DRAFT BASIC ASSESSMENT REPORT

FOR THE DESIGN REVIEW, SERVICES RELOCATION & CONSTRUCTION MONITORING OF BELLE OMBRE-PHASE 2 (OVERFLOW CAR PARK, ELECTRIC FENCING ETC) WITHIN THE JURISDICTION OF THE CITY OF TSHWANE METROPOLITAN MUNICIPALITY, GAUTENG PROVINCE

REF NO: GAUT 002/22-23/E3364

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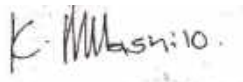
Date Issued: Occtober 2022
Client: Tshashu Consulting

SELAHLE CONSULTANCY & PROJECTS	**DOCUMENT CONTROL SHEET**			
Revision 01	**NAME OF REPORT** **DRAFT BASIC ASSESSMENT** FOR THE DESIGN REVIEW, SERVICES RELOCATION & CONSTRUCTION MONITORING OF BELLE OMBRE-PHASE 2 (OVERFLOW CAR PARK, ELECTRIC FENCING, ETC) WITHIN THE JURISDICTION OF THE CITY OF TSHWANE METROPOLITAN MUNICIPALITY, GAUTENG PROVINCE.			
COMPILED BY	**NAME**	**DESIGNATION**	**SIGNATURE**	**DATE**
	Shonisani Selahle	Environmental Consultant		September 2022
REVIEWED BY	Konanani Mashilo	Senior Environmental Consultant		September 2022
APPROVED BY	Dan Neluheni			

EXECUTIVE SUMMARY

Selahle Consultancy and Projects (Pty) Ltd (SCP) as an independent environmental consultant was appointed by Tshashu Consulting (Pty) Ltd, who is appointed by the City of Tshwane Metropolitan Municipality (herein referred to as the City) to undertake the Environmental Impact Assessment process for the proposed Design Review, Services Relocation & Construction Monitoring of Belle Ombre -Phase 2 (Overflow Car Park, Electrical Fencing etc.) project, in Pretoria, Gauteng Province of South Africa. The study area is located on Portion 12 of the Farm Daspoort 319 JR, in the City of Tshwane, Gauteng Province. The proposed study area falls within the jurisdiction of the greater City of Tshwane Metropolitan Municipality, Gauteng Province of South Africa.

Construction of proposed new overflow parking which will include following but not limited to:

- Installation of ClearVu Fence
- Installation of ClearVu Sliding Gate
- Construction of Retaining Wall
- Installation of 5m Energy Poles
- Parking Area with car ports
- Installation of Kerbs
- Construction of Stormwater Structures
- Clearing (with relocation of services) and grubbing of the parking area.
- Mass earthworks (Excavation, Fills and Roadbed)
- Paving with 80mm Interlocking, with 20mm Bedding Sand
- Road marking
- Public lighting

The proposed development is an extension to an existing project, therefore, there would be an extension of works on the existing infrastructure which includes the following but not limited to:

- Installation of ClearVu Sliding Gate
- Installation of ClearVu Fence
- Construction of Refuse Waste Bin
- Construction of Paved Walkways
- Installation of Storm water concrete Manhole Cover
- Clearing and grubbing of the parking area.
- Installation of Cameras
- Installation of Boom Gates
- Construction of Concrete edge beams
- Asphalt road patching
- Paving with 80mm Interlocking, with 20mm Bedding Sand
- Layer works to 450mm Imported Materials.
- Road marking
- Installation of sleeves

Legislative Requirements

The most important legislation applicable to the proposed project are listed below:

- National Environmental Management Act (No. 107 of 1998) [as amended]
  - Section 28: Duty of Care and responsibilities to minimise and remediate environmental degradation.

- EIA Regulations, 2014 (Government Notices 982) [as amended]
  - The EIA regulations prescribe the manner and content of the Basic Assessment and Public Participation Processes be followed as well as the content of the Environmental Management Programme.

Alternatives

For the proposed development, only one (1) site is considered. This is because of the location of the study area. This site is preferred by its close proximity to the City of Tshwane Regional Offices. In close proximity to the study area is the Areyeng Bus Depot, City of Tshwane, Belle Ombre Housing Department, a Clinic and the Department of Transport and Infrastructure to mention but a few.

The proposed Overflow Car Parking will assist all of the City's business hub in securing safe and protected parking for its employees and visitors. Part of the infrastructure that will be installed at the parking lot is electrical fences with CCTV cameras.

Furthermore, Technology Alternatives will be considered instead of site alternative. The technology that will be employed would be that of Greenhouse Gas, such as ensuring that the car parking is built in such a way that solar panels would be installed on the roof of the car parking, where the electric fence and other facilities that would require electricity will feed from the solar source.

Public Participation

The Public Participation Process is undertaken as part of the Basic Assessment Process for the proposed Overflow Car Parking with its Associated Infrastructure in Belle Ombre, Pretoria, Gauteng Province. The process is undertaken to ensure compliance with regard to the requirements in terms of the EIA Regulations, 2014 (as amended), published under the National Environmental Management Act (Act No. 107 of 1998, as amended).

This is a Draft Basic Assessment Report (DBAR), and will be circulated amongst the Organ of State, Local Municipalities, Stakeholders and Interested and Affected Parties. A thirty (30) day review and comment period will be afforded to all aforementioned parties to comment on the draft reports.

Next phases of the public participation process

- Review period for DBAR for thirty (30) days;
- Erection of Site Notices including:
  - DBAR review period and information regarding where the report can be accessed
  - Information on Public Meeting
- Placement of advert in the Local Newspaper
- Engagement will Ward Cllr and other relevant Government Departments

Specialist Studies

Two specialist studies were undertaken for the proposed development. The specialist studies that were undertaken are: Terrestrial Biodiversity Assessment Study and Archaeological Assessment Study. Herein below each specialist finding:

1. Terrestrial Biodiversity Assessment:

Results – Flora Assessment

Important plant taxa are those species that have a high abundance, a frequent occurrence or are prominent in the landscape within a particular vegetation type. Mucina & Rutherford (2006), provide the species that are important in the Marikana Thornveld (SVcb6) vegetation type. Based on the Botanical Database of Southern Africa (BODATSA)- new Plants of Southern Africa (POSA, 2016) database, there were no Botanical record collections for the broader study area therefore number of species of conservation concern could not be determined at desktop level.

Based on the field survey, in terms of vegetation structure, the grass layer was dominant in plant community with the shrub layer being subdominant. Dominant grass species include: Heteropogon contortus, Eragrostis trichophora, and anthephora pubescens Trees and shrubs (including herbs and bush shrubs) containing Arundo donax, cyperus eragrostis, and erigeron canadensis. There were no plants of conservation concern identified in the project site.

Results – Fauna Assessment

Historically, the study area could have provided habitat for a diverse population of larger mammal species, but the urbanisation and proximity to the city, have transformed the majority of the habitats and due to these anthropogenic disturbances, it is likely that only the more common and smaller mammal species such as rodents may occur, which show more adaptation.

During the field survey, faunal species were photographed in the project site.
There are observed standing water/aquatic environment in proximity to the site may be ideal for amphibian species particularly during wet season and spawning months however, no evidence of existing species was noted on site.

Habitat Assessment and Sensitivity

The entire project site was determined to be of Negligible sensitivity due to the uniformity of habitat type, the site is completely transformed with no natural habitat remaining and limited scope for rehabilitation. No species of conservation concern were noted and although the area has evidence anthropogenic impacts and activities.

Conclusion

The following conclusions were reached based on the result of the desktop assessment and field survey:

- The project site is situated in an ecosystem classified as vulnerable. However, the project site is highly degraded due to its proximity to the city centre and urbanisation.
- Furthermore, the sensitivity of the proposed development site is ranked as Negligible, meaning that the land has low conservation value and could be considered for development

with conditions.

- The project is considered to have limited impact on the remaining floral and faunal communities in the proposed development site.
- There were no species of conservation concern or sensitive ecological systems, or components recognised.

Recommendation:

It is recommended a Geotechnical study be undertaken to determine the vulnerability of the soil and geology of the study area. Considering the findings of this study, from a terrestrial ecology perspective no fatal flaws were identified for the proposed project. It is thus the opinion of the specialists that the proposed project is considered acceptable, but only if the appropriate due care and recommendations are implemented.

2. Archaeological Assessment Study – Phase 1

Survey Findings and Discussions

The main aim of the survey was to evaluate potential heritage resources that would occur within the boundaries of the proposed area (s), as well as to determine if there is any hamartia that may prevent the proposed development from taking place in any of the proposed study area. The Phase 1 Archaeological Impact Assessment for the proposed development did not yield any heritage resources within the footprint of the proposed area.

Recommendations and Discussions

Although no archaeological objects were observed during the survey, the client is reminded that these often happen underground, as such should any archaeological material be unearthed accidentally during construction (e.g., excavation), SAHRA should be alerted immediately, and construction activities within a radius of at least 10m of such indicator be stopped. The area should then be demarcated by a danger tape. Accordingly, a professional archaeologist or SAHRA officer should be contacted immediately. In the meantime, it is the responsibility of the Environmental Officer and the contractor to protect the site from publicity (i.e., media) until a mutual agreement is reached between the client and the consultant. It is mandatory to report any incident of human remains encountered to the South African Police Services, SAHRA staff members, and professional archaeologists. Any measure to cover up the suspected archaeological material or to collect any resources is illegal and punishable by law under Section 35(4) and 36(3) of the National Heritage Resources Act, Act 25 of 1999. The developer must induct field workers about archaeology, and steps that should be taken in the case of exposing archaeological materials.

3. Geotechnical Investigation

Geotechnical Investigation was conducted on the 08 May 2020 by Earthinv Lab, who were contracted by Iliso Consulting Engineers. Seven (7) tests pits were dug, and samples were taken to the lab to investigate the following issues:

- Foundation Indicators
- Bulk Density and soil activity (Shrink/Swell Potential)
- Hydrometer Analysis
- Maximum Dry Density (MDD)
- California Bearing Ratio (CBR)

- Consolidation Tests

The findings from a Geotechnical evaluation point states that:

i. **Supplementary Investigations:** The foundation conditions encountered during the field work were generally consistent. No additional investigations are thus required or recommended.
ii. **Mining activity and undermining:** No evidence of mining was observed on site and there are no known occurrences of economic mineral deposits on the site.
iii. **Dolomite:** The site is not a "dolomitic" site and none of the restrictions relating to development on dolomitic terrain are applicable.
iv. **Contaminated Soils (including tailings):** No contaminated soils were noted but careful consideration must be exercised during the excavations. The site is also not on or near a tailings dam.
v. **Slopes and Cuttings:** The site to be developed is having generally flat rolling terrain and no terracing is required.

The test pits indicate a consistent soil profile across the site. However, it is possible that the ground profile varies at other areas on site where these investigations were not performed. Hence it is highly recommended that an experienced geologist or geotechnical engineer is engaged to assess the conditions during construction to ensure that the ground conditions are as anticipated and to make recommendations if conditions change. The test pits sidewalls proved to be stable and there was no indication of ground sidewall collapse during investigations.

CONCLUSION

Environmental Assessment Practitioner's Statement:

From an environmental point of view, the activity is considered viable, and no fatal flaw exists. It is recommended that all mitigation measures be implemented to reduce the anticipated impacts.

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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 1/2022)

Kindly note that:

1. This **Basic Assessment Report** is the standard report required by GDARD in terms of the EIA Regulations, 2014.

2. This template is current as of April 2022. It is the responsibility of the EAP to ascertain whether subsequent versions of the template 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 must be submitted, for purposes of comments within a period of thirty (30) days, to a Competent Authority (uploaded to the EIA online system) empowered in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended to consider and decide on the application. The EIA online system can be accessed at https://eia.gauteng.gov.za**.
5.

6. **A copy (PDF) of the final report and attachments must be uploaded to the EIA online system. The EIA online system can be accessed at https://eia.gauteng.gov.za.**

7. **Draft and final reports submitted in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) must be emailed to environmentsue@gauteng.gov.za.**

8. 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.

9. Selected boxes must be indicated by a cross and, when the form is completed electronically, must also be highlighted.

10. An incomplete report may lead to an application for environmental authorisation or Waste Management License being refused.

11. 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 authorization or Waste Management License being refused.

12. 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 or Waste Management License being refused.

13. The applicant must fill in all relevant sections of this form. Incomplete applications will not be processed. The applicant will be notified of the missing information in the acknowledgement letter that will be sent within 10 days of receipt of the application.

14. 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.

15. 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 Sustainable Utilisation of the Environment (SUE) Branch
P.O. Box 8769
Johannesburg
2000

Ground floor, Umnotho House, 56 Eloff Street, Johannesburg

Administrative Unit telephone number: (011) 240 3051/3052
Department central telephone number: (011) 240 2500

(For official use only)

NEAS Reference Number:						
File Reference Number:	**GAUT 002/22-23/E3364**					
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.

This BAR will be submitted within the timeframe

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.

N/A

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

If no, state reasons for not attaching the list.

Have State Departments including the competent authority commented? NO

If no, why?

This is a draft report. All State Departments will still be afforded an opportunity to comment on this Draft Report.

SECTION A: ACTIVITY INFORMATION

1 PROPOSAL OR DEVELOPMENT DESCRIPTION

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

Proposed Phase 2, Construction of Belle Ombre Overflow Car Parking, Electrical Fence and Associated Infrastructure, City of Tshwane Metropolitan Municipality, Gauteng Province of South Africa.

Select the appropriate box

The application is for an upgrade of an existing development		The application is for a new development	X	Other, specify	

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

YES	NO
	X

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

Building plans in terms of Town Planning Act will be submitted to the City of Tshwane Metropolitan Municipality for review and approval. All buildings structures and services will adhere to the minimum standards of the Municipality.

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

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:
National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended).	National & Provincial	27 November 1998
National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended).	National & Provincial	1998
Section 28 of the Town Planning & Townships Ordinance	National	1986
National Heritage Resources Act 25 of 1999	SAHRA	2000

Title of legislation, policy or guideline:	Administering authority:	Promulgation Date:
National Water Act (Act No: 36 of 1998)	DWA	1998
Occupational Health and Safety Act (Act No: 58 of 1993)	National & Provincial	2014
National Environmental Management Act: Air Quality, 2004	National & Provincial	2004
National Environmental Management Act: Biodiversity Act (Act No: 10 of 2004)	National and Provincial	2004
Requirements for biodiversity assessments Version 2. Directorate of Nature Conservation, Department of Agriculture and Rural development.	Provincial	2012
Development Facilitation Act (Act No. 67 of 1995)	National & Provincial	1997
Environmental Nature Conservation Act (Act No: 100 of 1996)	National & Provincial	1983
National Environmental Management: Waste Act (Act 59 of 2009)	National & Provincial	2009
DEA Guidelines on Public Participation	National (DEA)	2012
DEA Guidelines on Need and Desirability	National (DEA)	2004
DEA Guidelines on Alternatives	National (DEA)	2004

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

Legislation, policy of guideline	Description of compliance
National Environmental Management Act No.107 of 1998 as amended.	A Basic Assessment process is required to obtain authorization for the activities, as per the EIA Regulations (2014) promulgated in terms of NEMA. The proposed development triggers Activity No. 12 of Listing Notice 3 of the Environmental Impact Assessment Regulations, 2014 (as amended), published under the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998, as amended). Listing Notice 3, Activity 12 states: *"The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan."* ***c. Gauteng*** *ii. Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans;*

Municipal Systems Act, 2000 (Act 32 of 2000)	The proposed development is an extension to an existing project by the City of Tshwane Metropolitan Municipality. Therefore, all By-Laws, Policies and Legislation would be adhered with.
Municipal Structures Act, 1998 (Act 117 of 1998)	

The proposed project entails the:

1. Construction of a new overflow parking which will include following but not limited to:
    - Installation of ClearVu Fence
    - Installation of ClearVu Sliding Gate
    - Construction of Retaining Wall
    - Installation of 5m Energy Poles
    - Parking Area with car ports
    - Installation of Kerbs
    - Construction of Stormwater Structures
    - Clearing (with relocation of services) and grubbing of the parking area.
    - Mass earthworks (Excavation, Fills and Roadbed)
    - Paving with 80mm Interlocking, with 20mm Bedding Sand
    - Road marking
    - Public lighting

The proposed development is an extension to an existing project, therefore, there would be an extension of works on the existing infrastructure which includes the following but not limited to:

- Installation of ClearVu Sliding Gate
- Installation of ClearVu Fence
- Construction of Refuse Waste Bin
- Construction of Paved Walkways
- Installation of Storm water concrete Manhole Cover
- Clearing and grubbing of the parking area.
- Installation of Cameras
- Installation of Boom Gates
- Construction of Concrete edge beams
- Asphalt road patching
- Paving with 80mm Interlocking, with 20mm Bedding Sand
- Layer works to 450mm Imported Materials.
- Road marking
- Installation of sleeves

3 ALTERNATIVES

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

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

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

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

The earmarked study area for the proposed car parking and associated infrastructure was chosen because it is in close proximity of Areyeng Bus Depot. This site alternative was earmarked so it can be an overflow parking for the employees of the Areyeng Bus Depot. This is to ensure that the Bus Depot can be utilized for its purpose and the proposed car parking can assist with parking space for the employees and visitors.

Provide a description of the alternatives considered

No.	**Alternative type**, either alternative: site on property, properties, activity, design, technology, energy, operational or other(provide details of "other")	**Description**
1	Proposal	Proposed overflow car parking, installation of electrical fence and associated infrastructure in the study area.
2	Alternative 1	Proposed overflow car parking, installation of electrical fence and associated infrastructure in the study area. The technology that will be employed would be that of Greenhouse Gas, such as ensuring that the car parking is built in such a way that solar panels would be installed on the roof of the car parking, where the electrical fence and other facilities that would require electricity will feed from the solar source.

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

No site alternative was considered and assessed for the proposed development, only technology alternatives would be considered as an aim to introduce and adhere to the Green House Gasses regulations and to promote more Green Building Houses. All considered technologies would be discussed in detail.

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)***	0,3Ha

Alternatives:

Alternative 1 (if any)	
Alternative 2 (if any)	

Ha/ m^2

or, for linear activities:

	Length of the activity:
Proposed activity	
Alternatives:	
Alternative 1 (if any)	
Alternative 2 (if any)	

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	0,3Ha
Alternatives:	
Alternative 1 (if any)	
Alternative 2 (if any)	

Ha/m^2

5 SITE ACCESS

Proposal

Does ready access to the site exist, or is access directly from an existing road?	YES **X**
If NO, what is the distance over which a new access road will be built	m

Describe the type of access road planned:

The site can be accessed via Bosman Street and Bosman Road, in Pretoria Central, Gauteng Province.

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

	YES	NO
Does ready access to the site exist, or is access directly from an existing road?		
If NO, what is the distance over which a new access road will be built	m	

Describe the type of access road planned:

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

	YES	NO
Does ready access to the site exist, or is access directly from an existing road?		
If NO, what is the distance over which a new access road will be built	m	

Describe the type of access road planned:

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

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.

Locality and Layout maps are appended as Appendix 1.

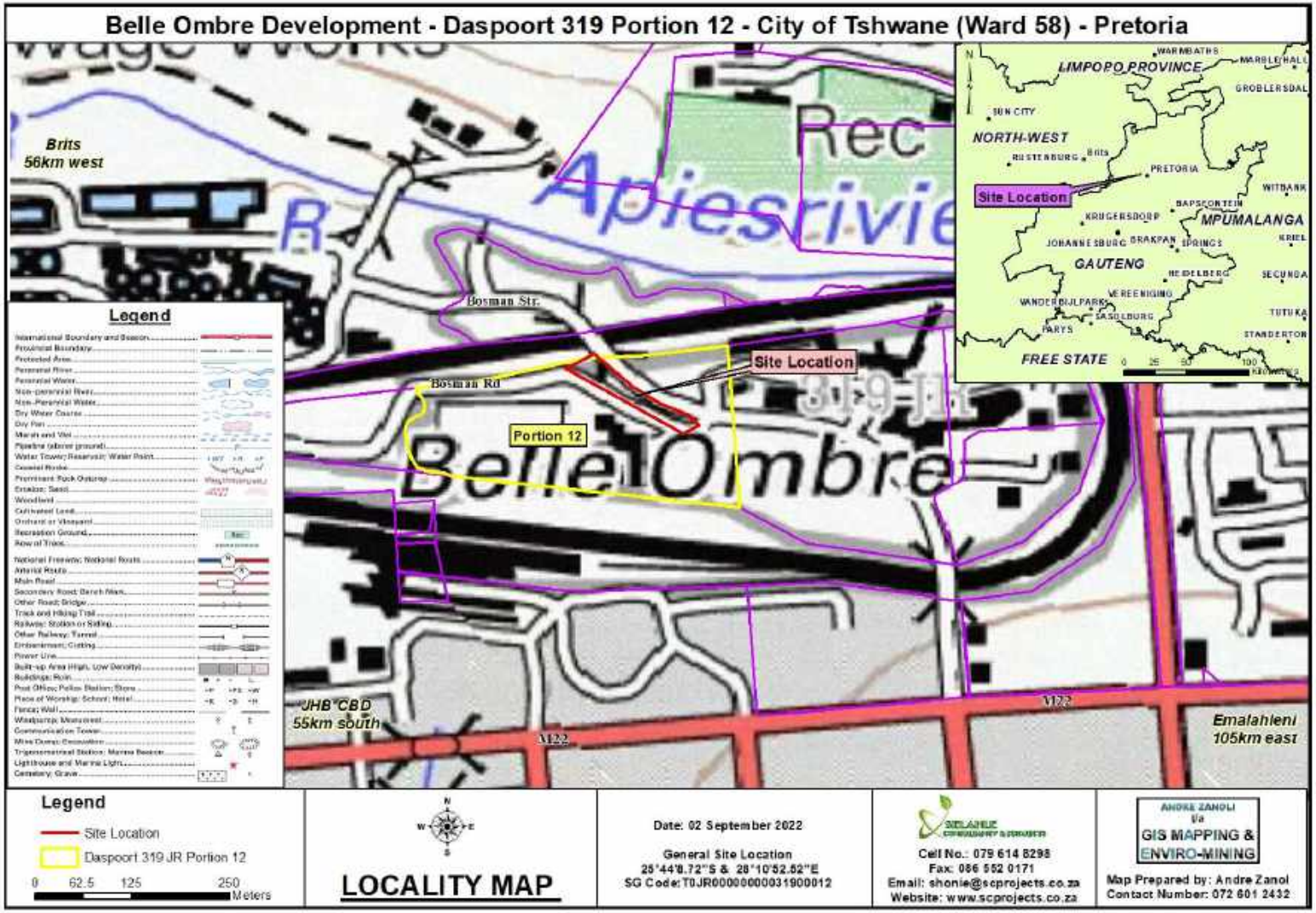


Figure 1: Belle Ombre Overflow Car Parking Phase 2 – Locality Map

7 SITE PHOTOGRAPHS

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.

Site Photographs are appended hereto as Appendix 2.

8. FACILITY ILLUSTRATION

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.

Facility illustrations of the proposed development are appended hereto as Appendix 3

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	**0**	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	**0**	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		(complete only when appropriate for above)
Section B – Location/route Alternative No.		(complete only when appropriate for above)

1 PROPERTY DESCRIPTION

Property description: (Including Physical Address and Farm name, portion etc.)	The proposed study area is located in Ward 58 of Portion 12 of the Farm Daspoort 319 JR, City of Tshwane, within the City of Tshwane Metropolitan Municipality, Gauteng Province.

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):**
	25º 44’ 07.39”	28º 10’ 51.22”

In the case of linear activities:

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

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

Addendum of route alternatives attached	

The 21 digit Surveyor General code of each cadastral land parcel

PROPOSAL	**T**	**0**	**J**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**1**	**9**	**0**	**0**	**0**	**1**	**2**
ALT. 1																					
ALT. 2																					
etc.																					

3 GRADIENT OF THE SITE

Indicate the general gradient of the site.

Flat **X**	**1:50 – 1:20** **X**	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 **X**	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)		NO X
Dolomite, sinkhole or doline areas		NO X
Seasonally wet soils (often close to water bodies)		NO X
Unstable rocky slopes or steep slopes with loose soil		NO X
Dispersive soils (soils that dissolve in water)		NO X
Soils with high clay content (clay fraction more than 40%)		NO X
Any other unstable soil or geological feature		NO X
An area sensitive to erosion		NO X

(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):**
o	o

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):**
o	o

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):**
o	o

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)?	NO X

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 = 30%	**Natural veld with scattered aliens =50%**	Natural veld with heavy alien infestation % =	Veld dominated by alien species % =	Landscaped (vegetation) % =
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % =	Building or other structure % =	**Bare soil =20%**

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		NO X

If YES, specify and explain:

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.		NO X

If YES, specify and explain:

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

If YES, specify and explain:

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

If yes complete specialist details

Name of the specialist:	Eco-Sentle Pty Ltd		
Qualification(s) of the specialist:	MSc. Aquatic Health		
Postal address:	Cnr Cedar & 3rd Street, Chartwell		
Postal code:	2055		
Telephone:		Cell:	083 537 0424
E-mail:	musa@ecosentle.co.za	Fax:	

Are any further specialist studies recommended by the specialist?	YES X	

If YES, specify:	The Ecology Specialist recommended that a Geotechnical Investigation study be undertaken.

If YES, is such a report(s) attached?	YES X

If YES list the specialist reports attached below

A previously done Geotechnical Investigation Report has been appended.

Signature of specialist:		Date:	August 2022

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.

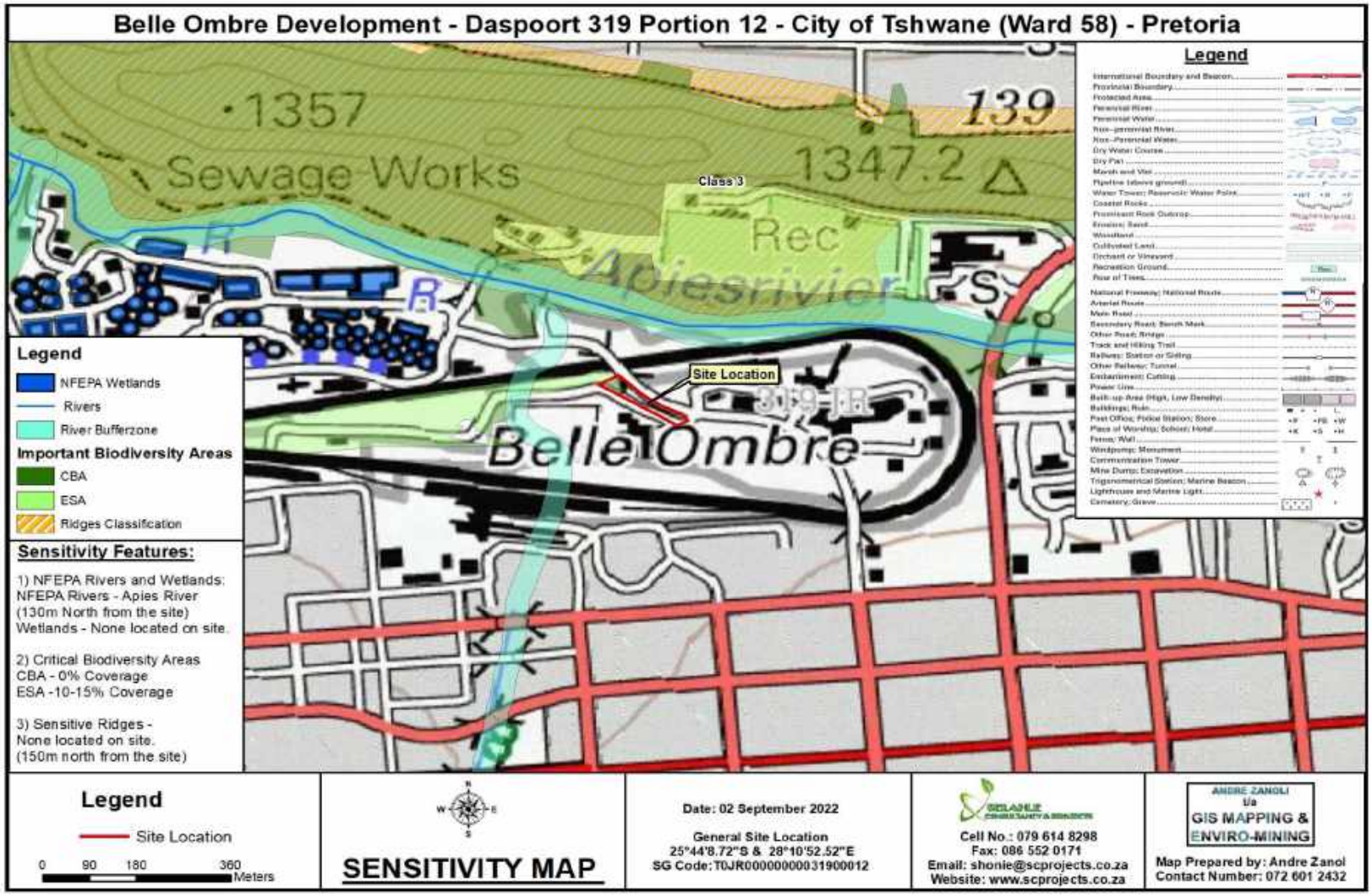


Figure 2: Belle Ombre Overflow Car Parking Phase – Sensitivity Map

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):				

NORTH

1	**1**	**1**	**1, 13,14**	**13,14**
1	**1**	**1,14**	**13,14,15**	**13,14**
1	**15**		**13,14,15**	**13,14**
1	**15**	**13,14**	**14,15**	**15**
13	**14**	**24**	**14,15**	**15**

WEST EAST

SOUTH

= Site

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

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	
	X	

If yes indicate the type of reports below

- Terrestrial Biodiversity Assessment Report
- Archaeological Phase 1 Assessment Report

9 SOCIO-ECONOMIC CONTEXT

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

The City of Tshwane Metropolitan Municipality is classified as a Category A municipality by the Municipal Demarcation Board in terms of Section 4 of the Local Government: Municipal Structures Act, 1998 (Act 117 of 1998). The Municipality was established on 5 December 2000 through the integration of various municipalities and councils that had previously served the greater Pretoria area and surrounding areas.

The City of Tshwane boundary was further amended on 28 May 2008 through a proclamation in the Government Gazette that incorporated the former Metsweding District Municipality, including Dinokeng tsa Taemane (Cullinan) and Kungwini (Bronkhorstspruit), into the City of Tshwane. The incorporation, which took place in May 2011 after the local government elections, enlarged Tshwane to 6 345 km². Currently, Tshwane stretches almost 121 km from east to west and 108 km from north to south, making it the third-largest city in the world after New York and Tokyo/Yokohama. It also makes up more than 30% of Gauteng, which is 19 055 km² in extent.

The Incorporation of Metsweding District Municipality into the City of Tshwane is in line with the Gauteng Global City Region Strategy which sought to reduce the number of municipalities in Gauteng.

The population within the city of Tshwane as per census, 2022 is at 2,739,768 with a growth rate of 3.16% increase from 2016, which had a population of 2,175,904.

The City is diverse and growing economy which contributed 27 per cent to Gauteng's GDP and 9 per cent to the national GDP in 2011 with its economy is highly service based with community services and government, financial services and manufacturing as the most significant sectors.

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 m2 in extent; or

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

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

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:

No archaeological objects were observed during the survey, the client is reminded that these often happen underground, as such should any archaeological material be unearthed accidentally during the course of construction (e.g., excavation), SAHRA should be alerted immediately, and construction activities be stopped within a radius of at least 10m of such indicator.

There are no major heritage reasons why the proposed development could not proceed.

Will any building or structure older than 60 years be affected in any way?		NO **X**
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?		NO **X**

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

Was a specialist consulted to assist with completing this section	YES X	

If yes complete specialist details

Name of the specialist:	Vhubvo Consultancy Cc		
Qualification(s) of the specialist:	MSc. Archaeology Anthropology		
Postal address:	546 16th Road, Constantia Park, Building 2 Upstairs, Midrand		
Postal code:	1685		
Telephone:	011 312 2878	Cell:	082 535 6855
E-mail:	munyadziwa@vhubvo.co.za	Fax:	086 566 8079

Are any further specialist studies recommended by the specialist?		NO X

If YES, specify:	No archaeological objects were observed during the survey, the client is reminded that these often happen underground, as such should any archaeological material be unearthed accidentally during the course of construction (e.g., excavation), SAHRA should be alerted immediately, and construction activities be stopped within a radius of at least 10m of such indicator. There are no major heritage reasons why the proposed development could not proceed.

