GAUTENG PROVINCE
AGRICULTURE AND RURAL DEVELOPMENT
REPUBLIC OF SOUTH AFRICA

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:	**GAUT 002/17-18/E2018**					
Application Number:						
Date Received:						

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? **No**

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 report is a Draft report. Comments from State Departments and the Competent Authority will be included in the Final Report.

SECTION A: ACTIVITY INFORMATION

1. PROPOSAL OR DEVELOPMENT DESCRIPTION

1.1 Project Title (must be the same name as per application form):

Proposed establishment of a rural private school o be known as SABIS School and related infrastructure on Portion 20 of the Farm Zwartkoppies 364 J.R. Refer to Figure 1 for a location Map.

Figure 1: Google Earth Map showing the location of the proposed development

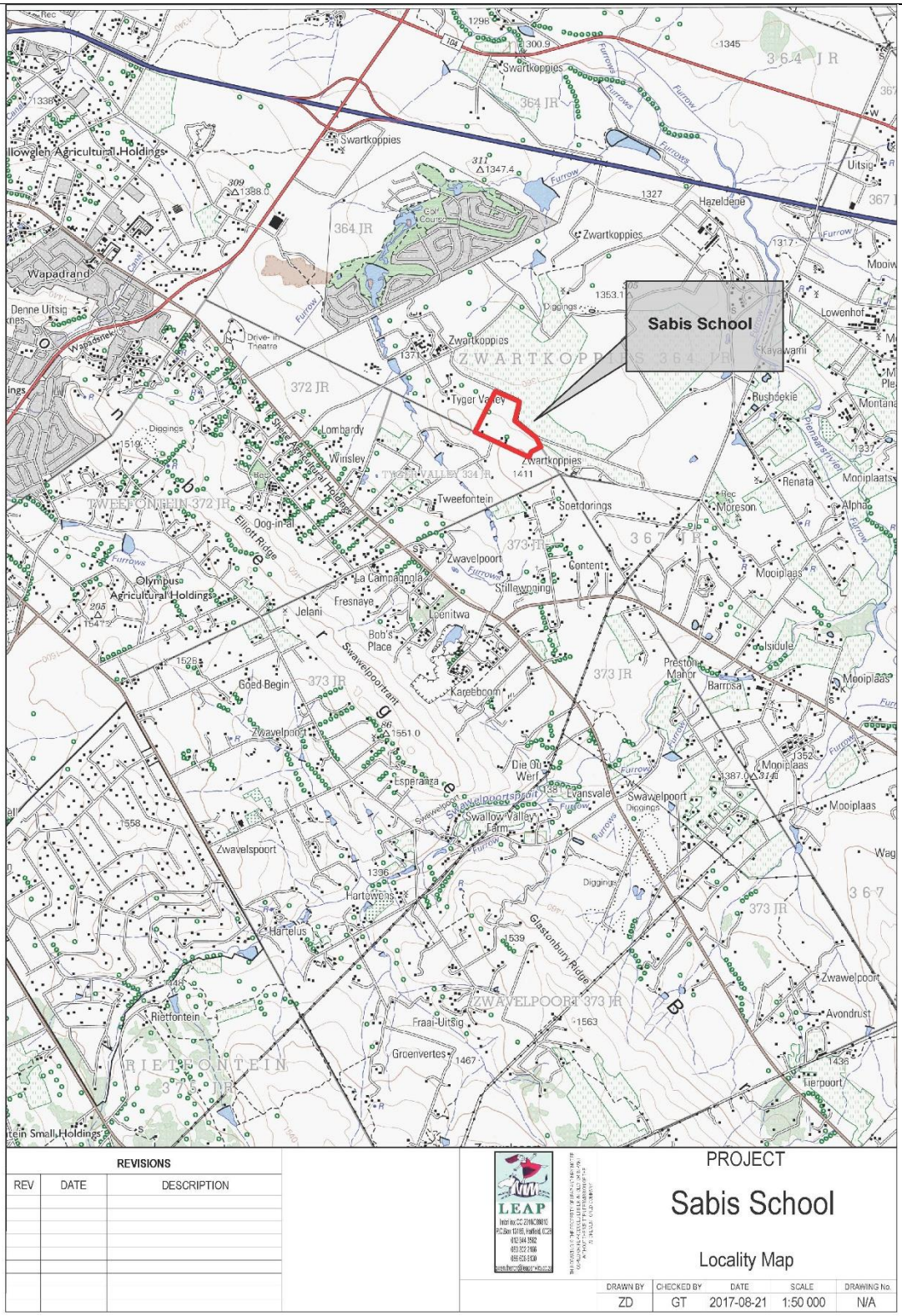


Figure 2: Locality Map

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**

Indicate the number of the relevant Government Notice:	Activity No (s) (relevant notice): e.g. Listing notices 1, 2 or 3	Describe each listed activity as per the wording in the listing notices:
GN R 983 of 8 December 2014 as amended by GNR 327, 7 April 2017	Listing Notice 1 Activity 9	The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or storm water – (i). With an internal diameter of 0.36 metres or more; or (ii). With a peak throughput of 120 liters per second or more Excluding where – (a). Such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve, or (b). Where such development will occur within an urban area.
GN R 983 of 8 December 2014 as amended by GNR 327, 7 April 2017	Listing Notice 1 Activity 24	The development of a road— (ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres;
GN R 983 of 8 December 2014 as amended by GNR 327, 7 April 2017	Listing Notice 1 Activity 27	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation,
GN R 983 of 8 December 2014 as amended by GNR 327, 7 April 2017	Listing Notice 1 Activity 45	The expansion of infrastructure for the bulk transportation of water or storm water where the existing infrastructure— (i) has an internal diameter of 0,36 metres or more; or (ii) has a peak throughput of 120 litres per second or more; and (a) where the facility or infrastructure is expanded by more than 1 000 metres in length; or
GN R 983 of 8 December 2014 as amended by GNR 327, 7 April 2017	Listing Notice 1 Activity 46	The expansion and related operation of infrastructure for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes where the existing infrastructure— (i) has an internal diameter of 0,36 metres or more; or (ii) has a peak throughput of 120 litres per second or more; and (a) where the facility or infrastructure is expanded by more than 1 000 metres in length; or (b) where the throughput capacity of the facility or infrastructure will be increased by 10% or more;
GN R 985 of 8 December 2014 as amended by GN. R 324, 7 April 2017	Listing Notice 3 Activity 4	The development of a road wider than 4 metres with a reserve less than 13,5 metres. **(c) Gauteng** iv. Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans; vi. Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority;

GN R 985 of 8 December 2014 as amended by GN. R 324, 7 April 2017	Listing Notice 3 Activity 12	The clearance of an area of 300 square metres or more of indigenous vegetation **Gauteng** ii. Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans;

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

Not Applicable

If yes, have you applied for the authorisation(s)?	YES	**NO**
If yes, have you received approval(s)? (attach in appropriate appendix)	YES	**NO**

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:**
Constitution of the Republic of South Africa (Act No 108 of 1990)	Government of South Africa	18 December 1996
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
GN Regulation 983 to 986 Dec 2014 as amended and promulgated under Chapter 5 of the National Environmental Management Act (NEMA, Act 107 of 1998) in Government Gazette 40772 on 7 April 2017. Listed activities: 1. GNR 983 amended by GN R 327: Listing Notice 1: Activity 9 2. GNR 983 amended by GN R 327: Listing Notice 1: Activity 24	Gauteng Department of Agriculture and Rural Development (GDARD)	7 April 2017

3. GNR 983 amended by GN R 327: Listing Notice 1: Activity 27 4. GNR 983 amended by GN R 327: Listing Notice 1: Activity 45 5. GNR 983 amended by GN R 327: Listing Notice 1: Activity 46 6. GNR 985 amended by GN R 324: Listing Notice 3: Activity 4 7. GNR 985 amended by GN R 324: Listing Notice 3: Activity 12		
National Water Act (Act No 36 of 1998)	Department of Water and Sanitation (DWS)	26 August 1998
National Heritage Resources Act No 25 of 1999 (Act No 25 of 1999 as amended)	South African Heritage Resources Agency (SAHRA)	28 April 1999
The Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983)	National -Department of Agriculture Forestry and Fisheries (DAFF)	27 April 1983
Gauteng Environmental Management Framework	Gauteng DARD	2016
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 vi. EIA Listed Activities and Timelines (2014 and 2017)	Gauteng DARD	Various dates
Spatial Planning and Land Use Management Act, 2013 • The National Development Framework • Gauteng Spatial Development Framework • City of Tshwane Spatial Development Framework • Regional Spatial Development Framework • Section 7 of the Spatial Planning and Land Use Management Act, 2013 • City of Tshwane Land Use Management By-Law, 2016 City of Tshwane Town Planning Scheme, 2008 (revised 2014)	City of Tshwane	Various dates

Description of compliance with the relevant legislation, policy or guidelines:

Legislation, policy of guideline	Description of compliance
Constitution of the Republic of South Africa (Act No 108 of 1990)	• Obligation to ensure that the proposed development will not result in pollution and ecological degradation; and

Legislation, policy of guideline	Description of compliance
	• 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).	The Amendments to the EIA Regulations, were published 7 on April 2017 in terms of the NEMA and came into effect on 7 April 2017. In terms of these EIA Regulations, the following listed activities within Government Notice R. 327 and R 985 are triggered by the proposed development, thereby requiring environmental authorisation from the GDARD. Government Notice 983 to 986 as amended by R. 327, R. 325 and R. 324, lists construction, transformation, extraction, exploration and expansion of facilities or activities that require environmental authorisation prior to commencement of construction. A distinction is made between Listing Notices 1 and 3 activities, which require a Basic Assessment, and Listing Notice 2 activities, which require a full EIA (Scoping followed by Impact Assessment). A Basic Assessment is generally intended for smaller scale activities, or activities whose impacts are well understood and can be easily managed. A Full EIA is required for Listing Notice 2 activities which are activities that due to their nature and/or extent are likely to have significant impacts that cannot be easily predicted. Listing 2 activities are therefore higher risk activities that potentially cause higher levels of pollution, waste and environmental degradation. The proposed project requires a basic assessment in terms of R. 327 and 324.
National Water Act (Act No 36 of 1998)	All nearby waterbodies were scanned but Water Use License Application is envisioned (i.e. There is no waterbodies near the proposed site)

Legislation, policy of guideline	Description of compliance
National Heritage Resources Act No 25 of 1999 (Act No 25 of 1999 as amended)	A Phase 1 Heritage Impact Assessment and Paleontological Assessment have been undertaken and submitted to PHRAG for comment.
Gauteng Environmental Management Framework	The land falls within zone 3 and 4: • **Zone 1 (Urban Development Zone):** Streamline urban development activities within the zone. Zone 1 promotes development infill, densification and concentration of urban development. Development in this area must be sustainable in respect to the capacity of the environment. • **Zone 2: (High Control Zone):** Special control zones are sensitive areas outside the urban development zone. These areas are sensitive to development activities and in several cases also have specific values that need to be protected. • CBAs (Irreplaceable and Important areas) and ESAs outside the urban development zone as defined in C-Plan 3.3; • Rivers (including a 30m buffer on each side) and currently undeveloped ridges that must be conserved; • Areas that are sensitive (as determined in the sensitivity assessment); and • Protected areas. No listed activities may be excluded from environmental assessment requirements in this zone and further activities may be added where necessary to protect the environment in this zone. Additional requirements (guidelines, precinct plans, etc.) to ensure the proper development of identified areas in this zone, in a manner that will enhance their potential for conservation, tourism and recreation may be introduced. In this instance: the proposed development is in line with the directives of the Zone. Conservation, tourism and recreation is proposed. • **Zone 4 (Normal Control Zone):** Dominated by agricultural uses outside the urban development zone as defined in the Gauteng Spatial Development Framework.

Legislation, policy of guideline	Description of compliance
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 vi. EIA Listed Activities and Timelines (January 2015) vii. Section 24G and Similar Listings (January 2015)	Guidelines have informed this Application for Environmental Authorisation procedures and project / BAR.
Spatial Planning and Land Use Management Act, 2013 i. The National Development Framework ii. Gauteng Spatial Development Framework iii. City of Tshwane Spatial Development Framework iv. Regional Spatial Development Framework v. Section 7 of the Spatial Planning and Land Use Management Act, 2013 vi. City of Tshwane Land Use Management By-Law, 2016 vii. City of Tshwane Town Planning Scheme, 2008 (revised 2014)	Guidelines have informed this Application for Environmental Authorisation procedures and project / BAR

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.

