Unlawful Construction and Infilling of a Watercourse on the Remainder of Portion 274 of the Farm Tiegerpoort 371 JR

Environmental Impact Report

GDARD Reference Number: S24G/03/22-23/0577

March 2023

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Environmental Impact Report

March 2023

AVDE Project Ref: Tiegerpoort 371

Prepared by: Kirthi Peramaul

VERSION CONTROL

Alta van Dyk Environmental cc

Version: Draft

Reviewed by: Suzanne van Rooy

Approved by: Alta van Dyk

Signed:

Position: Environmental Specialist

Date: March 2023

Table of Contents

List of Tables

List of Figures

Abbreviations

AVDE	Alta van Dyk Environmental Consultants
CBA	Critical Biodiversity Area
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
EMPr	Environmental Management Programme
ESA	Ecological Support Area
GDARD	Gauteng Department of Agriculture and Rural Development
I&APs	Interested and Affected Parties
NEM:BA	National Environmental Management: Biodiversity Act
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
NWA	National Water Act
Pr. Sci. Nat	Professional Scientist of Nature
SACNASP	South African Council for Natural Scientific Professions
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System

Glossary of Terms

Term	Definition
Clearing/Clearance	Clearing/Clearance refers to the removal of vegetation through permanent eradication and in turn no likelihood of regrowth. 'Burning of vegetation (e.g. fire- breaks), mowing grass or pruning does not constitute vegetation clearance, unless such burning, mowing or pruning would result in the vegetation being permanently eliminated, removed or eradicated'.
Competent Authority	In respect of a listed activity or specified activity, means the organ of state charged by this Act (NEMA) with evaluating the environmental impact of that activity and, where appropriate, with granting or refusing an environmental authorisation in respect of that activity
Conservation Plan Areas (C-Plan Areas)-	A tool developed by the Gauteng Department of Agriculture and Rural Development (GDARD) to identify sensitive areas. The main purposes of this tool is to: • serve as the primary decision support tool for the biodiversity component of the Environmental Impact Assessment (EIA) process; • • inform protected area expansion and biodiversity stewardship programmes in the province; and serve as a basis for development of Bioregional Plans in municipalities within the province. Some of the aspects that inform the identification of C-Plan Areas include Critical Biodiversity Areas (CBAs), Ecological Support Areas (ESA's), Watercourses, Ridges, Protected Areas, etc
Critical Biodiversity Area	Areas that are deemed important to conserve ecosystems and species. For this reason, these areas require protection.
Ecological Support Area	Areas that support the ecological functioning of protected areas or CBAs or provide important ecological infrastructure.
Environment	The surroundings within which humans exist and that are made up of— (i) the land, water and atmosphere of the earth; (ii) micro-organisms, plant and animal life; (iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and (iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.
Environmental Assessment Practitioner	The individual responsible for the planning, management, coordination or review of environmental impact assessments, strategic environmental assessments, environmental management programmers or any other appropriate environmental instruments introduced through regulations.
Environmental Management Programme	A programme with set objectives and timeframes that seek to achieve a required end state and describes how activities that have or could have an adverse impact on the environment will be mitigated, controlled and monitored.
Interested and Affected Parties (IAPs)	a) any person, group of persons or organisation interested in or affected by such operation or activity; and (b) any organ of stale that may have jurisdiction over any aspect of the operation or activity.
Regulated area of a watercourse:	• The outer edge of the 1:100-year flood line and /or delineated riparian habitat whichever is the greatest measured from the middle of a river, spring, natural channel, lake or dam;

Term	Definition
	• In the absence of a determined 1:100-year flood line or riparian area, the area within 100m from the edge of a watercourse where the edge of the watercourse is the first identifiable annual bank fill flood bench (subject to compliance to section 144 of the Act); • 500m radius from the delineated boundary of any wetland or pan.
Riparian Area	A Habitat that includes the physical structure and associated vegetation of the areas associated with a watercourse which are commonly characterised by alluvial soils, and which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of species with a composition and physical structure distinct from those of adjacent land areas.
Rip rap	Loose stone used to form a foundation for breakwater or other structure
Public Participation Process	In relation to the assessment of the environmental impact of any application for an environmental authorisation, means a process by which potential Interested and Affected Parties are given opportunity to comment on, or raise issues relevant to, the application.
Urban edge	A demarcated edge of an area that is used as land use management tool to manage, direct and control the outer limits of development growth around an urban area. The aim is to control urban sprawl due to its associated adverse impacts.
Watercourse	(a) a river or spring; (b) a natural channel in which water flows regularly or intermittently; (c) a wetland, lake or dam into which, or from which, water flows; and (d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks;
Wetland	Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

1 INTRODUCTION AND BACKGROUND

1.1 Background

In June 2021, Ms Sethole commenced with activities listed in terms of the National Environmental Management Act (Act No. 107 of 1998) (NEMA) Environmental Impact Assessment (EIA) Regulations 2014 (as amended) and National Environmental Management Waste Act (Act No. 59 of 2008) (NEM:WA), GNR 921 of 2013 within a watercourse without obtaining Environmental Authorisation (EA) from the relevant Competent Authority, the Gauteng Department of Agriculture and Rural Development (GDARD). Realising the contravention, Ms Sethole has voluntarily decided to undertake a Section 24G application process and construction activities on site have ceased.