If YES, is such a report(s) attached?		NO X

If YES list the specialist reports attached below

Signature of specialist:		Date:	September 2022

SECTION C: PUBLIC PARTICIPATION (SECTION 41)

1 THE ENVIRONMENTAL ASSESSMENT PRACTITIONER MUST CONDUCT PUBLIC PARTICIPATION PROCESS IN ACCORDANCE WITH THE REQUIREMENT OF THE EIA REGULATIONS, 2014.

2 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?

	NO **X**

This is a Draft BAR, therefore, any comment that will be received during the review period will be included in the Comment and Response Report (CRR).

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

	NO **X**

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

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

The Draft Report is still under review, anticipating getting comments before the commenting period elapses. However, all comments received will be included in the Comment and Response Report (CRR).

3 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?

	NO **X**

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

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

This is a Draft BAR, therefore, any comment that would be received during the review period will be included in the Comment and Response Report (CRR).

4 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.

5 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

Appendix 1 – Proof of site notice

Appendix 2 – Written notices issued as required in terms of the regulations

Appendix 3 – Proof of newspaper advertisements

Appendix 4 –Communications to and from interested and affected parties

Appendix 5 – Minutes of any public and/or stakeholder meetings

Appendix 6 - Comments and Responses Report

Appendix 7 –Comments from I&APs on Basic Assessment (BA) Report

Appendix 8 –Comments from I&APs on amendments to the BA Report

Appendix 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
4) Each alterative needs to be clearly indicated in the box below
5) Attach the above documents in a chronological order

Section D has been duplicated for alternatives	**0**	times

(complete only when appropriate)

Section D Alternative No.	**0**	(complete only when appropriate for above)

1 WASTE, EFFLUENT, AND EMISSION MANAGEMENT

Solid waste management

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

YES	
X	

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

1-2.5 m^3

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

Construction waste will comprise mainly of excess spoil material from excavation and trenching activities, construction material, general waste to be disposed of at registered landfill sites.

Spoil material will be reused where possible (as backfill, erosion mitigation works) while excess spoil will be disposed of off-site.

General waste will be kept in bins within the construction site and will be collected and disposed of weekly to a registered landfill site.

Hazardous Waste Management, all hazardous waste is to be disposed of at the approved hazardous waste facility

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

To a registered landfill site within City of Tshwane jurisdiction.

Will the activity produce solid waste during its operational phase?

YES	
X	

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

1.5m^3

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

The waste will be integrated into the municipal waste stream and will be removed by the appointed municipal waste removal company.

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?

	NO
	X

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

No official confirmation has been received yet. This may be sorted later but prior to construction

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?

	NO
	X

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?

	NO
	X

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:

- Separation of waste during the construction phase: The ECO will monitor the separation of waste during the construction phase:
  - Cement bags will be placed in a separate container and will be taken to a registered landfill site. Waste slips will be kept on site for inspection purposes.
  - Plastic material will be removed from waste stockpiles and placed in separate containers. Recycling bins will be placed at the eating area to encourage workers to separate waste and contribute to recycling. Toolbox tools will be sued to educate workers and explain the concept of recycling to them

- Separation of waste during the operational phase: separation of waste will be done as per the municipal guidelines.

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?	NO X
If yes, what estimated quantity will be produced per month?	m^3
If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the liquid effluent to be generated by this activity(ies)?	NO X

Will the activity produce any effluent that will be treated and/or disposed of on site?	NO X
If yes, what estimated quantity will be produced per month?	m^3

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

N/A

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?	NO X

If yes, provide the particulars of the facility:

Facility name:			
Contact person:			
Postal address:			
Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	

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

Liquid effluent (domestic sewage)

Will the activity produce domestic effluent that will be disposed of in a municipal sewage system?	NO X
If yes, what estimated quantity will be produced per month?	m^3
If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the domestic effluent to be generated by this activity(ies)?	NO X

Will the activity produce any effluent that will be treated and/or disposed of on site?		NO X

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

Emissions into the atmosphere

Will the activity release emissions into the atmosphere?		NO X
If yes, is it controlled by any legislation of any sphere of government?	YES	NO

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.
If no, describe the emissions in terms of type and concentration:

Construction Phase:

- Emission released by construction vehicles – the volume of emissions released is minimal will not impact negatively on the emission concentration within the area. The impact will be for a short period of time and the impact will be insignificant.
- Dust – dust will be mitigated through dust suppression methods. A water truck will be on site and the site will be damped regularly. The impact will be of a low significance and will only be present during the construction phase.
- Fires – no open fires will be allowed on site during the construction phase. The burning of construction waste is not permissible and will be monitored by the ECO and the Health and Safety Officer.

Operational Phase:

No significant impact is expected during the operational phase. Normal vehicular emissions will be generated.

2 WATER USE

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

Municipal X	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: liters

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?		NO X

If yes, list the permits required

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

Municipality, City of Tshwane Metropolitan Municipality.

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

4 ENERGY EFFICIENCY

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

There is little scope for energy efficiency measures in the construction and operation of the parking. Optimal planning and coordination of contractors and materials will be undertaken to reduce and optimise travel costs and fuel usage.

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

The technology that will be employed will be that of Greenhouse Gas, such as ensuring that the car parking is built in such a way that solar panels would be installed on the roof of the car parking, where the electrical fence and other facilities that would require electricity will feed from the solar source.

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 AND AFFECTED PARTIES

Summarise the issues raised by interested and affected parties.

This is a Draft Basic Assessment Report (DBAR), which will be distributed to all Interested and Affected Parties (I&APs) for their issues, comments and concerns. All issues will be recorded and reported in the Final Basic Assessment Report (FBAR).

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):

This is a Draft BAR, therefore, any comment that would be received during the review period would be included in the Comment and Response Report (CRR).

2 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION AND OPERATIONAL PHASE

Briefly describe the methodology utilised in the rating of significance of impacts

NATURE		
Include a brief description of the impact of environmental parameter being assessed in the context of the project. This criterion includes a brief written statement of the environmental aspect being impacted upon by a particular action or activity.		
GEOGRAPHICAL EXTENT		
This is defined as the area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment of a project in terms of further defining the determined.		
1	Site	The impact will only affect the site
2	Local/district	Will affect the local area or district
3	Province/region	Will affect the entire province or region
4	International and National	Will affect the entire country
PROBABILITY		
This describes the chance of occurrence of an impact		
1	Unlikely	The chance of the impact occurring is extremely low (Less than a 25% chance of occurrence).
2	Possible	The impact may occur (Between a 25% to 50% chance of occurrence).
3	Probable	The impact will likely occur (Between a 50% to 75% chance of occurrence).
4	Definite	Impact will certainly occur (Greater than a 75% chance of occurrence).
REVERSIBILITY		
This describes the degree to which an impact on an environmental parameter can be successfully reversed upon completion of the proposed activity.		
1	Completely reversible	The impact is reversible with implementation of minor mitigation measures
2	Partly reversible	The impact is partly reversible but more intense mitigation measures are required.
3	Barely reversible	The impact is unlikely to be reversed even with intense mitigation measures.
4	Irreversible	The impact is irreversible and no mitigation measures exist.
IRREPLACEABLE LOSS OF RESOURCES		
This describes the degree to which resources will be irreplaceably lost as a result of a proposed activity.		
1	No loss of resource.	The impact will not result in the loss of any resources.
2	Marginal loss of resource	The impact will result in marginal loss of resources.

3	Significant loss of resources	The impact will result in significant loss of resources.
4	Complete loss of resources	The impact is result in a complete loss of all resources.
DURATION		
This describes the duration of the impacts on the environmental parameter. Duration indicates the lifetime of the impact as a result of the proposed activity		
1	Short term	The impact and its effects will either disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase (0 – 1 years), or the impact and its effects will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0 – 2 years).
2	Medium term	The impact and its effects will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years).
3	Long term	The impact and its effects will continue or last for the entire operational life of the development but will be mitigated by direct human action or by natural processes thereafter (10 – 50 years).
4	Permanent	The only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered transient (Indefinite).
CUMULATIVE EFFECT		
This describes the cumulative effect of the impacts on the environmental parameter. A cumulative effect/impact is an effect which in itself may not be significant but may become significant if added to other existing or potential impacts emanating from other similar or diverse activities as a result of the project activity in question.		
1	Negligible Cumulative Impact	The impact would result in negligible to no cumulative effects
2	Low Cumulative Impact	The impact would result in insignificant cumulative effects
3	Medium Cumulative impact	The impact would result in minor cumulative effects
4	High Cumulative Impact	The impact would result in significant cumulative effects
INTENSITY/ MAGNITUDE		
Describes the severity of an impact		
1	Low	Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible.
2	Medium	Impact alters the quality, use and integrity of the system/component but system/ component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity).

3	High	Impact affects the continued viability of the system/ component, and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation.
4	Very high	Impact affects the continued viability of the system/component, and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired (system collapse). Rehabilitation and remediation often impossible. If possible, rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.

SIGNIFICANCE

Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. This describes the significance of the impact on the environmental parameter. The calculation of the significance of an impact uses the following formula:

(Extent + probability + reversibility + irreplaceability + duration + cumulative effect) x magnitude/intensity.

The summation of the different criteria will produce a non-weighted value. By multiplying this value with the magnitude/intensity, the resultant value acquires a weighted characteristic which can be measured and assigned a significance rating.

Points	Impact Significance Rating	Description
6 to 28	Negative Low impact	The anticipated impact will have negligible negative effects and will require little to no mitigation.
6 to 28	Positive Low impact	The anticipated impact will have minor positive effects.
29 to 50	Negative Medium impact	The anticipated impact will have moderate negative effects and will require moderate mitigation measures.
29 to 50	Positive Medium impact	The anticipated impact will have moderate positive effects.
51 to 73	Negative High impact	The anticipated impact will have significant effects and will require significant mitigation measures to achieve an acceptable level of impact.
51 to 73	Positive High impact	The anticipated impact will have significant positive effects.
74 to 96	Negative Very high impact	The anticipated impact will have highly significant effects and are unlikely to be able to be mitigated adequately. These impacts could be considered "fatal flaws".
74 to 96	Positive Very high impact	The anticipated impact will have highly significant positive effects.

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.

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
Flora Disturbances	Medium	▪ Before any vegetation is removed, suitably qualified person (i.e. on ECO request or 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. ▪ All invader or exotic plant species must be removed from the site and disposed of at a landfill site. ▪ Removal of natural vegetation should only be limited to the footprint of the development	Low	Though the Ecological Assessment indicated that there are no protected species, the likelihood for a protected specie to arise can be high. Having a qualified specialist on site like an ECO would minimise any chances of such occurring.
Fauna Disturbances	Low	▪ Snaring and hunting of fauna by construction workers on or adjacent to the site are strictly prohibited and the Local Municipality shall prosecute offenders. It should also be a condition of employment that any employees/ workers caught poaching will be dismissed. ▪ Workers must be trained on how to deal with fauna species as intentional killing will not be tolerated. ▪ Any protected/ Red Data fauna, that will have to be removed shall be removed by a suitably qualified specialist and relocated. The applicable responsible person at the provincial department must be notified in the event of such fauna 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.	Low	Snaring and hunting of present fauna on site would be practised by untrained employees and this will impact the existing ecosystems

Increased run-off due to hard surfaces	Medium – Low	▪ Storm water from the site will drain towards the drainage basin situated in the south-west side of the property where it will be discharged naturally. ▪ 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.	Low	At the study area, there is a challenge of existing stormwater drainage system, should this not be implemented, the drainage issue ,might persist and impact on the outcome of the proposed project.
Soil Erosion	Medium – Low	▪ Construction activities should preferably take place during the dry months. All surface run-offs shall be managed in such a way so as to ensure erosion of soil does not occur. ▪ All surfaces that are susceptible to erosion shall be covered with a suitable vegetative cover as soon as construction is completed. ▪ No vehicles are allowed to move across any wet areas (e.g. drainage line), other than those specifically designated as access, which could cause erosion scouring and compaction. ▪ Straw bales should be placed and adequately secured on all downhill locations where erosion may occur to prevent washouts and to retain siltation and topsoil from the site. ▪ The area being cleared of vegetation for the construction activities must be limited to a minimum. Only the footprint of the structure may be cleared.	Low	The Ecological Report indicated that the soil at the proposed study area is rather soft, therefore there should be new embarkment done on site together with a Geotechnical Study to profile the type of soil on site to avoid future erosion during construction and operational phase. Should such not be done, and the mitigation not implemented, erosion would be one of the greatest challenges at the proposed study area.

Air Pollution	Medium – Low	▪ The liberation of dust into the surrounding environment shall be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents, such as dust nets. ▪ Machinery or equipment used on the site must not constitute a pollution hazard in respect of air pollution via excessive exhaust fumes. This shall be inspected regularly by the contractor and rectified immediately. ▪ No open fires will be allowed to be made on site.	Low	If no maintenance is done, the impact will have a compounding impact on the environment. This refers to the storage of material, ablution facilities and rehabilitation of construction sites at the completion of the project
Soil Pollution	Low	▪ Oil trays must be used under all standing heavy machinery. ▪ Absorbents and clean-up materials and kits should be standard equipment present on the construction site. ▪ Proper spill and leaks management guidelines and procedures should be part of the standard procedures of the construction team. ▪ The contractor to procure a spill kit and use it during the construction phase of the project. ▪ Fuel must be stored in a secure area in a steel tank supplied and maintained by the fuel suppliers. Leakage of fuel must be avoided. ▪ An adequate bund wall, 110% of volume, must be provided for fuel and diesel areas to accommodate any spillage or overflow from these substances. The area inside the bund wall must be lined with an impervious lining to prevent infiltration of the fuel into the soil. Firefighting equipment must be present at this site.	Low	The soil may be contaminated by spillage of fuel from construction vehicles and machinery that will be used.

Land Degradation	Low	▪ Concrete must only be mixed on mortarboards (where small quantities of onsite mixing are required) or other impermeable surfaces, and not directly on the ground. ▪ The visible remains of concrete, either solid or from washings, shall be physically removed immediately and disposed of as waste, (washing of visible signs into the ground is not acceptable). ▪ All excess aggregate shall also be removed and suitably disposed of.	Low	The remaining concrete mixture can degrade the environment if not properly managed. Cement and liquid concrete are hazardous to the natural environment on account of the high pH of the mixed material, and the chemicals contained therein.
Noise Pollution	Low	▪ All plant and construction equipment to be kept in good repair to ensure that point source noise emissions are reduced. ▪ Work outside the regular working hours (weekdays 8am – 5pm) must be approved, and adjacent property owners must be notified. ▪ Strive for compliance with the relevant South African National Standards (e.g. SANS 10103) and other noise control legislation such as the Occupational Health and Safety Act (Act No. 85 of 1993).	Low	During the construction phase, there will be an increase in the ambient noise level on-site and on surrounding properties.

Land pollution	Low	▪ Rubble and general construction waste on site should be removed at regular intervals. ▪ All waste must be separated according to type and stored in separate drums, adequately marked according to waste sort. ▪ The Contractor shall prevent littering and the random discard of solid waste on the site. ▪ Provision of adequate numbers of litter bins throughout the development; and Implementation of an appropriate collection and disposal strategy to ensure regular removal of waste to a permitted waste disposal facility. ▪ Hazardous waste not to be mixed with general waste and be disposed of at permitted site. ▪ Records of all waste being taken off site must be recorded and kept as evidence.	Low	Land Pollution due to the improper handling of waste during the construction phase.
Cultural and Heritage Sites	Low	▪ Although no archaeological artefacts were discovered during HIA study, other historical remains might be discovered during excavation activities. ▪ Should any remains be found on-site that are potentially human remains, the PHRA-G and South African Police Service should be contacted. ▪ Under no circumstances must any archaeological, historical or any physical cultural property be destroyed or removed from the site.	Low	Although no archaeological artefacts were discovered during site assessment, other historical remaining might be discovered during excavation activities.

Increased Traffic Bosman Street and Bosman Road	Medium	▪ A road safety programme should be implemented in order to inform all relevant parties of the possible risks of the construction site. ▪ Develop an information campaign regarding the hazards associated with increased heavy vehicle traffic, and precautionary measures to be taken by the Construction Company. ▪ Heavy trucks should be directed to deliver all construction material after peak hours each day (i.e. 09:00- 15:00)	Low	Should the mitigation be implemented, the increased traffic would cause a drastic traffic impact to the local employees around the proposed study area, causing a hindrance of traffic flow during peak hours
Employment Creation	Medium-High	▪ The proposed development will create more employment opportunities during construction	Medium	Status Quo
Crime, Safety and Security	Medium	▪ No construction activities are to be allowed after hours during weekdays, or over weekends. ▪ Only a limited number of two-night watchmen are to be allowed on the property to ensure the safety of equipment stored on site overnight.	Low	Not Applicable

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

- Ecological Assessment Study
- Archaeological Assessment Study

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

From an environmental point of view, the activity is considered viable, and no fatal flaw exists. It is recommended that all mitigation measures be implemented to reduce the anticipated impacts.

3 IMPACTS THAT MAY RESULT FROM THE DECOMISSIONING AND CLOSURE PHASE

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 proposed Car Park and Associated Infrastructure will operate for a very long time – it is thus not realistic to evaluate the decommissioning phase at this stage. It is not foreseen that the proposed development would reach a decommissioning and closure phase due to the type of development. Section 3 is therefore not applicable to the proposed development.

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.

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

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:

1. **Construction phase:**

a) Erosion of soil if the soil is not properly maintained during the construction phase.
b) Construction-material by products and construction sites- If no maintenance done. the impact will have compounding impact on the environment.
c) Pollution.
d) Crime increases in the area due to construction activities.
e) Increase of traffic in Bosman Street and Bosman Road.

2. **Operational phase:**

The following Residual Impacts were identified:

Residual impacts are those impacts that will remain notwithstanding the implementation of mitigation measures. Potential residual impacts are those associated with the following:

- Increased surface runoff due to an increase in hard open spaces;
- Increase in traffic volumes.

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 proposed development will result in the minimal clearance of vegetation. The clearing of vegetation is likely to result in exposing the land and possible surface runoff pollution. This can be mitigated by implementing appropriate stormwater management strategies, including proper channelling of the stormwater during construction and operational phases by installing proper infrastructure for stormwater management. Other impacts that were identified, for the construction phase, are noted to be mitigatable. Noise and dust and oil spillage can be mitigated by avoiding and managing the occurrences. Impacts during the construction stage may be short-term and may end when construction is completed. Operational stage impacts on the natural environment can also be mitigated if proper strategies are put in place The possibility of mitigating these impacts makes reduces their significant levels considerably, to low significance.

- Socio-economic impacts during the construction stage will include employment opportunities, for both labours and suppliers of construction materials. The spiral effect of these will contribute to the improvement of economic activities during this period.

- The proposed Overflow Car Parking will assist all of the City's business hub in securing safe and protected parking for its employees and visitors.
- The proposed development will provide additional work opportunities, and increase the City of Tshwane Metropolitan Tax base.
- All identified Impacts can be successfully mitigated.

It is therefore suggested that the proposal be approved.

Alternative 1

Alternative 2

No-go (compulsory)

This implies that the site be left as is and that no development or alteration be done. If this alternative is pursued the employment status will remain as status quo. This option has the following drawbacks:

- The potential to provide additional safe car parking for the employees and visitors of City of Tshwane Metropolitan, will remain as is,
- A very viable opportunity to exploit the limited commercial opportunities in the area and creating jobs and income for the local market will be negated;
- The area will fall further in disrepair and the protection and appropriate management of the ecological significant areasmwill be negated; or
- Illegal squatters or vagrants could inhabit the site.

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 favorable than some of the other options presented.

The approval will ensure that an EMP be implemented and that the sensitive areas on the site will be managed and that any faunal species which are currently being hunted illegally be moved to natural habitat and be protected.

6 IMPACT SUMMARY OF THE PROPOSAL OR PREFERRED ALTERNATIVE

For proposal:

- The development will have a positive impact on the proliferation of invader species due to the implementation of a management of alien species onsite and rehabilitation of the infested areas;
- The significance of the impact on air quality during the construction phase will be low seeing that control measures will be put in place as per the EMPr; - Nuisance to neighboring residents and businesses due to noise from construction activities will be reduced by adhering to the Gauteng Noise Control Regulations, SANS 10103 provisions and local by-laws regarding the generation of noise and hours of operation;
- The significance of the impact on heritage features is low as the destruction of unidentified heritage sites during construction will be avoided by immediately reporting, such as finding a heritage practitioner so that an investigation and evaluation of the findings can be made;
- The significance of the impact on water resources i.e. surface and groundwater contamination (contamination of water resources through storm water runoff, spills and leaks) will be low seeing that environmental awareness will be emphasized, a buffer will be provided around the watercourse and due to the fact that the EMPr and specialist studies provide adequate mitigation measures and guidelines;
- The significance of the impact on soil/water/air pollution due to improper waste handling, storage and disposal will be very low if proper waste management is carried out on site;
- The Increased traffic in the project area and in the region and the risks to the safety of pedestrians and road users will be reduced after mitigation; and

Mitigation is achieved by a strict implementation of the Environmental Management Programme.

For alternative:

N/A

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.

- After assessing the environmental related impact in terms of the bio-physical and socio-economic aspects, the proposal alternative was more preferred as it has the least impact on the environment. The Proposal was selected because it will set out the goals as contained within the City of Tshwane Planning Documents.

- The proposal alternative site is more the more feasible site due to the proximity of the businesses and municipal offices in Belle Ombre site

- The impact on the ecological environmental environment will be mitigated due to the implementation of the EMP during construction.

- The proposed Overflow Car Parking will assist all of the City's business hub in securing safe and protected parking for its employees and visitors.

7 SPATIAL DEVELOPMENT TOOLS

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

- In terms of the LSDF, the site is located in a municipal land (City of Tshwane Metropolitan Municipality). The City has intensions of transforming the said land for the use of overflow parking for their employees and visitors, as the land is situated within the City's business hub.
- According to the GDARD C-Plan 3.3, the proposed study area partially overlaps with Ecological Support Area (EAS) in the western part of the project area. Large part of the project site was determined to be of Low sensitivity due to the degraded nature of the habitat type, no species of conservation concern were noted and due to transformation of the landscape.
- In terms of the Gauteng EMF the site is Environmental Management Zoned 1 which is urban development zone.
    - The primary intention of GPEMF Zone 1 is to streamline urban development activities in it and to promote development infill, densification and concentration of urban development within the urban development zones.

It can be concluded that the proposed site is suitable for the proposed development as the proposed development complies with the development policy for the area.

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	
X	

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

None.

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:

The EAP recommend the following specific conditions to be included as part of the positive Decision to be issued.

- The implementation of the mitigation measures contained in the EMPr to achieve maximum advantage from beneficial impacts, and sufficient mitigation of adverse impacts;
- All the guidelines and mitigations as supplied in the relevant specialist report must be taken into consideration and forms extension of the EMPr and conditions of the Environmental Authorisation;
- All declared weeds and invaders must be removed from the site on an ongoing basis and in phases.
- The areas to be protected must be fenced/ protected in an acceptable manner (as approved by the ECO) prior to the construction phase.
- An environmental awareness training programme for all staff members must be put in place by the Contractor. Before commencing with any work, all staff members must be appropriately briefed about the EMPr and relevant occupational health and safety issues.
- An ECO must be commissioned to implement the EMPr during the construction phase.
- Where possible, skilled and unskilled labour should be sourced from the local community.
- Construction activities must be kept to usual working hours.
- The parking must be monitored and maintained throughout its operational life.
- If any heritage items are unearthed, construction work must cease, and SAHRA and PRHA-G must be contacted.

9 THE NEEDS AND DESIREBILITY OF THE PROPOSED DEVELOPMENT (AS PER NOTICE 792 OF 2012, OR THE UPDATED VERSION OF THIS GUIDELINE)

In terms of the Needs and Desirability as per GN 792 of 2012 the following is applicable:

NEED ('timing'):

Question 1: Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved spatial development framework (SDF) agreed to by the relevant environmental authority? (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP).

- The proposed study area land is in accordance with the proposals of the Integrated Development Plan (IDP), which earmarks the area for business.

Question 2: Should development, or if applicable, expansion of the town/area concerned in terms of this land use (associated with the activity being applied for) occurs here at this point in time?

- The proposed development will enhance the general area by supplying the needed safety relief to the employees of the City of Tshwane Metropolitan Municipality by approving this BA application. It should therefore be approved as there is a current need for the activity.

Question 3: Does the community/area need the activity and the associated land use concerned (is it a societal priority)? This refers to the strategic as well as local level (e.g.

development is a national priority, but within a specific local context it could be inappropriate).

- There is a general need in the area for safety of owner's property, with a high crime rate in South Africa, safety for people's property, especially employees and the community at large should take priority. Furthermore, the proposed development will alleviate and contribute to the economic growth and job creation.

Question 4: Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development?

- As part of the development, the developer will be tasked to upgrade the required civil services and required infrastructure to service the development. Thus, the nearby businesses will benefit from the upgrades. The development will contribute to infrastructure upliftment project to service the surrounding existing and proposed developments.

Question 5: Is this development provided for in the infrastructure planning of the municipality, and if not, what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)?

- The site is in an area earmarked for the proposed development by the Municipality and thus supporting the proposed development.

Question 6: Is this project part of a national programme to address an issue of national concern or importance?

- The proposed project forms part of the bigger scheme of developments in the City of Tshwane. It will enhance the municipality, by providing much needed car parking shortage relief to the general and employees in question.

DESIRABILITY {'placing'):

Question 1: Is the development the best practicable environmental option for this land/site?

- Yes, as it will benefit the social context of the area. It will boost the economy and comply to the City of Tshwane IDP and SDF and other planning documents. Job creation will be encouraged and benefits in terms of its locality in closeness to residents of the general area will be encouraged.

Question 2: Would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF as agreed to by the relevant authorities?

- No, the approval of this application will not compromise the integrity of the existing credible of the Municipal IDP and SDF. It is believed that the proposed development is in accordance with the proposals of the Integrated Development Plan (IDP), which earmarks the area for low to medium density residential uses.

Question 3: Would the approval of this application compromise the integrity of the existing environmental management priorities for the area (e.g. as defined in EMFs), and if so, can it be justified in terms of sustainability considerations?

- The study area falls within Zone 1 of the Gauteng Provincial Environmental Management Framework (GPEMF) and the primary intention of GPEMF Zone 1 is to streamline urban development activities in it and to promote development infill, densification and concentration of

urban development within the urban development zones.

Question 4: Do location factors favour this land use (associated with the activity applied for) at this place? (this relates to the contextualisation of the proposed land use on this site within its broader context).
Yes, it does.

Question 5: How will the activity or the land use associated with the activity applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?
- The activity will have the following impacts on biodiversity
- Loss of habitat;
- Loss of fauna;
- Loss of flora;
- Minimal disturbances to ecological systems

Question 6: How will the development impact on people's health and wellbeing (e.g. in terms of noise, odours, visual character and sense of place, etc.)?
- The following social impacts are applicable:
- Dust emissions;
- Vehicular pollution;
- Noise;
- Visual impact;
- Safety and security;
- Traffic disruptions;

Please refer to the Impact Rating table. The above impacts can be mitigated, and the significance was assessed as low to low-medium levels after mitigation.

Question 7: Will the proposed activity or the land use associated with the activity applied for, result in unacceptable opportunity costs?
- No, the proposed development will be at the cost of the applicant.

Question 8: Will the proposed land use result in unacceptable cumulative impacts?
Minimal cumulative impacts are anticipated as discussed within this report, however, by the implementation of the EMPr appended in Appendix H and following mitigation measures mentioned in the Impact Assessment will drastically reduce the cumulative impacts.

10 THE PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED *(CONSIDER WHEN THE ACITIVTY IS EXPECTED TO BE CONCLUDED)*

The Environmental Authorisation will be required for a period of 10 years, to ensure that all construction activities are completed. It should also be noted that the proposed parking has operational phase.

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 **X**

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

Appendix A: Site plan(s) – *(must include a scaled layout plan of the proposed activities overlain on the site sensitivities indicating areas to be avoided including buffers)*

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Route position information

Appendix E: Public participation information

Appendix F: Water use license(s) authorisation, SAHRA information, service letters from municipalities, water supply information

Appendix G: Specialist reports

Appendix H: EMPr

Appendix I: Other information

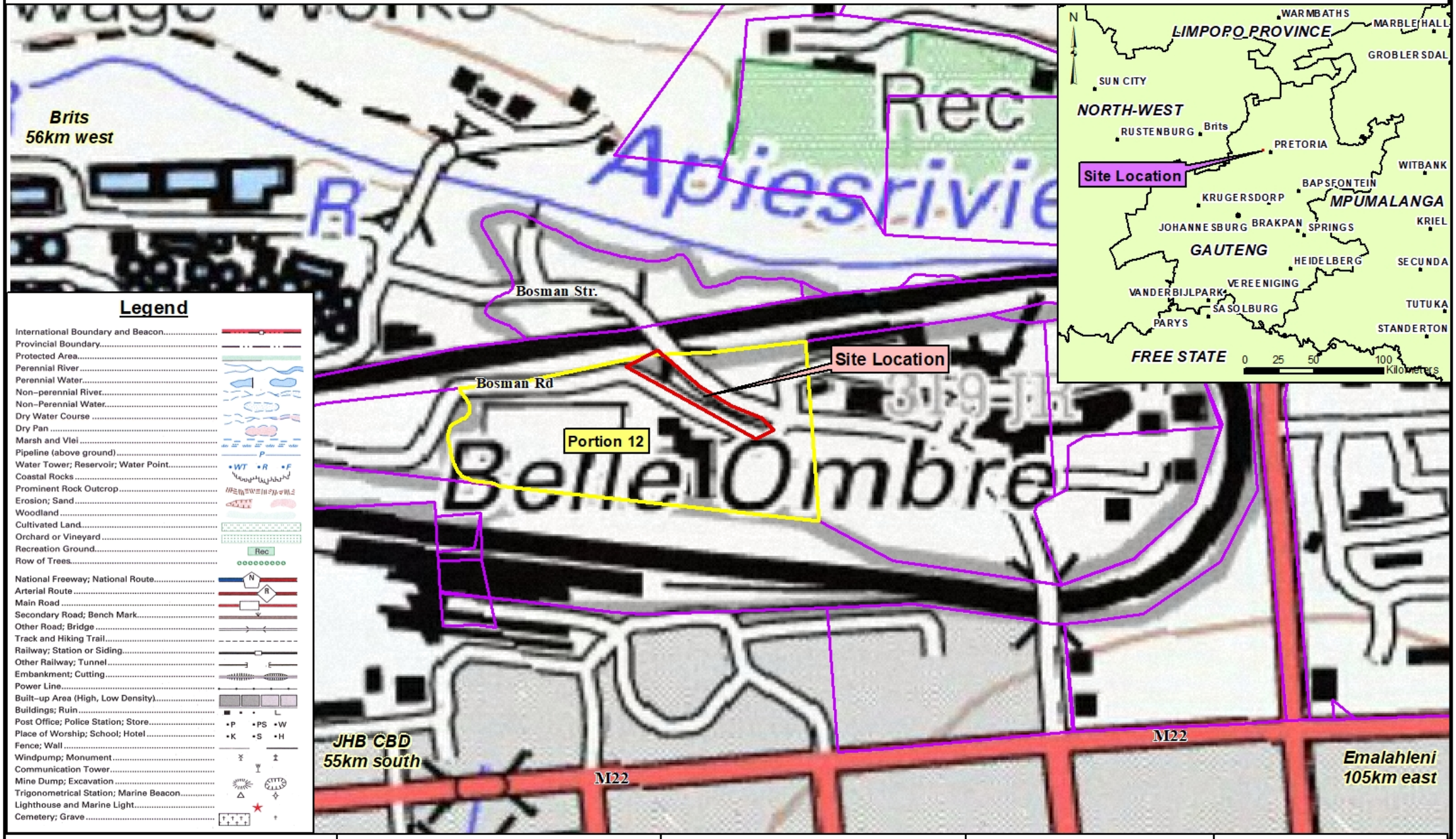
CHECKLIST

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.