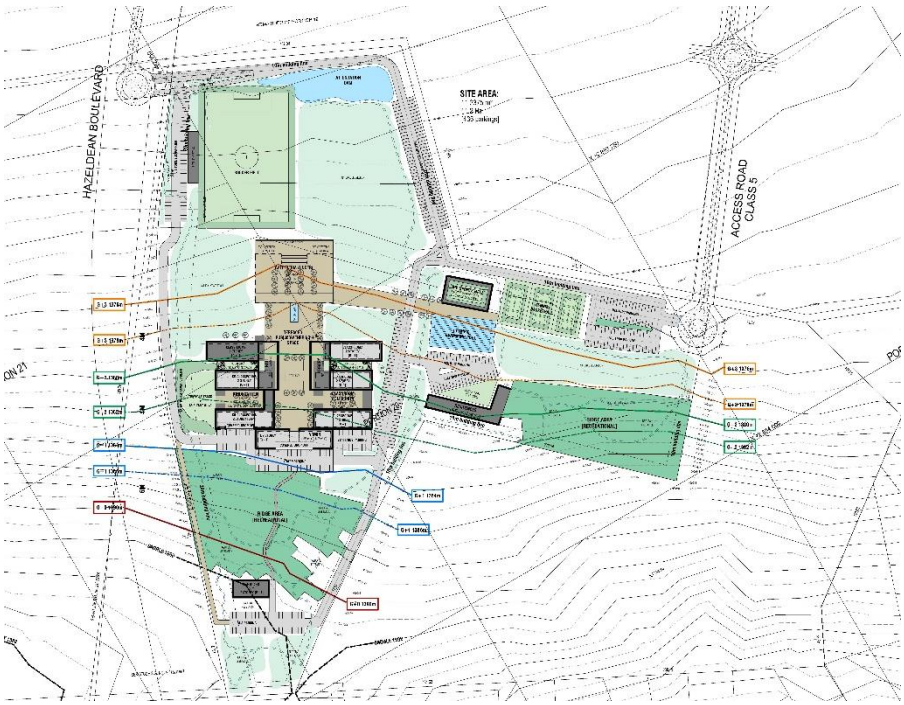
The no-go option must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. **Do not** include the no go option into the alternative table below.

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

Proposed Activity: Proposed establishment of a rural private school o be known as SABIS School and related infrastructure on Portion 20 of the Farm Zwartkoppies 364 J.R. (Preferred Alternative)

Provide a description of the alternatives considered

No.	Alternative Type - Activity	Description
1	**PROPOSED ACTIVITY:**	Proposed establishment of a rural private school o be known as SABIS School and related infrastructure on Portion 20 of the Farm Zwartkoppies 364 J.R. within the City of Tshwane Metropolitan Municipality, Gauteng. The subject property is located east of the City of Tshwane Metropolitan Municipality's boundary in Region 6 – North of the M6 (Graham Road) and West of the 223 (**Figure 1** and **2** above). The site measures approximately 21,4113 hectares, however only an area of 11,5242 hectares will be utilized for the proposed development. Refer to Figure 3 below for the layout of the proposed school.  **Figure 3: Proposed School layout**

No.	**Alternative Type** - Activity	**Description**
		There is substantial pressure for mainly residential development in this region, which in turn creates a demand for educational, business and other community facilities in the area. The Educational Department has not prioritized this area for public schools, therefore there is a gap in the market for private schools to fill. The school which is an international SABIS school will cater for about 800 learners which include pre-primary, primary and secondary learners. The subject property is located in a high-income area comprising of mainly of large plots, some of which have already been subdivided and some which are now being developed for residential uses and residential estates. The established houses are of a high standard. The immediate area is not well served by shops and community facilities. The subject property is located in the very fast developing eastern parts of Tshwane where there is a strong demand form more schools. A hostel will be provided at the school, which will draw some of its learners from far and not only from the adjoining residential areas. The school is compatible with the surrounding residential areas and should have no detrimental effect on the surrounding land uses. The school will also ensure optimum utilization of the site without defeating any of the primary considerations in respect of compatibility, environmental issues, health, safety, orderliness and well-being of the community it serves.

No.	**Alternative Type** - Activity	**Description**
		 **Figure 3: Location map indicating the property boundary in red and the development area in green**
2	**ALTERNATIVES 1: Light density residential development**	The introduction of a High income residential development, which will include residential houses and ancillary uses only, although suited to the general functioning and land uses of the surrounding urban environment. Low density housing in the area would be an alternative as there is a growing desire by people to escape the busy pace of the city and experience the fresh air and unadulterated sunshine of the countryside, whilst being able to work in urban centres. The subject property is located in a high-income area comprising of mainly of large plots, some of which have already been subdivided and some which are now being developed for residential uses and residential estates. The established houses are of a high standard. Low density residential uses are considered unsuitable due to the following reasons: • Over-saturation of a single-use activity • The housing shortage in the City of Tshwane will not be addressed as no additional housing facilities will be provided. • Inappropriateness to the surrounding residential activities and therefore does not respond to the immediate context and surrounding land-uses • Lack of diversity and vibrancy associated with a residential development and related use. • Over-saturation of residential areas in the surrounding areas of the proposed development has resulted in a shortage of facilities (shops and community facilities including schools) to serve the immediate community of the development area.

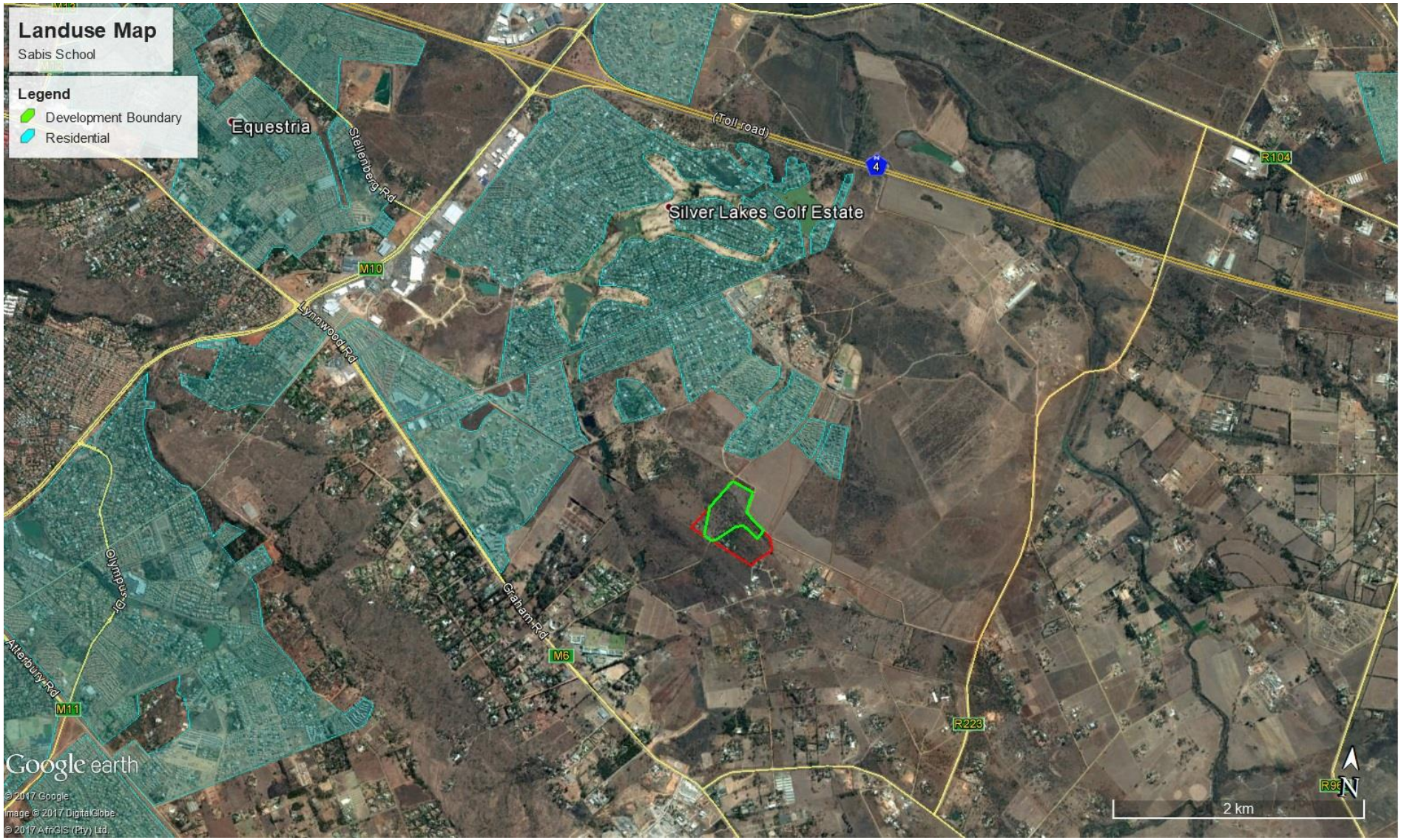


Figure 4: Land – use map suitable to low density residential area

No.	**Alternative type**, - Location alternatives	**Description**
1	**Proposal - Infill development location (preferred)**	This is the most preferred location type due to the balance achievable between social, environmental and economic requirements: • The land belongs to the Applicant • Aligns to the prerequisites of the City of Tshwane Metropolitan Municipality SDF • 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.
3	Alternative 2 – Suburban location	Not socially, environmentally or economically feasible due to the following: • 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 with regard to the mixed-use nodal development • Availability of land at an affordable cost minimal

No.	**Alternative type**, either alternative: site on property, properties, activity, design, technology, operational or other (provide details of "other")	**Description**
1	**Proposal Technology**	Standard construction equipment will be used during the construction phase. The Tshwane 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: • 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. The Tshwane 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: • Energy efficient light bulbs • Solar heating units, • Low flow water taps • Use local labour • Use local materials
3	Alternative 2	No technology alternatives required

Additional Information on the proposed development

It is the intention of SONSPROP (Pty) Ltd (the Applicant and land owner) to establish a private school with related infrastructure to be known as SABIS School on Portion 20 of the Farm Zwartkoppies 364 J.R. within the City of Tshwane Metropolitan Municipality, Gauteng. Refer to the site development attached as **Annexure A**.

1. Proposed development

The proposed development will entail the establishment and operating of a private school on the proposed site. The proposed development will comprise of a number of blocks of classrooms, with communal ablutions, sports facilities (including sports fields for several sports activities) and subservient activities (including but not limited to administration offices, a hall, cafeteria / tuckshop, storage facilities, staff / caretaker accommodation, student accommodation the form of hostels and playing fields as well as parking for staff and parents.

The school which is an international SABIS school intends on doing a phased development that will cater for approximately 800 learners in phase 1 and 2500 learners in phase 2 which will include pre-primary, primary and secondary school learners.

The total floor area shall not exceed 15 000 square metres which gives a Floor Area Ratio (FAR) of 0,14.

The height shall be restricted to ground floor plus 2 storeys with a further provision that no building shall protrude past the saddle contour by more than 4 metres.

2. Associated Infrastructure

Project engineers have developed the following engineering services proposals:

2.1. Electrical Supply

- The proposed development is situated within the municipal jurisdiction of the City of Tshwane.
- The project site falls within the supply area of the existing Wapadrand Primary Substation. (132/11 kV), fitted with 4x35 MVA transformers.
- The future Ridge road satellite substation will service this proposed development. Feeder cables from Wapadrand Primary Substation have already been installed up to T4 switches where the statelite substation will be built.
- At present the 11kV supply to the development will be picked up at the existing BMK that supplies the Retreat and installed along the proposed roads (in road reserve) to the site.

The authorised capacity of the rezoning is calculated below:

Table 1: Calculations of authorized capacity

Zoning	Area (ha)	FAR/Density/Minimum erf size	No. of erven	No. of units/GLA	Factor kVA/100m_2	Total kVA
"Special" for education etc	11,002		1 Erven	15000m	3.5	52
Total kVA						525 kVA

2.2. Access

There are currently no existing municipal roads that provide direct access to the development site. Access to the development will be provided off Ridge Road. The implementation scenarios of new sections of the road will be determined by the timing of developments on Tijger Vallei Extension 46, the property on the north-east border of the propsed SABIS School development site.

If the SABIS School is developed before Tijger Vallei Extension 46, the school will gain access to the existing road network via a newly constructed section of Hazeldean Boulevard between Ridge Road and the school's access road to the south of the future Hazeldean Boulevard/Lipizzaaner Road intersection (**Figure 5** below).