A Directive in terms of Section 24G (1) of the NEMA, as amended, was issued to Ms Sethole by the Gauteng Department of Agriculture and Rural Development (GDARD) on 13 October 2022, Ref.S24G/03/22-23/0577 for the following unlawful activities:

- The unlawful construction of a culvert within a watercourse,
- The widening of an existing access road, deposition and infilling with inert rubble and excavations within a watercourse,
- The disposal of inert waste on land (building rubble).

The Directive issued by GDARD is provided in **Appendix A**. Alta van Dyk Environmental Consultants cc (AVDE) was appointed by Ms Sethole as the independent Environmental Assessment Practitioner (EAP) to undertake the Section 24G application process.

It is important to note that that applicant intends to conclude the Section 24G application prior to the undertaking of any activities relating to the lodge establishment. This application only relates to the unlawful activities undertaken on site, completion of works that ceased and the undertaking of the rehabilitation activities. Details in terms of the lodge establishment and the number of accommodation units is not provided in this report.

1.2 Purpose of the Report

In accordance with the 2014 EIA Regulation, as amended, a specific list of activities which could potentially have a detrimental impact on the receiving environment have been identified, for which an Environmental Authorisation is required. Commencement with any of the listed activities prior to obtaining authorisation from the relevant authority is prohibited by these regulations and constitutes an offence.

Ms Sethole, unintentionally commenced with the construction activities on site which violates Section 24(F) (1) of NEMA. This has resulted in the Section 24G application for the consequences of unlawful commencement of activities.

In order to rectify the commencement of unlawful activities, a Section 24G Process is required to ensure full compliance. A Section 24G process is used to assess the potential impacts that may occur or have occurred due to a proposed development and to ensure that the identified impacts are avoided or mitigated where it cannot be altogether avoided. A Section 24G process is thus required to seek authorisation for the activities undertaken on site and activities associated with the rehabilitation activities.

This Environmental Impact Report (EIR) is a response to the Directive issued by the GDARD and provides and assessment of the impacts associated with the construction activities, specialist input, public participation, and information requested from the GDARD.

1.3 Content of the Environmental Impact Report

The intention of the Section 24G report is to meet the requirements of GDARD as stipulated in the Directive. **Table 1-1** provides the requirements from GDARD as provided in the Directive issued.

Table 1-1 EIR Requirements

Directive Condition	Requirement	Section in Report
8.1, 8.2, 8.3	Environmental Management Measures introduced to be reported on	2.5
8.6.1.1	Details of the EAP	1.5
8.6.1.2	Sworn Affidavit of the EAP	Appendix B
8.6.2	Public Participation Process	9
8.6.3.1	Description of Activities	2.2
8.6.3.2	Local Community Benefits	2.4
8.6.3.4	Storm water Management Plan	Appendix G
8.6.3.5	Description of the receiving Environment	4
8.6.3.6	Impact Assessment	8
8.6.3.7	Wetland Assessment	5, Appendix F
8.6.3.8	Wetland extent & associated buffers	4.4.1.1, Appendix G
8.6.3.9	Wetland Rehabilitation Plan	Appendix H
8.6.3.10	Site Layout Plan overlaid with sensitivity map	6
8.6.3.11	Specialist Assessment	Appendix G & F
8.6.3.12	Environmental Management Programme	Appendix I
8.6.3.13	Emergency Response Plan	Appendix J
8.6.4	Financial Consideration	10

1.4 Locality

The project is situated on the Remainder of Portion 274 of the Farm Tiegerpoort 371-JR. The property is located on Graham Road, approximately 11km south east from the intersection of Graham Road and Solomon Mahlangu Drive, Tierpoort, within City of Tshwane Metropolitan Municipality (CoTMM). The centre coordinates of the site are 25°51'38.54"S: 28°24'45.39"E.

Table 1-2 Project location details

Site specific details	Description
Municipal jurisdiction	City of Tshwane Metropolitan Municipality
Ward number	Ward 102
Nearest town	Pretoria
Site Centre Coordinates	25°51'38.54"S: 28°24'45.39"E.