APPENDIX A: SITE PLAN(S)

Belle Ombre Development - Daspoort 319 Portion 12 - City of Tshwane (Ward 58) - Pretoria



Legend

- International Boundary and Beacon
- Provincial Boundary
- Protected Area
- Perennial River
- Perennial Water
- Non-perennial River
- Non-Perennial Water
- Dry Water Course
- Dry Pan
- Marsh and Vlei
- Pipeline (above ground) P
- Water Tower; Reservoir; Water Point WT R F
- Coastal Rocks
- Prominent Rock Outcrop
- Erosion; Sand
- Woodland
- Cultivated Land
- Orchard or Vineyard
- Recreation Ground Rec
- Row of Trees
- National Freeway; National Route N
- Arterial Route R
- Main Road
- Secondary Road; Bench Mark
- Other Road; Bridge
- Track and Hiking Trail
- Railway; Station or Siding
- Other Railway; Tunnel
- Embankment; Cutting
- Power Line
- Built-up Area (High, Low Density)
- Buildings; Ruin
- Post Office; Police Station; Store P PS W
- Place of Worship; School; Hotel K S H
- Fence; Wall
- Windpump; Monument
- Communication Tower
- Mine Dump; Excavation
- Trigonometrical Station; Marine Beacon
- Lighthouse and Marine Light
- Cemetery; Grave

Legend

- Site Location
- Daspoort 319 JR Portion 12

0 62.5 125 250 Meters

N W E S

LOCALITY MAP

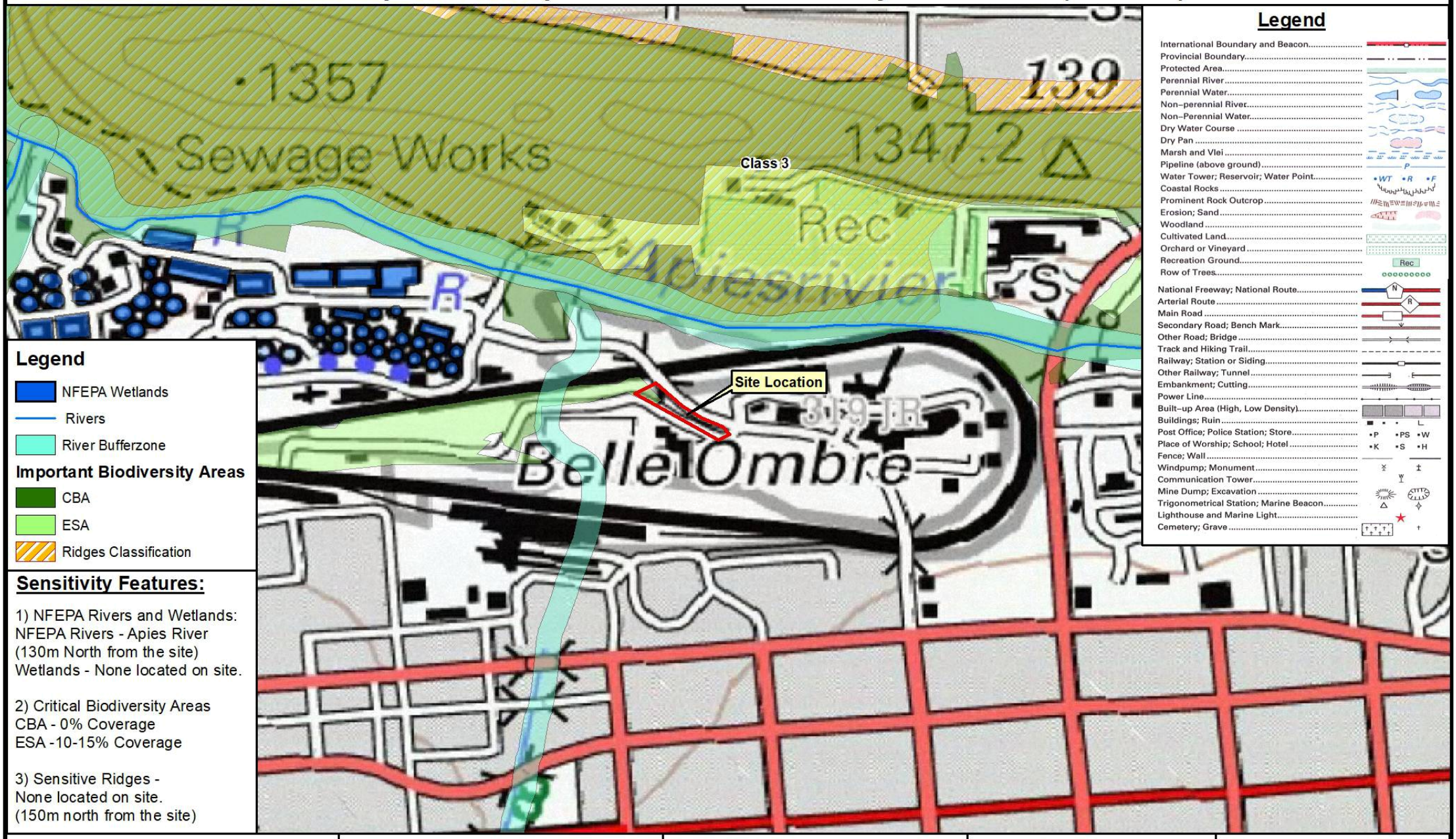
Date: 02 September 2022

General Site Location
25°44'8.72"S & 28°10'52.52"E
SG Code: T0JR00000000031900012

SELAHLE CONSULTANCY & PROJECTS
Cell No.: 079 614 8298
Fax: 086 552 0171
Email: shonie@scprojects.co.za
Website: www.scprojects.co.za

ANDRE ZANOLI
t/a
GIS MAPPING & ENVIRO-MINING
Map Prepared by: Andre Zanol
Contact Number: 072 601 2432

Belle Ombre Development - Daspoort 319 Portion 12 - City of Tshwane (Ward 58) - Pretoria



Legend

- NFEPA Wetlands
- Rivers
- River Bufferzone

Important Biodiversity Areas

- CBA
- ESA
- Ridges Classification

Legend

- International Boundary and Beacon
- Provincial Boundary
- Protected Area
- Perennial River
- Perennial Water
- Non-perennial River
- Non-Perennial Water
- Dry Water Course
- Dry Pan
- Marsh and Vlei
- Pipeline (above ground)
- Water Tower; Reservoir; Water Point
- Coastal Rocks
- Prominent Rock Outcrop
- Erosion; Sand
- Woodland
- Cultivated Land
- Orchard or Vineyard
- Recreation Ground
- Row of Trees
- National Freeway; National Route
- Arterial Route
- Main Road
- Secondary Road; Bench Mark
- Other Road; Bridge
- Track and Hiking Trail
- Railway; Station or Siding
- Other Railway; Tunnel
- Embankment; Cutting
- Power Line
- Built-up Area (High, Low Density)
- Buildings; Ruin
- Post Office; Police Station; Store
- Place of Worship; School; Hotel
- Fence; Wall
- Windpump; Monument
- Communication Tower
- Mine Dump; Excavation
- Trigonometrical Station; Marine Beacon
- Lighthouse and Marine Light
- Cemetery; Grave

Sensitivity Features:

1) NFEPA Rivers and Wetlands:
NFEPA Rivers - Apies River
(130m North from the site)
Wetlands - None located on site.

2) Critical Biodiversity Areas
CBA - 0% Coverage
ESA -10-15% Coverage

3) Sensitive Ridges -
None located on site.
(150m north from the site)

Legend

Site Location

0 90 180 360 Meters

N W E S

SENSITIVITY MAP

Date: 02 September 2022

General Site Location
25°44'8.72"S & 28°10'52.52"E
SG Code:T0JR00000000031900012

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ANDRE ZANOLI
t/a
GIS MAPPING & ENVIRO-MINING
Map Prepared by: Andre Zanol
Contact Number: 072 601 2432

Belle Ombre Development - Daspoort 319 Portion 12 - City of Tshwane (Ward 58) - Pretoria

Agricultural Potential

- 1.High
- 3.Moderate
- 4.Low
- 5.Very Low - None

The Agricultural Potential across the site is very low to none.

Soil Type: Plinthic catena: upland duplex and margalitic soils rare, dystrophic and/or mesotrophic; red soils widespread

Legend

- International Boundary and Beacon
- Provincial Boundary
- Protected Area
- Perennial River
- Perennial Water
- Non-perennial River
- Non-Perennial Water
- Dry Water Course
- Dry Pan
- Marsh and Vlei
- Pipeline (above ground)
- Water Tower; Reservoir; Water Point
- Coastal Rocks
- Prominent Rock Outcrop
- Erosion; Sand
- Woodland
- Cultivated Land
- Orchard or Vineyard
- Recreation Ground
- Row of Trees
- National Freeway; National Route
- Arterial Route
- Main Road
- Secondary Road; Bench Mark
- Other Road; Bridge
- Track and Hiking Trail
- Railway; Station or Siding
- Other Railway; Tunnel
- Embankment; Cutting
- Power Line
- Built-up Area (High, Low Density)
- Buildings; Ruin
- Post Office; Police Station; Store
- Place of Worship; School; Hotel
- Fence; Wall
- Windpump; Monument
- Communication Tower
- Mine Dump; Excavation
- Trigonometrical Station; Marine Beacon
- Lighthouse and Marine Light
- Cemetery; Grave

Legend

Site Location

0 62.5 125 250 Meters

AGRICULTURAL POTENTIAL MAP

Date: 02 September 2022

General Site Location
25°44'8.72"S & 28°10'52.52"E
SG Code: T0JR0000000031900012

SELAHLE CONSULTANCY & PROJECTS
Cell No.: 079 614 8298
Fax: 086 552 0171
Email: shonie@scprojects.co.za
Website: www.scprojects.co.za

ANDRE ZANOLI t/a GIS MAPPING & ENVIRO-MINING
Map Prepared by: Andre Zanol
Contact Number: 072 601 2432

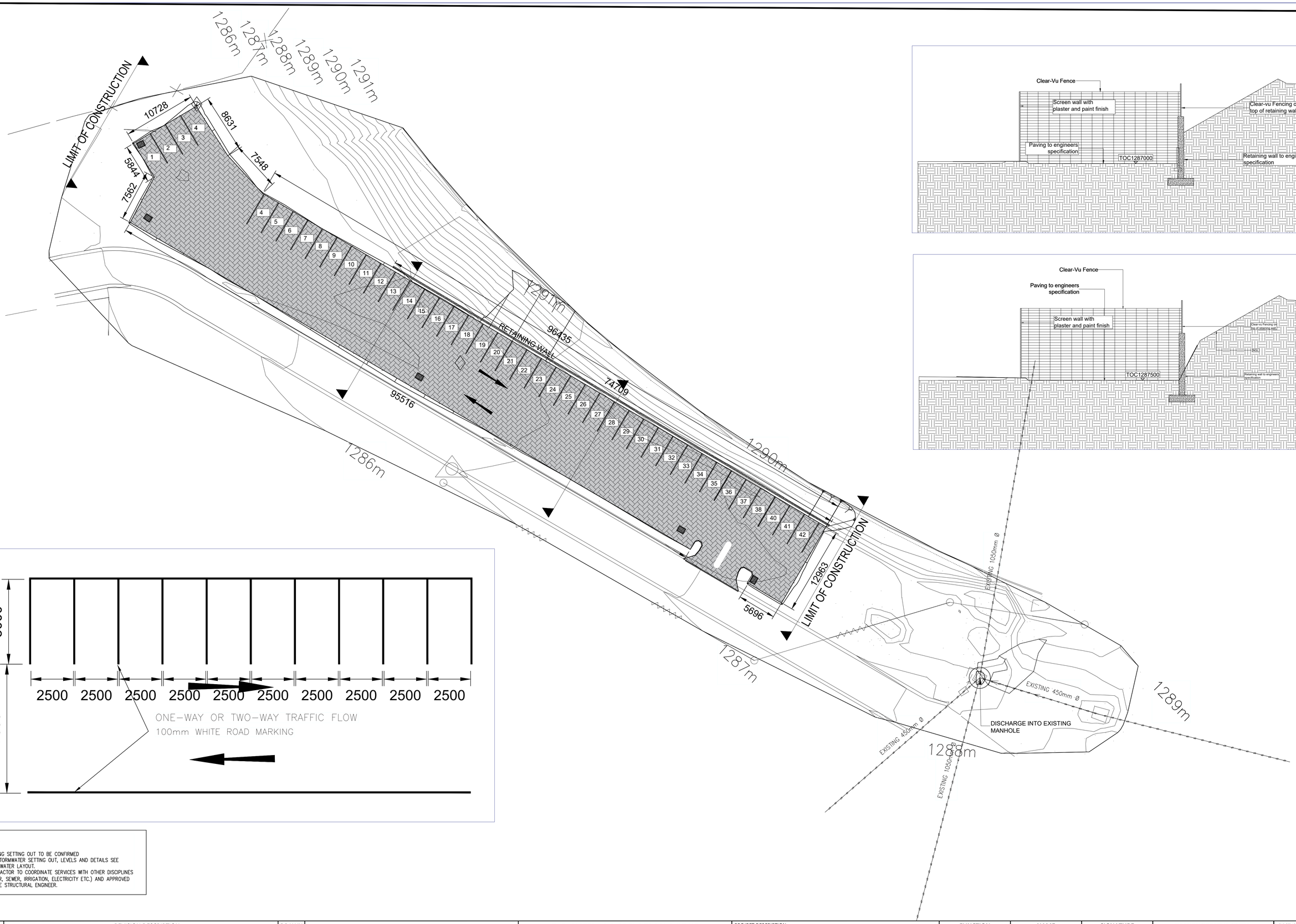
APPENDIX B: PHOTOGRAPHS

SITE PHOTOGRAPHS

Belle Ombre Phase 2

Proposed Study Area

APPENDIX C: FACILITY ILLUSTRATION(S)



NOTES:

1. PARKING SETTING OUT TO BE CONFIRMED
2. FOR STORMWATER SETTING OUT, LEVELS AND DETAILS SEE STORMWATER LAYOUT.
3. CONTRACTOR TO COORDINATE SERVICES WITH OTHER DISCIPLINES (WATER, SEWER, IRRIGATION, ELECTRICITY ETC.) AND APPROVED BY THE STRUCTURAL ENGINEER.

REV	DATE	REVISION DESCRIPTION	DRAWN

TS Consulting

PRETORIA OFFICE
SUITE NO2, 42 INGERSOL ROAD
PRETORIA
0700
TEL: +27 (0)12 348 1896

REG. No. 2008/304484/23

DISCIPLINE
ENGINEERING SERVICE

THE MASTER HELD AT THE TS CONSULTING POLOKWANE BEARS THE ORIGINAL SIGNATURE OF APPROVAL.

CLIENT
CITY OF TSHWANE
175 C DE WET
P.O Box 1409
PRETORIA, 0001
TEL (015) 633-4500
FAX (015) 633-6896

PROJECT DESCRIPTION
PROFFESIONAL ENGINEERING SERVICES-DESIGN REVIEW, SERVICES RELOCATION & CONSTRUCTION MONITORING OF BELLE OMBRE-PHASE 2(OVERFLOW CAR PARK, ELECTRIC FENCING ETC)

PROJECT NUMBER
HHS 01-2018/19

DRAWING TITLE
OVERFLOW PARKING LAYOUT PLAN

FUNCTION	NAME	SIGNATURE
DESIGNED BY	PKM	
DRAWN BY	PKM	
DESIGN CHECKED BY	PDN	
DRAWING CHECKED BY	PDN	

APPROVAL - CONSULTANT

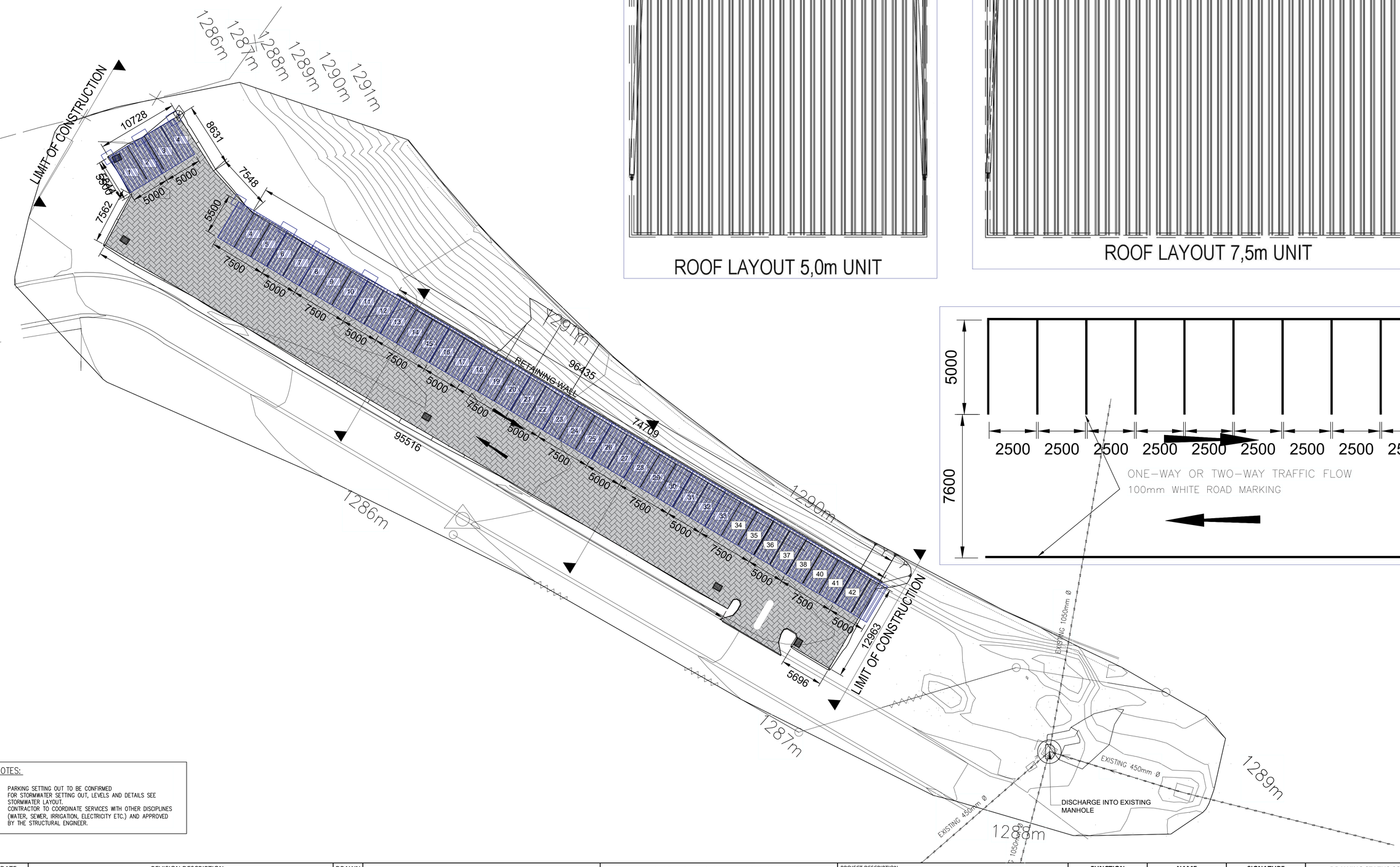
NAME	PD NELUHENI	SIGNATURE	
DATE		PROFESSIONAL REG No.	

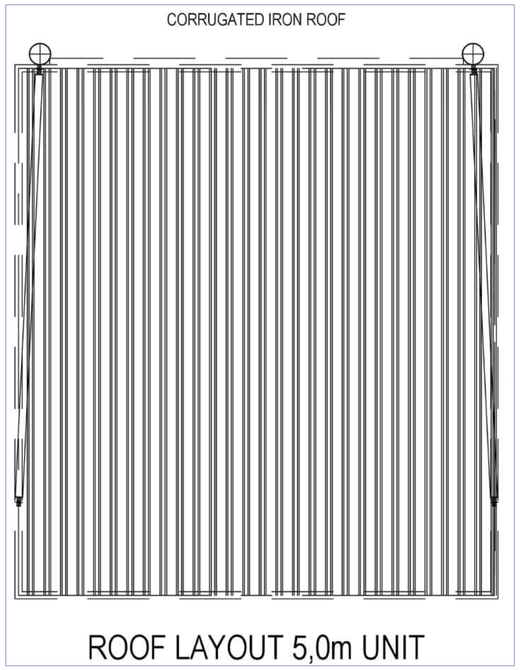
DRAWING STATUS CODES:
P/I=PRELIMINARY C=CONSTRUCTION
D=DESIGN A=AS-BUILT/RECORD
T=TENDER

FIRST ISSUE DATE
SCALE AS SHOWN
SHEET OF
SHEET SIZE A0

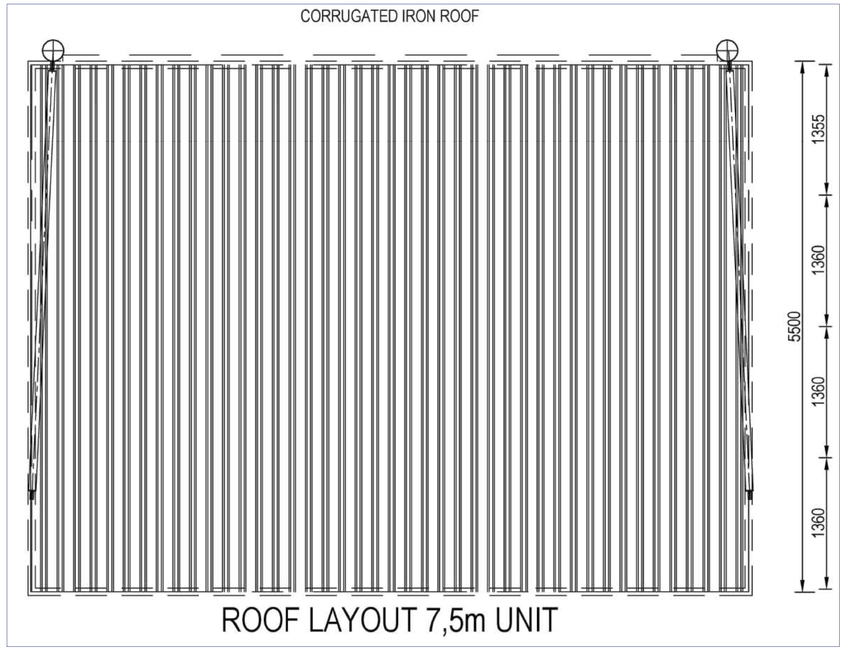
TS DRAWING NUMBER

TS PROJ. No.	SUB-No.	DISCIPLINE	NUMBER	STATUS	REVISION
_	_	CIVIL		C	A

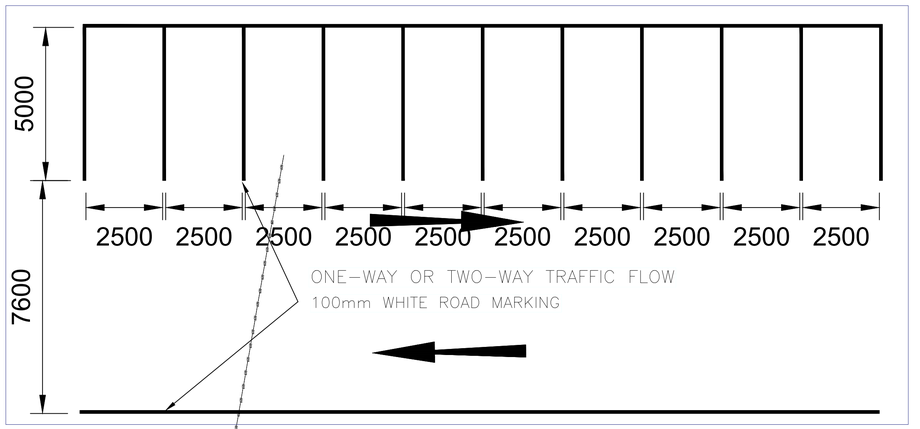




ROOF LAYOUT 5,0m UNIT



ROOF LAYOUT 7,5m UNIT



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TS Consulting
CIVIL|STRUCTURAL|PROJECT MANAGEMENT

PRETORIA OFFICE
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PROJECT NUMBER
HHS 01-2018/19

DRAWING TITLE
OVERFLOW PARKING CARPOT LAYOUT PLAN

FUNCTION	NAME	SIGNATURE
DESIGNED BY	PKM	
DRAWN BY	PKM	
DESIGN CHECKED BY	PDN	
DRAWING CHECKED BY	PDN	

APPROVAL - CONSULTANT

NAME	PD NELUHENI	SIGNATURE	
DATE		PROFESSIONAL REG No.	

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TS DRAWING NUMBER

TS PROJ. No.	SUB-No.	DISCIPLINE	NUMBER	STATUS	REVISION
_	_	CIVIL		C	A

APPENDIX D: ROUTE POSITION INFORMATION

NOT APPLICABLE

APPENDIX E: PUBLIC PARTICIPATION INFORMATION

NOT APPLICABLE

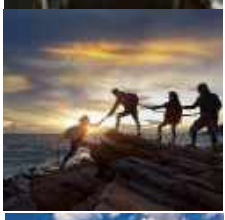
APPENDIX F: WATER USE LICENSE(S) INFORMATION, SAHRA, INFORMATION SERVICES FROM MUNICIPALITIES, WATER SUPPLY INFORMATION

NOT APPLICABLE

APPENDIX G: SPECIALIST REPORTS

APPENDIX G1: BIODIVERSITY REPORT









Aquatic Specialists and Environmental Consultants

Terrestrial Biodiversity Assessment for the Proposed Development in Pretoria, Gauteng Province, South Africa

August 2022

Prepared by: Eco-Sentle (Pty) Ltd

Cnr Cedar & 3rd Street, Chartwell

2055,

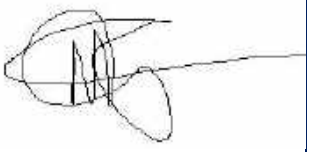
Prepared for: Selahle Consulting and Project (Pty) Ltd

1249 Tamarin Street

Bluehills

Midrand

1685

Report Name	**Terrestrial Biodiversity Assessment for the Proposed Development in Pretoria, Gauteng Province South Africa**	
Prepared for	**Selahle Consulting & Projects (Pty) Ltd**	
Report Writer	**Musa Magala (M. Sc; Cand.Sci. Nat**) *SACNASP Reg no: 100111/15*	
Report Reviewer	**Mthombeni Ndlangisa (Pr. Sci.Nat)** *SACNASP Reg no: 115120*	
Declaration	Eco-Sentle (Pty) Ltd and its associates operate as independent consultants under the auspice of the South African Council for Natural Scientific Professions. We declare that we have no affiliation with or vested financial interests in the proponent, other than for work performed under the Ecological Assessment Regulations, 2017. We have no conflicting interests in the undertaking of this activity and have no interests in secondary developments resulting from the authorisation of this project. We have no vested interest in the project, other than to provide a professional service within the constraints of the project (timing, time, and budget) based on the principals of science.	

Declaration

I, Musa Magala declare that:

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist work relevant to this application, including knowledge of the Act (NEMA), regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations, and all other applicable legislation.
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan, or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of Section 24F of the Act.

Musa Magala

Aquatic and Ecological Specialist

26 August 2022

Abbreviations

ADU	Animal Demography Unit
AIS	Alien Invasive Species
BGIS	Biodiversity Geographic Information System
BODATSA	Botanical Database of Southern Africa
CARA	Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983)
CBAs	Critical Biodiversity Areas
CR	Critically Endangered
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECA	Environmental Conservation Act, 1989 (Act No. 73 of 1989)
EMP	Environmental Management Plan
EMPR	Environmental Management Plan Report
EN	Endangered
EO	Environmental Officer
ESAs	Ecological Support Areas
EWT	Endangered Wildlife Trust
FEPA	Freshwater Ecosystem Priority Area
IBA	Important Bird Areas
IUCN	International Union for Conservation of Nature
LC	Least Concern
LCPV2	Limpopo Conservation Plan V2
LT	Least Threatened
NBA	National Biodiversity Assessment
NEMA	National Environmental Management Act
NEM:BA	NEM:BA National Environmental Management: Biodiversity Act
NT	Near Threatened
NWA	National Water Act

PA	Protected Area
QDGS	Quarter Degree Grid Square
SABAP	South African Bird Atlas Project
SANBI	South African National Biodiversity Institute
SCC	Species of Conservation Concern
WMA	Water Management Area
VU	Vulnerable

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1. EXECUTIVE SUMMARY

Introduction

Eco-Sentle (Pty) Ltd was appointed by Selahle Consulting & Projects (Pty) Ltd to conduct the terrestrial biodiversity assessment associated with the Application for Environmental Authorisation of the proposed development in Pretoria, Gauteng Province.

Gauteng Conservation Plan version v.3.3

The Gauteng Conservation Plan Version 3.3 (GDARD, 2014) identifies those sites that are critical for maintaining biodiversity, enabling planners, environmental professionals, and land use managers to integrate biodiversity into land use planning and decision-making.

The proposed project site partially overlaps with Ecological Support Area (EAS) in the western part of the project area. Large part of the project site was determined to be of Low sensitivity due to the degraded nature of the habitat type, no species of conservation concern were noted and due to transformation of the landscape.

Protected Areas, Important Bird Areas and National Freshwater Priority Areas

Based on the SANBI (2011) Protected Areas Map and the National Protected Areas Development Strategy (NPAES), the proposed development site does not overlap with any formally or informally protected areas.

Important Bird Areas (IBAs) are the sites of international significance for the conservation of the world's birds and other nature as identified by BirdLife International. These sites are also all Key Biodiversity Areas; sites that contribute significantly to the global persistence of biodiversity. Based on the SANBI Important Bird Areas 2015 Map, there are no IBA noted in the broader study area.

The National Freshwater Ecosystem Priority Areas (NFEPA) database forms part of a comprehensive approach for the sustainable and equitable development of South Africa's scarce water resources. The database affords guidance on how many rivers, wetlands, and estuaries, and which of these, should remain in a natural or near-natural condition to support the water resource protection goals of the National Water Act (NWA). The main intention of the Freshwater Ecosystem Priority Areas (FEPAs) is to be conservation support tools and are envisioned to guide the effective implementation of measures to achieve the National Environment Management Biodiversity Act (NEMBA) biodiversity goals informing both the listing of threatened freshwater ecosystems and the process of bioregional planning provided for by this Act (Nel *et al.,* 2011).

Based on this information, the proposed development site does not overlap with priority wetland areas or perennial rivers. However, there was evidence of aquatic ecosystems on the western part of the site. Standing water, giant reeds and evidence of water logging were noted outside the boundary of the project site.

Results: Flora Assessment

Important plant taxa are those species that have a high abundance, a frequent occurrence or are prominent in the landscape within a particular vegetation type. Mucina & Rutherford (2006), provide the species that are important in the Marikana Thornveld (SVcb6) vegetation type. Based on the Botanical Database of Southern Africa (BODATSA)- new Plants of Southern Africa (POSA, 2016) database, there were no Botanical record collections for the broader study area therefore number of species of conservation concern could not be determined at desktop level.

Based on the field survey, in terms of vegetation structure, the grass layer was dominant in plant community with the shrub layer being subdominant. Dominant grass species include: *Heteropogon contortus, Eragrostis*

trichophora, and anthephora pubescens Trees and shrubs (including herbs and bush shrubs) containing *Arundo donax, cyperus eragrostis, and erigeron canadensis.*

There were no plants of conservation concern identified in the project site.

Results – Fauna Assessment

Historically, the study area could have provided habitat for a diverse population of larger mammal species, but the urbanisation and proximity to the city, have transformed the majority of the habitats and due to these anthropogenic disturbances, it is likely that only the more common and smaller mammal species such as rodents may occur, which show more adaptation.

During the field survey, faunal species were photographed in the project site.

There are observed standing water/aquatic environment in proximity to the site may be ideal for amphibian species particularly during wet season and spawning months however, no evidence of existing species was noted on site.

Habitat Assessment and Sensitivity

The entire project site was determined to be of **Negligible** sensitivity due to the uniformity of habitat type, the site is completely transformed with no natural habitat remaining and limited scope for rehabilitation. No species of conservation concern were noted and although the area has evidence anthropogenic impacts and activities.

Conclusion

The following conclusions were reached based on the result of the desktop assessment and field survey:

- The project site is situated in an ecosystem classified as vulnerable. However, the project site is highly degraded due to its proximity to the city centre and urbanisation.
- Furthermore, the sensitivity of the proposed development site is ranked as Negligible, meaning that the land has low conservation value and could be considered for development with conditions.
- The project is considered to have limited impact on the remaining floral and faunal communities in the proposed development site.
- There were no species of conservation concern or sensitive ecological systems, or components recognised.

Recommendation:

- It is recommended a Geotechnical study be undertaken to determine the vulnerability of the soil and geology of the study area.

Considering the findings of this study, from a terrestrial ecology perspective no fatal flaws were identified for the proposed project. It is thus the opinion of the specialists that the proposed project is considered acceptable, but only if the appropriate due care and recommendations are implemented.

2. INTRODUCTION

2.1. BACKGROUND OF STUDY

Eco-Sentle (Pty) Ltd was commissioned by Selahle Consulting and Projects (Pty)Ltd to conduct a baseline biodiversity assessment as part of the environmental authorisation process for the construction of new overflow car park and design review of the existing structures, finishing off works and relocation of services for Belle Ombre, located within the City of Tshwane Metropolitan Municipality, Gauteng Province. This survey was conducted on the 13th of August 2022 and comprised assessment terrestrial ecosystems associated with the proposed development.