If SABIS School is developed after Tijger Vallei Extension 46, the school will get access via the following new road sections that need to be implemented by Extension 46 in order to get access to their development (indicated as the Proposed Access Road in **Figure 5** below):

- A section of Hazeldean Boulevard between Ridge Road and the future Hazeldean Booulevard/Lipizzaner Road intersection;
- A section of Lipizzaner Road between Hazeldean Boulevard and a Class 4 or Class 5 access road (named Road A for the purpose for this report);
- Road A between Lipizzaner Road and Portion 20, which runs between Erf 1 and Erf 2 of Extension 46. The school will implement the remaining section of this road up to Portion 20 from the access to the development on Tijger Vallei Extension 46.

The section of Hazeldean Boulevard between the Hazeldean Boulevard/Lipizzaner Road intersection and the school's access on Hazeldean Boulevard will not be implemented in the scenario where Tijger Vallei Extension 46 is developed before the school. In this scenario, the school will apply for a marginal access off Hazeldean Boulevard when the road is completed up to Lynnwood Road.

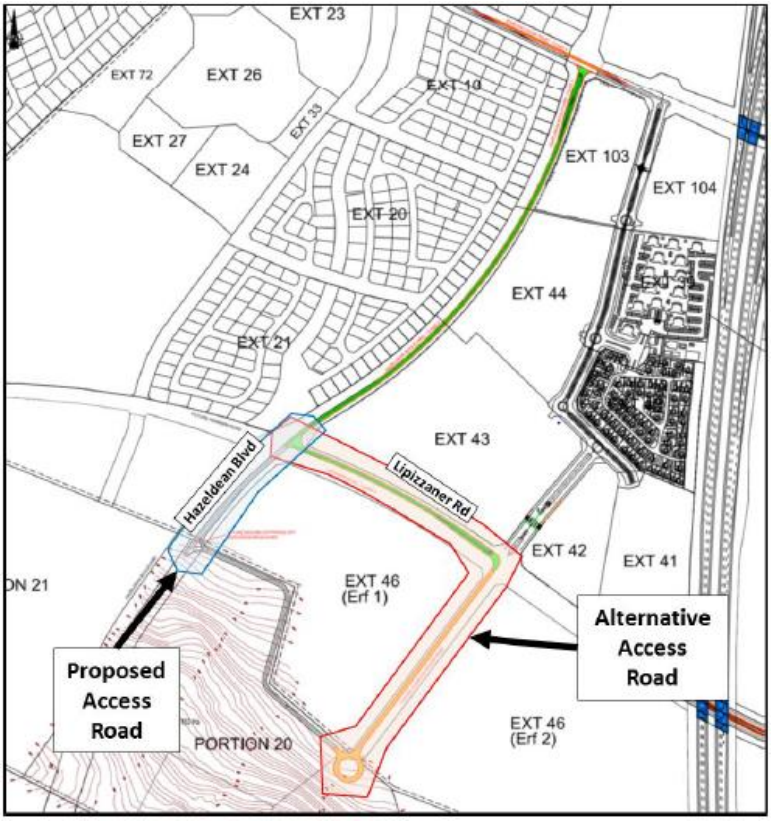


Figure 5 Access to the proposed SABIS School development

- **Non-Motorized Transportation**

Provision for non-motorized transportation (NMT) users will be made according to City of Tshwane policy and guidelines (City of Tshwane, 2015). A minimum paved sidewalk width of 1.8m is required along both directions of travel of Urban Distributors and Collectors, such as Hazeldean Boulevard and Lipizzaner Road.

- **Public Transport**

This study area is not currently serviced by any scheduled public transport service. The City of Tshwane does however plan to implement a Bus Rapid Transit (BRT) service in the area. The proposed route for the BRT service along future Hazeldean Boulevard and future Lipizzaner Road is shown in **Figure 4** above.

2.3. Water supply

The proposed school site falls on the north-western outskirts of the Gastonbury Reservoir Zone.

A 500mm water pipeline is located along the southern and western boundaries of the school which is a direct connection from the Rand Water H26 Bronberg (East) pipeline. This 500mm pipeline will in future be used as a bulk feeder main to the Zwartkoppies Reservoir site located directly south of the school.

Although the school is located within the Gastonbury Reservoir Zone the civil engineers propose that it be included within the Zwartkoppies Reservoir Zone. The Zwartkoppies Reservoir is not yet constructed and would result in an unfeasible project should the proposed school have to construct the reservoir now. It is proposed that a temporary direct connection be provided to the 500mm pipeline located along the southern and western boundaries.

Based on the topography of the school site, even though the PRV setting on the southern boundary is only 1 bar, sufficient pressure will be obtained at the relevant connection points.

2.4. Sanitation

An existing outfall sewer is located within Tijger Valley X21 to the north of SABIS School which gravitates north towards the Baviaanspoort WWTP.

The topography of the site allows the internal sewer reticulation to gravitate to the north-western corner of SABIS School site. The external outfall sewer could be constructed from this point along eastern side of Hazeldean Boulevard up to the intersection with Ferreira Road. At the intersection, the outfall sewer could cross to the west connect with the existing outfall sewer located with Tijger Valley X21.

The outfall sewer will be sized to take into consideration the higher lying developments gravitating towards the proposed outfall sewer as well as Tijger Valley X46.

2.5. Stormwater

The natural drainage pattern of the site is to the north-western corner of SABIS School.

Two major systems that will be able to accommodate the 1:20 year return storm will be constructed in Hazeldean Boulevard and Ferreira Road to connect into one another at the intersection of Hazeldean Boulevard and Ferreira Road to discharge into the existing channel within Tijger Valley X21. The new systems will form part of the external upgrades.

It is the intention to drain Tijger Valley X46 into the new external systems in the Hazeldean Boulevard and Ferreira Road reserves. This new stormwater systems will be suitably sized to accommodate the overland stormwater run-off from the Hazeldean Boulevard and Ferreira Road, in addition to the post development 1:20 year return storm from SABIS School and higher lying developments as required by the City of Tshwane. This new system will discharge into the existing drainage channel constructed within the Tijger Valley X21 draining the north.

No-Go Alternative

This option assumes that a conservative 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.

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

Not applicable

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 environmental (landscaping, parking, etc.) and the building footprint)***	Approximately 11,5242ha
Alternatives:	
Alternative 1 (if any)	11,5242ha
Alternative 2 (if any)	n/a

Ha / m^2

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)	
Alternative 2 (if any)	n/a

Ha/m^2

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:

There are currently no existing municipal roads that provide direct access to the development site. Access to the development will be provided off Ridge Road. The implementation scenarios of new sections of road will be determined by the timing of the developments on Tijger Vallei Extension 46, the property on the north-east border of the proposed SABIS School development site (see **Figure 5** above).

If the SABIS School is developed before Tijger Vallei Extension 46, the school will gain access to the existing road network via a newly constructed section of Hazeldean Boulevard between Ridge Road and the school's access road to the south of the future Hazeldean Boulevard/Lipizzaner Road intersection (indicated as the Proposed Access Road in **Figure 5** above).

If the SABIS School is developed after Tijger Vallei Extension 46, the school will get access via the following new road sections that need to be implemented by Extension 46 in order to get access to their development (indicated as the Alternative Access Road in **Figure 5** above):

- A section of Hazeldean Boulevard between Ridge Road and the future Hazeldean Boulevard/Lipizzaner Road intersection;
- A section of Lipizzaner Road between Hazeldean Boulevard and a Class 4 or 5 access road (named Road A for the purpose of this study);
- Road A between Lipizzaner Road and Portion 20, which runs between Erf 1 and Erf 2 of Extension 46. The school will implement the remaining section of this road up to Portion 20 from the access to the development on Tijger Vallei Extension 46.

The section of Hazeldean Boulevard beween the Hazeldean Boulevard/Lipizzaner Road intersection and the school's access on Hazeldean Boulevard will not be implemented in the scenario where Tijger Vallei Extension 46 is developed before the school. In this scenario the school will apply for a marginal access off Hazeldean Boulevard when the road is completed up to Lynnwood Road.

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

Describe the type of access road planned:

Not applicable

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 for the Site Development Plan

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 E

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

Facility illustrations not applicable - Refer to Annexure A for Proposed Site Development Plan

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 alterative 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 east of the City of Tshwane Metropolitan Municipality's boundary in Region 6 – North of the M6 (Graham Road) and West of the 223. On Portion 20 of the Farm Zwartkoppies 364 J.R.

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:	**Latitude (S):**	**Longitude (E):**
1. Project Proposal	25°47'26.66"S	28° 22'45.12"E
2. Alternative 1	As above	As above

In the case of linear activities:

Alternative:	**Latitude (S):**	**Longitude (E):**
• Starting point of the activity	n/a	n/a
• Middle point of the activity	n/a	n/a
• End point of the activity	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 **n/a**

The 21digit Surveyor General code of each cadastral land parcel

Portion 20 of the Farm Zwartkoppies 364 JR	T	O	J	R	0	0	0	0	0	0	0	0	0	3	6	4	0	0	0	2	0

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**

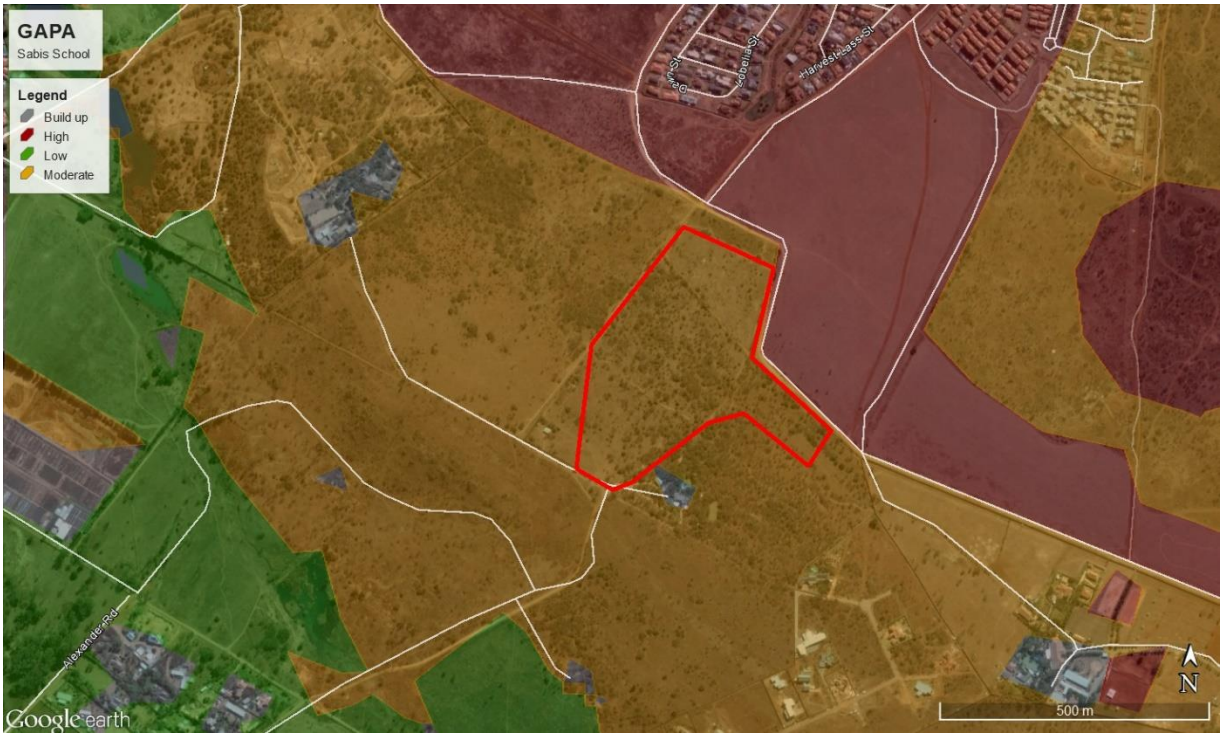


Figure 6: Gauteng Agricultural Potential Atlas (Source: GDARD)

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 % = 0	**Natural veld with scattered aliens** **% = 60**	Natural veld with heavy alien infestation % = 0	Veld dominated by alien species % = 0	**Landscaped (vegetation)** **% = 20**
Sport field % = 0	Old Cultivated land % = 0	Paved surface (hard landscaping) % = 0	**Building or other structure** **% = 20**	Bare soil % = 0

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.

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:

Not Applicable

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:

According to GDARD' s C-plan 3 (**Figure 5** below) there are important features present on the site. There are however, no ecological support areas, irreplaceable areas, or Protected Areas.