A description of the property on which the proposed project is located is provided in **Table 1-3.**

Table 1-3 Property Description

Farm Name	Farm Tiegerpoort 371-JR
Portion	274
Registered Landowner	Ms Agnus Sethole
SG21 number	T0JR00000000037100000

A layout map is provided in **Figure 1-1** and **Appendix C.**

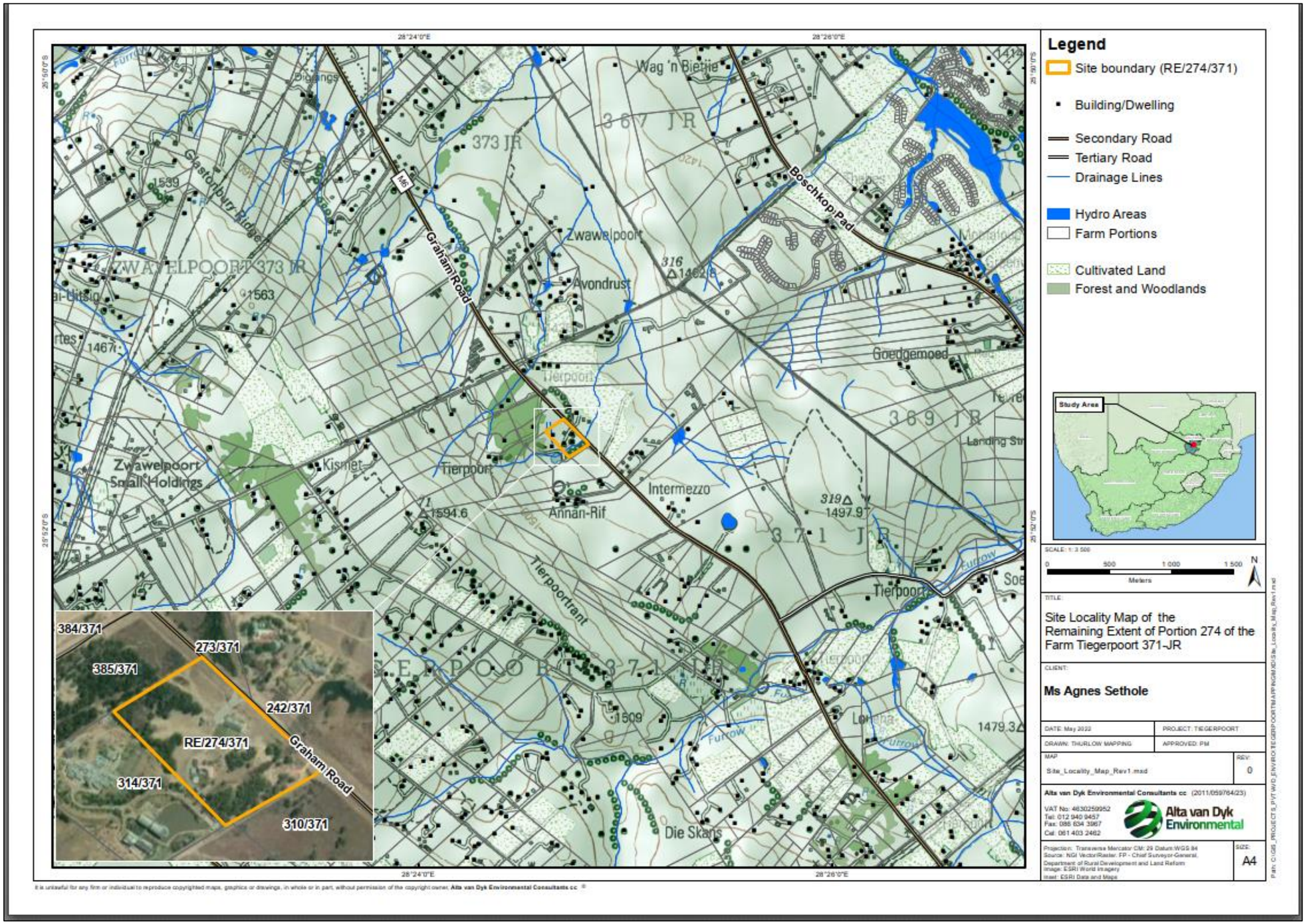


Figure 1-1 Locality map

1.5 Details of the Environmental Assessment Practitioner

Table 1-4 provides the details of the Environmental Assessment Practitioner (EAP) for the project.