2.2. PURPOSE OF THE REPORT

This report, after taking into consideration the findings and recommendation provided by the specialist herein, should inform and guide the Environmental Assessment Practitioner (EAP) and regulatory authorities, enabling informed decision making, as to the ecological viability of the proposed project.

2.3. TERMS OF REFERENCE

The aim of the terrestrial ecological assessment study was to develop a baseline ecological characterisation of the study area, and to conduct an ecological impact assessment based on the findings. In line with this, specific objectives of the study include:

- To apply relevant literature to determine the diversity and eco-status of the plants, mammals, birds, and reptiles in the proposed development area;
- To carry out a field surveys to gain an understanding of the diversity and eco-status of taxa which inhabit the proposed study area, as well as the presence of unique habitats that might require further investigation or protection;
- To assess the current habitat and conservation status of plant and animal species on the proposed development;
- To assess the possible impact of the proposed project on these taxa and/or habitats;
- To list the species on sites and to recommend necessary actions in case of occurrence of endangered, vulnerable, or rare species or any species of conservation importance; and
- To provide management recommendations to mitigate negative and enhance positive impacts

2.4. ASSUMPTIONS AND LIMITATIONS

- In order to obtain a comprehensive understanding of the dynamics of the terrestrial ecosystem and habitats in the study area, surveys should ideally have been replicated over several seasons and over a few years. This survey was conducted over one dry season.
- The absence or non-recording of a specific plant or animal species, at a particular time, does not necessarily indicate that: a) the species does not occur there; b) the species does not utilise resources in that area; or c) the area does not play an ecological support role in the life-history of that species.
- Data collection in this study relied heavily on data from representative, homogenous terrestrial sections, as well as general observations, analysis of satellite imagery from the past until the present, generic data, and a desktop analysis.
- The specialist responsible for this study reserves the right to amend this report, recommendations and/or conclusions at any stage should any additional or otherwise significant information come to light.

2.5. RELEVANT LEGISLATION

All legal implications should be considered prior to the commencement of any development activities as such, the following legislative requirements were considered during the assessment:

- National Environmental Management Act (NEMA) (Act No. 107 of 1998);
- National Environmental Management: Biodiversity Act (NEMBA) (Act No. 10 of 2004); and
- Environment Conservation Act (ECA) (Act No. 73 of 1989.
- National Environmental Management: Biodiversity Act (Act No. 10 of 2004) - Alien and Invasive Species (AIS) Regulations
- National Veld and Forest Fire Act (Act No. 101 of 1998)

2.6. STUDY LOCATION

The Study Area is located on the Farm 636 Belle Ombre in the jurisdiction of the City of Tshwane Metropolitan Municipality, Gauteng Province of South Africa. The proposed development is situated approximately 3 km From the Pretoria (Tshwane) city centre. The proposed Belle Ombre Phase 2 car parking and associated infrastructure has a footprint of approximately 0,39 Ha. The site Locality Map is shown in Figure 1.

The project site is located in the Central Bushveld ecoregion, the A23D quaternary catchment, Crocodile(West) and Marico and the Savanna biome. The site is situated within Quarter Degree Square (QDS) 2528CA.

For the purposes of the terrestrial ecological assessment, we define two spatial scales of analysis, namely:

- The **'project site'** – which comprises the land where the proposed development is to occur (i.e., the proposed surface infrastructure footprint); and
- The **'broader study area'** – which comprises the areas outside the boundary of surface infrastructure footprint.

TABLE 1: SITE LOCATION

ID	Description
GPS - Coordinates	Latitude: 25°44'8.63"S ; Longitude: 28°10'52.06"E
SG21 Code	T0JR00000000031900012
Closest town/City	Pretoria (Tshwane)
Municipality	City of Tshwane Metropolitan Municipality
Province	Gauteng

FIGURE 1: LOCALITY MAP OF PROPOSED DEVELOPMENT (COURTESY OF GOOLE)

3. METHODOLOGY

3.1. TERRESTRIAL ECOLOGICAL ASSESSMENT

3.1.1. 3.1. DESKTOP ASSESSMENT AND LITERATURE REVIEW

3.1.1.1. VEGETATION TYPES AND PLANT SPECIES

A general habitat description relevant to the broader study area and surrounding landscape was obtained from Mucina & Rutherford (2006) and SANBI (2013);

The formal conservation context of the region at a provincial and national level was established based on the Limpopo Conservation Plan (LCPv2) and the National List of Threatened Ecosystems (NEMBA Threatened Ecosystems, 2011), respectively.

A preliminary delineation of vegetation/habitat units was undertaken at a desktop level using available satellite imagery and land cover data from SANBI BGIS tool. Namely, The National Vegetation Map, SANBI (2018); The National Protected Areas Expansion Strategy (NPAES, 2010) and The List of Threatened Terrestrial Ecosystems (2011).

A list of plant species that are likely to occur in the broader study area was compiled using the South African National Biodiversity Institute's BODATSA (2016) database.

The verification of the presence of protected tree species was one of the primary ecological requirements of the Environmental Authorization application process.

3.1.1.2. FAUNAL CHARACTERISATION

Terrestrial fauna (mammal, bird, amphibian, and reptile) desktop lists for the Quarter Degree Grid Square (QDGS) were collected from Citizen Science sites (VMUS.ADU.org and SABAP2.org), referred to as ADU and SABAP2 Species. The desktop lists focussed on data for the last 10 years. Where the survey area falls over multiple QDGSs then all data for all QDGSs was obtained.

It must be stressed that survey areas are smaller areas within the larger QDGS, and the species may not have been recorded at the specific site. Also, the limitations of citizen science sites must be kept in mind. These species lists have been included in Appendices of this report. The Endemic and threatened and protected species from the Animal Demography Unit (ADU) and SABAP2 lists have been extracted and included as needed to the Endemic, threatened, and protected species desktop species lists presented in the results.

Lastly, any exotic and / or Alien Invasive (AI) Species (AIS) recorded on the ADU and SABAP lists are also presented and discussed in the results where relevant.

3.1.2. FIELD SURVEY APPROACH

The field programme comprised targeted survey that aimed to characterise natural habitats in the project site that may be affected by proposed development and identify potential negative impacts. As such, fieldwork focused primarily on assessing on-site vegetation and faunal communities. Field visit was conducted on 12 August 2022 by a SACNASP registered specialist zoologist/ ecologist where the botanical and the faunal aspects of the survey area were evaluated.

3.1.2.1. FLORAL SURVEYS

Several reference works were used to identify floral species including, *inter alia*; Mucina and Rutherford (2006), Van Wyk and Malan (1998), Van Oudtshoorn (1999), Van Der Walt (2009) and Glen and Van Wyk (2016).

3.1.2.2. FAUNA SCREENING

Fauna survey focused on mammal and bird communities within the project site and was based primarily on opportunistic observations of mammals and birds during the field visits. Online datasets were also reviewed to identify mammal communities in the broader study area.

3.1.3. SPECIES OF CONSERVATION CONCERN

The conservation status of faunal species based on the IUCN Red List Categories and Criteria version 3.1 (2013) (See Figure 2) and the threatened and protected status of floral and faunal species occurring, or potential occurring, in the study area was based on the following:

- Regional/National Red List Status, as per the International Union for the Conservation of Nature (IUCN) assessment criteria - specifically:
    - Red List of South African Plants Version (SANBI, 2017-1);
    - Red List of Mammals of South Africa, Lesotho, and Swaziland (EWT, 2016);
    - Regional Red List for Birds of South Africa, Lesotho, and Swaziland (BirdLife South Africa, 2015);
    - Atlas and Red List of the Reptiles of South Africa, Lesotho, and Swaziland (Bates et al., 2014);
    - The IUCN Threatened Species Website (IUCN, 2018-1) was used for amphibians; and
    - The conservation status of butterflies was based on Henning et al., (2009).
- National Environmental Management: Biodiversity Act (NEMBA) (Act No. 10 of 2004) - Threatened or Protected Species List (Notice 389 of 2013) (NEMBA ToPS List, 2013).

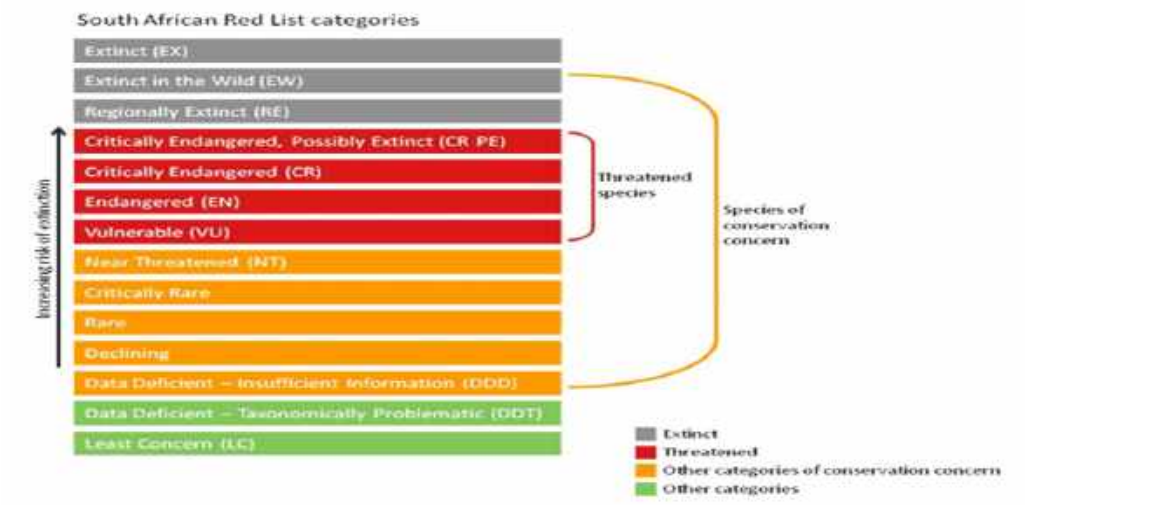


FIGURE 2: SCHEMATIC REPRESENTATION OF THE SOUTH AFRICAN RED LIST CATEGORIES (TAKEN FROM HTTP://REDLIST.SANBI.ORG/REDCAT.PHP)

3.1.4. ALIEN INVASIVE PLANT SPECIES

Alien invasive plant species were categorised according to the following listings:

- Conservation of Agricultural Resources Act (CARA) (Act No. 43 of 1983) (CARA, 1983); and/or
- National Environmental Management: Biodiversity Act (NEMBA) (Act No. 10 of 2004) - 2016 listing (NEMBA Alien and Invasive Species Lists, 2016).

4. BASELINE ECOLOGICAL CHARACTERISATION

4.1. GENERAL LAND USE

The proposed development site (project site) was vacant land at the time of compilation of this report. Based on the National Land Cover Map (2018), the land cover of the project site overlaps both Natural and Urban built-up, land cover with majority of the site area is in the Urban built up. No infrastructure and development activities have occurred. . The following infrastructure exists in the study area and surrounds:

- Power generation substation (approximately 100m).
- A RE YENG buses depot,
- Railway track (north of the site).
- Apies River
- Daspoort Wastewater treatment works

4.2. GAUTENG CONSERVATION PLAN (GAUTENG C-PLAN V3.3)

The Gauteng Conservation Plan Version 3.3 (GDARD, 2014) identifies those sites that are critical for maintaining biodiversity, enabling planners, environmental professionals, and land use managers to integrate biodiversity into land use planning and decision-making.

The final spatial outcome of the systematic conservation planning process is a map that delineates biodiversity priority areas for conservation and sustainable land use management. The map, which is commonly referred to as a Critical Biodiversity Areas or CBA Map, identifies biodiversity priority areas in a number of major categories:

- Protected Areas
- Critical Biodiversity Areas
- Ecological Support Area

Protected Areas (PA): Protected Areas are areas which have legal protection under relevant legislation, or which are managed with a primary conservation objective. Importantly, the Protected Area definition used, and the areas included in Gauteng C-Plan v3.3 deviate from those typically used in other South African conservation plans, as the key criteria used to guide inclusion or exclusion is the type of conservation management applied in an area rather than its legal status. For example, World Heritage Sites and Protected Environments are not considered to be Protected Areas while certain undeclared conservation areas are included.

Critical Biodiversity Areas (CBAs): CBAs include natural or near-natural terrestrial and aquatic features that were selected based on an area's biodiversity characteristics, spatial configuration and requirement for meeting both biodiversity pattern and ecological process targets. CBAs include irreplaceable sites where no other options exist for meeting targets for biodiversity features, as well as best-design sites which represent an efficient configuration of sites to meet targets in an ecologically sustainable way that is least conflicting with other land uses and activities. These areas need be maintained in the appropriate condition for their category. Some CBAs are degraded or irreversibly modified but are still required for achieving specific targets, such as cultivated lands for threatened species.

Ecological Support Areas (ESAs): Natural, near natural, degraded or heavily modified areas required to be maintained in an ecologically functional state to support Critical Biodiversity Areas and/or Protected Areas. ESAs maintain the ecological processes on which Critical Biodiversity Areas and Protected Areas depend. Some ESAs are irreversibly modified but are still required as they still play an important role in supporting ecological processes.

4.2.1. STUDY AREA IN RELATION TO GAUTENG C-PLAN V.3.3)

Figure 3 shows the Project Site superimposed on the Gauteng Conservation Plan map. Based on Map, the proposed project site partially overlaps with Ecological Support Area (EAS) in the western part of the project site.

Although the project site, partially overlaps with an ESA, the area can be described as degraded area not required to meet biodiversity targets.

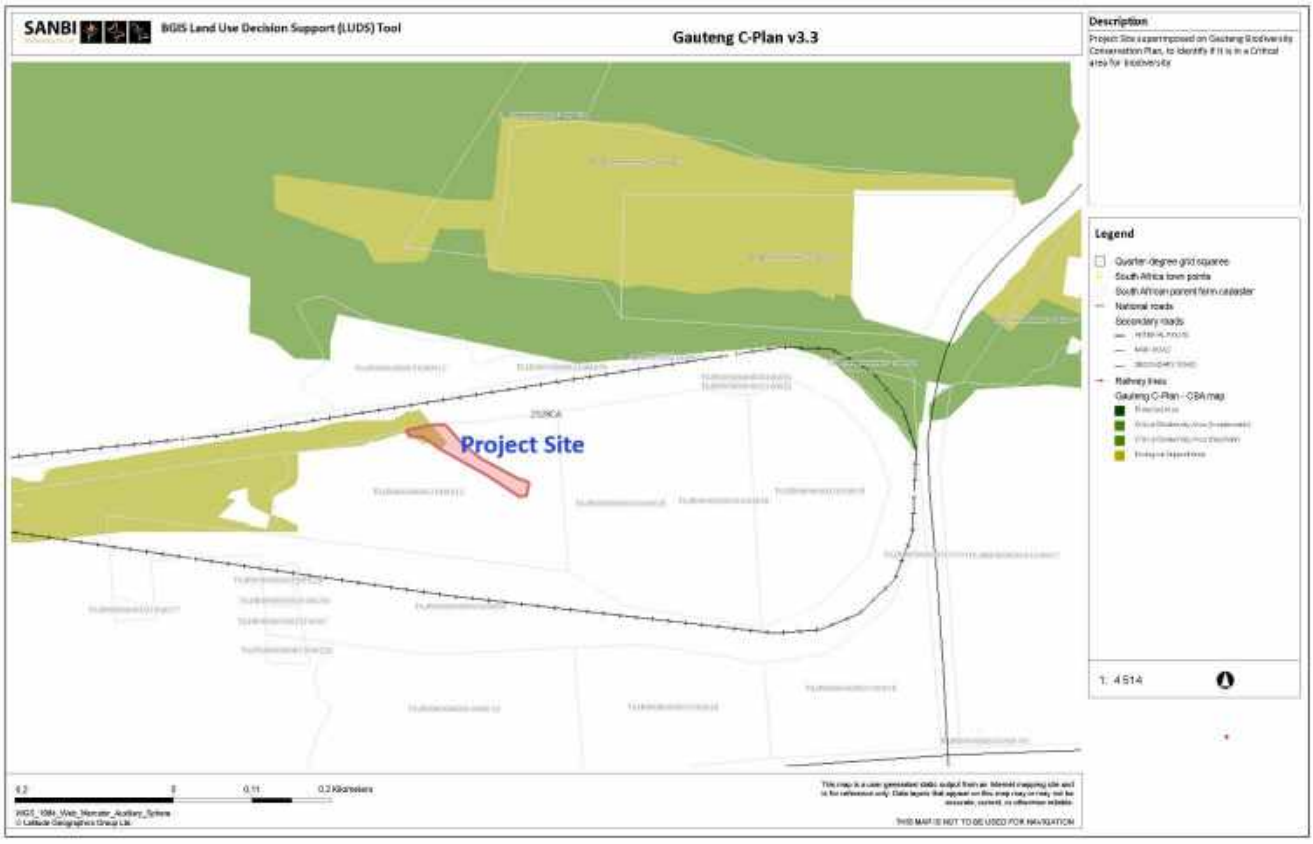


FIGURE 3: PROJECT SITE SUPERIMPOSED ON THE GAUTENG C-PLAN V.3.3 MAP (SANBI,2015)

The Gauteng C-Plan V3.3 provides land management guidelines for managing ecological functionality and loss of habitat in CBAs and ESA. With reference to the partial area that overlaps with ESA within which the project area, land management objective is to avoid additional impacts on ecological processes.

4.3. ECOSYSTEM THREAT STATUS AND PROTECTED AREAS

Ecosystem status classification refers to the likelihood of an ecosystem, in this case defined as a vegetation type, persisting into the future given the current amount of that ecosystem that has already been transformed to other non-natural land uses. Ecosystems that are Critically Endangered, Endangered or Vulnerable can be listed in terms of the Section 52 of the Biodiversity Act as threatened ecosystems at both national and provincial level. (Desmet *et al*., 2013).

SANBI has developed a classification system that uses a suite of biodiversity loss indicators or criteria to assign national ecosystem status to South African vegetation types. Ecosystem types are categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU) or Least Threatened (LT), based on the proportion of each ecosystem type that remains in good ecological condition (SANBI, 2008).

The proposed project site is situated within the Marikana Thornveld habitat type. Vegetation description is discussed in detail in the sections that follow. The project site was superimposed on the National list of threatened ecosystems that are threatened and in need of protection Map per SANBI mapping tool (Figure 4). The study area is located withing an ecosystem classified as Vulnerable.

Based on the SANBI (2011) Protected Areas Map and the National Protected Areas Development Strategy (NPAES), as shown in Figure 4 the project area does not overlap with any formally or informally protected area.

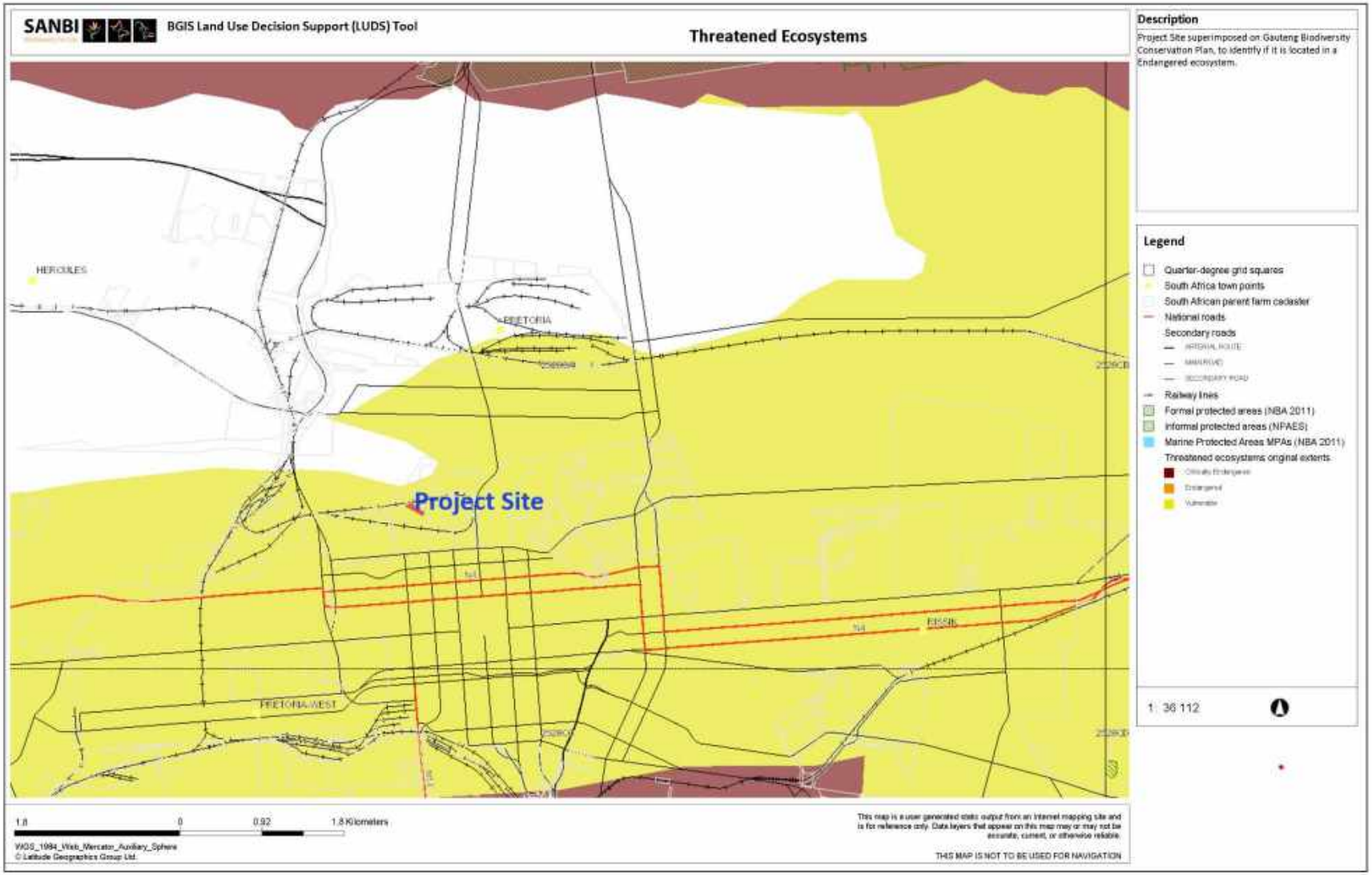


FIGURE 4: PROJECT SITE SHOWING PROTECTED AREAS AND THE ECOSYSTEM THREAT STATUS OF THE ASSOCIATED TERRESTRIAL ECOSYSTEM

4.4. NATIONAL FRESHWATER ECOSYSTEM PRIORITY AREAS (NFEPA)

The National Freshwater Ecosystem Priority Areas (NFEPA) database forms part of a comprehensive approach for the sustainable and equitable development of South Africa's scarce water resources. The database affords guidance on how many rivers, wetlands, and estuaries, and which of these, should remain in a natural or near-natural condition to support the water resource protection goals of the National Water Act (NWA). This directly applies to the NWA, which feeds into Catchment Management Strategies, water resource classification, reserve determination, and the setting and monitoring of resource quality objectives (Nel *et al.* 2011).

The main intention of the Freshwater Ecosystem Priority Areas (FEPAs) is to be conservation support tools and are envisioned to guide the effective implementation of measures to achieve the National Environment Management Biodiversity Act (NEMBA) biodiversity goals informing both the listing of threatened freshwater ecosystems and the process of bioregional planning provided for by this Act (Nel *et al.,* 2011).

Figure 5 shows the location of the Study area in relation to wetland and river FEPAs. Based on this information, the proposed project site does not overlap with any priority wetland areas or perennial rivers classified as priority rivers. The nearest NFEPA river noted in the broader study area was the Apies River which a Class D: Largely Modified river. Apies River is at least 150 meters from the Project site separated by a secondary road and railway track.

4.5. IMPORTANT BIRD AREAS

Important Bird Areas (IBAs) are the sites of international significance for the conservation of the world's birds and other nature as identified by BirdLife International. These sites are also all Key Biodiversity Areas; sites that contribute significantly to the global persistence of biodiversity (Birdlife, 2017).

According to Birdlife International (2017), the selection of Important Bird and Biodiversity Areas (IBAs) is achieved through the application of quantitative ornithological criteria, grounded in up-to-date knowledge of the sizes and trends of bird populations. The criteria ensure that the sites selected as IBAs have true significance for the international conservation of bird populations and provide a common currency that all IBAs adhere to, thus creating consistency among, and enabling comparability between, sites at national, continental, and global levels.

Based on the SABI Important Bird Areas 2015 Map, there are no IBA noted in the broader study area.

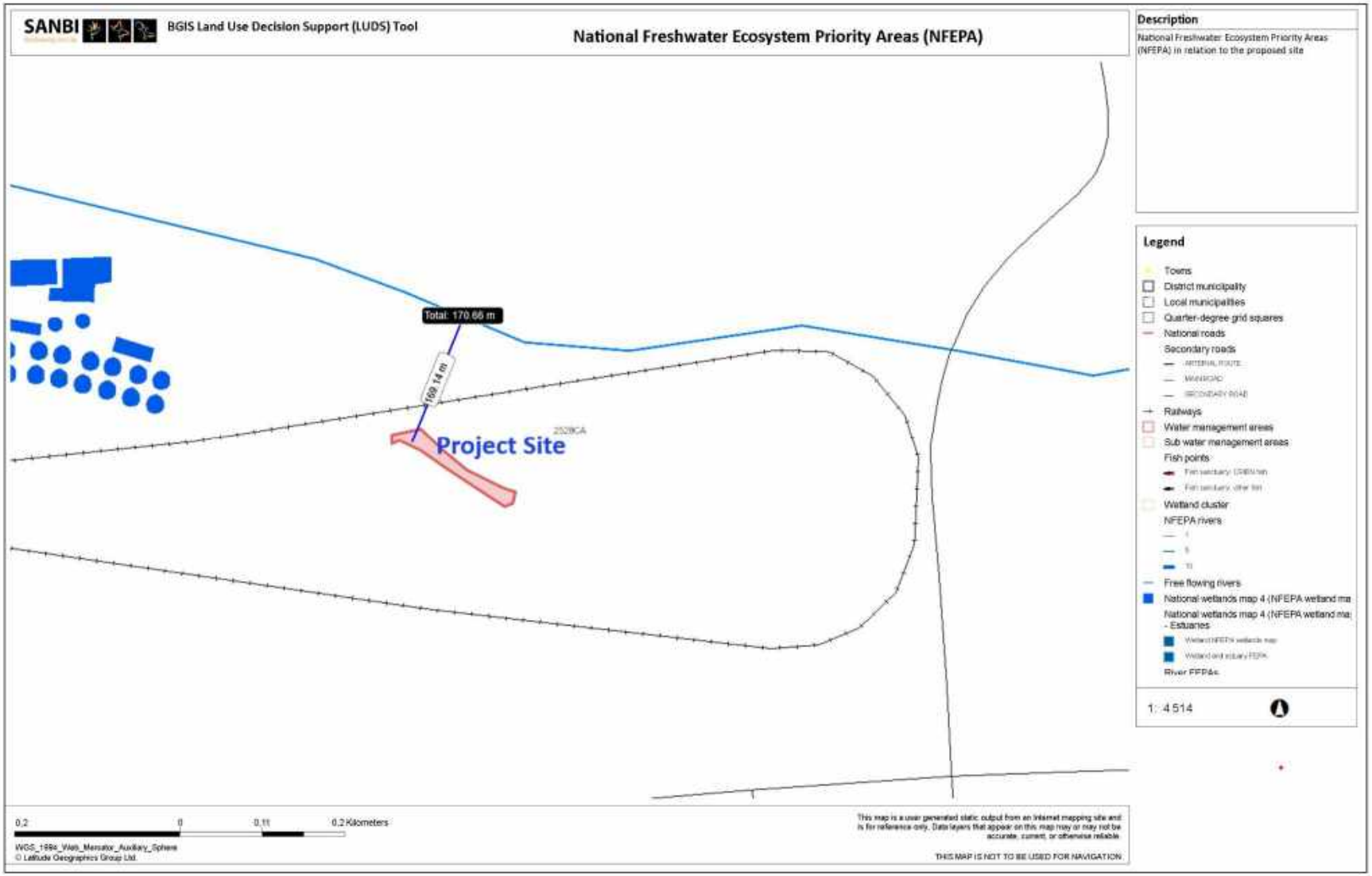


FIGURE 5: STUDY AREA IN RELATION TO THE NATIONAL FRESHWATER ECOSYSTEM PRIORITY AREAS (2011).

5. RESULTS AND DISCUSSION

5.1. HABITAT CHARACTERIZATION

The primary habitat type in the project site can be characterized as disturbed area, largely covered by grassland (with patches of shrub & trees) which is to be expected for the Savanna Biome.

The project site is composed of an area the is disturbed and dry in the east, and an area that shows evidence of water logging in the western part of the project site (see wet area in Figure 6). Considering the study was undertaken during the dry season, the soil was moist and vegetation of this section of the site was predominantly plant with high water affinity. The wet area of the project site overlaps with the Ecological Support Area (ESA) per Gauteng C-Plan V3.3. Figure 6 show habitat characterization of the site.

FIGURE 6: HABITAT CHARACTERIZATION

5.2. VEGETATION ASSESSMENT

The proposed project site is situated within the Savanna biome which is the largest Biome in southern Africa. It is characterized by a grassy ground layer and a distinct upper layer of woody plants. Where this upper layer is near the ground the vegetation may be referred to as Shrub veld, where it is dense as Woodland, and the intermediate stages are locally known as Bushveld (Mucina & Rutherford, 2006).

The Savanna biome comprises a number of vegetation types. The study area is located within the Marikana Thornveld (SVcb6) (National Vegetation Map, 2018).

5.2.1. DESKTOP VEGETATION TYPE DESCRIPTION: MARIKANA THORNVELD

An open Acacia Karroo woodland, occurring in valleys and slightly undulating plains, and some lowland hills. Shrubs are denser along drainage lines, on termitaria and rocky outcrops or in other places protected from fire. Considerably impacted, with 48% transformed, mainly cultivated and urban or built-up areas. Near Pretoria, industrial development is a greater threat of land transformation. Alien invasive plants occur localised in high densities, especially along the drainage lines. (Mucina & Rutherford, 2006).

5.2.1.1. IMPORTANT PLANT TAXA

Important plant taxa are those species that have a high abundance, a frequent occurrence or are prominent in the landscape within a particular vegetation type (Mucina & Rutherford, 2006). The following species are important in the Marikana Thornveld (SVcb6) vegetation type:

Tall tree: *Acacia burkei;*

Small trees: *Acacia caffra (d), A. gerrardii (d), A. karroo (d), Combretum molle (d), Rhus lancea (d), Ziziphus mucronata (d), Acacia nilotica, A. tortilis subsp. heteracantha, Celtis africana, Dombeya rotundifolia, Pappea capensis, Peltophorum africanum, Terminalia sericea*;

Tall shrubs: *Euclea crispa subsp. crispa (d), Olea europaea subsp. africana (d), Rhus pyroides var. pyroides (d), Diospyros lyeioides subsp. guerkei, Ehretia rigida subsp. rigida, Euclea undulata, Grewia flava, Pavetta gardeniifolia;*

Low shrubs: *Asparagus cooperi (d), Rhynchosia nitens (d), Indigofera zeyheri, Justicia flava;*

Woody climbers: *Clematis brachiata (d), Helinus integrifolius;*

Herbaceous climbers: *Pentarrhinum insipidum (d), Cyphostemma cirrhosum; graminoids: Elionurus muticus (d), Eragrostis lehmanniana (d), Setaria sphacelata (d), Themeda triandra (d), Aristida scabrivalvis subsp. scabrivalvis, Fingerhuthia africana, Heteropogon contortus, Hyperthelia dissoluta, Melinis nerviglumis, Pogonarthria squarrosa*;

Herbs: *Hermannia depressa (d), Ipomoea obscura (d), Barleria macrostegia, Dianthus mooiensis subsp. mooiensis, Ipomoea oblongata, Vernonia oligocephala;*

Geophytic herbs: *Ledebouria revoluta, Ornithogalum tenuifolium, Sansevieria aethiopica.crispa.*

5.2.2. FIELD SURVEY: VEGETATION ASSESSMENT

The vegetation assessment was conducted throughout the extent of the proposed development site. Because the field survey was undertaken during peak dry season, the veld was still largely dormant, which particularly affected the herb-grass layer. Species identification for these layers was therefore limited. The level of confidence in the preliminary communities as well as in the preliminary sensitivity assessment is high due to the lack of diversity in plant species and size of the site.

Habitat description: within the eastern part of the project site, there was evidence water logging in the soil. This was further substantiated by the vegetation type observed on site (*Arundo donax* – Giant reed). Water logging maybe due to stream adjacent to the site as well as the topography of the site (site is flat due to levelling). Standing water was also observed in proximity to the site. There was evidence of recent fire within the site.