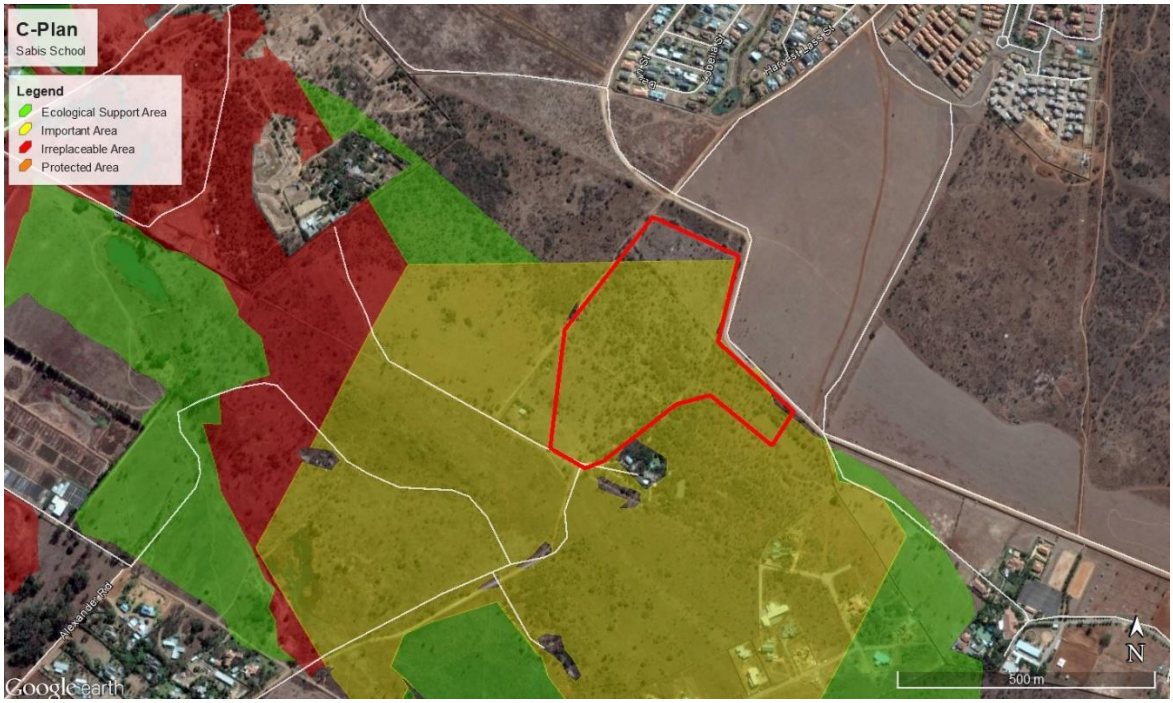


Figure 7: Conservation Plan Version 3 (Source GDARD)

Varying degrees of natural vegetation structures representative of the natural vegetation types occur throughout the proposed development site due to mixed historical use of the property.

The north-western area where the footprint of the school infrastructure is proposed, has been historically used as paddocks for horses. The woody elements within this area were also historically removed, presumably in an effort to improve grazing value or as a safety factor for the horses. Horses have since been removed from the property, although some cattle remain. Woody elements have since actively recruited within this area, but the vegetation is dominated by exotic and pioneering species. Limited vegetation features representative of the natural vegetation type (Marikana Thornveld) remain within this area.

The remainder of the property has an association with rocky ridge habitat, with Andesite Mountain Bushveld being the most prominent vegetation unit. Although much of the natural vegetation elements remain, this area has also suffered some degradation. Isolated areas within this unit have suffered disturbances and, as a result, are overridden with exotic species.

Was a specialist consulted to assist with completing this section	**YES**	NO

If yes complete specialist details

Name of the specialist:	Dr M Ross		
Qualification(s) of the specialist:	Pr Sci Nat (Ecological Sciences) 400061/09 MSc (Aquatic Health), RAU; PhD (Aquatic Health), UJ.		
Postal address:	P.O. Box 369 Wendywood		
Postal code:	2144		
Telephone:	-	Cell:	082 293 5752
E-mail:	mathew@enviross.co.za	Fax:	-

Are any further specialist studies recommended by the specialist?	YES	**NO**
If YES, specify:		
If YES, is such a report(s) attached?	YES	**NO**

If YES list the specialist reports attached below

Annexure G1: Geotechnical Assessment Annexure G2: Ecological (Biodiversity) Assessment Annexure G3: Heritage Impact Assessment Annexure G4: Paleontological Assessment

Signature of specialist: _____ Date:

Please note: If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated.

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):				

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

1/17	**1**	**9**	**1**	**1**
1	**1**	**1**	**1**	**1**
8/17	**1**		**1**	**8**
8	**1**	**1**	**8/17**	**8**
1	**1**	**1**	**8**	**8**

WEST **EAST**

SOUTH

= Site

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		

Annexure G1: Geotechnical Assessment
Annexure G2: Ecological (Biodiversity) Assessment
Annexure G3: Heritage Impact Assessment
Annexure G4: Paleontological Assessment

1. Geotechnical Assessment

1.1. Geology

- **Regional Geology**

According to regional geological information, the majority of the study area is underlain by the Silverton Formation (Pretoria Group, Transvaal Supergroup). Bedrock material consists largely of shale in this Formation. In addition, two diabase dykes are inferred on or adjacent to the site.

- **Site Geology**

The profiles and bedrock encountered in trial holes and as outcrop suggest that diabase materials may have been partially or completely weathered away from this site. At numerous occasions residual materials suggest that diabase overlay the shale, causing it to be baked by the heat contact metamorphism; however, the diabase itself has since that time been weathered, leaving only residual materials to overlie baked shale bedrock. Considering the site findings, it is possible that the ridge excluded from the development could constitute the original diabase dyke and that the scenario described above formed by lateral flows (i.e. a sill type structure).

The result of the geological complexity has another implication for the development. A number of trial holes revealed baked shale bedrock (which was formed by contact metamorphism with the diabase); however; the baked shale was relatively thin (suggesting a thin diabase intrusion took place and/or very rapid cooling of the diabase magma). As a result of this, trial holes on numerous occasions revealed that once the thin shale horizon was penetrated (i.e. excavated), residual or completely weathered shale was found at depth. This is of particular concern, because in such a scenario the baked shale material encountered will therefore not necessarily constitute competent bedrock suitable for founding.

1.2. Soil Profiles

Prior to discussing the geotechnical zoning of the land, it is important to distinguish between the different materials present on site. The distribution of the materials is summarised in Table 2. The materials encountered can be summarised as follows:

Table 2: Distribution of soil materials

Material	Trial Holes	Depth Range (mm)
Colluvium	1 - 10, 12 - 15	100-1100
Residual Diabase 1	1 - 8	300 - 1800
Residual Diabase 2	6	900
Residual Shale	1, 2, 8, 10 - 14	300 - 2100
Diabase Bedrock	4, (6), 13	N/A
Shale Bedrock	9 – 12, 15	N/A

- **Colluvium:** A surface horizon of colluvial soil covered the majority of the site, but was not encountered in trial hole eleven. The horizon was mostly of surficial distribution and consisted of dark brown clayey sand or clayey gravel with a shattered structure and a loose consistency. The colluvium commonly contained gravel fragments of mixed origins (e.g. shale and diabase). A single test sample was taken, as the colluvium largely occurs above conventional founding depth. The results proved that the horizon is indeed moderately expansive, with active clay content and a plasticity index of 27% and 29%, respectively. The material had a grading modulus of 1.40 and was awarded a PRA classification of A-7-5.
- **Residual Diabase 1:** The first diabase material discussed here includes all the cohesive (i.e. clayey) derivatives of the material. The horizon was between 300mm and 1800mm in vertical thickness, where encountered. The residual diabase had variable physical properties, with colour descriptions that included dark red, yellow grey or grey brown, while discolorations (i.e. black and orange) were not uncommon.

The material was described as silty clay, sandy silt or gravelly silt with an intact or shattered structure and mostly had a firm consistency. In some instances the horizon was described as a more granular material with an intact structure and loose to dense consistency. Test results confirmed that the horizon is moderately or highly expansive. Active clay contents were between 18% and 56%, while plasticity indices ranged from 19% to 37%. The calculated grading moduli were between 0.39 and 0.99 and PRA classifications included A-7-5 and A-7-6.

- **Residual Diabase 2:** This material was identified only in trial hole six, which bordered a ridge of diabase outcrop (i.e. dyke). The residual horizon in this instance consisted of a granular material (i.e. silty sand) which also contained diabase cobbles. The horizon had white grey colour, an intact structure and a dense consistency. Due to its limited occurrence, the material was not sampled.
- **Residual Shale:** This material constituted mixed cohesive and granular soils and generally had light grey or light grey brown colour. Granular materials had a loose or medium dense consistency and intact structure. Cohesive materials were mostly described as intact with a firm consistency. The material tests results revealed that the residual shale was mostly expansive. Of the four samples tested, one (gravelly) material was non-expansive, while two samples were moderately expansive and the last sample, highly expansive. Active clay contents were between 10% and 21%, with associated plasticity indices between 17% and 30%. Grading moduli were calculated to be between 0.35 and 1.91, while PRA classifications included A-2-7 and A-7-5.

1.3. Groundwater

- **Perched Water:** No seepage water or perched water levels were encountered in any of the trial holes; however, it must be taken into account that the site was investigated at the end of a period of drought. Evidence in the soil profiles suggest that seasonal water migration does occur in the area. It is therefore expected that seasonal seepage water may occur on site, particularly in the northern and north-western parts of the site.
- **Permanent Water:** The probability for drilling successfully for water in the area to be less than 40%, and the probability that such a borehole will yield more than 2l/s to be between 20% and 30%. Groundwater is expected to occur at depths between 20 metres and 30 metres in fractures restricted to a zone directly below ground water level.

1.4. Geotechnical Zoning

- **Properties of Heave**: The laboratory test results indicate that the majority of materials sampled and tested from this site are moderately or highly expansive. Using the results of the soil tests in the parametric heave calculation method as proposed by Van der Merwe, free heave was calculated. The heave estimates varied, depending on the expansiveness of a particular material and its vertical thickness in the soil profile.
- **Properties of Settlement**: Conditions of settlement are restricted and are not expected to prove particularly problematic on the site.
- Bedrock: Shallow bedrock materials were encountered at a number of occasions, but care needs to be taken where shale bedrock is concerned. Areas of bedrock outcrop (such as the diabase dyke) largely fall in the area demarcated by the client as undevelopable.
- **Seepage Water**: Seepage water is expected to occur in the soil profile on a seasonal basis. The extent and severity of such seepage water remains to be verified.

The geotechnical classification of the property is in accordance with the guidelines of the NHBRC.

Within the limitations of the scope of the investigation and based on the principles as explained above, the study area can be divided into the following zones, not considering the areas excluded from the investigation:

- **Zone 1: H2:** This zone includes the north-eastern parts of the site, as well as a small band in the southern part of the site. The soil profiles typically consist of colluvial materials underlain by expansive residual shale or residual diabase. The expected soil movement in this zone consists of unrestrained heave between 15mm and 30mm.
- **Zone 2: H1/R:** Zone 2 is characterised by expansive residual materials underlying colluvium; however shallow bedrock or bedrock outcrop also occurs intermittently or irregularly. As a result, unrestrained soil heave of up to 15mm is anticipated, along with the occurrence of shallow bedrock or bedrock outcrop in places.
- **Zone 3: H3:** Soil profiles in Zone 3 consist mostly of expansive residual diabase with a thin colluvial cover. Unrestrained soil heave exceeding 30mm is expected to occur in this zone.

- **Zone 4: R/H2**: Zone 4 is peculiar due to geological conditions. The soil profile in this zone consists of limited colluvial cover underlain by expansive residual diabase and a thin interval of baked shale. The shale bedrock is of a limited thickness, though, and is again underlain by expansive residual shale. Consequently, while shallow bedrock does occur in this zone, unrestrained heave (of up to 30mm) may also occur.

The zonation is illustrated in Figure 5 below Geotechnical Zoning. The indicated boundaries between the zones are inferred and must not be considered as set boundaries. It is essential that the zoning be refined during the phase two or detailed investigations.

Figure 8: Geotechnical Zoning

1.5. Conditions of Excavation

Excavation by a backhoe was proved to depths between 1100mm and 2400mm. 87% of trial holes were excavated deeper than 1500mm without encountering refusal of excavation.

1.6. Seismicity

A 10% probability exists that an earthquake with Peak Ground Acceleration of 0.12g to 0.06g may take place in 50 years.

1.7. Corrosivity

Residual soil materials on site were proven to be extremely corrosive.