Table 1-4: Details of the EAP

Environmental Assessment Practitioner	Kirthi Peramaul
Company	Alta van Dyk Environmental Consultants cc
Qualifications	BSc Hons Environmental Modelling and Monitoring
Professional Registrations	• South African Council for Natural Scientific Professions- Pr.Sci.Nat, Registration Number : 400012/18 • Environmental Assessment Practitioners Association of South Africa- Registered Environmental Assessment Practitioner: Number 2020/1537
Postal Address	Postnet Suite # 745 Private Bag X 1007 Lyttelton 0140
Telephone number:	012 940 9457
Fax number:	086 634 3967
Email address	kirthi@avde.co.za

1.5.1 Summary of the EAP's experience

Kirthi Peramaul (BSc Hons Environmental Monitoring and Modelling, Pr.Sci.Nat, Registered EAP). Kirthi has 13 years' experience in the environmental management field and is currently registered with the South African Council of Natural Scientific Professions (SACNASP) as a Professional Natural Scientist (Registration No 400012/18: Environmental Science) and is as a Registered Environmental Assessment Practitioner with the Environmental Assessment Practitioners Association of South Africa (EAPASA) (Registration No 2020/1537). Kirthi specialises in environmental authorisations, environmental compliance monitoring, environmental management plans, water use authorisation, stakeholder engagement, risk assessments and blue and green drop auditing. She has been involved in projects related to Waste Management, Linear Infrastructure, as well as Mixed-Use developments.

Refer to **Appendix B** for the Curriculum Vitae of the EAP.

1.6 Assumptions, qualifications and limitation

The assumptions and limitations pertaining to this EIA are presented in **Table 1-5** below.

Table 1-5: Qualifications, assumptions and limitations

Aspect	Qualifications, assumptions and limitation
General	• It is assumed that AVDE has been provided with all relevant project information and that it was correct and valid at the time it was provided. • The report and its investigations are project specific, and consequently AVDE did not evaluate any other activities within adjacent properties.
The Aquatic Biodiversity S24G Study and Impact	• It is assumed that all information received from the client is correct; • Only a single season survey was conducted for the respective studies, which would constitute a wet season survey;

Aspect	Qualifications, assumptions and limitation
Assessment for the Tiegerpoort Project. The Biodiversity Company	• A single aquatic ecology survey was completed for this assessment. Thus, temporal trends were not investigated • Five (5) meter contours were used to assist in the delineation of the riparian area and may cause some discrepancies in areas between sites; • Aquatic biomonitoring surveys are based on industry standard rapid assessment methodologies. It is therefore likely that the complete macroinvertebrate and fish community was likely underestimated at each site. Results do however present a representative biological community based on onsite conditions at the time of each sample event; and • No baseline biomonitoring data/report(s) are available for the project area due to the S24G nature of this project. This makes interpreting potential modification difficult as the site can only be compared to upstream conditions.

2 PROJECT DESCRIPTION

2.1 Overview of the project

The current consent of use for the property is for a "guesthouse" which was approved by the former Kungwini Local Municipality. It is however the intention of Ms Sethole to include certain land uses on the site to make provision for a wider convenient service to be provided at the facility. These include a conference centre, wedding chapel, staff quarters, and self-catering units. The aforementioned land uses do not fall under the definition of a guest house, hence Ms Sethole applied to the City of Tshwane for consent of a lodge in 2019. The application was submitted in terms of Clause 16 of the Tshwane Town-Planning scheme, 2008 (revised 2014) read with Section 16(3) of the City of Tshwane Land-Use Management By Law, 2016.

Approval in terms of the consent use application has not yet been obtained from the City of Tshwane (CoT). In February 2021, the Gauteng Department of Roads and Transport (Gautrans) as a Commentary Authority commented on the application with certain conditions and recommended the change in access point to the site. Two access points were recommended by GAUTRANS. The two access points are shown in **Figure 2-1** with the blue broken lines.