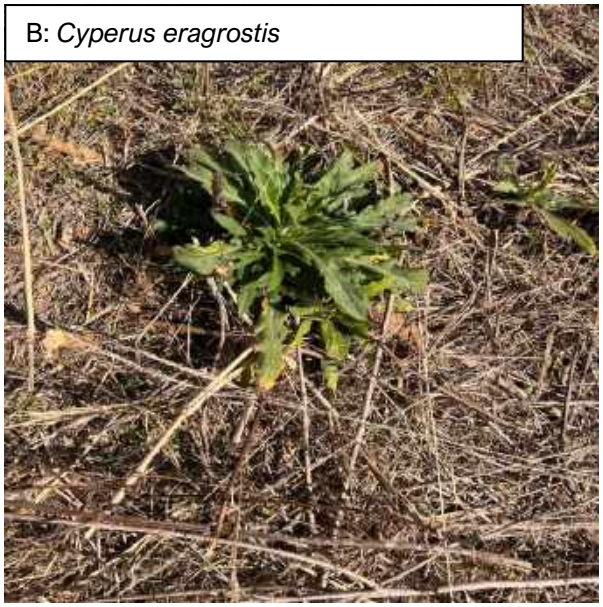
The project site appears to have been cleared and levelled previously which significantly reduced or affected the diversity of plants on the site, In terms of vegetation structure, the grass layer was dominant in plant community

with the shrub layer being subdominant. Dominant grass species include: *Heteropogon contortus , Eragrostis trichophora,* and *anthephora pubescens.*

Trees and shrubs (including herbs and bush shrubs) containing *Arundo donax, cyperus eragrostis,* and *erigeron canadensis* There were no medicinal plants nor plants of conservation concern identified in the project site.

A: dominant grass species: *Heteropogon contortus*

B: *Cyperus eragrostis*



C: *Arundo donax*

Alien Invasive Plants D: *Sesbania punicea*

E : *Project site Habitat*

F – *Soil Profile shows evidence of water logging*

FIGURE 7: PLANT SPECIES RECORDED DURING THE SURVEY

5.2.3. ALIEN AND INVASICE PLANTS

Declared weeds and invader plant species have the tendency to dominate or replace the canopy or herbaceous layer of natural ecosystems, thereby transforming the structure, composition, and function of ecosystems. Therefore, it is important that these plants are controlled and eradicated by means of an eradication and monitoring programme. Some invader plants may also degrade ecosystems through superior competitive capabilities to exclude native plant species.

The NEMBA is the most recent legislation pertaining to alien invasive plant species. In August 2014, the list of Alien Invasive Species was published in terms of the National Environmental Management: Biodiversity Act (Act 10 of 2004) (Government Gazette No 78 of 2014). The Alien and Invasive Species Regulations were published in the Government Gazette No. 43735, 25 September 2020. The legislation calls for the removal and / or control of alien invasive plant species (Category 1 species). In addition, unless authorised thereto in terms of the National Water Act, 1998 (Act No. 36 of 1998), no land user shall allow Category 2 plants to occur within 30 meters of the 1:50 year flood line of a river, stream, spring, natural channel in which water flows regularly or intermittently, lake, dam, or wetland. Category 3 plants are also prohibited from occurring within proximity to a watercourse.

Below is a brief explanation of the three categories in terms of the National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA):

- Category 1a: Invasive species requiring compulsory control. Remove and destroy. Any specimens of Category 1a listed species need, by law, must be combatted or eradicated from the environment. No permits will be issued.
- Category 1b: Invasive species requiring compulsory control as part of an invasive species control programme. Remove and destroy. These plants are deemed to have such a high invasive potential that infestations can qualify to be placed under a government sponsored invasive species management programme. No permits will be issued.
- Category 2: Invasive species regulated by area. A demarcation permit is required to import, possess, grow, breed, move, sell, buy, or accept as a gift any plants listed as Category 2 plants. No permits will be issued for Category 2 plants to exist in riparian zones.

- Category 3: Invasive species regulated by activity. An individual plant permit is required to undertake any of the following restricted activities (import, possess, grow, breed, move, sell, buy, or accept as a gift) involving a Category 3 species. No permits will be issued for Category 3 plants to exist in riparian zones.

Category 1b invasive species were recorded within the project area include: *Sesbania punicea* and *Bidens pilosa* must therefore be removed by implementing an alien invasive plant management programme in compliance of section 75 of the Act as stated above.

5.3. FAUNA ASSESSMENT

5.3.1. FIELD SURVEY FAUNAL ASSESSMENT

The Project area was ground-truthed on foot, which included spot checks in pre-selected areas to validate desktop data. Photographs were recorded during the site visits, and some are provided under the Results section in this report. All site photographs are available on request. The field survey was conducted at the peak of the dry season only, therefore information provided should be interpreted accordingly.

5.3.1.1. MAMMALS

No mammal species were photographed in the Proposed development site. The likelihood of occurrence of mammal species was rated as low due to the Project site location. The site is located in a peri-urban area as such with impacts such as noise, and lack of appropriate habitat, it was expected that no mammal species would be recorded on site.

5.3.1.2. AVIFAUNA

During the field visit, no avifauna were noted in the proposed development site. No birds of conservation concern have been identified.

5.3.1.3. HERPFAUNA (REPTILES AND AMPHIBIANS)

No herpetofauna species were recorded in the project site. There is however aquatic ecosystem that can be ideal for amphibian species in the vicinity of the project site. Because the project site has been cleared, with little to no vegetation, no herpfauna species of conservation concern were expected or have been recorded on the study area.

5.4. TERRESTRIAL ECOLOGICAL SENSITIVITY ASSESSMENT

The ecological sensitivity function describes the intactness of the structure and function of the vegetation communities which in turn support faunal communities. It also refers to the degree of ecological connectivity between the identified vegetation communities and other systems within the landscape. Therefore, systems with a high degree of landscape connectivity among each other are perceived to be more sensitive.

5.4.1. SENSITIVITY ANALYSIS

Habitat sensitivity in the study area was determined by subjectively assessing the ecological integrity and conservation importance of identified vegetation communities. The habitat sensitivity criteria developed by Golder was used to guide the habitat sensitivity analysis and is presented in Table 2. Important to that this method is then integrated with the Limpopo Conservation Plan, (Desmet, *et al.,* 2013) in the detailed analysis.

TABLE 2: CRITERIA FOR RATING OF HABITAT SENSITIVITY (*GOLDER & ASSOCIATES*).

Score	Ecological Integrity	Conservation Importance

HIGH	Habitats of high ecological integrity have compositional, structural, and functional characteristics that are close to the natural/sustainable state (i.e., reference conditions). As such, they have a combination of the following attributes: Key floral and faunal indictors are present or highly likely to be present; Large habitat patch that is mostly unfragmented and has a high level of connectivity to adjacent natural habitat patches; Has little to no evidence of anthropogenic disturbances (pollution, earth works, etc.); and Little or no alien invasive species establishment.	Habitats of high conservation importance or irreplaceability have one or a combination of the following attributes: Pristine or relatively undisturbed habitat displaying high species richness; Areas playing an important functional role in ecological processes at a landscape scale (e.g., high levels of connectivity, source patches, water attenuation, etc.); Niche or relatively rare/unique habitat within the landscape that contributes to overall habitat heterogeneity; Areas designated by provincial or national authorities as having high conservation importance, sensitivity, or irreplaceability; and Areas with confirmed presence or high probability of occurrence of Red List and/or protected species.
MODERATE	Habitats of moderate ecological integrity have a combination of the following attributes: Moderate levels of anthropogenic disturbance; and Despite disturbances, habitat maintains much of the same functional attributes as areas in a natural/sustainable state.	Habitats of moderate conservation importance have a combination of the following attributes: Intermediate levels of species richness; No or low probability of Red List and/or protected species as determined by critical habitat assessments; and Disturbed areas that are situated adjacent to habitat of high ecological integrity and/or conservation importance and therefore may play a role as an ecological support area.

LOW	Habitats of low ecological integrity have a combination of the following attributes: Severely modified from natural state as a consequence of anthropogenic activities, with poor species richness and all or most key floral and faunal indicators absent; Highly fragmented areas, with little or no connectivity to adjacent natural habitat; High incidence of alien species establishment; and Successful rehabilitation may restore some degree of habitat integrity.	Habitats of low conservation importance are typically transformed or highly disturbed, with little or no ecological integrity. These areas are species poor and in their current form, play little role in ecological processes and thus cannot contribute toward biodiversity conservation.
NEGLIGIBLE	Completely transformed or developed areas with no natural habitat remaining and limited scope for rehabilitation.	Completely transformed or developed areas with no natural habitat remaining and limited scope for rehabilitation.

In terms of terrestrial habitat, the proposed project site was classified as having a **Negligible** sensitivity. The proposed project site partially overlaps with Environmental Support Areas, however large parts of the site can be classified as degraded.

During the ecological field survey, an assessment was carried out to determine the most sensitive areas within the project Site. Although the proposed overlaps with ESA, the entire project site was determined to be of Low sensitivity due to the degraded nature of the habitat type, no species of conservation concern were noted and due to transformation of the landscape.

The summary of ESA and Other description per Gauteng C-Plan V3.3 is provided in Table 3 below.

TABLE 3: DESCRIPTION OF ESA AND ASSOCIATED LAND MANAGEMENT OBJECTIVES

CBA Map category	Description	Land Management Objective	Land management recommendations	Compatible Land Use	Incompatible Land use
EAS 2	Areas with no natural habitat which retain potential importance for supporting ecological processes.	Avoid additional impacts on ecological processes.	Avoid intensification of land use, which may result in additional impacts on ecological processes.	Existing activities (e.g., cultivation) should be maintained or where possible a transition to less intensive land uses should be favoured.	Any land use or activity which results in additional impacts on ecological functioning, mostly associated with the intensification of land use in these areas (e.g., change of floodplain from cultivation to urban land use, or from recreational fields and parks to housing)
Other Natural Areas	Irreversibly modified areas which are not required as ecological support areas, including intensive agriculture, urban development, industry and infrastructure.				

FIGURE 8: SENSITIVITY MAP OF PROJECT AREA

6. CONCLUSION RECOMMENDATIONS

The completion of a study, in conjunction with the detailed results from the survey means that there is a high confidence in the information provided. The survey, which was completed, and the corresponding studies resulted in good site coverage, within the proposed footprint area, assessing the major habitat and ecosystems, obtaining a general species (flora) overview, and observing the major current impacts.

The following conclusions were reached based on the result of the desktop assessment and field survey:

- The project site is situated in an ecosystem classified as vulnerable. However, the project site is highly degraded due to its proximity to the city centre and urbanisation.
- Furthermore, the sensitivity of the proposed development site is ranked as Negligible, meaning that the land has low conservation value and could be considered for development with conditions.
- The project is considered to have limited impact on the remaining floral and faunal communities in the proposed development site.
- There were no species of conservation concern or sensitive ecological systems, or components recognised.

Recommendation:

- It is recommended a Geotechnical study be undertaken to determine the vulnerability of the soil and geology of the study area.

Considering the findings of this study, from a terrestrial ecology perspective no fatal flaws were identified for the proposed project. It is thus the opinion of the specialists that the proposed project is considered acceptable, but only if the appropriate due care and recommendations are implemented.

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www.inaturalist.org: For images of protected plants as well as confirmation of observed plant species by peers.

http://www.iucnredlist.org: For the IUCN Red List status of species in 2016.

http://redlist.sanbi.org/: For checking national conservation status of plants, common names, and levels of endemism.

http://pza.sanbi.org/: For identification of plant species.

APPENDIX G2: HERITAGE DESKTOP REPORT

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Selahle Consultancy and Projects (Pty) Ltd

PHASE I ARCHAEOLOGICAL AND CULTURAL HERITAGE IMPACT ASSESSMENT SPECIALIST REPORT FOR THE PROPOSED DESIGN REVIEW, SERVICES RELOCATION AND CONSTRUCTION MONITORING OF BELLE OMBRE-PHASE 2 (OVERFLOW CAR PARK, ELECTRICAL FENCING ETC) WITHIN THE CITY OF TSWANE METROPOLITAN MUNICIPALITY IN GAUTENG PROVINCE.

September, 2022

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DECLARATION

ABILITY TO CONDUCT THE PROJECT

Munyadziwa Magoma is a professional archaeologist, having obtained his BA degree in Archaeology and Anthropology at the University of South Africa (UNISA), an Honours degree at the University of Venda (UNIVEN), and a Master's degree at the University of Pretoria (UP). He is an accredited Cultural Resource Management (CRM), a member of the Association for southern African Professional Archaeologists (ASAPA) and Amafa aKwaZulu-Natali. Munyadziwa is further affiliated with the South African Archaeological Society (SAAS), the Society of Africanist Archaeologists (SAfA), Historical Association of South Africa (HESA); Anthropology Southern Africa (ASA); International Association for Impact Assessment (IAIAsa); International Council on Monuments and Sites (ICOMOS) and the International Council of Archaeozoology (ICAZ). He has more than fifteen years of experience in heritage management, having worked for different CRM organisations and government heritage authorities. As a CRM specialist, Munyadziwa has completed well over 1000 hundred Archaeological Impact Assessments (AIA) for developmental projects situated in several provinces of the Republic of South Africa. The AIAs projects he has been involved with are diverse and include the establishment of the major substations, upgrades, and establishment of roads, and establishment and extension of mines. In addition, he has also conducted Heritage Impact Assessments (HIAs) for the alteration of heritage buildings and the relocation of graves. His detailed CV is available on request.

Ms. Nokusho Ngobeni is a professional archaeologist, with a BA degree in Arts, an Honours degree in Archaeology obtained at the University of Pretoria, and a Master of Science degree in Archaeological Heritage Management at Witwatersrand University. She has experience working at museums, laboratories and in the field handling archaeological materials (curation). Nokusho is a member of the International Association for Impact Assessment (IAIAsa), the Association for Southern African Professional Archaeologists (ASAPA) and the Society of Africanist Archaeologists (SAFA) Nokusho has undertaken several Heritage Impact Assessment and relocation of graves.

INDEPENDENCE

We declare that this report has been prepared independently of any influence as may be specified by all relevant departments, institutions and organization. We act as the independent specialist in this application and will perform the work relating to the application objectively even if this results in views and findings that are not favourable to the applicant. We declare that there are no circumstances that may compromise my objectivity in performing such work, we vow to comply with all relevant Acts, Regulations, and applicable legislation.

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EXECUTIVE SUMMARY

Introduction

At the request of Selahle Consultancy and Projects (Pty) Ltd, Vhubvo Consultancy Cc conducted a Phase I Cultural-Heritage Impact Assessment Study for the proposed Design Review, Services Relocation & Construction Monitoring of Belle Ombre-Phase 2. The proposed project is located within the jurisdiction of the City of Tswane Metropolitan Municipality in Gauteng Province. This assessment is a specialist component that will form part of the Environmental Management Programme and is aimed at investigating the general heritage state of the area affected by the proposed development as well as determining if there is a need to conduct any further investigation from an archaeological perspective. The study aims to advise on mitigation measures should any sites be impacted, these mitigations will, in turn, assist the developer in making decisions on the most appropriate option (in line with the National Heritage Resources Act, 1999 (Act 25 of 1999). To reach a defensible recommendation, both desktop study and field survey were conducted. The desktop study was undertaken through the South African Heritage Resources Information System (for previous Archaeological Impact Assessments conducted in the region of the proposed development, and also for research that has been carried out in the wider area over recent years. The field survey was conducted to validate any assumptions made during the desktop study.

Brief History of the Area

The Stone Age is the period in human history when stone materials were used to produce tools. In South Africa the Stone Age can be divided into three periods, Early (More than 2 million years ago - 250 000 years Ago), Middle (250 000 years ago – 25 000 years ago), and Late (25 000 years ago - AD 200). It is, however, important to note that dates only provide a broad framework for interpretation. This area is home to three known phases of the Stone Age. The Iron Age is the name given to the period of human history when metal was mainly used to produce tools. In South Africa it can be divided into two separate phases. Early (AD 400 - AD 1025) and Late (AD 1025 - AD 1830). Although there are no known Early Iron Age sites in the area, there are several Late Iron Age sites in the area (Bergh 1999: 7 - 8). The Late Iron Age farmers were followed by colonists. The pre-history of the area is evidence through the presence of several farms with rock art engravings (van Schalkwyk, 2012, Morris 1998).

Methodology and Approach

The study method refers to the SAHRA Policy Guidelines for impact assessment, 2012. As part of this impact assessment; the following processes were followed:

- Literature Review: To understand the background archaeology of the area, a background study was undertaken and relevant institutions were consulted. These studies entail the view of archaeological and

heritage impact assessment studies that have been conducted around the proposed area through SAHRIS. In addition, E-journal platforms such as the Journal Storage (J-stor), Google scholars, and History Resource Centre were searched. The University of Pretoria's Library collection was also utilised:

- The field survey was conducted on the **02nd of September 2022** by an archaeologist from Vhubvo.
- The final step involved the recording and documentation of relevant archaeological resources, as well as the assessment of resources in terms of the heritage impact assessment criteria and report writing, as well as mapping and useful recommendations.

The applicable maps, tables, and figures are included as stipulated in the NHRA (no 25 of 1999) and the National Environmental Management Act (NEMA) (no 107 of 1998).

Impact statement

The impact of the proposed development on archaeological and cultural heritage remains is rated as being low. The probability of locating any important archaeological remains dating to the Stone or Iron Age during the construction of the project is rated as low.

Restrictions and Assumptions

As with any survey, archaeological materials may be under the surface and therefore unidentifiable to the surveyor until they are exposed once construction resume. As a result, should any archaeological/ or gravesite be observed during the construction stage, a heritage specialist monitoring the development must immediately be notified.

Survey Findings and Discussions

The main aim of the survey was to evaluate potential heritage resources that would occur within the boundaries of the proposed area (s), as well as to determine if there is any hamartia that may prevent the proposed development from taking place in any of the proposed study area. The Phase I Archaeological Impact Assessment for the proposed development did not yield any heritage resources within the footprint of the proposed area.

Recommendations and Discussions

Although no archaeological objects were observed during the survey, the client is reminded that these often happen underground, as such should any archaeological material be unearthed accidentally during construction (e.g., excavation), SAHRA should be alerted immediately, and construction activities within a radius of at least 10m of such indicator be stopped. The area should then be demarcated by a danger tape. Accordingly, a professional archaeologist or SAHRA officer should be contacted immediately. In the meantime, it is the responsibility of the Environmental Officer and the contractor to protect the site from publicity (i.e., media)

until a mutual agreement is reached between the client and the consultant. It is mandatory to report any incident of human remains encountered to the South African Police Services, SAHRA staff members, and professional archaeologists. Any measure to cover up the suspected archaeological material or to collect any resources is illegal and punishable by law under Section 35(4) and 36(3) of the National Heritage Resources Act, Act 25 of 1999. The developer must induct field workers about archaeology, and steps that should be taken in the case of exposing archaeological materials.

Pre-construction education and awareness training

Prior to construction, contractors should be given training on how to identify and protect archaeological remains that may be discovered during the project. The preconstruction training should include some limited site recognition training for the types of archaeological sites that may occur in the construction areas. Below are some of the indicators of an archaeological site that may be found during construction:

- Flaked stone tools, bone tools, and loose pieces of flaked stone;
- Ash and charcoal;
- Bones and shell fragments;
- Artefacts (e.g., beads or hearths); and
- Packed stones that might be uncounted underground and might indicate a grave or collapsed stone walling.

In the event that any of the above are unearthed, all construction within a radius of at least 10m of such indicator should cease and the area be demarcated by a danger tape. Accordingly, a professional archaeologist or SAHRA officer should be contacted immediately. In the meantime, it is the responsibility of the contractor to protect the site from publicity (i.e., media) until a mutual agreement is reached between the consultant and the client. Noteworthy that any measures to cover up the suspected archaeological material or to collect any resources is illegal and punishable by law. In the same manner, no person may exhume or collect such remains, whether of recent origin or not, without the endorsement by SAHRA.

Conclusions

A thorough background study and survey of the proposed development was conducted and findings were recorded in line with SAHRA guidelines. As per the recommendations above, there are no major heritage reasons why the proposed development could not be allowed to proceed. It is thus recommended that SAHRA approves the proposed development to proceed subject to the recommendations given above.

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ACRONYMS AND ABBREVIATIONS

AIA	Archaeological Impact Assessment
EMP	Environmental Management Plan
HIA	Heritage Impact Assessment
LIA	Late Iron Age
MIA	Middle Iron Age
EIA	Early Iron Age
HMP	Heritage Management Plan
LSA	Late Stone Age
MSA	Middle Stone Age
ESA	Early Stone Age
NASA	National Archives of South Africa
NHRA	National Heritage Resources Act
SAHRA	South African Heritage Resources Agency

GLOSSARY OF TERMS

The following terms used in this Archaeology are defined in the National Heritage Resources Act [NHRA], Act Nr. 25 of 1999, South African Heritage Resources Agency [SAHRA] Policies as well as the Australia ICOMOS Charter *(Burra Charter)*:

Archaeological Material: remains resulting from human activities, which are in a state of disuse and are in, or on, land and which are older than 100 years, including artifacts, human and hominid remains, and artificial features and structures.

Artefact: Any movable object that has been used modified or manufactured by humans.

Conservation: All the processes of looking after a site/heritage place or landscape including maintenance, preservation, restoration, reconstruction and adaptation.

Cultural Heritage Resources: refers to physical cultural properties such as archaeological sites, palaeolontological sites, historic and prehistorical places, buildings, structures and material remains, cultural sites such as places of rituals, burial sites or graves and their associated materials, geological or natural features of cultural importance or scientific significance. This includes intangible resources such as religion practices, ritual ceremonies, oral histories, memories indigenous knowledge.

Cultural landscape: "the combined works of nature and man" and demonstrate "the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both internal and external".

Cultural Resources Management (CRM): the conservation of cultural heritage resources, management, and sustainable utilization and present for present and the future generations

Cultural Significance: is the aesthetic, historical, scientific, and social value for past, present, and future generations.

Chance Finds: means Archaeological artefacts, features, structures, or historical cultural remains such as human burials that are found accidentally in the context previously not identified during

cultural heritage scoping, screening, and assessment studies. Such finds are usually found during earth-moving activities such as water pipeline trench excavations.

Compatible use: means a use, which respects the cultural significance of a place. Such a use involves no, or minimal, impact on cultural significance.

Conservation means all the processes of looking after a place to retain its cultural significance.

Expansion: means the modification, extension, alteration, or upgrading of a facility, structure, or infrastructure at which an activity takes place in such a manner that the capacity of the facility or the footprint of the activity is increased.

Grave: A place of interment (variably referred to as burial), including the contents, headstone, or other marker of such a place, and any other structure on or associated with such place.

Heritage impact assessment (HIA): Refers to the process of identifying, predicting, and assessing the potential positive and negative cultural, social, economic, and biophysical impacts of any proposed project, plan, program or policy which requires authorisation of permission by law and which may significantly affect the cultural and natural heritage resources. The HIA includes recommendations for appropriate mitigation measures for minimising or avoiding negative impacts, measures enhancing the positive aspects of the proposal, and heritage management and monitoring measures.

Historic Material: remains resulting from human activities, which are younger than 100 years, but no longer in use, including artifacts, human remains, and artificial features and structures.

Impact: the positive or negative effects on human well-being and / or on the environment.

***In situ* material:** means material culture and surrounding deposits in their original location and context, for instance, archaeological remains that have not been disturbed.

Interested and affected parties Individuals: communities or groups, other than the proponent or the authorities, whose interests may be positively or negatively affected by the proposal or activity and/ or who are concerned with a proposal or activity and its consequences.

Interpretation: means all the ways of presenting the cultural significance of a place.

Late Iron Age: this period is associated with the development of complex societies and state systems in southern Africa.

Material culture means buildings, structures, features, tools and other artefacts that constitute the remains of past societies.

Mitigate The implementation of practical measures to reduce adverse impacts or enhance beneficial impacts of an action.

Place: means site, area, land, landscape, building or other work, group of buildings, or other works, and may include components, contents, spaces and views.

Protected area means those protected areas contemplated in section 9 of the NEMPAA and the core area of a biosphere reserve and shall include their buffers.

Public participation process: A process of involving the public in order to identify issues and concerns and obtain feedback on options and impacts associated with a proposed project, programme or development. Public Participation Process in terms of NEMA refers to: a process in which potential interested and affected parties are given an opportunity to comment on or raise issues relevant to specific matters.

Setting: means the area around a place, which may include the visual catchment.

Significance: can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e., intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e., level of significance and acceptability). It is an anthropocentric concept, which makes use of value judgments and science-based criteria (i.e., biophysical, physical cultural, social and economic).

Site: a spatial cluster of artefacts, structures, and organic and environmental remains, as residues of past human activity.

1. Introduction

Selahle Consultancy and Projects (Pty) Ltd appointed Vhubvo Consultancy Cc to conduct a Heritage Impact Assessment (HIA) for the proposed Design Review, Services Relocation & Construction Monitoring of Belle Ombre-Phase 2 (Overflow Car Park, Electrical Fencing Etc). This assessment is a specialist component which will provide the necessary input into the Basic Assessment Report, and form part of the Environmental Management Programme (EMPr). The main objective of the assessment is to investigate the general state of heritage within the affected area. The study aims are to outline the archaeological sites, cultural resources, sites associated with oral histories, graves, cultural landscapes, and any structure of historical significance that may be affected by the proposed development, and to advise on mitigation measures should any be affected and these will in turn assist the developer to decide on the most appropriate options in line with the National Heritage Resource Act, 1999 (Act 25 of 1999).

2. Sites Location and Description

The study area is located in an industrial area on portion of the Farm 636 Belle Ombre within the jurisdiction of City of Tswane Metropolitan Municipality, Gauteng Province. It is situated north of Pretoria central and is about 1.6 km. The site proposed for Belle Ombre Phase 2 car parking and associated infrastructure is approximately 0,39 Ha. There are noticeable roads adjacent to the site connecting to various developments. In addition, the site and surrounding areas are encircled by a railway line. Currently, the proposed study area is not occupied, whilst covered by vegetation. Although, the site seems to have been previously modified (i.e., preceding excavation activities, fire hydrant, burnt grass etc.,).

Summary of Project Location Details

Province:	Gauteng
Municipality:	City of Tswane
Suburb:	Belle Ombre
Proposed development:	Design Review, Services Relocation & Construction Monitoring of Belle Ombre-Phase 2 (Overflow Car Park, Electrical Fencing Etc)

Co-ordinates: 25º 44' 07.39" S 28º 10' 51.22" E.

Figure 1: Earth map of the area proposed for development.

Figure 2: View from the south eastern side.

Figure 3: Closer view of the ground cover. Note some patch(es) of burnt grass.

Figure 4: View from the western side.

Figure 5: Vegetation of the area.

Figure 6: The site is characterised by an escarpment.

Figure 7: Some material of the soil might have moved downslope.

3. Nature and Need of the Proposed Project

The project entails of the construction of new overflow car park and design review of the existing structures, finishing off works and relocation of services for Belle Ombre, located within the City of Tshwane Metropolitan Municipality, Gauteng Province. Construction of a new overflow parking which will include following but not limited to:

- Installation of ClearVu Fence
- Installation of ClearVu Sliding Gate
- Construction of Retaining Wall
- Installation of 5m Energy Poles
- Parking Area with car ports
- Installation of Kerbs
- Construction of Stormwater Structures
- Clearing (with relocation of services) and grubbing of the parking area.
- Mass earthworks (Excavation, Fills and Roadbed)
- Paving with 80mm Interlocking, with 20mm Bedding Sand
- Road marking
- Public lighting

The proposed development is an extension to an existing project, therefore, there would be an extension of works on the existing infrastructure which includes the following but not limited to:

- Installation of ClearVu Sliding Gate
- Installation of ClearVu Fence
- Construction of Refuse Waste Bin
- Construction of Paved Walkways
- Installation of Storm water concrete Manhole Cover
- Clearing and grubbing of the parking area.
- Installation of Cameras
- Installation of Boom Gates
- Construction of Concrete edge beams
- Asphalt road patching
- Paving with 80mm Interlocking, with 20mm Bedding Sand
- Layer works to 450mm Imported Materials.
- Road marking
- Installation of sleeves

Parking is an important and integral part of the transportation system in a metropolitan area. A city must have adequate parking spaces to provide its residents and visitors a place to safely park their cars. Insufficient parking, on the other hand, can result in overflow or queuing on the street network and illegal parking on the sidewalks and in the road reserve. A parking policy and parking provision requirements are essential element of any urban transport plan.

4. Purpose of the Cultural Heritage Study

The purpose of this Archaeological and Cultural Heritage study is to entirely identify and document archaeological sites, cultural resources, sites associated with oral histories, graves, cultural landscapes, and any structure of historical significance that may be affected by the proposed Design Review, Services Relocation & Construction Monitoring of Belle Ombre-Phase 2, these will, in turn, assist the developer in ensuring proper conservation measure in line with the National Heritage Resource Act, 1999 (Act 25 of 1999). Impact assessments highlight many issues facing sites in terms of their management, conservation, monitoring and maintenance, and the environment in and around the site. Therefore, this study involves the following:

- Identification and recording of heritage resources that may be affected by the proposed construction;

- Providing recommendations on how best to appropriately safeguard identified heritage sites. Mitigation is an important aspect of any development on areas where heritage sites have been identified.

5. Methodology and Approach

Background study introduction

The methodological approach is informed by the 2012 SAHRA Policy Guidelines for impact assessment. As part of this study, the following tasks were conducted: 1) literature review, 2), consultations with the developer and appointed consultants, 3), completion of a field survey and 4), analysis of the acquired data, leading to the production of this report.

Physical survey

The field survey was undertaken on the **2nd of September 2022** by an archaeologist from Vhubvo conducted the survey.

Documentation

The general project area was documented. This documentation included taking photographs using cameras a 10.1 mega-pixel Sony Cybershort Digital Camera. Plotting of finds was done by a Garmin etrex Venture HC.

Restrictions and Assumptions

As with any survey, archaeological materials may be under the surface and therefore unidentifiable to the surveyor until they are exposed once construction resume. As a result, if any archaeological/ or gravesite is observed during construction, a heritage specialist must be notified immediately.

6. Applicable Heritage Legislation

Several legislations provide the legal basis for the protection and preservation of both cultural and natural resources. These include the National Environment Management Act (No. 107 of 1998); Mineral Amendment Act (No 103 of 1993); Tourism Act (No. 72 of 1993); Cultural Institution Act (No. 119 of 1998), and the National Heritage Resources Act (Act 25 of 1999). Section 38 (1) of the National Heritage Resources Act requires that where relevant, an Impact Assessment is undertaken in case where a listed activity is triggered. Such activities include:

(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 50 m in length; and
(c) any development or other activity which will change the character of an area of land, or water -
(i) exceeding 5 000 m² in extent;
(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 m2 in extent; or
(e) any other category of development provided for in regulations by SAHRA or a Provincial Heritage Resources Authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

Section 3 of the National Heritage Resources Act (25 of 1999) lists a wide range of national resources protected under the act as they are deemed to be national estate. When conducting a Heritage Impact Assessment (HIA) the following heritage resources have to be identified:

(a) Places, buildings, structures and equipment of cultural significance
(b) Places to which oral traditions are attached or which are associated with living heritage
(c) Historical settlements and townscapes
(d) Landscapes and natural features of formation of cultural significance
(e) Geological sites of scientific or cultural importance
(f) Archaeological and paleontological sites
(g) Graves and burial grounds including-
(i) ancestral graves
(ii) royal graves and graves of traditional leaders
(iii) graves of victims of conflict
(iv) graves of individuals designated by the Minister by notice in the Gazette
(v) historical graves and cemeteries; and
(vi) other human remains which are not covered by in terms of the Human Tissue Act,1983 (Act No. 65 of 1983)
(h) Sites of significance relating to the history of slavery in South Africa
(i) moveable objects, including -
(i) objects recovered from the soil or waters of South Africa, including archaeological and paleontological objects and material, meteorites and rare geological specimens
(ii) objects to which oral traditions are attached or which are associated with living heritage
(iii) ethnographic art and objects
(iv) military objects
(v) objects of decorative or fine art
(vi) objects of scientific or technological interest; and
(vii) books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1 of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).

Other sections of the Act with a direct relevance to the AIA are the following:
Section 34(1) *No person may alter or demolish any structure or part of a structure, which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.*
Section 35(4) *No person may, without a permit issued by the responsible heritage resources authority:*

- *destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite*

Section 36 (3) *No person may, without a permit issued by SAHRA or a provincial heritage resources authority:*

- *destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside formal cemetery administered by a local authority; or*

- *bring onto or use at a burial ground or grave any excavation equipment, or any equipment which assists in detection or recovery of metals.*

7. Degree of Significance

This category requires a broad, but detailed knowledge of the various disciplines that might be involved. Large sites, for example, may not be very important, but a small site, on the other hand, may have great significance, as it is unique for the region. The following table is used to grade heritage resources.