2. Ecological Assessment

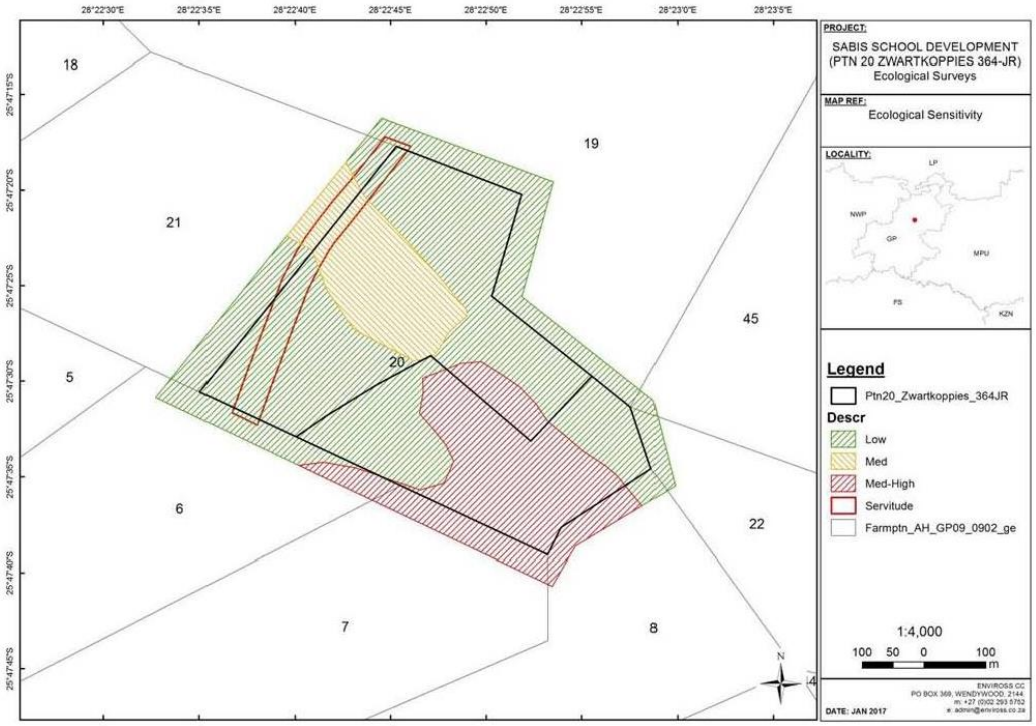


Figure 9: Ecological Sensitivity Map

2.1. Floral features

2.1.1. Vegetation

The proposed development site falls exclusively within the Savanna Biome and the Central Bushveld Bioregion. The flatter areas of the northern section of the site falls within Marikana Thornveld vegetation type, whereas the central to southern sections (the rocky ridge habitat) include elements of Andesite Mountain Bushveld (**Figure 10** below). Andesite Mountain Bushveld is regarded as conservationally least threatened. This vegetation unit occurs in association with rocky ridge habitat, which, due to step topography and difficult access, remains relatively unchanged. This is, however, changing as it is becoming commonplace to utilise rocky ridges for residential developments due to aesthetic appeal. Marikana Thornveld is regarded as endangered due to largescale transformation to accommodate agriculture and urbanisation. This vegetation unit also is not included within many formal conservation areas (Mucina & Rutherford, 2006).

Due to the various drivers and pressures, the vegetation structures suffer varying degrees of transformation within the proposed development site. The north-western areas have suffered the greatest transformation, where the woody elements have been recently removed. This is usually done in order to "open up the area" to improve the quality of grazing as it induces a greater grassy basal layer. The area was utilised for grazing or horses until recently, which has resulted in a limited diversity of grass species and a high prominence of exotic and pioneering forb and shrub species. There is active recruitment of trees within this area as well, both indigenous as well as invasive exotic species. Trees included Searsia lancea, Searsia zeyheri, Vachellia karroo, Lantana camara, Melia azedarach, Celtis sinensis, Acacia mearnsii, Acacia decurrens, Diospyros lycioides, Senegalia caffra, Searsia leptodictya, Searsia pyroides and Ziziphus mucronata.

Problematic invasive exotic forb species noted throughout the area are *Campuloclinium macrocephalum* (pom-pom weed), *Zinnia peruviana, Tagetes minuta, Schkuhria bipinnata, Conyza canadensis* and *Conyza bonariensis*. Indigenous shrubs and forbs included *Gomphocarpus fruticosus, Indigofera melanadenia, Euryops laxus, Osteospermum muricatum, Senecio inaequidens, Hermannia depressa, Conyza podocephala, Ipomoea bathycolpos, Cucumis zeyheri, Solanum chenopodioides, Solanum incanum* and *Solanum supinum*. Dominant grass species included *Cynodon dactylon, Hyparrhenia dregeana, Urochloa mosambicensis, Aristida congesta, Bothriochloa insculpta, Chloris pycnothrix, Chloris virgata, Digitaria eriantha, Tragus berteronianus, Eragrostis chloromelas, Heteropogon contortus* and *Melinis repens*.

The central to southern areas included rocky ridge habitat and therefore a change in floral community structures was expected to occur. This is largely due to change in soil composition, quality and depth, as well as topography. These areas are often protected from frost, fires and high winds, which are limiting factors to a lot of vegetation units. A higher canopy cover is expected as trees and larger shrubs dominate this vegetation unit, with a lesser basal layer. This was found to be the case within most of this area. Besides the residential infrastructure, there are other pressures and drivers of ecological change within these areas. Various animals that frequently graze within these areas include cattle, ostrich, zebra and some small antelope species. Fringing impacts from surrounding development, and some isolated areas of local disturbances sees the dominance of exotic invaders, such as kikuyu (*Pennisetum clandestinum*), *Tagetes minuta*, some *Lantana camara, Verbena aristigera* and *Zinnia peruviana*. This area was dominated by indigenous vegetation, typical of the vegetation unit. Indigenous trees species included *Combretum molle, Zanthoxylum capense, Senegalia caffra, Ehretia rigida, Vangueria infausta, Vachellia robusta, Ziziphus mucronata and Euclea crispa*. Forb species included *Gerbera piloselloides* and *Ledebouria ovatifolia*. Although dominated by indigenous vegetation, the impacts of livestock grazing within this area were readily observed and therefore the vegetation unit can be described as suffering a degree of transformation.

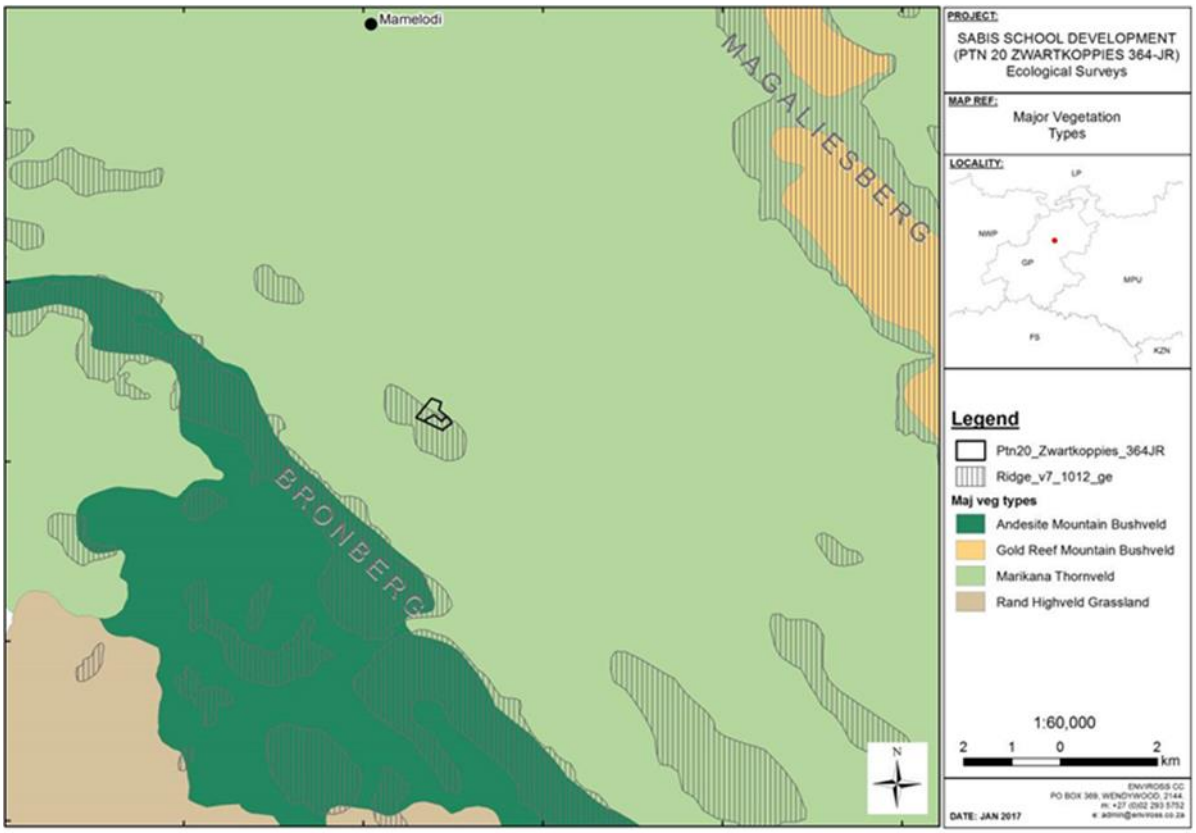


Figure 10: Major vegetation units for the region and how they associate with the proposed development site

2.1.2. Red data plants

No red data species were recorded on the study site. It is doubted whether such species would be found on the property due to limited suitable habitat as well as degraded conditions on the site.

2.1.3. Invasive floral species

The proposed development site did include exotic floral species, many of which are regarded as being invasive. Species observed that would require active management *include Zinnia peruviana, Campuloclinium macrocephalum, Pennisetum clandestinum, Opuntia ficus-indica, Melia azedarach, Ligustrum lucidum* and *Lantana camara.* Further to this, a variety of exotic floral species were noted associated with the residential infrastructure. As this is a controlled environment, it is not regarded as being invasive and are therefore not deemed problematic.

2.2. Fauna features

The survey area falls within a local area that remains relatively undeveloped, but there is increasing pressure placed on natural habitat features from development. These are mostly residential developments, but service-type developments (commercial, education, etc) are also becoming commonplace. Wetland units and rocky ridge habitat units within the region means that migratory connectivity remains relatively high. The proposed development site itself, however, offers limited habitat suitable to support conservational significant and otherwise sensitive species in general.

2.2.1. Mammals

Those species that the proposed development activities would potentially impact are the mobile (mostly confined to smaller to medium species) that remain within the open areas and are free to migrate in or out of the region. The site is surrounded by open vertical concrete palisade fencing, which limits recruitment into the property to only small to medium species.

2.2.2. Avifauna

some birds will be displaced with a transformation of the habitat that will occur as a result of the proposed development. Only common and highly adaptable species will be able to exploit the changes, with some using it to their advantage. There will essentially be a transformation of woodland habitat to pure managed grass (sports fields) and buildings. Although no significant impacts will be imposed on the conservation of avifauna within the area, the proposed development will transform habitat, which will displace individuals and remove breeding/foraging habitat.

2.2.3. Reptiles

The proposed development site (the north-western subdivision) has been subjected to habitat degradation and vegetation transformations through historical removal of the woody elements and overgrazing of the grassy basal layers. This has removed much of the microhabitats that would be utilised as refugia by reptilian (and other taxon) species. Therefore, the development of the site is perceived to have limited significance to the ongoing conservation of reptile species known to occur within the area.

2.2.4. Amphibians

There is no suitable breeding habitat for this species within the proposed development site as well as adjacent properties. There is a wetland unit located to the south of the site where suitable habitat does occur. No amphibian species were observed during the field survey.

3. Heritage Assessment

Refer to Section 10 below.

4. Palaeontological Assessment

The development is taking place on the Silverton Formation of the Pretoria Group, Transvaal Supergroup.

The Transvaal Supergroup fills an east-west elongated basin in the south-central part of the old Transvaal (now North – West, Gauteng and Mpumalanga) as far south as Potchefstroom. It is Vaalian in age, approximately 2600 Ma to 2100 Ma. A maximum thickness of the Transvaal Supergroup reaches 2000 m in the north-eastern section. The east-west elongated basin is filled with clastic, volcanic and chemical sedimentary rocks. Three groups based on lithological differences have been established: they are the Rooiberg, Pretoria and Chuniespoort Groups as well as other smaller groups (Kent 1980, Snyman 1996). It is the Bushveld Complex that is responsible for the tilting of the Transvaal sediments and the heat of its intrusion having created andalusite crystals (Norman and Whitfield 2006). This Supergroup is underlain by the Ventersdorp, Witwatersrand and Pongola Supergroups, and the Dominion Group. Three prominent ridges are present from the oldest to the youngest, the Time Ball Hill, Daspoort and Magaliesberg Formations (Norman and Whitfield 2006).

