toxins
- Ensure that no operational activities impact on the watercourse or buffer area. This includes edge effects.
- Control of waste discharges and do not allow dirty water from operational activities to enter the watercourse
- Ensure that no operational activities impact on the watercourse or buffer area. This includes edge effects.
- Control of waste discharges and do not allow dirty water from operational activities to enter the watercourse

- Regular independent water quality monitoring should form part of operational procedures in order to identify pollution
- Treatment of pollution identified should be prioritized accordingly.

Heritage:

Should archaeological sites or graves be exposed during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.

9. THE NEEDS AND DESIRABILITY OF THE PROPOSED DEVELOPMENT (as per notice 792 of 2012, or the updated version of this guideline)

Need

The Gauteng City Region is characterized by only very moderate densities in world-city terms. The population density of Pretoria is only 2750 people/km². Densification as applied for is a must.

Though cities occupy a small percentage of the earth's surface, their impact on the environment extends beyond their geographic boundaries. Cities that spread out into rural areas are more likely to leave a bigger ecological footprint than denser, more compact cities. Therefore, medium-density mixed housing not only impacts the social aspects of sustainable development, but also the economy and the environment. The Department of Human Settlements currently advocates the pursuit of a more compact form of housing, facilitation of higher densities, mixed-use developments, as well as the integration of different land use as an alternative to strict zoning. Developments which incorporate these principles are considered important in changing the nature of South African cities and contributing to the creation of sustainable human settlements.

Like other city regions worldwide, the province faces rapid urbanization alongside massive immigration to Gauteng from other parts of the country as well as from other parts of the continent and the world. While this poses significant challenges and is putting pressure on social amenities, infrastructure, state resources and services, it also has exciting possibilities in attracting skills and innovation, creating new and viable markets and in making Gauteng a dynamic, diverse innovative and productive urban hub. In South Africa it is said that approximately 55% of the population live in urban areas. Past census figures indicate that the process of urbanization is escalating, and this has been demonstrated most vividly by the 20% increase in the Gauteng population over the last 8 years.

The proposed township is situated on a portion of land in the western section of the Tshwane Metropolitan area. The proposed development is situated adjacent to a major east-west mobility link (Wierda Road) which connects with the N14 Highway, and then also Old Johannesburg Road (a major north-south mobility road) which links to the Ben Schoeman (N1) Freeway, ensuring excellent accessibility.

If approved, the proposed township will create a "new" node on the corner of Wierda Road and Old Johannesburg Road. The proposed township will comprise of a mixture of land uses that compliments each other. These land uses ("Business 2", "Educational" and "Residential 3") will create a "Mixed Use Node" where two mobility spines intersect.

The proposed development will have the following effects on the surrounding community:

- The “new Mixed-Use Node” will not only provide educational facilities but will also supply retail and leisure facilities. As mentioned previously, the application site is mostly vacant, which poses a great risk in the possibility of illegal invasion, resulting in un-planned occupation.
- The development will create temporary job opportunities during the construction phase and temporary and permanent job opportunities during the operational phase. Should the local community does not benefit from these opportunities, it could lead to an influx of people from other areas. Only employing people from the local community could mitigate the potential adverse impact.
- Traffic increase during the construction and operational phases of the development will have an impact on traffic flow and the tranquillity of the area. The impact of additional traffic during the construction phase, especially heavy construction vehicles that can slow traffic down, can be mitigated to a certain extent by not allowing construction vehicles to use public roads during peak traffic times, as well as to avoid construction activities on public roads during peak traffic times. The Traffic Impact Study suggest various road and intersection upgrades which will ensure that traffic generated by the development during operational phase will be effectively handled.

Urban Studies (Dr Dirk Prinsloo), whom specialises in market studies was appointed to conduct a retail study to determine the need for a neighbourhood shopping centre in the area. The study concluded that:

“The potential exists for a neighbourhood / small community centre of 12 000 m² by 2022.”

- The proposed centre will also include a gymnasium, banks, etc., and subsequently the proposed bulk floor area of 12 000 m² is in line with the findings of the retail study. The township establishment process, construction etc. will take at least 2 – 3 years, which would mean that the proposed development will come into the market around the time (2022) indicated in the study.

The proposed density of 85 dwelling units per hectare complies with the following spatial objectives:

- The application site is located next to Wierda Road / Old Johannesburg Road, identified as a High-Density Residential Zone – thus at densities of up to 120 units per hectare.
- Promote the availability of residential and employment opportunities in close proximity to each other (employees at the shopping centre and school can reside in close proximity to their work);
- Contribute towards the correction of historically distorted spatial patterns of settlement in towns by filling the strategically located vacant strips of land between segregated communities, and providing for economic and social integration;
- Optimise the use of existing resources including bulk infrastructure, roads, transportation and social facilities; and
- The provision of a variety and diversity in residential choices.

Desirability of the proposed township

- The application for the development of a mixed-use township is consistent with the Region 4 RSDF. Although the site is earmarked as part of a “Mobility Roads”, where residential densification is mostly encouraged, the RSDF also states that “mixed uses” should be provided at intersections. The site is located on the intersection of two “Mobility Roads”, which makes the development of a small neighbourhood shopping centre and a school very attractive in combination with a higher density residential development.