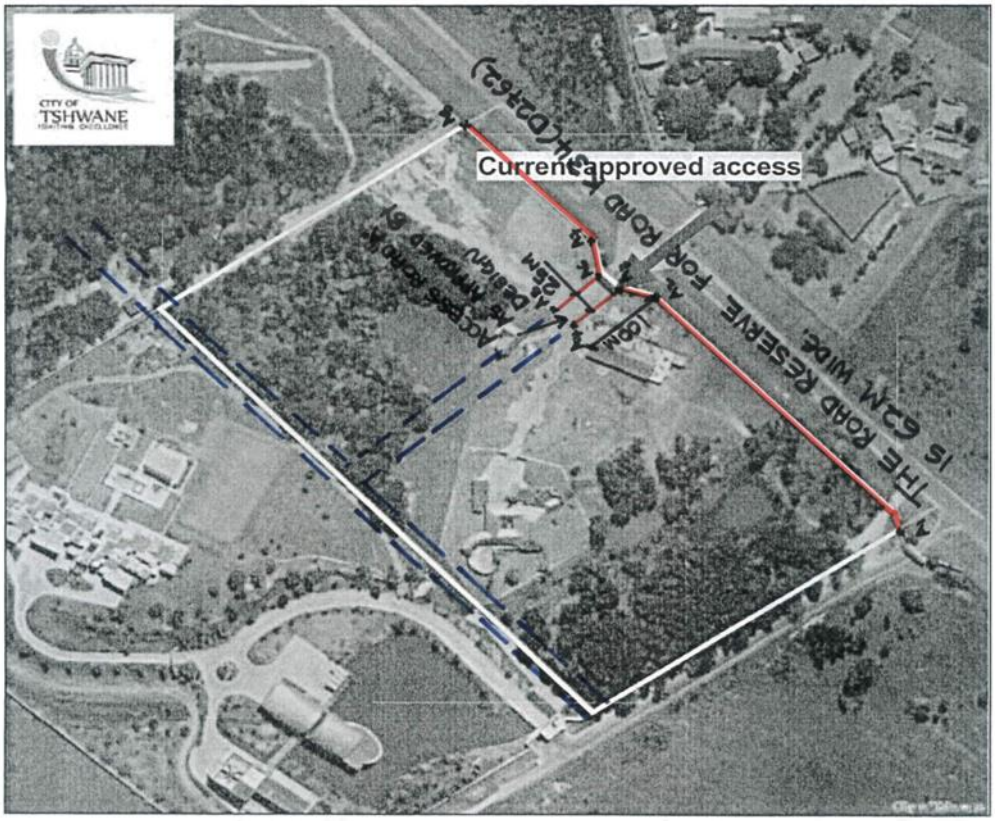


Figure 2-1 Access road recommended by GAUTRANS (indicated with the blue broken line)

Comments received from the CoT: Transportation Planning Division indicated that the current access point to the facility shall be relocated as it is not in line with the CoT Roads Master Plan (RMP). Currently access to the site is gained from the north eastern boundary off Graham Road. The CoT also advised that they are not in agreement with the comments provided by GAUTRANS and the CoT requested that access to the property should be gained from the right of way servitude that intersects with Graham Road.

This is the gravel road to the south east of the property. The new access road will join an existing road (developed prior to 1998). The existing road is a narrow width gravel road, approximately 4m wide which

traversed the watercourse. (**Figure 2-2**). In order to make use of the existing access road, access to the site will have to be via the south eastern boundary.

Figure 2-2 Google Earth Image (2019) showing the access points in relation to the site

Due to the constrictions associated with the south eastern access, Ms Sethole appointed Design Engineers for the design of the road and a floodline assessment was undertaken to determine the geographical location of the relevant floodlines.

2.2 Activity description

2.2.1 Activities undertaken without Authorisation

As the request for change in access was a formal response from the GAUTRANS and City of Tshwane, Ms Sethole was under the impression that she could commence with the construction activities on site without any further approvals. Construction activities on site commenced in June 2021 which included the following (**Figure 2-3**).

- Relocating the entry/exit point from Graham Road (north of the site) to the south east of the site (approximately 100m from Graham Road);
- The construction of an access road which joins the existing gravel road;
- Construction of a culvert within the watercourse;
- Paving of existing access road;
- Deposition and infilling with the watercourse with inert building rubble and soil stockpiled on site within a watercourse. The soil stockpiled on site was the soil excavated from the watercourse by the previous owner. Upon purchasing the property Ms Sethole found the soil stockpile on site.
- The disposal of inert waste on land (building rubble). Approximately 150m^3 of inert waste was stockpiled on site.

An attenuation dam previously existed along the watercourse, west of the existing water crossing. Ms Sethole has infilled the attenuation dam and constructed a second culvert with the intention to channelize the

watercourse. The construction of a new culvert which serves as a new flow path (diversion) of the watercourse. In terms of the site topography, steeper slopes are located within the vicinity of the watercourse situated on site. Due to the steep slopes, extensive erosion is encountered on site, whereby the bank of the watercourse is extensively eroded. It was the intention of Ms Sethole to stabilise the banks of the watercourse by the infilling and compaction of waste/rubble material to achieve a levelled grassed area, hence the building rubble that has been disposed off on site.