Table 1: Grading systems for identified heritage resources in terms of National Heritage Resources Act (Act 25 of 1999).

Level	Significance	Possible action
National (Grade I)	Site of National Value	Nominated to be declared by SAHRA
Provincial (Grade II)	Site of Provincial Value	Nominated to be declared by PHRA
Local Grade (IIIA)	Site of High Value Locally	Retained as heritage
Local Grade (IIIB)	Site of High Value Locally	Mitigated and part retained as heritage
General Protected Area A	Site of High to Medium	Mitigation necessary before destruction
General Protected Area B	Medium Value	Recording before destruction
General Protected Area C	Low Value	No action required before destruction

Significance rating of sites

(i) High (ii) Medium (iii) Low

This category relates to the actual artefact or site in terms of its actual value as it is found today, and refers more specifically to the condition that the item is in. For example, an archaeological site may be the only one of its kind in the region, thus its regional significance is high, but there is heavy erosion of the greater part of the site, therefore its significance rating would be medium to low. Generally speaking, the following are guidelines for the nature of the mitigation that must take place as Phase 2 of the project.

High

- This is a 'do not touch' situation, alternative must be sought for the project, examples would be natural and cultural landscapes like the Mapungubwe Cultural Landscape World Heritage Site, or the house in which John Langalibalele resided.
- Certain sites, or features may be exceptionally important, but do not warrant leaving entirely alone. In such cases, detailed mapping of the site and all its features is imperative, as is the collection of diagnostic artefactual material on the surface of the site. Extensive excavations must be done to retrieve as much information as possible before destruction. Such excavations might cover more than half the site and would be mandatory; it would also be advisable to negotiate with the client to see what mutual agreement in writing could be reached, whereby part of the site is left for future research.

Medium

- Sites of medium significance require detailed mapping of all the features and the collection of diagnostic artefactual material from the surface of the site. A series of test trenches and test pits should be excavated to retrieve basic information before destruction.

Low

- These sites require minimum or no mitigation. Minimum mitigation recommended could be a collection of all surface materials and/ or detailed site mapping and documentation. No excavations would be considered to be necessary.

In all the above scenarios, permits will be required from the South African Heritage Resources Agency (SAHRA) or the appropriate PHRA as per the legislation (the National Heritage Resources Act, no. 25 of 1999). Destruction of any heritage site may only take place when the appropriate heritage authority has issued a permit. The following table is used to determine rating system on the receiving environment.

Table 2: Rating System

NATURE
Including a brief description of the impact of the heritage parameter being assessed in the context of the project. This criterion includes a brief written statement of the heritage aspect being impacted upon by a particular action or activity.
TOPOGRAPHICAL EXTENT

This is defined as the area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment of a project in terms of further defining the determined.		
1	Site	The impact will only affect site.
2	Local/district	Will affect the local area or district.
3	Province/region	Will affect the entire province or region.
4	International and National	Will affect the entire country.
PROBABILITY		
This describes the chance of occurrence of an impact		
1	Unlikely	The chance of the impact occurring is extremely low (Less than 25% chance of occurrence).
2	Possible	The impact may occur (Between a 25% to 50% chance of occurrence).
3	Probable	The impact will likely occur (Between 50% to 75% chance of occurrence).
4	Definite	Impact will certainly occur (Greater than 75% chance of occurrence).
REVERSIBILITY		
This describes the degree to which an impact on a heritage parameter can be successfully reversed upon completion of the proposed activity.		
1	Completely reversible	The impact is reversible with implementation of minor mitigation measures.
2	Partly reversible	The impact is partly reversible but more intense mitigation measures are required.

3	Barely reversible	The impact is unlikely to be reversed even with intense mitigation measures.
4	Irreversible	The impact is irreversible and mitigation measures exist.
IRREPLACEABLE LOSS OF RESOURCES		
This describes the degree to which heritage resources will be irreplaceably lost as a result of proposed activity		
1	No loss of resource	The impact will not result in the loss of any resources.
2	Marginal loss of resource	The impact will result in marginal loss of resources.
3	Significant loss of resource	The impact will result insignificant loss of resources.
4	Complete loss of resource	The impact is result in a complete loss of all resources.
DURATION		
This describes the duration of the impact on the heritage parameter. Duration indicates the lifetime of a result of the proposed activity.		
1	Short term	The impact and its effects will either disappear with mitigation or will be mitigated through natural process in span shorter than the construction phase (0-1 years), or the impact and its effects will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0-2 years).

2	Medium term	The impact and its effects will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2-10 years).
3	Long term	The impact and its effects will continue or last for entire operational life of the development but will be mitigated by direct human action or by natural processes thereafter (10-50 years).
4	Permanent	The only class of the impact that will non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered transient (Indefinite).
CUMULATIVE EFFECT		
This describes the cumulative effect of the impacts on the heritage parameter. A cumulative effect/impact is an effect, which in itself may not be significant but may become significant if added to other existing or potential impacts emanating from similar or diverse activities as a result of the project activity in question.		
1	Negligible Cumulative Impact	The impact would result in negligible to no cumulative effects.
2	Low Cumulative Impact	The impact would result in insignificant cumulative effects
3	Medium Cumulative Impact	The impact would result in minor cumulative effects
4	High Cumulative Impact	The impact would result in significant cumulative effects.

MAGNITUDE		
Describes the severity of an impact.		
1	Low	Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible.
2	Medium	Impact alters the quality, use and integrity of the system/component but system/ component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity).
3	High	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation.
4	Very High	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired (system collapsed). Rehabilitation and remediation often impossible. If possible, rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.
SIGNIFICANCE		

Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. This describes the significance of the impact on heritage parameter.

7. Discussion of (Pre-) History of South Africa

South Africa possesses a rich archaeological record. It has one of the longest sequences of human development in the world. South African scientists have been actively involved in the search of human origins since 1925 when Raymond Dart identified the *Taung* child as an infant halfway between apes and humans. Dart named the remains Austrolopithecus Africanus, southern ape-man, and his work fundamentally changed the focus of human evolution from Europe and Asia to Africa, and it is now widely accepted that humanity originated from Africa, hence reference to Africa as the "cradle of humanity" (Robins et al.1998). In many ways Dart's discovery marked the birth of palaeonthropology as a discipline. The archaeology of South Africa which fits well into the southern African periodisation is broadly divided into Stone Age, Iron Age and the Historical Period.

Stone Age

The Stone Age is the pre-historic period when humans widely used stone for tool making (Robins et al. 1998). As the early ancestors progressed physically, mentally and socially they developed stone tools. These tools are the earliest evidence for culture in southern Africa (Clark & Kuman 2000). The Stone Age began approximately 2.6 million years ago and ended around 20 000 years ago. It is divided into three phases; namely the Early Stone Age, Middle Stone Age and Later Stone Age. It is argued that there are two transitional periods. Noteworthy that the time used for Stone Age is approximate and it differs from one researcher to another (See Robins et al.1998; Korsman & Mayor 1999; Mitchell 2002).

Early Stone Age (ESA)

The Early Stone Age is dominated by two industries; the Oldowan and Acheulian. The Oldowan industry which was the earliest was developed by the earliest members of the genus Homo, such as Homo habilis around 2.6 million years ago. The Oldowan tools which are only found in Africa, and not anywhere else are mainly simple flakes that were struck from cobbles. The assemblage comprises tools such as cobble cores and pebble choppers. They were not task-specific tools, and

one tool could be used for many functions (Wurz 2000). The Oldowan industry was completely replaced by the Acheulian around 1.7 million years ago. Homo ergaster was probably responsible for the manufacture of Acheulian tools in South Africa. Acheulian tools were longer with sharper edges which suggest they could be used for a variety of activities ranging from the butchering of animals, chopping of wood, digging roots, and cracking bones for marrow.

Middle Stone Age (MSA)

The Middle Stone Age artefacts started appearing about 250 000 years ago and these replaced the larger handaxes and cleavers. In contrast to the ESA technique of removing flakes from a core, MSA tools were flakes to start with. These were of a predetermined size and shape. They were made by preparing a core of suitable material and striking off the flake so that it was flaked according to a shape that the toolmaker desired. MSA people made a range of tools from both coarse and fine-grained rock types, sometimes rocks used for tool making were transported considerable distances, probably in bags or containers, as such tool assemblages from some MSA sites tend to lack some of the preliminary cores and contain predominantly finished products like flakes and retouched pieces. The stone toolkit of this period is dominated by elongated, parallel-sided blades as well as triangular flakes. Many MSA sites have evidence of control of fire, before this, rock shelters and caves would have been dangerous for human occupation due to predators (Deacon & Deacon 1999). Besides the introduction of fire, the widespread use of red ochre, probably as body paint, also shows that MSA behavior had become more human. The recent finds of decorated ochre at Blombos and decorated ostrich egg shells at Diepkloof also in the Cape further cements the point. Other sites that have yielded MSA tools in South Africa are Klassies River Mouth, Bloombos, and Border Cave (Deacon & Deacon 1999).

Later Stone Age (LSA)

The Later Stone Age ranges from 20 000 to 2000 years ago. It is important to note that the transition from MSA to LSA did not occur simultaneously in southern Africa. It is described by Deacon (1984) as a period when man refined small blade tools conversely abandoning the MSA prepared-core technique. Anatomically speaking, as the brain gets bigger, tools became smaller and more efficient. Thus, refined artefacts such as thumbnails, convex–edge scrapers, crescents, and bladelets are associated with this period. Other tools of the period are hammers, adzes, bores, grooved stones, hafted tools, and points. The period also saw the introduction of poisoned arrows to enhance the effectiveness of bone points and this led to improved hunting (Walker & Thorp 1997). Faunal evidence suggests that LSA hunter-gatherers trapped and hunted zebras, impala,

warthog, and bovid of various sizes. They also diversified their protein diet by gathering tortoises, marine resources, and land snails (Achatina) in large quantities. In addition to bow-hunting and marine sources collection, human behaviour was recognisably modern in many ways; uniquely traits such as rock art and purposefully burial with ornaments was common practice (Villa *et al.*2012). Rock art in form of paintings and engravings is an important signature of this period. Examples of LSA sites in South Africa are Cottage Cave, and Nelson Bay Cave.

Iron Age

Iron Age is a period in human history when metal was mainly used to produce tools. The period marks the movement of farming communities into South Africa in the first millennium AD, or 2500 years ago (Mitchell 2002:259). The people were agro-pastoralists that settled in the vicinity of water. In terms of material culture, pottery is a dominant and critical component of an Iron Age assemblage. Iron Age archaeologists use pottery to identify the presence and chronology of different cultural groups on sites. Through the study of stylistic traditions related to vessel shape and decoration, the movement, interaction and lineage of cultural groups can be traced (Huffman 1989). Pottery seriation in conjunction with linguistic data has been used by researchers to trace the origin of these people who brought the Iron Age culture. Researchers have traced the origin of the Bantu people with their agro pastoral to what is now the border of Nigeria and Cameroon. These people migrated eastward and southward breaking into two groups. According to Huffman (2007) there were two streams of Early Iron Age expansion in southern Africa, one referred to as the Urewe-Kwale tradition (or the eastern stream) and another one called the Kalundu tradition (or the western stream). Refer to figure 14 below:

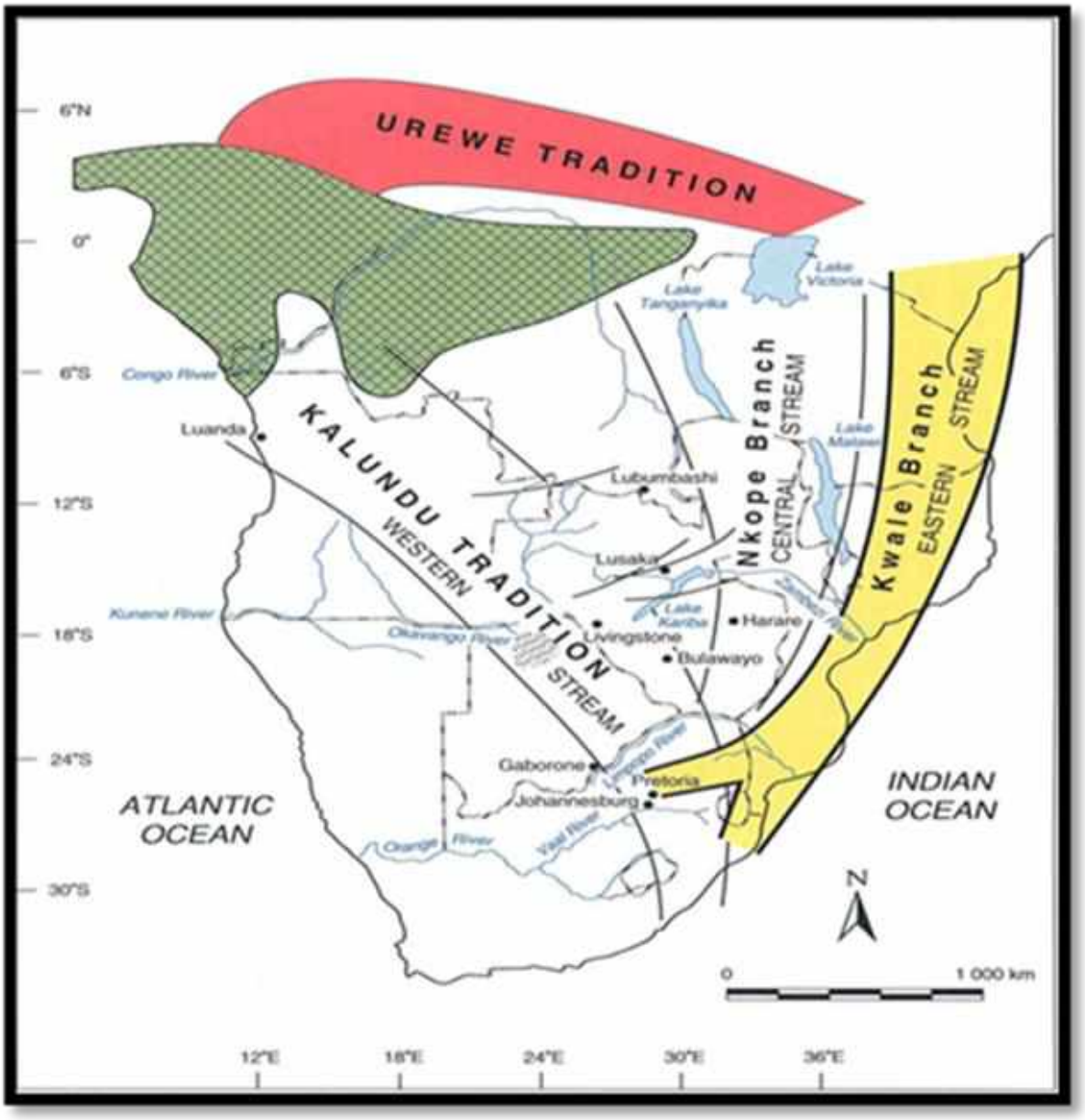

Figure 8: View of the spread of EIA movements, namely Urewe-Kwale and Kalundu traditions in southern Africa (From Huffman 2007:336).

Early Iron Age (EIA)

Early Iron Age dwelling were built-in low-lying areas, such as river valleys and the coastal plain, where forests and savannas facilitated shifting (slash and burn), they also cultivate grains such as cow peas, ground beans, sorghum and millets (Mitchell 2002). Early Iron Age pottery is characterized by large and prominent inverted rims, large neck areas and fine elaborate decorations. Unlike the broad and flat surface grinding stones of Late Iron Age, the Early Iron Age grinding stones is deeper and more lenticular grooves. Well known EIA sites in South Africa include Happy Rest in the Limpopo Province, Lydenburg Heads in Mpumalanga, Broederstroom in North West, and Mzonjani in KwaZulu-Natal Province.

Middle Iron Age (MIA)

The Middle Iron Age stretches from AD900 to 1300 and marks the origins of the Zimbabwe culture. It is marked by a change in emphasis from grain cultivation to cattle herding, however, the importance of cattle cut across all the three ages of the Iron Age period (Huffman 2007). In South Africa a clear shift from the EIA to the MIA is apparent in the Shashe-Limpopo basin where it marks the origins of the Zimbabwe culture where it came with class distinction and sacred leadership (Huffman 2005, 2007). Middle Iron Age sites in the Shashe-Limpopo basin are Schroda, K2 and Mapungubwe.

Late Iron Age (LIA)

The Late Iron Age dates from AD1300 to 1840.Greater focus on economic growth and the increased importance of trade marks the beginning of the LIA. Specialisation in terms of natural resources exploitation and utilisation is a character feature of this period. Iron slags which tend to occur only in certain localities compared to earlier times. Also Later Iron Age settlement were no longer located in rivers valleys but were built on higher ground where homestead which in most instances were made of stone for building purposes would benefit from cooling breezes and good views most probably for strategic purposes. Pottery styles also underwent significant changes; maize was also introduced during this period (Maggs 1980). Well known Late Iron Age sites in South Africa are Thulamela in Limpopo Province, there is also Madikwe in the North West (Huffman 2007).

Historical Period

The Historical period dates from 1600. It deals with Europe's infiltration, settlement, spread and domineering of European influence in southern Africa. Its segments are; Dutch settlement in the Western Cape, the troubled times of Zululand (Mfeqane/Difaqane), Voortrekkers, early missions and the diamond rush. This period also witnessed or saw the compilation of early maps by missionaries, explorers and military personnel.

Bartolomeo Dias was the first European to sail around the southern point of Africa in 1486, he named it "The Cape of Good Hope", nine years later it was Vasco da Gama, however, these Portuguese seafarers were not seriously interested in southern Africa. Nevertheless, the history of southeast part will change forever on the 6th of April 1652. This is when the Dutch seafarer Jan van Riebeeck arrived in Table Bay with his three ships. His mission was not to establish a full-

fledged colony at the Cape but to establish supply station on behalf of the Dutch East India Company (DEIC); however it committed itself when it granted nine company servants freedom in 1657 to establish private farms in the Rondebosch area below the eastern slopes of Table Mountain. One of the reasons why the Dutch settled at the Cape was to access the herds of cattle kept by the Khoi-Khoi, this was first achieved by friendly trade, however it was not long before disputes over land erupted after Free Burghers began to encroach on traditional communal grazing lands. By the early 1700's the Dutch colonists have prevailed (Bergh 1999). These new white settlers will influence the context and content of South African's culture forever, starting with development of Cape Town into an urban centre, however it took many years for it to equal the size of Mapungubwe Kingdom which was attained five centuries earlier (it is also argued that Mapungubwe was during its peak more developed than other areas in Europe). These newcomers also introduced new style of houses consisting of flat roofs and ornate pediments, slaves were also imported from other parts of Africa, i.e., Madagascar, India and East Asia, these slaves who were used as labourers were skilled carpenters and bricklayers as such their skills played an invaluable role in speeding up the progress and development of the Cape. It is important to note that the intermingling between the slaves, Africans and the European population marked the beginning of the coloured community.

One of the most significant historical occurrences in the early history of South Africa was the Mfecane/ Difaqane. Shaka was a shrewd king and he stablished a kingdom that became the strongest throughout the region in the 19th Century. During the Mfecane/Difaqane at the end of the 19th Century, communities who had settled in the KwaZulu-Natal were displaced and forced to move out by wars between the Zulu chiefdoms (Shillington 2013). Many generals were such as Mzilikazi, Soshangane were displaced as Zululand became a desert storm. Shaka's majesty rule came to end in 1828 when he was assassinated by his half-brothers, Dingane and Mhalangana, with Dingane assuming the leadership (Laband 1995). The kingdom became weaker and Cape merchants moved into the region to colonise Natal, and also the Voortrekker who became dissatisfied with British rule, also moved into the area (McKenna 2011).

Over a span of three years starting in 1835, some 12,000 Voortrekkers (pioneers) left the Cape Colony and trekked into the interior by ox wagon. In time, these Voortrekkers who were escaping British policies started to build a unique identity and started calling themselves Afrikaners, they also developed a hybrid language, Afrikaans, which stemmed from high Dutch but incorporated strong French, Malay, German and Black influences. The Afrikaans - speaking descendants of

these people would later simply be called "Boere" (boers or farmers) (Bergh 1999). From the 1820s European missionaries worked tireless to Christianise indigenous communities and to in-culture them in a European way of life, whatever intention these missionaries have undermine African and contributed to displacing African tradition across South Africa. By the 1860s, African states began to weaken as Europeans were eager to exploit Africans as a source of labour and to acquire the fertile area, during this era most African leaders died, e.g.: Makapane (1854); Soshangane (1858); Sekwate (1861); Mswati (1865); Mzilikazi (1868); Moshoeshoe (1870); Mpande (1872); Sekhukhune (1882) and Makhado (1895).

With the discovery of diamonds and gold in the 19th century, urbanisation started in South Africa. People came from all over the world to claim their stake in the diamond fields, these discoveries also made the British to realise that there was great wealth for the taking outside the Cape Colony, and with these discoveries South African black's view of life were further changed. Nevertheless, the 1902 Peace treaty in Vereeniging marked the end of Anglo/Boers war, this gave South African black people peace treaty as they hope for better opportunity after all the suppression and domination by the minority, unfortunately it turned out differently as it made no provisions as far as human rights for black people were concerned, actually the process of segregation increased in South Africa.

8. Discussion of (Pre-) History of the Study Area

Several Heritage Impact Assessment studies have been undertaken in the Tswane Municipality. These assessments have yielded archaeological, cultural and historical resources. This is for instance the work done by van Schalkwyk (2019), documented limited number of MSA tools close to streams, outcrops and ridges on the south east, north east and, west of Bronkhorstspruit. Van Schalkwyk also identified historical structures (i.e., buildings, monuments and bridges) occurring in the urban environment of the town (Bronkhorstspruit). Whilst the Archaeologist and Heritage Consultant (2010), recorded two graveyards for the Eskom Tswane strengthening project in Pretoria. Significantly, all graveyards and graves in South Africa can be considered to be high significance and are protected by law (i.e., NHRA of 25 no. 1999 section 36). A recent archaeological rescue excavation by Vhubvo Consultancy (2020), found plaster flooring, underground kiln and lot of charcoal between Vlakfontein and Mamelodi within Tswane, Kungwini and Ekhurhuleni Municipalities. In addition, there is a known EIA site located at Broederstroom west of Pretoria. The site comprises of the earliest evidence of metal working in the region.

Initially, the region of Pretoria was occupied by the Southern Ndebele people led by Chief Musi. The area was inhabited around 300 to 400 years ago. During the Mfecane or Difaqane period from the 1820 to 1832 change was experienced. This event began as a result of the movement of several Nguni people across the Drakensberg from the province of KwaZulu Natal in order to escape Zulu Expansion.

General Mzilikazi fled from the King Shaka Zulu's army. Along the way he caused so much havoc in various areas such as the Vaal, Orange River up to the south and Mozambique. This includes killing many members of the Bakwena and Ba Hurutsi tribes and taking over their land. He mainly killed men and took young boys and, girls to incorporate them into the Matebele tribe. The General took Pretoria as his home and formed two military kraals on the Apies River: Dinaneni which was located north west of Pretoria on the road to Hartbeespoort Dam and Kungweni which was constructed along the Daspoort range of hills.

In 1836 when Mzilikazi heard of the white invading his land, he launches a force to attack on the Voortrekkers led by Hendrick Portgieter. Mzilikazi launched a second attack on the whites and manage to take the Voortrekkers livestock. Portgieter launched a counter-attack on the Matebele recovering their livestock. The 1837 attack by the Voortrekkers preceded by Dingane was launched against Mzilikazi sending him across Limpopo.

The first white to settle in Pretoria were the Bronkhorst brothers in 1840. They owned the farms called Groenkloof and Elandspoort. Later a trek guided by Andries Pretorius from Ohrigstad settled in the area. In 1853, the son of Pretorius bought two farms called Elandspoort and Koadoespoort. The two farms were declared a town presently known as Pretoria.

There are a number of sites with rich history in Pretoria. Amongst these sites includes the Voortrekker monument a National Heritage Site that opened it doors in 1949 in commemoration of Trekkers who have left the Cape Colony between the mid-1800s, the Union Building also declared a National Heritage Site with historic events such as the inauguration of the late former President Dr. Nelson Rolihlahla Mandela, the Freedom Park Heritage Site built to commemorate all the individuals who gave their lives in the formation of the South Africa's freedom, the church Square at the centre of Pretoria surrounded by the old significant building (the Palace of Justice where Dr. Mandela trial of treason took place as he was later incarcerated, old Capitol Theater, National Bank & Mint, the Tudor Chambers, Old Coouncil Camber & General Post Office), Paul Kruger's House, Melrose House, Sammy Marks House and Pretorial Forts (www.sa-venues.com).

Cultural Landscapes

Over the past twenty years a territorial approach to heritage has shifted emphasis from sites to the recognition of broad territorial attributes of heritage. Within the international discourse which has ensued, a genre of heritage called Cultural Landscapes has emerged. Article 47 of the Operational Guidelines for the Implementation of the World Heritage Convention (2005) defines Cultural Landscapes as:

Cultural landscapes are cultural properties that represent the —combined works of nature and of man" designated in Article 1 of the World Heritage Convention. They are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal.

9. Findings and Discussions

The main aim of the survey was to evaluate potential heritage resources that would occur within the boundaries of the proposed area (s), as well as to determine if there is any hamartia that may prevent the proposed development from taking place in any of the proposed study area. The Phase I Archaeological Impact Assessment for the proposed did not yield any heritage resources within the footprint of the surveyed area

9.1 Impact assessment

Below is a description of the proposed development impact ratings. These ratings are for archaeological and cultural heritage sites known to exist in the proposed area, and include Stone and Iron Age, as well as Historical era materials. Note that these impacts are assessed as per **Table 2** above:

Table 3: Anticipated impact ratings.

Alternatives	Ratings
Impact	Low
Nature	Negative
Topographical Extent	The impact will only affect site.
Duration	Long term
Magnitude	Medium
Probability	Possible
Reversibility	Irreversible

Irreplaceable Loss	The impact will not result in the loss of any heritage resources

10. Recommendations

Although no archaeological objects were observed during the survey, the client is reminded that these often happen underground, as such should any archaeological material be unearthed accidentally during the course of construction (e.g., excavation), SAHRA should be alerted immediately, and construction activities be stopped within a radius of at least 10m of such indicator. The area should then be demarcated by a danger tape. Accordingly, a professional archaeologist or SAHRA officer should be contacted immediately. In the meantime, it is the responsibility of the Environmental Officer and the contractor to protect the site from publicity (i.e., media) until a mutual agreement is reached between the client and the consultant. It is mandatory to report any incident of human remains encountered to the South African Police Services, SAHRA staff members and professional archaeologists. Any measure to cover up the suspected archaeological material or to collect any resources is illegal and punishable by law under Section 35(4) and 36(3) of the National Heritage Resources Act, Act 25 of 1999. The developer must induct field workers about archaeology, and steps that should be taken in the case of exposing archaeological materials.

Pre-construction education and awareness training

Prior to construction, contractors should be given training on how to identify and protect archaeological remains that may be discovered during the project. The preconstruction training should include some limited site recognition training for the types of archaeological sites that may occur in the construction areas. Below are some of the indicators of an archaeological site that may be found during construction:

- Flaked stone tools, bone tools, and loose pieces of flaked stone;
- Ash and charcoal;
- Bones and shell fragments;
- Artefacts (e.g., beads or hearths); and
- Packed stones that might be uncounted underground and might indicate a grave or collapse stone walling.

In the event that any of the above are unearthed, all construction within a radius of at least 10m of such indicator should cease and the area be demarcated by a danger tape. Accordingly, a

professional archaeologist or SAHRA officer should be contacted immediately. In the meantime, it is the responsibility of the contractor to protect the site from publicity (i.e., media) until a mutual agreement is reached between the consultant and the client. Noteworthy that any measures to cover up the suspected archaeological material or to collect any resources is illegal and punishable by law. In the same manner, no person may exhume or collect such remains, whether of recent origin or not, without the endorsement by SAHRA.

11. Conclusions

A thorough background study and survey of the proposed development was conducted and findings were recorded in line with SAHRA guidelines. As per the recommendations above, there are no major heritage reasons why the proposed development could not proceed. It is thus recommended that SAHRA approves the proposed development to proceed subject to the recommendations given above.

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APPENDIX 1: SITE SIGNIFICANCE

The following guidelines for determining site *significance*were developed by SAHRA in 2003. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these.

(a) Historic value

- Is it important in the community, or pattern of history?
- Does it have strong or special association with the life or work of a person, group or organization of importance in history?
- Does it have significance relating to the history of slavery?

(b) Aesthetic value

- Is it important in exhibiting particular aesthetic characteristics valued by a community or cultural group?

(c) Scientific value

- Does it have potential to yield information that will contribute to an understanding of natural or cultural heritage?
- Is it important in demonstrating a high degree of creative or technical achievement at a particular period?

(d) Social value

- Does it have strong or special association with a particular community or cultural group for social, cultural or spiritual reasons?

(e) Rarity

- Does it possess uncommon, rare or endangered aspects of natural or cultural heritage?

(f) Representivity

- Is it important in demonstrating the principal characteristics of a particular class of natural or cultural places or objects?
- What is the importance in demonstrating the principal characteristics of a range of landscapes or environments, the attributes of which identify it as being characteristic of its class?
- Is it important in demonstrating the principal characteristics of human activities (including way of life, philosophy, custom, process, land-use, function, design or technique) in the environment of the nation, province, region or locality?

APPENDIX G3: GEOTECHNICAL INVESTIGATION REPORT

GEOTECHNICAL INVESTIGATIONS REPORT FOR: BELLE OMBRE OVERFLOW PARKING

GEOTECHNICAL INVESTIGATION
FINAL REPORT

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Approval

The signatories hereof, being duly authorized thereto, by their signatures hereto confirm their acceptance of the contents hereof.

Name	Designation	Signature	Date
Basimane	Senior Technologist		29/05/2020

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1. INTRODUCTION

1.1. General

Earthinv Lab was appointed by Iliso Consulting Engineers to carry out a geotechnical investigation to identify subsurface conditions that will affect the Construction of Belle Ombre Overflow Parking. The geotechnical data, discussions and recommendations of this report includes a field reconnaissance, data review and field explorations. The investigation comprised a desktop study, site walkover and fieldwork.

The information in this report will inform the design and construction precautions to be considered in the implementation of the project, thus reducing the risk of structural failure and construction damage where such adverse conditions may occur.

1.2. Purpose and Scope of Work

The site investigation was carried out in order to establish the site-specific geotechnical properties of the subsurface material and to provide geotechnical evaluation and recommendations for the detailed design of the proposed project as stated below:

- Review existing geologic maps and regional seismic and geological data.
- Assess the groundwater level underneath the site at the time of investigation, if encountered.
- Review available subsurface information in the project vicinity
- Evaluation of potential construction constraints and development of possible mitigation.
- Advise on appropriate, practicable and cost-effective conceptual planning and design options for the development.
- Excavation conditions and provision of relevant information for the planning and designs.

Iliso Consulting Engineers are responsible for the design of Belle Ombre Overflow Parking. This report addresses the required field works needed and provides the parameters to facilitate the design, as well as all applicable South African regulatory requirements, which includes:

- SAICE (Site Investigation Code of Practice)
- SAIEG (Guidelines for Soils and Rock Logging in South Africa)
- Relevant SANS Codes of Practice

Evaluation of the material obtained from the site and the analysis of the laboratory test results are presented in this report

1.3. Information Provided

The location of the area of investigation is provided by Iliso Consulting Engineers. Google maps was used to confirm the location of the site and regional geological Maps were used to confirm the regional geology.

2. SITE INFORMATION

2.1. Site Description

The site area is located in the town of Pretoria in the Gauteng Province under the jurisdiction of City of Tshwane Metropolitan Municipality. The site is located at Marabastad in Belle Ombre and can be accessed by Bosman Street. The site area is adjacent to the City of Tshwane Areyeng Buses Depot. This area is about 0.5 ha (hectares).

The site is a flat land that is flanked by a bush, paved road and the formal houses. The site coordinates in Longitude and Latitude, Datum WGS 84 are 25°44'9.45"S & 28°10'51.85"E with 1290 m above the sea level. Figure 1. below show the site area and the surroundings.

Figure 1 – Site Locality

2.2. Existing Infrastructure

During our investigations there were underground services observed adjacent to the proposed area that could be of hindrance during construction. Although underground municipal services were observed within the boundaries of the area under investigation, it is recommended that all way-leaves or service detection be performed prior to any commencement of works/excavation, to avoid services interruption.

The proposed works will be located in a vacant piece of land. Photos 1 to 4 show the existing services and surrounding infrastructure.