The Pretoria Group consists predominantly of quartzite and shale, together with a prominent volcanic unit, minor conglomerate, chemical and volcanic members. It comprises the Hekpoort Andesite, Dullstroom Basalt, Time Ball Hill, Silverton, and Magaliesberg Quartzite Formations as well as several smaller formations (in total 15) and overlies the Chuniespoort Group (Kent 1980). Both the shale and quartzite of the Pretoria Group are utilised in the building industry (Snyman 1996).

The Time Ball Hill shale Formation is known to contain 'algal microfossils' diagenetic in origin. Stromatolites as they are known are preserved in the subordinate carbonate rocks (Kent 1980). The Pretoria Group is clastic sedimentary in nature (Eriksson 1999). The pile of sedimentary rocks, mainly mudstones and quartzites with some basalt can collectively reach a thickness of up to 5 km. The Silverton shale Formation is the thickest of all the shale formations of the Pretoria Group (300 – 3000 m) (Visser 1989).

Fossils in South Africa mainly occur in rocks of sedimentary nature and not in rocks from igneous or metamorphic nature. Therefore, if there is the presence of sedimentary rocks the palaeontological sensitivity can generally be LOW to VERY HIGH, and here locally HIGH for the Pretoria Group (SG 2.2 SAHRA APMHOB, 2012).

There is no objection to the development, and it is not necessary to request a Phase 1 Palaeontological Impact Assessment. The palaeontological sensitivity is **HIGH** so caution is recommended. A Phase 2 Palaeontological Mitigation may be required if a fossil is found during construction.

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.

REGIONAL INFORMATION

LOCALITY

Region 6 is bordered by the Magaliesberg Mountain range to the north and the N1 freeway to the west and Ekhuruleni Local Municipality to the South. The Region includes large parts of the former Kungwini and Nokeng Tae Tsamane regions.

- The N4 freeway which links the City of Tshwane with Mpumalanga Province and runs east-west through the region.
- The N1 freeway which runs on the western side of the region and links the City of Tshwane with the Limpopo Province in the north and Johannesburg, Bloemfontein and Cape Town towards the south.
- The R21 freeway along the western boundary of the region which links the City with the Ekurhuleni Municipality and the OR Tambo International Airport. The region clearly enjoys a high level of accessibility.

AREA

The region is 885 km² in extend.

Region 6	M²	km²	ha	Wards
	885,239,940	885	88524	24

Demographic

Region 6 had a population of about 605554 people according to the 2011 Census.

POPULATION			
High	**Medium**	**Low**	**Total**
152289	141418	292743	605 554

In terms of income groups 48 % can be regarded to be within the Low-income group (monthly household income of less than R 2000.00 a month).

Region 6 has an unemployment figure of about 20.5 % which is below the national average of 25%.

REGIONAL CHARACTERISTICS

The main characteristics of Region 6 are discussed below:

- The south-eastern section of this region has the highest income per capita and could be considered the fuel injection of the city.
- However, there is also a huge concentration of people in the north-east quadrant, representing low and no-income groups.
- It is the region with the greatest development pressure.
- Decentralised nodes accommodate a wide range of urban facilities.
- The region is popular in terms of retail as well as office functions as many of the higher category retail and office functions of the City have relocated to this region over the past few years. Further to this is also the second most important industrialised area in Tshwane situated in Silverton/ Silvertondale/ Waltloo/ Bellevue- area.
- Suburban areas are mostly low density in nature and the region accommodates a number of Golf and Life Style Estates such as Woodhill, The Hills and Silver lakes. However, there is also a high density area to the

north of the region with large areas planned for RDP type development and informal settlements invaded the land before construction of services took place.

- The east-west transportation linkages between nodes are saturated during peak hours.
- The historical radial linkages to the CBD are prominent.
- There is a high dependency on private motor vehicles, from the southern section of the region, placing an impossible demand on the road infrastructure. Further to this is a high rail related dependency of the north-eastern quadrant to the City Centre. No south connection is possible.
- There is also an unusually high dependency on bus travel through the area from the far outlying rural areas e.g. Moutse and Moloto.
- The Bronberg and the Magaliesberg Mountain range is a major environmental feature running east to west in the northern part of the region. It provides limited thoroughfare, with only two major crossing points.
- The Moreleta Spruit and its tributaries cover virtually the entire area to the south of the Bronberg, contributing to the well-defined regional open space system of the southern part of the region.
- Further to the south of the region is the Rietvlei Dam and Nature reserve which is one of the larger open space assets of the City.
- The region contains a number of strategic land uses including the CSIR, South African National Intelligence Service and the Menlyn Retail Park Node which has a metropolitan function in terms of facilities.
- The Hatherley landfill site has a metropolitan function in terms of its Strategic nature and size. No other sites are known for future development in the Metro as yet.
- The region contains three large private hospitals as well as the Pretoria East Cemetery
- Almost all the developable land within the southern section of the Region has been developed and the uncontrolled development in the old Kungwini area places a burden on the existing saturated road infrastructure
- The north-eastern section of the region accommodates mostly low-income communities and industrial land uses.
- The middle and south-western section of the region accommodates medium to high-income areas with large institutional uses.
- The northern section of the region includes a number of strategically located undeveloped areas in terms of accessibility and infrastructure which offer significant development potential.

STRUCTURING ELEMENTS

The main structuring elements of the region include:

- The N1 and N4 Freeways facilitating north-south and east-west regional linkages with the rest of the country.
- The secondary (mobility) roads including Lynnwood Road, Atterbury Road, Garsfontein Road, radiating from the CBD through the region and Solomon Mahlangu Drive (Hans Strydom) linking the three roads with the N1 in the south and N4 in the north.
- The Bronberg Mountain limits road linkage with the northern section of the region to only two major crossing points.
- The Moreleta Spruit and its tributaries covering the entire area forming an interlinked regional open space network.
- The Rietvlei Nature Area limiting southward expansion of the region.
- The Urban Edge roughly following the municipal boundaries and currently under pressure due to limited expansion possibilities.

- The low density rural residential estate – Mooikloof – limits expansion in a south-eastern direction.
- The Menlyn Retail Park node and Silverton/Waltloo Industrial node within the region plays a further important structuring role in terms of economic development and regional accessibility.
- Pretoria Road and Stormvoël/Tsamaya Roads are parallel to the N4.
- Large industrial and vacant land parcels divide the mainly low-income in the north east and the higher income areas to the south.
- A railway line runs east-west through the region with industrial and residential uses following this line, and a north- south line linking with the huge freight facility near Babsfontein to the south east of the region.
- The Magaliesberg forms the northern boundary of the region and limits access to the areas north of the mountain.
- Micheal Brink (Nico Smith)/Stormvoël/Tsamaya Roads provides east-west linkage between the north-eastern part of the region and the CBD.
- Linkage between the north-eastern part of the metro and the CBD is very poor and obstructed by the mountain range.

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 categorised 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 resources authority;

(d) the re-zoning of a site exceeding 10 000 m^2 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:

Five sites were recorded (**Table 3** and **Figure 11** below) located at the base of a small ridge. These sites consist of Later Iron Age stone walled sites with middens and undecorated ceramics.

Table 3: Recorded features and coordinates

Field No.	Type Site	Coordinates	Significance	Description
SS1	Stone Complexed Wall	25º 47' 27.0" S 28º 22' 48.0" E	Medium Significance	Low stone packed walls, the complex is approximately 60m in diameter. A midden with ash, animal, bone fragments and potsherds is situated within one of the enclosures.
SS2	Stone Complexed Wall	25º 47' 22.3" S 28º 22' 43.7" E	Medium Significance	Low stone packed walls, the complex is approximately 40m in diameter. A midden with ash, animal bone fragments and potsherds is situated within one of the enclosures.
SS3	Stone Complexed Wall	25º 47' 25.4" S 28º 22' 43.0" E	Medium Significance	Low stone packed walls, the complex is approximately 40m in diameter.
SS4	Stone Complexed Wall	25º 47' 26.7" S 28º 22' 46.0" E	Medium Significance	Low stone packed walls, the complex measures about 25 m in diameter.
SS5	Stone Complexed Wall	25º 47' 29.1" S 28º 22' 47.6" E	Medium Significance	Low stone packed walls, the complex measures about 25 m in diameter.

Stonewalled complexes were identified at the location of site 1 -5. The low stone walls were packed to form circular enclosures and other sections of wall. The enclosures are of various sizes, but together they form a distinct pattern as part of a LIA settlement. The walls consist of low lines of packed rocks, but some of these walls were damaged or collapsed in certain areas. The walls measure approximately 0,5m high and 0,5m wide. The stone walls are also overgrown with grass, trees and other vegetation hampering the identification of the size and layout of the stone walls. Middens with ash, animal bone fragments and potsherds were recorded within the enclosures at Site 1 and Site 2.

The preservation of the sites in situ is the preferred option. If this is not possible these sites will require archaeological mitigation prior to the construction phase where the sites will be mapped, and excavated before a destruction permit can be applied for. If the sites are preserved a buffer zone of

20 meters should be kept around the sites during construction and a heritage management plan should be implemented for the sites as part of the EMP for the project.

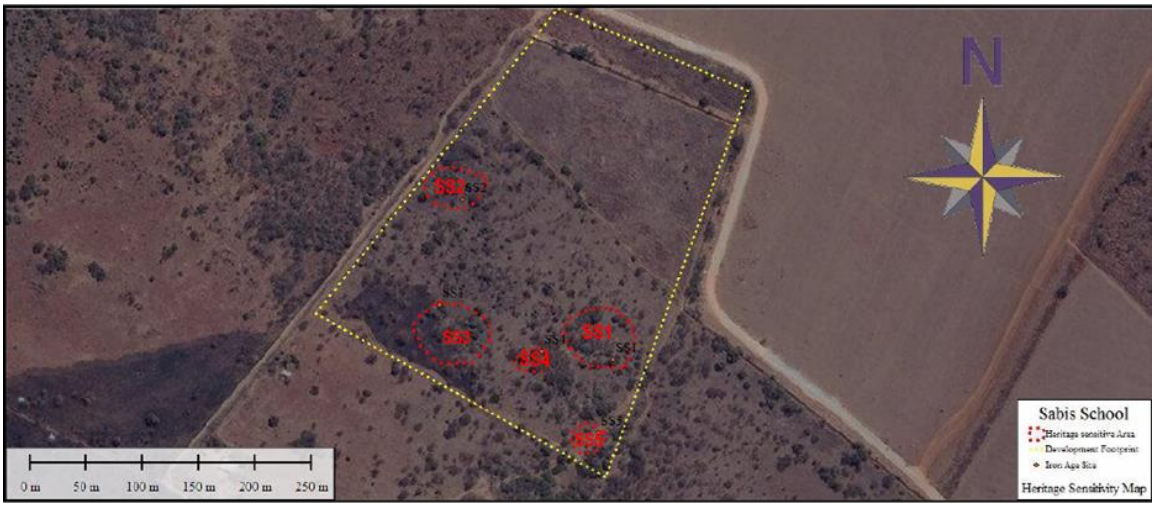


Figure 11: Heritage sensitivity map

It must be kept in mind that sites like these might contain unmarked graves and if impacted on these sites must be monitored by a professional archaeologist during the construction phase to mitigate accidental finds.

A chance find procedure must also be included in the EMPr for accidental finds as briefly outlined below.

Will any building or structure older than 60 years be affected in any way?	YES	**NO**
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	YES	**NO**
If yes, please attached the comments from SAHRA in the appropriate Appendix		

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**

The report is still a Draft report. Comments from State Departments and the Competent Authority will be included in the Final Report

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

Not Applicable

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 site the Environmental Management Department of the City of Tshwane Municipality was invited participate.

The Ward councillor of the area; Mr Mike Strange (Ward 101) 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):

The stakeholders showed concern on the following:

Availability of services infrastructure namely,

- Road infrastructure
- Traffic
- Provision of public schools, clinics and parks
- Safety
- Noise

(Refer to **Annexure E**) These are detailed in the Comments & Response Report.

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.