- The site is in line with Tshwane's Compaction and Densification Strategy, 2005 that promotes in-fill development and densification.
- The proposed township area enjoys excellent accessibility due to its location adjacent to Wierda Road and Old Johannesburg Road that were identified as "mobility spines" in terms of the Regional Spatial Development Framework. These roads link directly to the N14 and N1 Highways respectively. A single access from Wierda Road is proposed for the township. Ingress and egress will be designed and constructed with input and approval from the appointed Traffic Engineer and the Local Authority. As is evident on the lay-out plan, an extensive open space area is provided throughout the proposed development for functional recreational purposes.
- The proposed township includes erven zoned and to be zoned as "Community Facility" and "Business 2" at the Wierda Road / Old Johannesburg Road intersection. This will serve as a node along "Mobility Roads in line with the Region 4 RSDF.
- The proposed development of the subject properties further constitutes infill development and will combat urban sprawl as it constitutes the development of land that is currently mostly vacant and not used for any "Agricultural" purpose. The development of the subject properties will not only contribute towards the economy of the City of Tshwane and the creation of additional employment opportunities but will also extend the income base of the Municipality. The income that will be generated by the Local Authority via rates and taxes, payment for services, etc. will have a multiplier effect on the economic growth within the municipal area.

The proposed development is **co-ordinated and harmonious** and may have impact or promote to the following in the surrounding area:

- Demographic impacts include the number of new permanent residents or seasonal residents associated with the development, the density and distribution of people and any changes in the composition of the population, (e.g., age, gender, ethnicity, wealth, income, occupational characteristics, educational level, health status).
- Development invites growth in new jobs in a community and draws new workers and their families into the community, either as permanent or temporary residents. When this occurs, the incoming population affects the social environment in various ways including increased demand for housing and social services (e.g., health care, day care, education, recreational facilities).
- The proposed township will attract a variety of new developments including both freestanding stores and a neighbourhood shopping centre. These developments provide a community with products, services and conveniences important to the quality of life of local residents.
- Development directly influences changes in employment and income opportunities in communities. Such changes may be more or less temporary (e.g., construction projects, or seasonal employment) or may constitute a permanent change in the employment and income profile of the community should the development project bring long-term job opportunities for community residents (e.g., establishment of a light industrial, manufacturing, or commercial establishment).
- Impacts on the aesthetic quality of a community are often the most obvious sign of development and have a significant impact on the social well-being of the community and resident perceptions about the quality of life in the community.

Reasonableness for the proposed township

Factors for determining reasonableness include:

- Size of area and its characteristics:

- Relation to comprehensive plan
- Degree of change in uses allowed
- Relative harm and benefit to owner, neighbours, and the community

With regards to the factors mentioned above, the following confirm the reasonableness of the proposed township:

- The proposed township will ensure that a township development of a feasible size, together with the required supporting facilities such as schools, shops, etc. can be developed on the site. The proposed neighbourhood development is in line with not only the future development proposals for the area, but also with current development trends:
- In terms of the Region 4 RSDF, the application site is situated along two “Mobility Roads” which include higher density residential development, and mixed land uses at intersections.
- Residential towns are in the process of being established / developed around the site.
- Benefit to the owner will include the increase of his property value, while the advantages of the proposed development do not only include the provision of much needed job opportunities but will also contribute to the overall aesthetics and property values of the surrounding area. The proposed development will have the following effects on the surrounding community:
- The development will create temporary job opportunities during the construction phase and temporary and permanent job opportunities during the operational phase. Should the local community not benefit from these opportunities, it could lead to an influx of people from other areas. Only employing people from the local community could mitigate the potential adverse impact.
- Traffic increase during the construction and operational phases of the development will have an impact on traffic flow and the tranquillity of the area. The impact of additional traffic during the construction phase, especially heavy

construction vehicles that can slow traffic down, can be mitigated to a certain extent by not allowing construction vehicles to use public roads during peak traffic times, as well as to avoid construction activities on public roads during peak traffic times. The Traffic Impact Study suggest various road and intersection upgrades which will ensure that traffic generated by the development during operational phase will be effectively handled.

10. THE PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED (consider when the activity is expected to be concluded)

10 years.

11. ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR) (must include post construction monitoring requirements and when these will be concluded.)

If the EAP answers “Yes” to Point 7 above, then an EMPr is to be attached to this report as an Appendix

EMPr attached

YES

SECTION F: APPENDIXES

The following appendixes must be attached as appropriate (this list is inclusive, but not exhaustive):

It is required that if more than one item is enclosed that a table of contents is included in the appendix

Annexure A1: Location Map
Annexure A2: Township layout Plan
Annexure B: Photographs
Annexure C: Not Applicable
Annexure D: Route position information – Not Applicable
Annexure E: Public participation information
Annexure F: Township Name Approval
Annexure G: Specialist reports
Annexure G1: Geotechnical Report
Annexure G2: Ecological Impact Assessment
Annexure G3: Wetland Impact Assessment
Annexure G4: Paleontological Impact Assessment
Annexure G5: Cultural Heritage Impact Assessment
Annexure H: (EMPr)
Annexure I1: Township Memorandum
Annexure I2: Electricity Confirmation
Annexure I3: Services Report
Annexure I3a: GLS Report
Annexure I4: Floodlines Study Report
Annexure I5: Retail Study
Annexure I6: Traffic Impact Assessment
Annexure I7: EAP CV
Annexure I8: Declaration by EAP

CHECKLIST

To ensure that all information that the Department needs to be able to process this application, please check that:

- Where requested, supporting documentation has been attached;
- All relevant sections of the form have been complete