Photo 1 – Existing Tshwane Storage on site

Photo 2 – Existing paved road adjacent to site

Photo 3 – Existing Areyeng building Adjacent to site

Photo 4 – Existing Power Lines Adjacent to Site

2.3. Climate & Hydrological Conditions

According to South African Explorer monthly weather forecast and climate, Pretoria receives about 573mm of rain per year, with most rainfall occurring during summer. The area receives the lowest rainfall (0mm) in June and the highest (110mm) in January. The average midday temperatures for Pretoria range from 18.3°C in June to 27.5°C in January. The region is the coldest during July when the mercury drops to 1.7°C on average during the night.

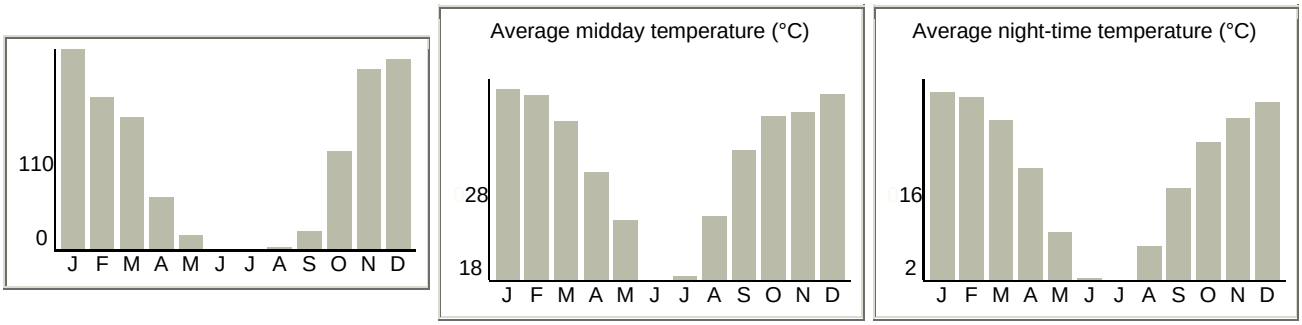

Figure 2 – Pretoria Climate

Climate

Climate determines the mode of weathering and rate of weathering. The effect of climate on the weathering process (i.e. soil formation) is determined by the climatic N-value defined by Weinert.

Table 1: Weinert N Value versus Climate (after H.H Weinert, 1980)

Climate Zone	Arid	Semi-Arid	Sub Humid	Humid
Weinert N-Value	>10	5-10	2-5	<2
Mean Annual Rainfall (mm)	< 250	250-500	500-800	800

The N-value for the site area is between 2 and 5, which implies a sub Humid climate. The N-value for the site area is between 2 & 5, which implies a moderate climate, and is an indication that both chemical decomposition and mechanical disintegration can occur as the rock weathering mode though chemical decomposition predominates.

''*These materials tend to have relatively high plasticity and are moisture sensitive. Basic igneous rocks are often not durable and prone to degradation in service. Careful attention should be paid to the internal and external drainage of pavement*''. *LVSR Guidelines*

Climate Data indicates that construction would be better suited between the months of March and September, as there is less rain which can hamper a construction program. The months of June, July and August are in particular favorable as there is very little or no rain.

Hydrological Conditions

The trial pits were excavated to a depth of 3.0 m or to the machine refusal. There was no water seepage encountered at all the test pits during the investigations. It is recommended that final levels of the surface earthworks should be self-draining in consideration of the storm water infrastructure of the area.

Refer to Annexure D: Test Pit/Soil Profiles

3. METHOD OF INVESTIGATION AND OBSERVATIONS

3.1. Test Pits Fieldwork

The implementation of the geotechnical investigations mainly includes the digging of the Trial Pits around the site area given as to obtain the accurate information of the entire area.

Fieldwork consisting of a total Seven (7) test pits carried out on the 08th of May 2020. The (7) tests pits were located as per the proposed development. The test pit positions were coordinated with a Garmin e-Trex 10 instrument and are given in the **Table 2** below.

Table 2: Summary of Test Pits

Position	Sampled Depth (m)	Total Depth (m)	Co-ordinates
TP 1	1.0-2.1	3.5	25°44'9.45"S & 28°10'54.22"E
TP 2	0.0-1.5	4.2	25°44'9.05"S & 28°10'53.28"E
TP 3	1.0-4.1	3.9	25°44'8.60"S & 28°10'52.40"E
TP 4	1.8-2.4	3.9	25°44'8.20"S & 28°10'51.53"E
TP 5	1.8-3.8	2.8	25°44'7.68"S & 28°10'50.70"E
TP 6	1.2-2.1	2.1	25°44'8.61"S & 28°10'51.85"E
TP 7	-	2.1	25°44'9.53"S & 28°10'53.59"E

These tests pits were profiled by an Engineering Geologist according to the standard profiling parameters as per SAICE Reference 7.1 and were profiled according to the standardized profiling method proposed by Jennings et al. 1973.

Enclosed as Annexure B are the Test Pit Positions Map and Annexure C for Site Photos"

3.2. Laboratory Testing

Soil samples of the in-situ soils were retrieved and delivered to our SANAS accredited soil testing laboratory to determine the material classification. The following tests were undertaken:

- Foundation indicators
- Bulk density and soil activity (Shrink / Swell Potential)
- Hydrometer Analysis
- Maximum Dry Density (MDD)
- California Bearing Ratio (CBR)
- Consolidation Tests

The tests are conducted to determine materials suitability for usage and foundation Indicators for the proposed development.

Laboratory test results are tabulated on table 3 below. **Annexure E: Laboratory Test Results.**

3.2.1 Test Results Clean Gravels

Table 3: Laboratory test results clean gravels

TP No.	Depth of sample (m)	Material Description	OMC %	MDD	PI	LL	LS	GM	Classification TRH 14
TP1	1.0-2.1	Light yellow clayey Sand	-	-	25	53	10.4	1.32	-
TP2	0.0-1.5	Yellowish brown clayey Sand	-	-	15	41	6.5	1.41	-
TP3	1.8-3.9	Yellowish brown clayey Gravel	16.9	1730	21	50	9.5	0.91	-
TP4	1.8-2.4	Reddish brown silty Clay	-	-	20	48	8.3	1.18	-
TP5	1.8-3.8	Dark brown clayey Gravel	16.7	1822	16	40	6.8	1.50	-
TP6	1.2-2.1	Reddish brown sandy Gravel	13.2	1771	16	42	7.3	1.21	-

GM-Grading Modulus
LL-Liquid Limit
PI-Plasticity Index

LS-Linear Shrinkage

CBR test indirectly measures the shearing resistance of a soil under controlled moisture and density conditions. The variation in CBR values are the results of differences in size and shape of the particles, the prevailing moisture within the soil, grading of the particles, how loose the grains are, presence of hard rock fragments and fines. CBR test was conducted on recovered samples from profiled test pits to characterize the strength and bearing capacity of the obtained samples. Laboratory results show low values for obtained CBRs @ 93%, 95% and 98%. Refer to **Annexure E** for Laboratory Test Results

3.2.2 Hydrometer analysis & Bulk Density and Soil Activity (Swell/Shrink Potential)

Van der Merwe`s method relies on the PI of the gross sample and clay fraction. The PI gross is plotted on the y-axis and clay fraction on the x-axis as the classification of heave potential curve. The values of the plot are obtained from the hydrometer analysis to obtain the clay fraction. The potential expansiveness is classified as Very High, High, Medium, and Low. The potential expansiveness according to Van de Merwe (1964) based on laboratory results obtained sample is low to medium. The activity classification of the material across the profiles ranged from minimum of 7.92 to maximum of 15.34 and classified as low to medium. The samples swell and shrink activity factor was evaluated as per the chart below referred to as **Figure 3**.

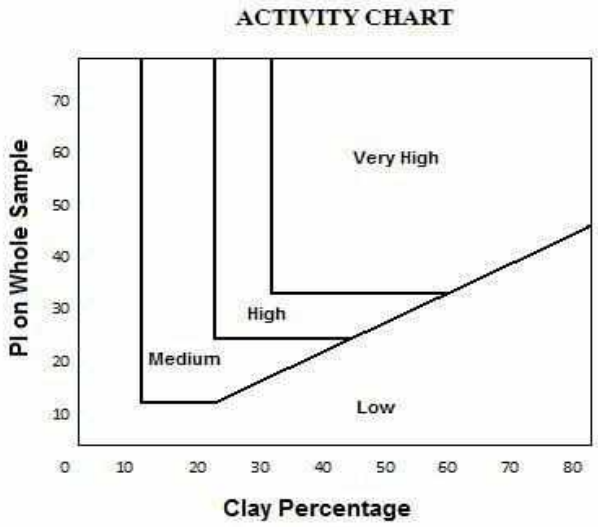

Figure 1: Soil Activity Chart, Van der Merwe (1964)

Table 4: Hydrometer Results

Test Pit	Depth of Sample	Overall PI	Activity
1	1.0-2.1	14.55	Medium
2	0.0-1.5	8.12	Low
3	1.0-4.1	15.34	Medium
4	1.8-2.4	12.31	Medium
5	1.8-3.8	7.92	Low

The samples activity factor has been found to be low to medium across the length of the proposed pipeline, which means variant soil ground movements with changing moisture content and applied weight.

Refer to **Annexure F** for the Laboratory Test Results"

3.2.3 Consolidation/Swell Tests

Disturbed samples were also extracted on site to conduct consolidation test (Standard 1-Dimensional Oedometer Test) to establish the time-dependent decrease in the volume of a soil mass under applied loading. The consolidation properties may be used to estimate the rate of magnitude of primary and secondary consolidation settlement of the earth. Disturbed samples were retrieved where undisturbed samples could not be obtained, and these were remolded at standard proctor before consolidation. Refer to **Annexure E** for Laboratory Test Results.

4. GENERAL GEOTECHNICAL ASSESSMENT

4.1. Geology

The Geological Map Series, sheet number 2528 Pretoria, published at a scale of 1:250 000 by department of Minerals and Energy Affairs from the Council of Geoscience indicate that the area is underlain by Andesite and Agglomerate in places of the Hekpoort Formation of the Pretoria Group. This lithology was formed during the Vaalian age.

4.2. Test Pits

Total of Seven (7) test pits were excavated and profiled by an experienced engineering geologist, with detailed analysis carried out based on the field works and interpretation of laboratory results obtained from the representative soil sample collected during the ground investigation around the study area.

The site test pits profiles show that the top material is the fill material (Dry, reddish & yellowish brow, loose to medium dense, intact and pinholed voided with low to intermediate clay content). The average thickness of this fill material is about 2.0 m. The fill material on the embankment was sampled at TP 1, TP 2, and TP 4. The insitu material was sampled at TP 3, TP 5, and TP 6.
The material type for the whole site area does not have as significant variation as it reflected consistency throughout. **Refer to annexure D for the test pit soil profiles.**

4.3. Conditions of Excavations

Method of Excavation: The pits were dug by TLB (Bell).
The excavation characteristics of the different soil horizons encountered have been evaluated according to the South African Bureau of Standards standardized excavation classification for earthworks (SABS-1200D) and earthworks (small works-SABS-1200DA). The soil on site can be classified as soft excavation. It is anticipated therefore that the excavatability of the in-situ material with an excavator will not pose any problem depending on the in-situ moisture content. There were no refusals on site therefore it is unlikely to envisage hard excavation requiring blasting in this project.

4.4. Stability of Trenches

The test pits excavations were all vertical and there was no evidence of side wall collapse during excavation of the test pits, therefore any trenches excavated to within the limits of the tests pit depths are expected to be stable. However, in cases where water ingress is encountered, or the slopes are left open for an extended period, there could be instability problems. In such case(s), the excavated trenches would have to be battered to stable angles or shored to avoid sidewall collapse.

4.5. Construction Material

Construction materials, i.e. coarse and fine aggregates suitable for concrete as well as base material for road layer works construction are not present within the site and therefore should be acquired from commercial sources.

4.6. Earthworks

It is recommended that all earthworks be carried out in accordance with SABS1200DM (latest version).
All unsuitable fill, i.e. garden refuse and general waste, should be removed from the site. All vegetation should be cleared from the areas over which fills are to be built. In addition, the upper 500mm of topsoil should be removed and stockpiled for later use as topsoil.

4.7. Drainage

The most important factor in the promotion of a stable site is the control and removal of both surface and groundwater from the site. It is important that the design of the stormwater management system allow for the

drainage of accumulated surface water. Such water should be directed towards the natural drainage lines. Disposal of stormwater should in any case conform to the Local Authority's requirements. Points of discharge of piped stormwater should be carefully designed to limit erosion.

4.7.1 Surface drainage

Surface drainage of building platforms should be designed to direct water away from fill edges to prevent overtopping of the fill crest and erosion of the fill embankment slopes. It is important that grassing of fill embankments be carried out as soon as possible after construction.

4.7.2 Sub-surface drainage

The need for subsoil drains will have to be assessed on site during development. Where groundwater seepage is encountered during construction, these zones will need to be controlled with effective subsoil drains, particularly where water is likely to gain ingress into the structural layers of roads. The occurrence of seepage at the base of road or housing platform cuts may also require similar treatment.

4.8. Foundation maintenance

All soils are affected by water. Water can weaken the structure of some soils causing gradual or collapse settlements to take place.

Collapsible soil rapidly changes its volume in response to changes in moisture content resulting in differential movements. Precautionary measure should therefore be taken to ensure that water ingress into the foundations is minimized by constructing apron slabs around the structures.

4.9. Vegetation

All trees should be regarded as potential source of damage. The following varieties are, however, particularly prone to causing damage:

a) All eucalyptus varieties

b) Lombardy (Free State) poplars

c) London planes

d) Willows (Salix) of any type; and e) Jarandas

The greatest risk of direct damage occurs close to the tree from the growth of the main trunk and roots and diminishes rapidly with distance. The risk of damage can be minimized should precautions be taken when the distance from trees is less than given in **Table 5** derived from the South African National Standard (SANS 10400-H: 2012 Edition 3). The application of the National Building Regulations. Part H: Foundations. SABS Standard Division.

Table 5: Minimum distance between masonry and center of trunks of young trees.

Description	Minimum distance between buildings and trees (meters)		
	Mature height of tree		
	<8 m	8 m to 15 m	>15 m
Buildings other than single-storey buildings of lightweight construction (for example, timber framed)	-	0.5	1.2
Single-storey buildings of lightweight construction (for example, timber framed)	-	0.7	1.5
Free-standing masonry walls: - distance for prevention of all damage - distance which permits some movement and minor damage which might be tolerable	- -	1.0 -	- 2.0
Drains and underground services: - distance which permits some movement and minor damage which might be tolerable - less than 1 m deep - more than 1 m deep	- 0.5 -	0.5 1.5 1.0	1.0 3.0 2.0
In-situ concrete paths and driveways: - distance for prevention of all direct damage - distance which permits some movement and minor damage which might be tolerable	0.5 -	1.0 0.5	2.5 1.5
Paths and driveways with flexible surfaces, such as asphalt, shale or paving slabs: - distance for prevention of all direct damage - distance which permits some movement and minor damage which might be tolerable	0.7 -	1.5 0.5	3.0 1.0
Note: This table provides guidance on the proximity of young trees or new planting to allow for future growth. This should not be taken imply that construction work can occur at the specified distance from existing trees, as such work might damage the tree, or render it dangerous, but refers to the potential for future growth, either of a young tree or of planting occurring subsequent to construction.			

5. CONCLUSIONS & RECOMMENDATIONS

5.1. Geotechnical Evaluation:

1. Supplementary Investigations: The foundation conditions encountered during the field work were generally consistent. No additional investigations are thus required or recommended.
2. Mining activity and undermining: No evidence of mining was observed on site and there are no known occurrences of economic mineral deposits on the site.
3. Dolomite: The site is not a “dolomitic” site and none of the restrictions relating to development on dolomitic terrain are applicable.
4. Contaminated Soils (including tailings). No contaminated soils were noted but careful consideration must be exercised during the excavations. The site is also not on or near a tailings dam.
5. Slopes and Cuttings: The site to be developed is having generally flat rolling terrain and no terracing is required.

The geotechnical investigation carried out and discussed in the report are based on the fact that an overflow parking will be constructed on the proposed site. Should this not be the case, further geotechnical investigations might have to be conducted.

The recommendations made are based on the information obtained from the 7 test pits. The test pits indicate a consistent soil profile across the site. However, it is possible that the ground profile varies at other areas on site where these investigations were not performed. Hence it is highly recommended that an experienced geologist or geotechnical engineer is engaged to assess the conditions during construction to ensure that the ground conditions are as anticipated and to make recommendations if conditions change. The test pits sidewalls proved to be stable and there was no indication of ground sidewall collapse during investigations.

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Annexure A
Geological Map

Annexure B
Test Pit Positions

Annexure C
Site Photos

Annexure D
Test Pit/Soil Profiles

Annexure E
Laboratory Test Results

APPENDIX H: ENVIRONMENTAL MANAGEMENT PLAN

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

FOR THE DESIGN REVIEW, SERVICES RELOCATION & CONSTRUCTION MONITORING OF BELLE OMBRE-PHASE 2 (OVERFLOW CAR PARK, ELECTRIC FENCING ETC) WITHIN THE JURISDICTION OF THE CITY OF TSHWANE METROPOLITAN MUNICIPALITY, GAUTENG PROVINCE

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Date Issued: September 2022

PROPOSED CONSTRUCTION OF BELLE OMBRE-PHASE 2 (OVERFLOW CAR PARK, ELECTRIC FENCING ETC) WITHIN THE JURISDICTION OF THE CITY OF TSHWANE METROPOLITAN MUNICIPALITY, GAUTENG PROVINCE

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

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Abbreviations (Definitions are above):

C	Contractor
DEO	Designated Environmental Officer
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
ESS	Environmental Scoping Phase
I&APs	Interested and / or Affected Parties
PC ELO	Environmental Liaison Officer
MSDS	Material Safety Data Sheets
PC	Principal Contractor
PM	Project Manager
SAHRA	South African Heritage Resource Agency
SM	Site Manager
SO	Safety Officer

1 INTRODUCTION

TS Consulting has been appointed by City of Tshwane Metropolitan Municipality (herein referred to CTMM) to Design Review, Services Relocation & Construction Monitoring of Belle Ombre -Phase 2 (Overflow Car Park, Electrical Fencing etc.) project, in Pretoria, Gauteng Province of South Africa. Projects of this nature can somehow trigger Listed Activities in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) and the EIA Regulations, 2014 (amended in 2017). As such, TS Consulting, appointed Selahle Consultancy and Projects (Pty) Ltd (SCP), to carry out environmental activities. This document is compiled in accordance with the Integrated Environmental Management (IEM) philosophy which aims to achieve a desirable balance between conservation and development (DEAT, 1992).

IEM is a key instrument of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended [NEMA]. NEMA promotes the integrated environmental management of activities that may have a significant effect on the environment, while IEM prescribes a methodology for ensuring that environmental management principles are fully integrated into all stages of the development process. It advocates the use of several environmental management tools that are appropriate for the various levels of decision-making. One such tool is an EMP.

The EMPr is a detailed plan for the implementation of the mitigation measures to minimise the negative environmental impacts. The EMPr for this project includes a construction environmental monitoring plan specifying how the construction of the project is to be carried out. The EMPr also includes the actions required for the Post-Construction Phase (Operation and Maintenance Phase) to ensure that all potential environmental impacts are managed for the duration of the project's life-cycle, and will ensure environmental good practice.

The provisions of this EMP are binding on the contractor during the life of the contract. They are to be read in conjunction with all the documents that comprise the suite of documents for this contract. In the event that any conflict occurs between the terms of the EMP and the project specifications or Environmental Approval, the terms herein shall be subordinate.

2 PROPOSED ACTIVITY

2.1 Description of Proposed Activity

The project entails of the construction of new overflow car park and design review of the existing structures, finishing off works and relocation of services for Belle Ombre, located within the City of Tshwane Metropolitan Municipality, Gauteng Province.

Construction of a new overflow parking which will include following but not limited to:

- Installation of ClearVu Fence

- Installation of ClearVu Sliding Gate
- Construction of Retaining Wall
- Installation of 5m Energy Poles
- Parking Area with car ports
- Installation of Kerbs
- Construction of Stormwater Structures
- Clearing (with relocation of services) and grubbing of the parking area.
- Mass earthworks (Excavation, Fills and Roadbed)
- Paving with 80mm Interlocking, with 20mm Bedding Sand
- Road marking
- Public lighting

The proposed development is an extension to an existing project, therefore, there would be an extension of works on the existing infrastructure which includes the following but not limited to:

- Installation of ClearVu Sliding Gate
- Installation of ClearVu Fence
- Construction of Refuse Waste Bin
- Construction of Paved Walkways
- Installation of Storm water concrete Manhole Cover
- Clearing and grubbing of the parking area.
- Installation of Cameras
- Installation of Boom Gates
- Construction of Concrete edge beams
- Asphalt road patching
- Paving with 80mm Interlocking, with 20mm Bedding Sand
- Layer works to 450mm Imported Materials.
- Road marking
- Installation of sleeves

2.2 Project Location

The study area is located on Portion 12 of Farm Daspoort 319 JR, in the City of Tshwane, Gauteng Province. The proposed study area falls within the jurisdiction of the greater City of Tshwane Metropolitan Municipality, Gauteng Province of South Africa. The proposed development footprint is approximately 0,39 ha. The proposed property is a municipal owned land. There are existing businesses and industrial activities in close proximity of the proposed study area.

The proposed study area can be accessed via Bosman Street and Bosman Road. It is in close proximity with the Ereyeng Bus Depot in Pretoria, Gauteng Province.

2.3 The Principal Contractor's Environmental Liaison Officer (PC ELO)

The PC ELO will be appointed by the Contractor to implement the EMPr and monitor activities on site on a daily basis. The PC ELO will be the ECO's representative on the site and will report back on all audit trips. The PC ELO must report any major incidents immediately to the ECO.

Table 1: Responsibilities

Responsibility	Function
▪ Overall management of project and EMPr implementation	Project Manager (PM)
▪ Oversee site works, liaison with Contractor (PC ELO), PM and ECO	Senior Site Supervisor/ Contract Manager (CM)
▪ Implementation of EMPr, and monitoring of compliance with the requirements of the EMPr. ▪ Maintains close communication with the PC ELO, and oversees the PC ELO's environmental control, remediation and rehabilitation actions (including checking that the complaints register and register of environmental incidents are being maintained by the PC ELO). ▪ Environmental awareness training of the contractor and select main construction staff ▪ Settlement of damage claims and completion of Damage Release Forms	Environmental Control Officer (ECO) – Appointed by the proponent
▪ Ensures the implementation and compliance with recommendations and conditions of the EMPr; Appoints dedicated person (PC ELO) to work with ECO	Contractor (PC)
▪ Monitoring of compliance with EMPr, environmental control of site actions, adjusting of environmental quality of works performed by construction staff, remediation and rehabilitation work. ▪ Reports back to the ECO through compilation of regular site inspection reports. ▪ Ensures compliance of construction activities with relevant environmental legislation. ▪ Maintains the complaints register that is kept on-site. ▪ Keeps record of all environmental incidents and ensures that corrective action is taken. ▪ Compiles method statements from the project-specific EMPr. ▪ Environmental awareness training of all staff. ▪ Day-to-day management of landowner requirements and landowner liaison; ensures all landowner special conditions are met.	Contractor-appointed Environmental Liaison Officer (PC ELO)

3 PLANNING AND DESIGN

3.1 Contractor Requirements

The Contractor must be aware of the issues and impacts surrounding the proposed development site. The Contractor must also be provided with a copy of the EMPr and the EMPr must form part of any tender documents for the proposed development.

3.2 Waste Management

During the construction phase the Contractor must ensure to make provision for the appropriate removal of waste from the site to a permitted waste disposal facility. The accumulation of a construction waste materials must be avoided as far as possible.

A waste Disposal Management Plan (DMP) must be complied and produced. This plan should ensure to specify where all the different waste streams would be stored on site as well as the mode of transportation of all hazardous waste to a registered landfill sites. The DMP should also indicate as to how most waste would be recovered in means of Recycling, Reusing, and Recovering prior to it being disposed to landfill sites.

3.3 Storm Water Management

A Professional Engineer must be draft a storm water management plan before construction commences. This should include considering of the following:

- Methods to control storm water run-off during the construction phase so that significant silt does not enter the storm water system
- Implementation of measures to dissipate the energy of the storm water before it is released into drainage areas
- The distribution of the storm water runoff as evenly as possible from the site; and
- Use of gabions, riffle beds and swales to reduce the velocity of water runoff.

3.4 Sensitive Areas

All identified sensitive landscapes and features must be included in the planning, management, use and rehabilitation of the area.

3.5 Environmental Control Officer (ECO)

An independent Environmental Control Officer (ECO) should be appointed to oversee all environmental aspects relating to the development. The ECO will be responsible for the monitoring, reviewing and verifying of compliance with the EMP and conditions of the environmental authorisation by the Contractor. The ECO's duties in this regard will include, inter alia, the following:

- Confirming that all the environmental authorisations and permits required in terms of the applicable legislation have been obtained prior to construction commencing.
- Monitoring and verifying that the EMPr, Environmental Authorisation and Contract are adhered to at all times and taking action if specifications are not followed.
- Monitoring and verifying that environmental impacts are kept to a minimum.
- Reviewing and approving construction method statements with input from the ESO and Engineer, where necessary, in order to ensure that the environmental specifications contained within this EMPr and environmental authorisation are adhered to.
- Inspecting the site and surrounding areas on a regular basis regarding compliance with the EMPr, Environmental Authorisation and Contract.
- Monitoring the undertaking by the Contractor of environmental awareness training for all new personnel on site.
- Ensuring that activities on site comply with all relevant environmental legislation.
- Ordering the removal of, or issuing spot fines for person/s and/or equipment not complying with the specifications of the EMPr and/or environmental authorisation.
- Undertaking a continual internal review of the EMPr and submitting any changes to GDARD (in case of major changes) for review and approval.
- Checking the register of complaints kept on site and maintained by the ECO and ensuring that the correct actions are/were taken in response to these complaints.
- Checking that the required actions are/were undertaken to mitigate the impacts resulting from non-compliance.
- Reporting all incidences of non-compliance to PM and the Principal Contractor.
- Conducting monthly environmental audits in respect of the activities undertaken relating to the project. The ECO shall also submit compliance audit reports to GDARD, in accordance with the requirements of the environmental authorisation. Such reports shall be reviewed by client, prior to submission.
- Keeping a photographic record of progress on site from an environmental perspective. This can be conducted in conjunction with the Safety Officer (SO) as the Safety Officer will be the person that will be onsite at all times and can therefore take photographic records weekly. The ECO would need to check and ensure that the SO understands the task at hand.
- Recommending additional environmental protection measures, should this be necessary.
- Providing report back on any environmental issues at site meetings.

The ECO must have:

- A good working knowledge of all relevant environmental policies, legislation, guideline and standards;
- The ability to conduct inspections and audits and to produce thorough, readable and informative reports;
- The ability to manage public communication and complaints;
- The ability to think holistically about the structure, functioning and performance of environmental system.

4 SITE ESTABLISHMENT

4.1 Contractor's Camp

The construction camp must preferably be located away from surrounding residential areas to minimise visual and noise impacts.

All moveable materials and associated accessories must be stored overnight in the camp. The camp needs to be fenced with a lockable with access control for security purposes. No staff should be accommodated at the site camp except the overnight security guard. Proper facilities for him should however be provided.

4.2 Complaints Registers

A complaint register must be kept at the construction camp at all times and all complaints, issues and concerns shall be recorded in the register. All issues, concerns and complaints should also be incorporated in the feedback report and submitted to GDARD.

Where complaints requires corrective actions and/or measures, this must be communicated urgently to the relevant parties to ensure that the complainant is satisfied. All registered and identified Interested and Affected Parties (I&APs) should be notified prior to construction commencement.

4.3 Provision of Services

Chemical toilets should be provided for construction worker prior to construction commencement of any construction activities. These must be regularly maintained and emptied as and when required, at least weekly. The toilets must be located within walking distance of the work staff and an average of one (1) toilet per five (5) workers must be provided.

4.4 Staff Awareness

Staff must be made aware of their responsibilities to ensure that impacts such as fire, safety and pollution are taken care of. This must include an induction program. The movement of construction workers must be controlled and access to adjacent properties must be prohibited.

4.5 Involvement of the ECO

The ECO should be involved in any decisions that are taken on site. This should include the approval of the layout plan and activities that are to be undertaken during construction phase.

5 LAYOUT OF ENVIRONMENTAL MANAGEMENT PROGRAMME

This EMPr addresses specific issues relating to the different phases of the project. The impact is identified and given a brief description. The phases of the development are then identified as below

- Pre-construction
- Construction
- Operation Phase
- Decommission Phase

This EMPr seeks to manage and keep to a minimum the negative impacts of a development and at the same time, enhance the positive and beneficial impacts.

6 SUMMARY OF IMPACTS ASSOCIATED WITH THE PROPOSED ACTIVITY

1. Contamination of groundwater as a result of deposition of contaminants during the construction phase;

2. Increased erosion and surface water runoff from hydrological systems in close proximity to the construction sites as a result of vegetation clearing (mainly during the construction phase) and increases area of hardened surfaces (mainly during the operational phase);

3. Impact on wetland mechanisms as a result of construction activities in close proximity of delineated wetland areas; Floral destruction through vegetation clearing and earthworks during the construction phase;

4. Habitat loss or destruction as a result of vegetation clearing and other preconstruction activities;

5. Faunal destruction (deaths) and displacement as a result of migration and competition from introduced species;

6. Increased dust and noise generation from construction vehicles and other heavy-duty equipment used during the construction phase of the proposed development and increased noise during the operational phase of the development;

7. Visual intrusion as a result of the construction activities of the development;

8. Increase in crime as a result of construction work;

9. Impact on traffic patterns as a result of construction activities;

10. Increased employment opportunities and the resulting socio-economic benefits arising from an increase in earnings per household;

11. Upgrade of bulk services to the area and infrastructure optimisation due to the proposed installation of services; and

12. Improvement to the quality of the water course a comprehensive holistic storm water management plan

7 MITIGATION GUIDELINES

7.1 Environmental Management Programme

Mitigation guidelines are addressed through three phases namely Pre-construction (Site Establishment) Phase; Construction Phase (and associated rehabilitation of affected environment) and Operational Phase (Post-Construction).

Each phase has specific issues unique to that period of the development and operation of the proposed infrastructure. The impact is identified and given a brief description. The three phases of the development are then identified and addressed below:

Table 2: Environmental Management Programme and Mitigation Measures

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
PRE-CONSTRUCTION PHASE			
Site Preparation Activities	1. Appoint an Environmental Control Officer	Proponent	Once Off
	2. The PC must draw up method statements for relevant construction activities.	PC	As required
	3. The PM and ECO must approve all of the method statements before they become operational.	PM & ECO	As required
	4. Before construction begins, all areas to be development must be clearly demarcated with fencing or orange construction barrier where applicable.	PC	Throughout, Monitored monthly
	5. The PC must ensure compliance with conditions of the EMPr.	PC	Throughout, Monitored monthly
	6. The ECO must ensure compliance with conditions of the EMPr.	ECO	Throughout, Monitored monthly
	7. All no-go areas on site must be properly fenced off / demarcated and signage placed prior to the onset of construction.	PC	Throughout, Monitored monthly
	8. Records of compliance / non-compliance with the conditions of the EMPr must be kept on-site and be available on request. A copy of	PC	Throughout, Monitored monthly

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
	these records must be made available to the provincial department on request throughout the project execution.		
	9. All unskilled labourers must be drawn from the local market as far as possible and use must be made of local semiskilled and skilled personnel where possible.		Once off
Construction Site Signage	1. Construction site signage and warning signs must be erected where necessary informing the public of the construction area. Safety signage where required must also be erected.	PC	Monitored Monthly
Site Access	1. Use of planned access routes or only to be used. No new access routes are to be created without the necessary approvals.	PC	Monitored Monthly
Water Supply	1. Municipal sources only to be used. Use of water from the nearby Vaal River is strictly prohibited. No cleaning of vehicles or abstraction of water from the nearby Vaal may take place.	PC	Monitored Monthly
Site and vegetation Clearing	2. Areas which are not to be constructed on must not be cleared in order to reduce erosion risks.	PC	Monitored Monthly
	3. The area to be cleared must be clearly demarcated and this footprint strictly maintained. Footprint of clearance should not exceed the required footprint. Designated area is required where cleared vegetation is to be stockpiled until removal.		Monitored Monthly
	4. Stripped topsoil must be stockpiled for reuse where possible (i.e. for post-construction rehabilitation).		Monitored Monthly
	5. Spoil (including excavated sub-soils and topsoil) that is removed from the site must be stockpiled in a designated area and removed to an approved spoil site.		Monitored Monthly

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
	6. All removed plant material (i.e. trees) must be disposed at a suitable waste site. No burning of plant material removed in the construction site is allowed.		Monitored Monthly
	7. Alien invasive vegetation is to be removed and controlled on the construction site.		Monitored Monthly
Dust	1. Damping down of the un-surfaced access roads and site where required must be implemented to reduce dust and nuisance. This can be achieved through regular watering.		Monitored Monthly
Soil Erosion	1. The necessary silt fences and erosion control measures must be implemented in areas where these risks are more prevalent.		Monitored Monthly
Worker Safety	1. All the necessary Public Protective Equipment (PPE) must be provided to all workers on site (including but not limited to dust masks, dust goggles, gloves, ear plugs, overalls and boots where applicable).	PC	Monitored Monthly
Sanitation and Ablution Facilities	1. Temporary chemical sanitation facilities are to be provided to workers at a ratio of 1 toilet to 20 workers (1:20). Use of the construction site and nearby area strictly prohibited.	PC	Monitored Monthly
Vehicle and Machinery Maintenance	1. All mechanical work, repairs or servicing will be done on site. This must be undertaken at the relevant workshop.	PC	Monitored Monthly
	2. Emergency oil spill kits are required to be kept on site in the case of any spills of oils or any other hazardous fluid or substance.		
	3. Refuelling of plant equipment by means of diesel bowser must be undertaken over a bunded or impermeable surface. Any leakages or spills must be cleaned up immediately, removed and disposed off accordingly in terms of hazardous substances.		