Annexure 1 – Proof of site notice
Annexure 2 – Written notices issued as required in terms of the regulations
Annexure 3 – Proof of newspaper advertisements
Annexure 4 –Communications to and from interested and affected parties
Annexure 5 – Minutes of any public and/or stakeholder meetings
Annexure 6 - Comments and Responses Report
Annexure 7 –Comments from I&APs on Basic Assessment (BA) Report
Annexure 8 –Comments from I&APs on amendments to the BA Report
Annexure 9 – Copy of the register of I &APs

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 alterative 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 (complete only when appropriate)	**0**	times
Section D Alternative No.	**0**	(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
If yes, what estimated quantity will be produced per month?	**Unknown at this stage**	

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 Section 20 of the Environmental Conservation Act, 1989 (Act No. 73 of 1989).

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
If yes, what estimated quantity will be produced per month?	**Unknown at this stage**	

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

Solid waste during the operational phase will primarily be household waste. It 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 demolition 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 exist 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 on site?	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 waste water, if any:

No waste water 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?		**n/a**
If yes, has the municipality confirmed that sufficient capacity exist 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 off.

Not applicable

Additional information

An existing outfall sewer is located within Tijger Valley X21 to the north of SABIS School which gravitates north towards the Baviaanspoort WWTP. The topography of the site allows the internal sewer reticulation to gravitate to the north-western corner of SABIS School site. The external outfall sewer could be constructed from this point along eastern side of Hazeldean Boulevard up to the intersection with Ferreira Road. At the intersection, the outfall sewer could cross to the west connect with the existing outfall sewer located with Tijger Valley X21. The outfall sewer will be sized to take into consideration the higher lying developments gravitating towards the proposed outfall sewer as well as Tijger Valley X46.

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?		**n/a**

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.

Odour from the refuse yards are to be combated by the provision of a compaction unit and is to be walled.
T
he EMP 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: **n/a**

Additional information

The proposed school site falls on the north-western outskirts of the Gastonbury Reservoir Zone.

A 500mm water pipeline is located along the southern and western boundaries of the school which is a direct connection from the Rand Water H26 Bronberg (East) pipeline. This 500mm pipeline will in future be used as a bulk feeder main to the Zwartkoppies Reservoir site located directly south of the school.

Although the school is located within the Gastonbury Reservoir Zone the civil engineers propose that it be included within the Zwartkoppies Reservoir Zone. The Zwartkoppies Reservoir is not yet constructed and would result in an unfeasible project should the proposed school have to construct the reservoir now. It is proposed that a temporary direct connection be provided to the 500mm pipeline located along the southern and western boundaries.

Based on the topography of the school site, even though the PRV setting on the southern boundary is only 1 bar, sufficient pressure will be obtained at the relevant connection points.

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 eg. Municipality / Eskom / Renewable energy source

- The proposed development is situated within the municipal jurisdiction of the City of Tshwane.
- The project site falls within the supply area of the existing Wapadrand Primary Substation. (132/11 kV), fitted with 4x35 MVA transformers.
- The future Ridge road satellite substation will service this proposed development. Feeder cables from Wapadrand Primary Substation have already been installed up to T4 switches where the statelite substation will be built.
- At present the 11kV supply to the development will be picked up at the existing BMK that supplies the Retreat and installed along the proposed roads (in road reserve) to the site.

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

See box above

4. ENERGY EFFICIENCY

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

The following energy savings methods shall be investigated for possible implementation for the proposed development:

- 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, wills, ceilings and roofs.

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

The design intent is to make use of renewable solar powered lighting for external lighting.

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

Summarise the issues raised by interested and affected parties.

Availability of services infrastructure namely,

- Road infrastructure
- Traffic
- Provision of public schools, clinics and parks
- Safety
- Noise

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):

Refer to the comments and response report attached to appendix 6 of the public participation report, which is attached hereto under **Annexure E**.

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

Briefly describe the methodology utilised 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.

2.5 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 1: 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 Tables below

2.1 Significance scores of expected impacts

Preferred Alternative – Proposed school development and associated infrastructure on Portion 20 of the Farm Zwartkoppies 364 J.R. within the City of Tshwane Metropolitan Municipality.

Table 2: Assessment of Potential Impact of the Proposed Potential impacts

Potential Impact	Scale	Duration	Probability	Magnitude	Significance Points	Impacts Significance	Confidence
Biophysical Environment							
1. Issue: Air Quality							
1.1 Dust/Air pollution - The generation of fugitive dust associated with construction activities & earthworks.	**Site Only (1)**	**Immediate (1)**	**High Probability (4)**	**Moderate (6)**	**36**	**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 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 Probability (4)**	**Minor (2)**	**20**	**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 probability (4)**	**Minor (2)**	**18**	**Low environmental significance**	**High**
3. ISSUE GEOLOGY AND SOILS							
3.1 Soil erosion, loss of topsoil, deterioration of soil quality	**Site only (1)**	**Long term (4)**	**Highly probable (4)**	**Minor (2)**	**18**	**Low environmental significance**	**High**
3.2 Soil pollution (due to hydrocarbon spillages)	**Site only (1)**	**Medium term (3)**	**Medium probability (2)**	**Moderate (6)**	**36**	**Moderate environmental significance**	**High**
ISSUE FOUNA AND FLORA							

Potential Impact	Scale	Duration	Probability	Magnitude	Significance Points	Impacts Significance	Confidence
4.1 Degradation, destruction of habitats/ ecosystem	**Site only (1)**	**Medium term (3)**	**Definite probability (5)**	**Very high (10)**	**90**	**High environmental significance**	**High**
4.2 Increase of alien invasive plant species.	**Site only (1)**	**Medium term (3)**	**Highly probable (4)**	**High (8)**	**64**	**Moderate environmental significance**	**High**
4.3 Impacts on fauna and flora	**Local (1)**	**Medium term (4)**	**Definite probability (5)**	**Very high (10)**	**100**	**High environmental significance**	**High**
ISSUE HYDROLOGY							
5.1 Storm water flaw and damage- Developments cause the modification of the drainage patterns. Storm water 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.	**Regional (3)**	**Long term (4)**	**Low probability (2)**	**Moderate (6)**	**54**	**Moderate environmental significance**	**High**
5.2 Impact on water quality (due to hydrocarbon spillages)	**Regional (3)**	**Long term (4)**	**Low probability (2)**	**Moderate (6)**	**54**	**Moderate environmental significance**	**High**
SOCIO-ECONOMIC AND CULTURAL HISTORICAL ENVIRONMENT							
4. ISSUE AESTHETICS, LANDSCAPE CHARACTER AND SENSE OF PLACE							
6.1 Noise/ vibration	**Site only (1)**	**Immediate (1)**	**Highly probable (4)**	**Minor (2)**	**12**	**Low environmental significance**	**High**
6.2 Visual impact on adjacent residents and motorists	**Site only (1)**	**Short term (2)**	**Medium probability (3)**	**Minor (2)**	**12**	**Low environmental significance**	**High**

Potential Impact	Scale	Duration	Probability	Magnitude	Significance Points	Impacts Significance	Confidence
7. ISSUE SOCIAL WELL-BEING AND QUALITY OF THE ENVIRONMENT							
7.1 Safety and Security	**Local (2)**	**Short term (2)**	**Low probability (2)**	**Minor (2)**	**12**	**Low environmental significance**	**High**
7.2 Employment opportunities	**Region (3)**	**Long term (4)**	**Highly Probable (4)**	**Moderate (6)**	**66**	**Moderate environmental significance**	**Medium**
8. ISSUE HISTORICAL ENVIRONMENT							
8.1 Destruction of palaeontological resources	**Site only (1)**	**Medium term (3)**	**Highly Probable (4)**	**- Moderate (6)**	**48**	**Moderate environmental significance -**	**High**
8.2 Destruction of heritage resources	**Site only (1)**	**Medium term (3)**	**Highly Probable (4)**	**- Moderate (6)**	**48**	**Moderate environmental significance -**	**High**
9. ISSUE INFRASTRUCTURE AND SERVICES/WASTE							
9.1 Generation of waste	**Site only (1)**	**Short time (3)**	**Medium probability (3)**	**Minor (2)**	**14**	**Low environmental significance**	**High**
9.2 Pressure on existing infrastructure and services	**Region (3)**	**Long term (4)**	**Low probability (2)**	**Moderate (6)**	**54**	**Moderate environmental significance**	**Medium**
10. ISSUE DESIGN AND LAYOUT							
10.1 Functional design	**Local (2)**	**Long term (4)**	**Low Probability (2)**	**Minor (2)**	**16**	**Low environmental significance**	**Medium**

Alternative 1: Low residential development

The impacts for Alternative are similar to that of the preferred alternative with the following exceptions. Traffic will increase doubly and due to double the amount of people residing in the area there will be increased pressure on existing services.

Potential Impact	Scale	Duration	Probability	Magnitude	Significance Points	Impacts Significance	Confidence
1.1 Dust/ Air pollution- The generation of fugitive dust associated with construction activities & earthworks.	**Local (2)**	**Long term (4)**	**Highly probable (4)**	**Moderate (8)**	**80**	**High environmental significance**	**High**
3. ISSUE GEOLOGY AND SOILS							
3.1 Soil pollution (due to hydrocarbon spillages)	**Local (2)**	**Medium term (3)**	**High Probability (4)**	**High (8)**	**72**	**High environmental significance**	**High**
4. ISSUE HYDROLOGY							
5.1 Storm water flaw and damage- Developments cause the modification of the drainage patterns. Storm water 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	**Regional (3)**	**Long term (4)**	**High probability (4)**	**High (8)**	**88**	**High environmental significance**	**High**
5.2 Impact on water quality of water resources situated within the vicinity of the proposed development.	**Site only (1)**	**Long term (4)**	**High probability (4)**	**Moderate (6)**	**54**	**Moderate environmental significance**	**High**
SOCIO- ECONOMIC AND CULTURAL HISTORICAL ENVIRONMANT							
5. ISSUE AESTHETICS, LANDSCAPE CHARACTER AND SENCE OF PLACE							
6.1 Noise/ vibration	**Local (2)**	**Long term (4)**	**Highly probable (4**	**Moderate (6)**	**60**	**Moderate environmental significance**	**High**
6.2 Noise impact	**Site only (1)**	**Long term (4)**	**High probability (4)**	**Moderate (6)**	**54**	**Moderate environmental significance**	**High**

Table 4: Assessment of potential impacts and proposed mitigation measures

Potential Impacts	Significance rating of impacts before mitigation	Proposed mitigation	Significance rating of impacts after mitigation
1.1 Dust /Air pollution The generation of dust associated with construction activities & earthworks	Low	• 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 stabilisation 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 minimise 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 stabilised. Soil stabilising 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.	Low
2.1. Visual Impacts - Topographical changes	Low	• 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 minimised. • The construction footprint must be minimised. • Construction / management activities must be limited to the daylight hours between 7:00am and 5:30pm weekdays; 7:00am and 1:30pm on Saturdays.	Low

Potential Impacts	Significance rating of impacts before mitigation	Proposed mitigation	Significance rating of impacts after mitigation
		• Lighting on site is to be sufficient for safety and security purposes, but shall not be intrusive to neighbouring 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.	
2.2. Bulk earthworks	Low	• 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	Medium	• 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-fuelling 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 bunded. • All excavations and foundations must be inspected regularly. • Once earthworks are complete, disturbed areas are to be stabilised with mulch, straw or other approved method.	Low
3.2. Soil Pollution	**Medium**	• 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 *Petro-Clean ™* 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	Low

Potential Impacts	Significance rating of impacts before mitigation	Proposed mitigation	Significance rating of impacts after mitigation
		Hydrocarbons may escape into the environment. A spill recovery kit must be on site, along with trained personnel.	
4.1. Degradation, destruction or elimination of habitats/ecosystems	**High - Medium** The proposed development site, and can therefore be mitigated through observing the ecological sensitivity map.	• Red data plant species may occur (suitable habitat for several species, though presence not confirmed during field survey) on the proposed development. Wetland habitat along the eastern side of the site has been designated as ecologically sensitive. • No development will occur within the 32m buffer zone of the 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. • The alien plants on site will be removed during construction. • 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. • Currently very few alien plants occur within this plant community (excluding the wattle bush). • An alien invasive management programme must be incorporated into the Environmental Management Programme • (particularly the wattle bush); • Ongoing alien plant control must be undertaken; • 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.	Medium