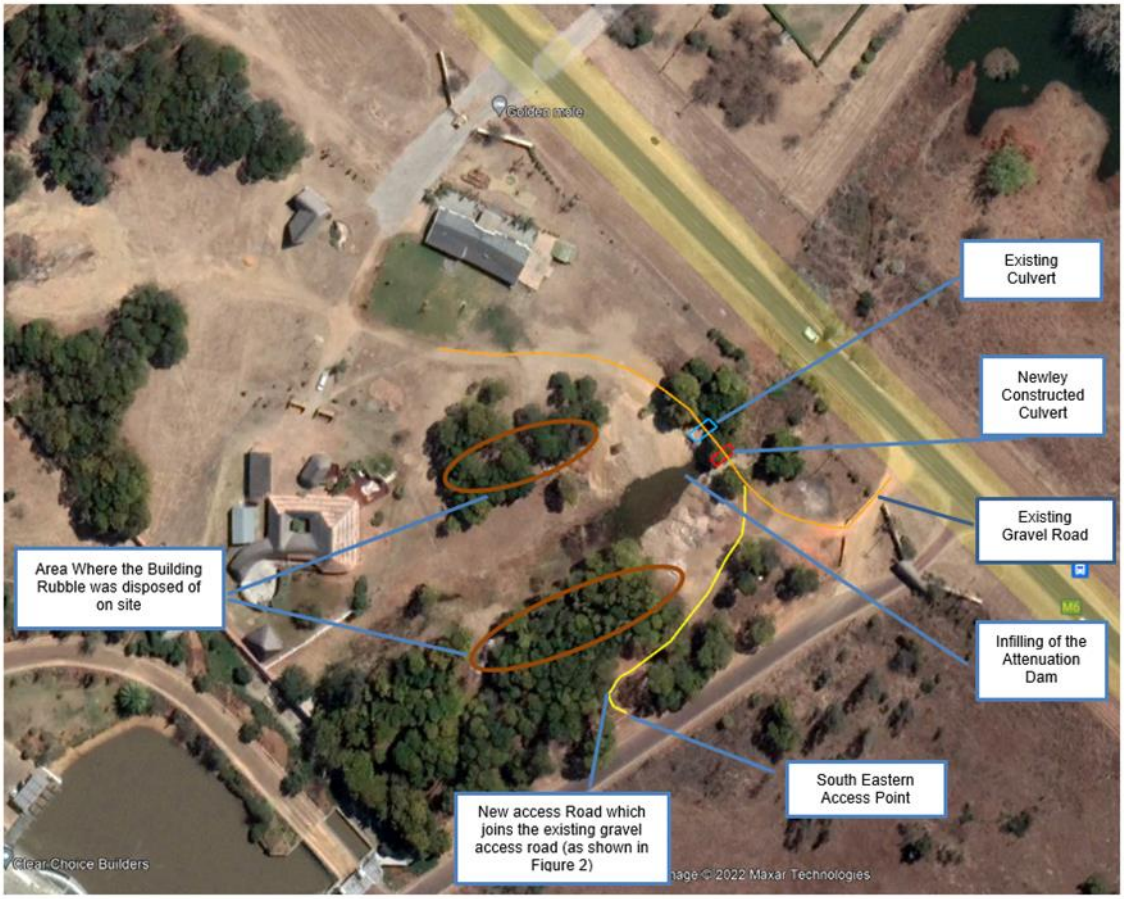


Figure 2-3 Google Earth Image (2021) showing the construction activities undertaken on site

The dimensions the activities undertaken on site are provided in **Table 2-1.**

Table 2-1: Infrastructure/Activity Dimension already constructed

Infrastructure/Activity	Dimension
Access road	Width of 6m 1m additional to include the pedestrian walkway. Length of 100m Approximately 200m of existing gravel road has been paved on site
Newly constructed Culvert	Length- 9.0m (pipe lengths 6.0m) Width – 1.8m Height – 1.95m
Inert waste stockpiled on site	150m^3

Site photos are provided in **Appendix E**.

2.2.2 Activities proposed as part of rehabilitation and continuation of construction activities

The following activities are required to be completed, pending the outcome of this application. These activities have been assessed as part the EIR and are recommendations from the specialist studies undertaken.

- Energy breakers are to be installed on the downstream side of the two culvert structures to reduce the impact of the water flow speed through the outlet structures and reducing erosion.
- Gabions are proposed to be installed upstream and downstream of the access road and culverts. The gabions will be constructed on top of a reno mattress. The gabions and reno mattress are simple gravity retaining structures which retains soil with its weight. The porosity of gabions prevents the pore-water pressure development behind the walls which, is one of the major advantages of these kinds of systems. These structures blend with the surroundings and allow vegetation to take roots through the structure which enhances the life of the structure and also result in a reduction of carbon foot prints.
- Riverbank slope re-shaping to prevent further erosion of the riverbanks. The slope re-shaping will be undertaken through the construction of a retaining wall e.g. gabions with reno mattress
- The boundary wall constructed south west of the site, allows for the flow of water through culverts situated beneath the wall. Due to the hydraulic action of the water, the watercourse bank and floor currently experiences erosion. Ms Sethole is therefore proposing to spread out the previously placed rocks at the south western boundary of the site (adjacent to the boundary wall), approximately 20m from the outlet structure to prevent further erosion. The rocks will be covered with reno mattresses. It is important to note that the boundary wall was constructed by the adjacent neighbour and not Ms Sethole.
- The road crossing the watercourse was incomplete at the time when construction activities ceased on site, hence Mr Sethole intends to complete the construction works by paving of the roadway and widening of the access road on the wingwalls of the culverts to allow for a pedestrian walkway.

The dimensions of the proposed activities are provided in **Table 2-2**.