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
Storage of Hazardous or Dangerous Materials	1. No diesel, fuel, hazardous fluids or substances are to be kept on site.	PC	Monitored Monthly
Solid Waste Facilities	1. Waste collection bins are to be provided.	PC	Monitored Monthly
	2. Solid waste must be disposed of at a registered landfill with sufficient capacity to assimilate waste.	PC	Monitored Monthly
	3. Strictly no burning of solid waste on site.	PC	Monitored Monthly
Excavations	4. Excavations for water reticulation, sewer and storm water must be clearly demarcated with danger tape for workers safety	PC	Monitored Monthly
Identification of archaeological features	5. Training on how to identify and protect archaeological remains that may be discovered during the project	HIA Specialist	Once off
CONSTRUCTION PHASE			
Development of Construction and Laydown Area	1. Choice of site for the Contractor's laydown area requires the Project Manager and ECO's permission and must take into account location of local residents and / or ecologically sensitive areas, including flood zones. A site plan must be submitted to the Project Manager for approval. The size of the Construction laydown area must be minimized	PC	Once Off
	2. Adequate parking must be provided for site staff and visitors. The Contractor must attend to drainage of the camp site to avoid standing water and / or sheet erosion.		Monitored Monthly

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
	3. Suitable control measures over the Contractor's yard, plant and material storage to mitigate any visual impact of the construction activity must be implemented.		Monitored Monthly
	4. All laydown areas are to be fenced off in such a manner that unlawful entry is prevented and access is controlled. Signage shall be erected at all access points in compliance with all applicable occupational health and safety requirements. All access points to the Construction laydown must be controlled by a guard or otherwise monitored, to prevent unlawful access.	PC	Monitored Monthly
	5. The Construction laydown area must be set up in accordance with the EMPr. The ECO and Contractor must inspect this site to confirm and note any environmental sensitivity.		Once off
	6. The construction laydown area layout plan must be provided to the ECO for approval prior to the construction of the laydown area.		Once off
	7. Site establishment shall take place in an orderly manner and all required amenities shall be installed at the construction laydown areas before the main workforce move onto site.		Once off
	8. All construction equipment must be stored within the construction laydown area.		Monitored Monthly
	9. All associated fuelling and re-fuelling must take place within this camp on a bunded or sealed surface such as a concrete slab.		Monitored Monthly
	10. An area for the storage of hazardous materials must be established that conforms to the relevant safety requirements and that provides for spillage prevention and containment.		Monitored Monthly

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
	11. The Construction Camps shall be provided with portable fire extinguishing equipment, in accordance with all relevant legislation and must be readily accessible.		Monitored Monthly
	12. The Contractor shall inform all site staff to make use of supplied ablution facilities and under no circumstances shall indiscriminate sanitary activities be allowed.		Monitored Monthly
	13. All imported materials (e.g. sand) must be stockpiled within the site boundary / Construction Zone. Sand and excavated material stockpiles should be protected against wind using temporary screens, and from water erosion using tarpaulins where necessary. All stockpiles are to be limited to 3-5m heights in order to be suitably managed.		Monitored Monthly
	14. It is likely that most of the cement requirements are to be transported to site as “ready mix” from an off-site batching plant. To prevent spillage onto roads, “ready mix” trucks shall rinse off the delivery shoot into a suitable sump prior to leaving the Site. Cement / concrete shall not be mixed directly on the ground. Dagga boards, mixing trays and impermeable sumps shall be used at all mixing and supply points. Unused cement bags are to be stored so as not to be effected by rain or runoff events. Used cement bags shall be stored in weatherproof containers to prevent windblown cement dust and water contamination. Used cement bags shall be disposed of on a regular basis, and shall not be used for any other purpose.		Monitored Monthly
	15. All visible remains of excess concrete shall be physically removed on completion of the plaster or concrete pour section and disposed		Monitored Monthly

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
	of. Washing the remains into the ground is not acceptable as groundwater contamination could occur. All excess aggregate shall also be removed. With respect to exposed aggregate finishes, the persons undertaking construction shall collect all contaminated water and store it in sumps for disposal at an approved waste site.		
	16. No fires will be allowed and the Contractor must make alternative arrangements for heating. LP Gas may be used, provided that all required safety measures are in place. The Contractor shall take specific measures to prevent the spread of veld fires, caused by activities at the campsites. These measures may include appropriate instruction of employees about fire risks and the construction of firebreaks around the site perimeter.		Monitored Monthly
Storage of materials (including hazardous materials)	1. Choice of location for storage areas must take into account prevailing winds, distances to water bodies, general onsite topography and water erosion potential of the soil. Impervious surfaces must be provided where necessary. Storage areas must be designated, demarcated, sign posted and fenced if necessary.	PC	Monitored Monthly
	2. Storage areas must be secure so as to minimize the risk of crime. They must also be safe from access by unauthorised persons i.e. children / animals etc.	PC	Monitored Monthly
	3. Fire prevention facilities must be present at all storage facilities.	PC	Monitored Monthly

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
	4. Proper storage facilities for the storage of oils, grease, fuels, chemicals and any hazardous materials to be used must be provided to prevent the migration of spillage into the ground and groundwater regime around the temporary storage area(s). These pollution prevention measures for storage must include a bund wall high enough to contain at least 110% of any stored volume, and this must be sited away from drainage lines in a site with the approval of the Project Manager. The bund wall must be high enough to contain 110% of the total volume of the stored hazardous material with an additional allocation for potential storm water events.	PC	Monitored Monthly
	5. All necessary approvals with respect to fuel storage and dispensing (if required on site) shall be obtained from the appropriate authorities.	PC	Monitored Monthly
	6. All fuel storage areas must be roofed to avoid creation of dirty storm water	PC	Monitored Monthly
	7. Material Safety Data Sheets (MSDSs) shall be readily available on site for all chemicals and hazardous substances to be used on site. Where possible the available, MSDSs must additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases or escapes.	PC	Monitored Monthly

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
	8. Staff dealing with these materials / substances must be aware of their potential impacts and follow the appropriate safety measures.	PC	Monitored Monthly
	9. All excess cement and concrete mixes are to be contained on the construction site prior to disposal off site.	PC	Monitored Monthly
	10. All harmful materials must be properly stored in a dry, secure environment, with concrete or sealed flooring and a means of preventing unauthorised entry. Furthermore, it must be ensured that material storage facilities are cleaned/ maintained on a regular basis, and that leaking containers are disposed of in a manner that allows no spillage onto the bare soil. The management of such storage facilities and means of securing them shall be agreed.	PC	Monitored Monthly
	11. The ECO shall further monitor that materials storage facilities are cleaned/maintained on a regular basis, and that leaking containers are disposed of in a manner that allows no spillage onto the bare soil.	ECO	
	12. All major spills as specified in the contractor emergency response procedure of any materials, chemicals, and fuels or other potentially hazardous or pollutant substances must be cleaned immediately and the cause of the spill investigated. Preventative measures must be identified and submitted to the ECO for information. Emergency response procedures to be followed and implemented.	PC	Monitored Monthly

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
Traffic	1. All equipment moved onto site or off site is subject to the legal requirements.	PC	Monthly Monitoring
	2. The Contractor shall meet these safety requirements under all circumstances. All equipment transported shall be clearly labelled in terms of its potential hazards according to specifications. All the required safety labelling on the containers and trucks used shall be in place.		Monthly Monitoring
	3. The Contractor shall ensure that all the necessary precautions against damage to the environment and injury to persons are taken in the event of an accident.		Monthly Monitoring
	4. Construction routes and required access roads must be clearly defined.		Monthly Monitoring
	5. Delivery of equipment must be undertaken with the minimum amount of trips to reduce the carbon footprint of these activities		Monthly Monitoring
	6. Damping down or proper dust suppression of the un-surfaced access roads must be implemented to reduce dust and nuisance.		Monthly Monitoring
	7. Vehicles and equipment shall be serviced regularly to avoid the contamination of soil from oil and hydraulic fluid leaks etc. The servicing of vehicles and equipment are not allowed to take place on-site. This must be undertaken off-site.		Monthly Monitoring
	8. Servicing must be done in dedicated service areas on site or else off site if no such area exists.		Monthly Monitoring
	9. Oil changes must take place on a concrete platform and over a drip tray to avoid pollution.		Monthly Monitoring

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
	10. Any temporary access roads created for construction will need to follow due environmental processes and attain the necessary environmental approvals before being implemented (if required). Additionally, temporary roads are to be rehabilitated prior to contractors leaving the site.		Monthly Monitoring
Soil and Geology	1. Rehabilitation of soil and vegetation is to take place where identified by the ECO as necessary.	PC	Monthly Monitoring
	2. Implement effective erosion control measures as identified by the ECO.	PC	Monthly Monitoring
	3. The full depth of topsoil must be stripped from areas affected by construction and related activities prior to the commencement of major earthworks. This must include the building footprints, working areas and storage areas.	PC	Monthly Monitoring
	4. Subsoil and overburden in all construction and lay down areas must be stockpiled separately to be returned for backfilling in the correct soil horizon order.	PC	Monthly Monitoring
	5. Stockpiles must not exceed 3m in height unless otherwise permitted by the Engineer. Similarly, the footprint of the resultant stockpiles are to be minimised to reasonably sized area.	Project Engineer	Monthly Monitoring
	6. Stockpiles must be kept clear of weeds and alien vegetation growth by regular weeding.	PC	Monthly Monitoring
	7. Should a batching plant be required on site, the concrete batching plant must be contained within a bunded area.	PC	Monthly Monitoring

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
	8. If a batching plant is necessary, run-off must be managed effectively to avoid contamination of other areas of the site. Run-off from the batch plant must not be allowed to enter the storm water system.	PC	Monthly Monitoring
	9. Soils compacted during construction must be deeply ripped to loosen compacted layers and re-graded to even running levels. Topsoil must be re-spread over landscaped areas.	PC	Monthly Monitoring
	10. It is very important that the foundation excavations for the proposed structures be inspected by an engineering geologist or geotechnical engineer prior to the placing of steel reinforcement or concrete in order to determine that the structure is being founded upon the correct material, and also to detect whether any active layers have been exposed by the foundation excavation.	PC	Monthly Monitoring
	11. Ensure that the mixing / decanting of all chemicals and hazardous materials should take place on a tray or impermeable surface.	PC	Monthly Monitoring
	12. Waste generated from these should then be disposed of at a registered landfill site.	PC	Monthly Monitoring
	13. Ensure all storage tanks are designed, bunded and managed in order to prevent pollution of drains, groundwater and soils.	PC	Monthly Monitoring
	14. Construct separate storm water collection areas and interceptors at storage tanks, and other associated potential pollution activities.	PC	Monthly Monitoring
	15. Ensure that use and storage of fuels and chemicals that could potentially leach into the ground be controlled. Adequate spillage containment measures shall be implemented, such as cut off drains, etc. Fuel and chemical storage containers shall be set on	PC	Monthly Monitoring

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
	a concrete plinth. The containment capacity shall be equal to the full amount of material stored, plus 10%.		
	16. Appoint appropriate contractors to remove any residue from spillages from site. Handling, storage and disposal of excess or containers of potentially hazardous materials shall be in accordance with the requirements of the above-mentioned Regulations and Acts.	PC	Monthly Monitoring
	17. Ensure that used oils/lubricants are not disposed of on/near the site, and that contractors purchasing these materials understand the liability under which they must operate.	PC	Monthly Monitoring
	18. The Environmental Control Officer will be responsible for reporting the storage / use of any other potentially harmful materials to the relevant authority where necessary.	ECO	
	19. Ensure that potentially harmful materials are properly stored in a dry, secure environment, with concrete or sealed flooring. The PC will ensure that materials storage facilities are cleaned / maintained on a regular basis, and that leaking containers are disposed of in a manner that allows no spillage onto the bare soil or surface water. The management of such storage facilities and means of securing them shall be agreed.	PC	Monthly Monitoring
	20. The ECO will monitor that materials storage facilities are cleaned / maintained on a regular basis, and that leaking containers are disposed of in a manner that allows no spillage onto the bare soil or surface water.	ECO	Monthly Monitoring

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
Erosion Control	1. It is recommended that construction only be undertaken during agreed working times and permitted weather conditions.	PC	Monthly Monitoring
	2. If heavy rains are expected activities should be put on hold to reduce the risk of erosion.		Monthly Monitoring
	3. If additional earthworks are required than any steep or large embankments that are expected to be exposed during the 'rainy' months should either be armoured with fascine like structures.		Monthly Monitoring
	4. If earth works are required then storm water control and wind screening should be undertaken to prevent soil loss from the site.		Monthly Monitoring
	5. Oil traps must be installed to remove the bulk of the oil from the storm water, which water can then be used on haul roads for dust suppression or as wash down water in the wash bays.		Monthly Monitoring
Water Use and Pollution	1. No water must be abstracted from a natural water body (i.e. Vaal) unless authorised under a General Authorisation under the National Water Act, or unless authorised by the Department of Water Affairs through a water use licence if such a licence is required.	PC	Monthly Monitoring
	2. Efficient oil and grease traps or sumps must be installed and maintained at re-fuelling facilities, workshops, fuel storage depots, and containment areas and spill kits must be available with emergency response plans.	PC	Monthly Monitoring
	3. The construction site / areas must be managed in order to prevent pollution of downstream watercourses or groundwater due to fuel oil, suspended solids and silt or chemical pollutants.	PC	Monthly Monitoring

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
	4. Silt fences must be used to prevent any soil as a result of storm water run-off entering nearby watercourses and becoming silt that would pollute these.	PC	Monthly Monitoring
	5. Promote a water saving mind set with construction workers in order to ensure less water wastage.	PC	Monthly Monitoring
	6. Earth, stone and rubble is to be properly disposed of, or utilised on site so as not to obstruct natural water path ways over the site (i.e. these materials must not be placed in storm water channels, drainage lines or rivers).	PC	Monthly Monitoring
	7. There must be a periodic checking of the site's drainage system to ensure that the water flow is unobstructed.	PC	Monthly Monitoring
	8. Should new roads need to be constructed across any surface water features the necessary environmental processes will need to be followed and necessary environmental authorizations obtained. Existing road accesses across surface water features must be used, and if necessary the road crossing must be upgraded / improved to allow construction traffic to pass over it without impacting the surface water resource. Should road upgrading be required, the necessary environmental processes	PC	Monthly Monitoring

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
	will need to be followed and environmental authorizations obtained.		
Surface and Groundwater	1. Particular care must be taken to prevent erosion and siltation into watercourses, specifically the nearby Spruit.	PC	Monthly Monitoring
	2. Site staff shall not be permitted to use any open water body or natural water resource adjacent to or within the construction areas for the purposes of bathing, washing of clothing or for any construction or related activities (unless the appropriate permit has been obtained from the Department of Water Sanitation - DWA).		Monthly Monitoring
	3. Municipal water (or another source approved by the PM and supported by the ECO) must be used for all activities such as washing of equipment or disposal of any type of waste, dust suppression, concrete mixing, compacting, etc.		Monthly Monitoring
	4. Disturbed surfaces must be kept to a minimum. All surfaces must be rehabilitated.		Monthly Monitoring
	5. Storm water management must be enforced by monitoring runoff levels. At the start of erosion, accelerated run-off must be diverted away from bare soil.		Monthly Monitoring
Waste	1. Refuse bins must be placed at strategic positions to ensure that litter does not accumulate within the construction site.	PC	Monthly Monitoring
	2. Where considerable quantities of waste are generated, this must be placed in 200 litre bins or skip containers and removed once full. Additionally, the generated waste will need to be disposed off in line with station's waste management procedures.		Monthly Monitoring

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
	3. The Contractor shall supply waste collection bins where such is not available and all solid waste collected shall be disposed of at registered/licensed landfill.	PC	Monthly Monitoring
	4. In general, any litter must be cleared immediately.	PC	Monthly Monitoring
	5. All waste generated on site must be separated into glass, plastic, paper, metal, wood and then be recycled in line with station's waste management procedures. An independent contractor can be appointed to conduct this recycling.	PC	Monthly Monitoring
	6. Littering by the employees of the Principal Contractor shall not be allowed under any circumstances.	PC	Monthly Monitoring
	7. The ECO shall monitor the neatness of the work sites as well as the Contractor campsite.	ECO	
	8. It is important that the contractors (and sub-contractors by implication) and workers must be informed of the facilities and procedures available for the disposal of waste.	PC	Monthly Monitoring
	9. The construction of "Long Drop" toilets is forbidden, but rather toilets connected to a sewage treatment plant, portable toilets or chemical toilets are to be used.	PC	Monthly Monitoring
Spills and Contamination	1. Depending on the nature and extent of the spill, contaminated soil must be either excavated or treated on-site.	PC	Monthly Monitoring
	2. Excavation of contaminated soil must involve careful removal of soil using appropriate tools/machinery to storage containers until treated or disposed of at a licensed hazardous landfill site.		As spill occurs
	3. The ECO must determine the precise method of treatment for polluted soil. This could involve the application of soil absorbent materials as well as oil-digestive powders to the contaminated soil.		As spill occurs

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
	4. If a spill occurs on an impermeable surface such as cement or concrete, the surface spill must be contained using oil absorbent material. Alternatively, any spill must follow the station's dirty water channels.		As spill occurs
	5. Materials used for the remediation of petrochemical spills must be used according to product specifications and guidance for use. Contaminated remediation materials must be carefully removed from the area of the spill so as to prevent further release of petrochemicals to the environment, and stored in adequate containers until appropriate disposal.		As spill occurs
Biodiversity	1. Only vegetation within the construction footprint may be removed	PC	Once off
	2. Vegetation is to be removed as it becomes necessary rather than removal of all vegetation throughout the site in one step.		Monthly Monitoring
	3. Vegetation clearing on the site must be kept to a minimum.		Monthly Monitoring
	4. Existing access roads must be utilised as much as possible.		Monthly Monitoring
	5. Materials must not be delivered to the site prematurely which could result in additional areas being cleared or affected.		Monthly Monitoring
	6. No vegetation is to be used for firewood.	PC	Monthly Monitoring
	7. The construction areas must be well demarcated and no construction activities must be allowed outside of this demarcated footprint.		Monthly Monitoring
	8. Alien vegetation on the site will need to be controlled.		Monthly Monitoring
	9. The contractor must be responsible for implementing a programme of weed control (particularly in areas where soil has been disturbed); and grassing of any remaining stockpiles to prevent weed invasion.		Monthly Monitoring

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
	10. The use of pesticides and herbicides on the site must be discouraged.		Monthly Monitoring
Dust Control	1. The PC ELO must monitor weather forecasts relating to periods of expected high winds; dust control methods such as damping down must be undertaken regularly when high winds are forecast for the study area.	PC ELO & ECO	Monthly Monitoring
	2. The Contractor shall be responsible for dust control on site to ensure no nuisance is caused to sensitive receptors such as the surrounding landowners and the neighbouring communities.	PC	Monthly Monitoring
	3. Dust generation must be kept to a minimum and suppressed on access roads and construction areas during dry periods. This can be accomplished by the regular application of water.	PC	Monthly Monitoring
	4. Speed limits on un-surfaced roads must not be exceeded.	PC	Monthly Monitoring
	5. Speed limits for construction vehicles must be clearly signposted and must be monitored by the PC ELO and ECO. Any complaints or claims emanating from the lack of dust control shall be attended to immediately by the PC ELO. The ECO monitors the implementation.	PC ELO & ECO	Monthly Monitoring
Noise	1. The construction phase must aim to adhere to the relevant noise regulations (SANS 10328:2008) and limit noise to within standard working hours and acceptable industrial limits (61 dBA for an industrial noise) in order to reduce disturbance of dwellings in close proximity to the development.	PC	Monthly Monitoring
	2. Truck traffic must be routed away from noise sensitive areas, where possible.		Monthly Monitoring

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
	3. Construction activities are to be contained to reasonable hours during the day and early evening (week days from 06:00am to 18:00pm). Night-time activities near noise sensitive areas must not be allowed.		Monthly Monitoring
	4. Construction workers to wear necessary Personal Protection Equipment (PPE).		Monthly Monitoring
	5. Noise suppression measures must be applied to all construction equipment. Construction equipment must be kept in good working order and where appropriate fitted with silencers which are kept in good working order. Should the vehicles or equipment not be in good working order, the contractor may be instructed to remove the offending vehicle or machinery from site		Monthly Monitoring
	6. Applying regular and thorough maintenance schedules to equipment and processes. An increase in noise emission levels very often is a sign of the imminent mechanical failure of a machine.		Monthly Monitoring
	7. Should blasting be required, the contractor will need to obtain a blasting permit. Moreover, the contractor must make the public aware of when blasting is to take place as well as the specific times of blasting. Blasting activities must take place at reasonable times and during daily working hours		Monthly Monitoring
Labour Impacts / concerns	1. The use of labour intensive construction measures must be used where appropriate	PC	Throughout
	2. All unskilled labourers must be drawn from the local market i.e. and where possible use must be made of local semiskilled and skilled personnel.		Throughout

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
	3. Local suppliers to be used where and as far as possible		Throughout
	4. The recruitment process must be equitable and transparent. A concerted effort will be made to guard against nepotism and/or any form of favouritism during the process		Throughout
	5. Record of official complaints by employees to authorities i.e. Labour and Social Security (see Appendix A for complaints record sheet).		Throughout
Occupational Health and Safety	1. Safety measures for work procedures must be implemented.	PC	Throughout
	2. First aid kits must be available and accessible on site.		Monthly Monitoring
	3. A health and safety plan in terms of the Occupational Health and Safety Act (Act No. 85 of 1993) must be drawn up by the Contractor and approved by the ECO to ensure worker safety.		Monthly Monitoring
	4. Workers must be thoroughly trained in using potentially dangerous equipment.		Monthly Monitoring
	5. Contractors must ensure that all equipment is maintained in a safe operating condition.		Monthly Monitoring
	6. A safety officer must be appointed.		Monthly Monitoring
	7. A record of health and safety incidents must be kept on site.		Monthly Monitoring
	8. Any health and safety incidents must be reported to the Project Manager immediately.		Monthly Monitoring
	9. First aid facilities must be available on site at all times and a number of employees trained to carry out first aid procedures.		Monthly Monitoring
	10. Workers have the right to refuse work in unsafe conditions.		Monthly Monitoring
	11. The Contractor shall take all the necessary precautions against the spreading of disease such as measles, foot and mouth, etc.		Monthly Monitoring

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
	12. A record shall be kept of drugs administered to construction staff at the stations health facilities or precautions taken and the time and dates when this was done. This can then be used as evidence in court should any claims be instituted against Mopolo House Projects (Pty) Ltd or the Contractor.		Monthly Monitoring
	13. Material stockpiles or stacks must be stable and well secured to avoid collapse and possible injury to site workers / local residents.		Monthly Monitoring
	14. Working areas must be provided with adequate ventilation and dust/fume extraction systems to ensure that inhalation exposure levels for potentially corrosive, oxidizing, reactive or siliceous substances are maintained and managed at safe levels.		Monthly Monitoring
	15. Eye wash and emergency shower systems must be provided in areas where there exists the possibility of chemical containment of workers and the need for rapid treatment.		Monthly Monitoring
	16. Use of electrical safety devices on all final distribution circuits and appropriate testing schedules applied to such safety systems.		Monthly Monitoring
	17. All sources of hazardous energy or hazardous substances must have written procedures for isolation, identifying how the system, plant or equipment can be made and kept safe.		Monthly Monitoring
	18. Use of contrast colouring on equipment/machinery including the provision of reflective markings to enhance visibility.		Monthly Monitoring
	19. Use of moving equipment/machinery equipped with improved operator sight lines.		Monthly Monitoring
	20. Issuing workers with high visibility clothing.		Monthly Monitoring
	21. Personal Protective Equipment (PPE) must be made available to all construction staff and must be compulsory. Hard hats and		Monthly Monitoring

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
	safety shoes must be worn at all times and other PPE worn were necessary i.e. dust masks, ear plugs etc.		
	22. No person is to enter the site without the necessary PPE.		Monthly Monitoring
	23. Emergency numbers for local police and fire department etc must be placed in a prominent area		Monthly Monitoring
	24. All speed limits must be adhered to.		Monthly Monitoring
	25. All equipment used for construction must be in good working order with up to date maintenance records.		Monthly Monitoring
	26. From the construction phase, an emergency evacuation plan must be drawn up to ensure the safety of the staff and surrounding land users in the case of an emergency.		Monthly Monitoring
	27. All permanent staff must undergo safety training.		Monthly Monitoring
	28. The construction must fall within construction site.		Monthly Monitoring
Heritage and Paleontology	1. Any finds must be reported to the nearest National Monuments office to comply with the National Heritage Resources Act (Act No 25 of 1999) and to GDARD.	PC	Should Findings occur
	2. The Construction Workers must receive basic training in environmental awareness, including the storage and handling of hazardous substances, minimisation of disturbance to sensitive areas, management of waste, and prevention of water pollution. They must be informed of how to recognise historical / archaeological artefacts that may be uncovered. They must also be appraised of the Empress requirements.		Should Findings occur
	3. Local museums as well as the South African Heritage Resource Agency (SAHRA) should be informed if any artefacts are uncovered in the affected area.		Should Findings occur

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
	4. The contractor must ensure that his workforce is aware of the necessity of reporting any possible historical or archaeological finds to the ECO so that appropriate action can be taken.		Should Findings occur
	5. Any discovered artefacts shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped and noted. Permits shall be obtained from the South African Heritage Resources Association (SAHRA) should the proposed site affect any world heritage sites or if any heritage sites are to be destroyed or altered.		Once Off
	6. Should any archaeological sites / graves be uncovered during construction, their existence shall be reported to the necessary authorities immediately.		Should Findings occur
	7. Should any archaeological sites / graves be uncovered during construction, their existence shall be reported to the necessary authorities immediately.		Should Findings occur
OPERATION PHASE			
Decommissioning of Construction Site	1. All structures comprising the construction camp are to be removed from site.	PC	To take place at the end of the Construction Phase
	2. The area that previously housed the construction camp is to be checked for spills of substances such as oil etc., and these shall be cleaned up.		Inspection at end of Construction Phase
	3. All hardened surfaces within the construction camp area must be ripped, all imported materials removed, and the area shall be top		Inspection at end of Construction Phase

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
	soiled and regressed using the guidelines set out in the rehabilitation section that follows in this document.		
	4. Surfaces are to be checked for waste products from activities such as concreting and cleared in a manner approved by the Engineer.		Inspection at end of Construction Phase
	5. All surfaces hardened due to construction activities are to be ripped and imported material thereon removed.		Inspection at end of Construction Phase
	6. All rubble is to be removed from the site to in line with the stations waste management procedures. Burying of rubble on site is prohibited.		Inspection at end of Construction Phase
	7. The construction camp site is to be cleared of all litter.		Inspection at end of Construction Phase
	8. Fences, barriers and demarcations associated with the construction phase are to be removed from the site unless otherwise stipulated by the Engineer.		Inspection at end of Construction Phase
	9. All residual spoil and topsoil stockpiles must be removed to spoil or spread on site as directed by the Engineer.		Inspection at end of Construction Phase
	10. All residual building materials must be returned to the depot or removed from the site.		Inspection at end of Construction Phase
Soil Erosion	1. All damaged areas shall be rehabilitated upon completion of the contract	PC	Inspection at end of Construction Phase
	2. All natural areas impacted during construction must be rehabilitated with locally indigenous grasses typical of the representative botanical unit.		Inspection at end of Construction Phase
	3. Rehabilitation must take place in a phased approach as soon as possible.		Inspection at end of Construction Phase

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
	4. Rehabilitation must be executed in such a manner that surface run-off will not cause erosion of disturbed areas.		Inspection at end of Construction Phase
Waste	1. The site must be kept clear of litter at all times	PC	Inspection at end of Construction Phase
	2. Solid waste separation and recycling must take place for the duration of the operational phase for the development in line with the plant's waste management procedures.		Continuous
	3. All waste must be removed promptly to ensure that it does not attract vermin or produce odours.		Continuous
	4. In house treatment procedures must be followed strictly.		Continuous
	5. Solid waste must be collected on a regular basis.		Continuous
Health and Safety	1. Upon completion of the construction phase, an emergency evacuation plan must be drawn up to ensure the safety of the staff and surrounding land users in the case of an emergency.	PC	Once-off
	2. The site is to be regularly maintained. A maintenance schedule must be drawn up and records of all maintenance kept.		Continuous
	3. Firefighting equipment in the form of fire hydrants or fire extinguishers must be available on the site. These must be regularly maintained by an appropriate company.		Continuous
	4. A spill kit needs to be kept on site to address any unforeseen spillages.		Continuous
	5. Transport of all hazardous substances must be in accordance with the relevant legislation.		Continuous
Visual	1. Lighting must be kept to a minimum and restricted to low level, downward facing lights to reduce light spill.	PC	Continuous

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
	2. Lighting must be inward and downward pointing to reduce glare in surrounding areas.		Continuous
	3. The site and surrounds must be kept clean, tidy and well maintained to reduce negative visual impacts.		Continuous
	4. Surrounding roads must be well maintained.		Continuous
	5. Regular maintenance of the associated infrastructure must be undertaken.		Continuous
DECOMMISSIONING PHASE			
Decommissioning of the Development	1. Demarcated routes to be established for construction vehicles to ensure the safety of communities, especially in terms of road safety and communities to be informed of these demarcated routes.	PC	To take place as required in the decommissioning phase
	2. Where dust is generated by trucks passing on gravel roads, dust mitigation to be enforced.		To take place as required in the decommissioning phase
	3. Any infrastructure that would not be decommissioned must be appropriately locked and/or fenced off to ensure that it does not pose any danger to the community.		To take place as required in the decommissioning phase
	4. All decommissioned equipment must be removed from site and disposed of at a registered land fill. Records of disposal must be kept.		To take place as required in the decommissioning phase
Biodiversity	1. Rehabilitation of exposed surfaces with indigenous species.	PC	To take place as required in the decommissioning phase

IMPACT	MITIGATION ACTION REQUIRED	RESPONSIBLE PERSON	FREQUENCY
	2. Adherence to surface and groundwater mitigation measures to prevent secondary impacts on biodiversity.		To take place as required in the decommissioning phase
	3. Prevention of expansion of current footprints.		To take place as required in the decommissioning phase
Surface and Groundwater	1. Removal of any historically contaminated soil as hazardous waste must be undertaken.	PC	To take place as required in the decommissioning phase
	2. Removal of hydrocarbons and other hazardous substances by a suitable contractor to reduce contamination risks must be undertaken.		To take place as required in the decommissioning phase
	3. Removal of all substances which can result in groundwater (or surface water) contamination must be undertaken.		To take place as required in the decommissioning phase
	4. Re-vegetation of exposed soil surfaces to ensure no erosion in these areas is to be undertaken.		To take place as required in the decommissioning phase
Air Quality	1. Regular maintenance of equipment to ensure reduced exhaust emissions.	PC	To take place as required in the decommissioning phase

8 CONCLUSION

The environmental biophysical and social impacts of the project have been assessed to be spread through the project life. Both positive and negative project-related impacts have been identified but it has been concluded that all of the negative impacts could be ameliorated to acceptable levels or made negligible through the implementation of the mitigation measures contained within this EMP.

APPENDIX I: OTHER INFORMATION

NOT APPLICABLE