Potential Impacts	Significance rating of impacts before mitigation	Proposed mitigation	Significance rating of impacts after mitigation
		• Use indigenous plant species in all gardens	
4.2. Impacts on fauna and flora	Medium-low	• No RDL or otherwise sensitive fauna or flora is thought to inhabit the actual proposed development site due to the generally poor PES of the area. Wetland habitat along the eastern side of the site has been designated as ecologically sensitive. • Other than the road crossing the wetland and services crossing within the road reserve no development will occur within the 15m buffer zone of the wetland • 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 Flourescent 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 Bushbabies, 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 suboptimal habitat for Boweia volubilis subsp. volubilis on the study site, but none were observed during the field survey. Brachycorythis conica subsp. transvaalensis and Searsia gracillima do not occur on the site. No other medicinal / protected / Red Data Flora was found on the site however should any medicinal/ protected/ Red Data flora that will have to be removed shall be removed by a suitably qualified specialist and relocated. The applicable responsible person at	Low

Potential Impacts	Significance rating of impacts before mitigation	Proposed mitigation	Significance rating of impacts after mitigation
		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. • 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 o 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 *Conservation of Agricultural Resources Act* 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 suppliers advice should always be sought. Do not irrigate for 24 hours after applying insecticides in areas where there is a chance of contaminating water-courses or dams, fungal pathogens should be used in preference to chemical insecticides.	
5.1. Stormwater flow, drainage and increased runoff due to hardened surfaces	Medium	• 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
		• The cross-section of the swale should be parabolic or trapezoidal in shape with side slopes no steeper than 1:3, to maximise 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 Drainage line and water quality	Medium	• 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	Low

Potential Impacts	Significance rating of impacts before mitigation	Proposed mitigation	Significance rating of impacts after mitigation
		vehicles to which they are dispensing. In addition the dispensing devices must be fitted with the necessary valves/ apparatus that will ensure that the nozzles do not drip fuel after pumping has stopped. • 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. **A small drainage line originates south of the site and drains northwards down the rocky slope** 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; • Exotic vegetation recruitment was observed as an impacting feature within the wetlands. It is recommended that an exotic vegetation management strategy be developed as part of a rehabilitation plan to manage the present and future emergent exotic vegetation; • Subsistence hunting or harvesting of fauna or flora within the wetland zones should be prohibited;	
6.1. Noise/ vibration	Low	• 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.	Low

Potential Impacts	Significance rating of impacts before mitigation	Proposed mitigation	Significance rating of impacts after mitigation
		• 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. • 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	
6.2. Visual Impact	Low	• 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	Low
7.1. Safety and Security	Low	• 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	Low

Potential Impacts	Significance rating of impacts before mitigation	Proposed mitigation	Significance rating of impacts after mitigation
		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 conspicuously at prominent locations around the construction site and the construction crew camps at all times. • 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	• 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.	Medium
8.1. Destruction of cultural / heritage sites	Low	• Ensure that construction staff members are aware that heritage resources could be unearthed and the scientific importance of such finds.	Low

Potential Impacts	Significance rating of impacts before mitigation	Proposed mitigation	Significance rating of impacts after mitigation
		• 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. • Implement a chance find procedure in the EMP to ensure that any un	
9.1. Waste	Low	• 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 land-owners/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 odours 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: o Paper o Biodegradable o Glass o Plastics o 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 infrastructure	Medium	• Integrity of existing services to be ensured. • Adherence to Service Report • 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.	Medium-low

Potential Impacts	Significance rating of impacts before mitigation	Proposed mitigation	Significance rating of impacts after mitigation
10.1. Functional design	Medium	• 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

The No- Go alternative is the option of not implementing the activities. This implies that the site be left as is and that no development be done.

This option has the following potential impacts:

- Many direct and indirect spin-off benefits, such as job creation, capacity building, rates for the municipality and the upgrading of supply of services will not be realised.
- Invasive vegetation would probably continue to spread in areas where land is vacant and not actively used in its entirety.
- If not developed, the site will derive no income and will not contribute to the services and total income of the area.
- Illegal squatters are becoming increasingly interested in using this site and are posing more of a threat to local inhabitants. They are setting up temporary structures on unsupervised areas of the site that are well hidden. If this continues unchecked, it may spread and the land may become unmanageable.

Given the fact that the site will eventually degenerate if left unmanaged, and the fact that it is most likely unsuitable to be utilised for grazing or agricultural purposes due to its location, it is reasonable to state that the no-go option is less favourable than some of the other options presented.

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 Assessment
Annexure G2: Ecological Assessment
Annexure G3: Heritage Impact Assessment
Annexure G: Paleontological 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).

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

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

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

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.

The majority of surrounding land is or has been utilised for residential developments and as such it would make sense for these properties to be used for this purpose. In terms of density, the general typology of housing in the area consists of medium to higher density housing. This would fit in with the property prices and affordability of property in the area.

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 totally transform the site and will lead to the complete loss of habitat for any potential plant of animal species. This is considered to be an impact of no significance as the site is currently transformed and limited opportunity exists to improve ecological function by not developing the site. The cumulative impact is non-existent.

- **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 stormwater management system. Localised flooding may result on negative impacts on bed and banks of the stream course due to the cumulative effects.

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

The identified impacts in both the construction and the operational phase are those usually experienced with rural 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: Light Industrial Development

The impacts for Alternative 1 are similar to that of the preferred alternative with the following exceptions. Increase in air pollution in the area due to industrial nature of the development. Increase in pollutants into the surrounding environmental due to the industrial nature of Alternative 1.

Impacts can be successfully mitigated, however Alternative 1, is less favourable than the proposed development and will have slightly higher environmental impacts than the preferred alternative.

Alternative 2

Not Applicable

No-go (compulsory)

The No- Go alternative is the option of not implementing the activities. This implies that the site be left as is and that no development be done.

This option has the following potential impacts:

- Many direct and indirect spin-off benefits, such as job creation, capacity building, rates for the municipality and the upgrading of supply of services will not be realised.
- Invasive vegetation would probably continue to spread in areas where land is vacant and not actively used in its entirety.
- If not developed, the site will derive no income and will not contribute to the services and total income of the area.
- Illegal squatters are becoming increasingly interested in using this site and are posing more of a threat to local inhabitants. They are setting up temporary structures on unsupervised areas of the site that are well hidden. If this continues unchecked, it may spread and the land may become unmanageable.

Given the fact that the site will eventually degenerate if left unmanaged, and the fact that it is most likely unsuitable to be utilised for grazing or agricultural purposes due to its location, it is reasonable to state that the no-go option is less favourable than some of the other options presented.

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.

Comments and/or concerns identified by Interested and Affected Parties (I&APs) during the review period of the Draft Basic Assessment will be incorporated into the Final Basic Assessment to be submitted to the GDARD for consideration.

Having assessed all the potential environmental impacts associated with the proposed development it is the opinion of the EAP that the proposed Fort Recce Heritage Site on Portion 280 (A Portion of Portion 26) of the Farm Tiegerpoort 371-JR is issued with a positive Authorisation from the GDARD for the following reasons:

- The proposed development is in line with requirements of the spatial planning tools (i.e. the Spatial Development Framework for City of Tshwane Local Municipality – 03, July 2008, City of Tshwane Town Planning Scheme, 2008 (revised 2014) and the Gauteng Development Framework, 2011);

- The proposed development is not for human settlement or business activity outside the Urban Edge but rather for heritage purposes and thus does not contribute to urban sprawl.

- The proposed heritage site would make use of natural and human resources within the local community and as such complies to above factor.
- The economic service sphere of the heritage site would be of National and International significance and thus economic growth within the area would be stimulated by the proposed heritage site.

- As from the traffic study, the client would be responsible to construct an access road from Nkwe Road which would be to the benefit of surrounding properties thus, increased access and mobility will be a result of the proposed heritage site.

- The site is located in a remote area, not close to major public transport routes. It is expected that the development will generate employment opportunities for workers dependent on public transport for daily commuting. As part of the approval for the development, it is proposed to allocate a parking area on the property for a public transport vehicle/s.

- The proposed heritage site would stimulate local economic growth and therefore contribute to the wellbeing of the area.

- The property is found in a rural area with limited resources, social amenities, and infrastructure. The proposed development would contribute to all mentioned aspects. Therefore, the intensification of the property by means of the proposed rezoning application would result in the land and infrastructure being optimally utilised.

- The proposed development is sustainable in the sense that the infrastructure would be optimally used and the proposed heritage site would create sustainable employment opportunities. The proposed use would be located in an area earmarked for tourism activities and therefore would stimulate eco-tourism activity within the area and contribute to spatial sustainable growth.

Although a number of potential negative biophysical, socio economic and cumulative impacts where identified, there are no fatal flaws that should prevent the development from proceeding. It was demonstrated that most of these impacts can also be mitigated effectively in order to reduce the significance. Refer to Table 6 for a summary of the impact significance ratings – before and after mitigation.

Table 6: 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**	**Low**
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	**Moderate**	**Low**
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.	**Moderate**	**Low**
5.2 Impact on water quality (due to hydrocarbon spillages)	**Moderate**	**Low**
SOCIO-ECONOMIC ENVIRONMENT		
6.1 Noise/ vibration	**Low**	**Low**
6.2 Visual impact on adjacent residents and motorists	**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)**
CUMULATIVE IMPACT		
Transformation of natural habitat caused by the urban sprawl of Pretoria in a south-eastern direction	**low**	**low**

7. SPATIAL DEVELOPMENT TOOLS

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

Tshwane Regional Spatial Development Framework – Region 6 (2012 and 2013)

- The Tshwane Regional Spatial Development Framework - Region 6 was compiled by the City of Tshwane Metropolitan Municipality and aims to ensure that the desired urban form and patterns are established within the region.
- The property falls within the City of Tshwane's Spatial Development Framework for Region 6 (RSDF).
- The proposed heritage site is in line with above characteristics outlined by City of Tshwane and would contribute to the implementation of the City's vision.
- The proposed rezoning can also be motivated in terms of the Gauteng Spatial Development Framework, 2011 (GSDF). The GSDF identified 5 critical factors:

a. Contained urban growth

The proposal is not for human settlement or business activity outside the Urban Edge but rather for heritage purposes and thus does not contribute to urban sprawl.

***b.* Resource based economic development**

The proposed heritage site would make use of natural and human resources within the local community and as such complies to above factor.

c. Re-direction of urban growth (stabilize /limit growth in economically non-viable areas, achieve growth on the land within the economic growth sphere)

The economic service sphere of the heritage site would be of National and International significance and thus economic growth within the area would be stimulated by the proposed heritage site.

***d.* Protection of rural areas and enhancement of tourism and agricultural related activities**

An environmental study is being conducted which would identify sensitive environmental areas to be protected and enhanced accordingly.

***e.* Increased access and mobility**

As from the traffic study, the client would be responsible to construct an access road from Nkwe Road which would be to the benefit of surrounding properties thus, increased access and mobility will be a result of the proposed heritage site.

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:

It is recommended that the Proposed Activity is authorised over Alternative 1.

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

General:

- The monitoring of the construction site must be carried out by a professionally qualified Environmental Compliance Officer (ECO) with proven expertise in the field so as to ensure compliance to the Environmental Management Programme.
- All mitigation measures listed in the BAR as well as the EMP 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.

Palaeontology:

- The overburden and inter-burden must be surveyed for fossils. Special care must be taken during the digging, drilling, blasting and excavating of foundations, trenches, channels and footings and removal of overburden not to intrude fossiliferous layers.

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)

There is a need for the proposed memorial and heritage site to commemorate fallen individuals. The site will also include a museum to educate subsequent generations of the South African history. The site needs to be located within a tourism area on the periphery of the city. Neighbouring structures and uses are not negatively influenced by overshadowing of the proposed heritage site. The heritage site would support nearby businesses and facilities. The trustees of the heritage site would also strengthen needed security within the area by implementing a vigilant community security programme.

The desirability of the rezoning application can be motivated in the following:

- The proposed development will not in any way encumber the existing municipal infrastructure.
- All required parking can easily be provided on site
- Due to the high accessibility, no access problems or interference with the existing traffic circulation patterns in the area are foreseen.
- The proposed land use is policy and legislative compliant.

It is therefore evident that there is a need and desirability**.**

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 EMP 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 A: Site plan(s)

Annexure B: Photographs

Annexure C: Facility illustration(s) – Not Applicable

Annexure D: Route position information – Not Applicable

Annexure E: Public participation information

Annexure F: Water use license(s) authorisation, SAHRA information, service letters from municipalities, water supply information - Not Applicable

Annexure G: Specialist reports
Annexure G1: Geotechnical Assessment
Annexure G2: Ecological Assessment
Annexure G3: Heritage Assessment
Annexure G4: Paleontological Assessment

Annexure H: EMPr

Annexure I: Other information
Annexure I1: Townplanning Memorandum
Annexure I2: Traffic Impact Assessment
Annexure I3: Services report
Annexure I4: Electrical Services Report
Annexure I5: EAP CV
Annexure I6: EAP declaration

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 completed.