Table 2-2: Dimensions of infrastructure for the continuation of activities

Infrastructure/Activity	Dimension
Gabions & Reno Mattress south of the watercourse	Width-4m wide Height-2m Length-124m
Gabions & Reno Mattress north of the watercourse	Width-4m wide Height-2m Length-136m
Rip rap & Reno Mattress downstream of the old culvert	Dump rock Length- 4m Width – 3.5 Reno mattress Length- 4m Width – 3.5
Rip rap & Reno Mattress downstream of the new culvert constructed by the applicant	Dump rock Length- 4m Width – 3.5 Reno mattress Length- 4m Width – 3.5
Gabions downstream of the access road on the riverbank	Length-26m Width-2.0m

Infrastructure/Activity	Dimension
	Height -2.5m
New area to be covered with Reno mattress (north of old culvert)	Length-2.3m Height -1.0m
Rocks at the boundary wall	2m X 6m Reno mattress to be used
Total area to be levelled out south of the watercourse	890m^2
Total area to be levelled out north of the watercourse	830m^2
Total size of the area applicable to this application	5700m^2

The site layout is provided in **Figure 2-4** and **Appendix D**.

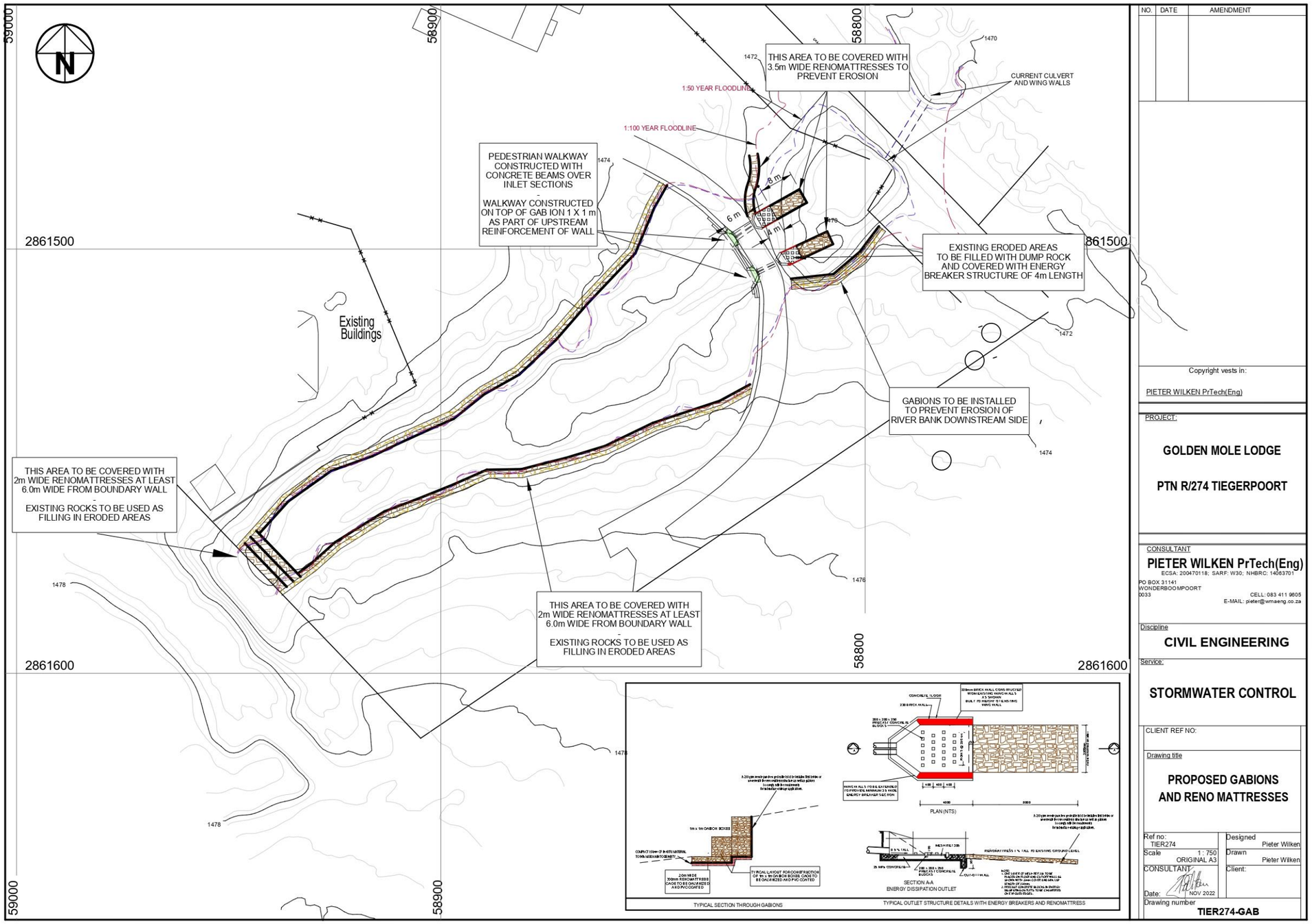


Figure 2-4: Site Layout

2.3 Activity need and desirability

As provided in **Section 2.1**, it is the intention of the applicant to make provision for a wider service in support of a lodge on site. The application for change in consent use was submitted to the CoT for consent to operate a lodge on the property. The GAUTRANS, recommended the change in access point to the site. Comments received from the CoT: Transportation Planning Division indicated that the access point to the facility shall be relocated as it is not in line with the CoT Roads Master Plan (RMP). Currently access to the site is gained from the north eastern boundary off Graham Road, and the CoT requested that access to the property should be gained from the right of way servitude that intersects with Graham Road. In order to ensure that the future plans for the site is met, the applicant undertook the required access route amendment.

It is important to note that that applicant intends to conclude the Section 24G application prior to the undertaking of any activities relating to the lodge establishment. This application only relates to the unlawful activities undertaken on site, completion of works that ceased and the undertaking of the rehabilitation activities.

2.4 Local community benefits

The investment in demand-based activities such as the lodge, which includes a conference and wedding venue, provides benefits to local residents and the region. These include employment opportunities, opportunities for skills acquisition, and access to facilities and infrastructure that have key local benefits for business, recreational, social or community purpose. According to the 2018 Regional Spatial Development Framework, the western boundary of the site is characterized as an area of tourism potential. The study area has already been acknowledged by the COT as a potential for development within the tourism industry.

2.5 Environmental Management Measures

In line with Instruction 8.2 and 8.3 of the Directive issued, the activities applied for were not expanded in any way beyond the current scope. No construction has taken place since the issuing of the Directive. The Applicant is awaiting the finalisation of the Section 24G process and the decision from GDARD.

In line with instruction 8.3 of the directive:

"Within 30 days of the date of receipt of this Directive, control, contain and prevent any pollution or degradation that may be occurring on site or that may have occurred because of the activity. To this effect, you are instructed to ensure that environmental management measures to manage any pollution or degradation that may occur/be occurring as a result of the development are put in place, especially with regards to

(i) Surface and stormwater management;
(ii) Soil erosion
(iii) The disposal of inert waste within the watercourse

The report on the measures implemented must be included in the final report to be submitted to the Department."

In compliance with the above instruction Ms Sethole removed the building rubble that was stockpiled within the riparian area. The building rubble was removed and stockpiled out of the floodline. Refer to **Figure 2-5** and **Figure 2-6**.

Figure 2-5: Building rubble removed from the floodline

Figure 2-6: Building rubble stockpiled on site (out of the floodline) west of Graham Road

3 LEGAL FRAMEWORK

3.1 Legal Requirements

There are several regulatory requirements at local, provincial and national level with which the proposed project need comply to. A brief summary of each of these legal requirements are provided in the following sections.

3.1.1 Constitution of the Republic of South Africa (Act No 108 of 1996)

The environmental right is mentioned in Section 24 of the Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996). This states the following:

"...everyone has the right to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation, promote conservation, and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development".

The State must therefore respect, protect, promote and fulfil the social, economic and environmental rights of everyone and strive to meet the basic needs of previously disadvantaged communities. The Constitution therefore recognises that the environment is a functional area of concurrent national and provincial legislative competence, and all spheres of government and all organs of state must cooperate with, consult and support one another if the State is to fulfil its constitutional mandate.

The undertaking of the Section 24G application process will ensure that the environmental right enshrined in the Constitution contributes to the protection of the biophysical and socio- economic environment. The abovementioned authorisations, permits, or licences will be largely based on the legislation outlined in this Chapter.

3.1.2 National Environmental Management Act

NEMA is the environmental framework legislation promulgated to ensure that the environmental rights contemplated in Section 24 of the Constitution of South Africa (Act 108 of 1996) are realized.

The Environmental Impact Assessment (EIA) Regulations, 2014, promulgated in terms of NEMA, govern the process, methodologies and requirements for the undertaking of EIAs in support of EA applications. Listing Notices 1-3 in terms of NEMA list activities that require EA (NEMA listed activities). The EIA Regulations, 2014, lay out two alternative authorisation processes. Depending on the type of activity that is proposed, either a BA process or a Scoping and Environmental Impact Reporting (S&EIR) process is required to obtain EA. Listing Notice 1, lists activities that require a BA process, while Listing Notice 2 lists activities that require S&EIR. Listing Notice 3 lists activities in certain sensitive geographic areas that also require a BA process

In terms of the EIA Regulations 2014 (as amended), a specific list of activities have been identified for the unlawful activities undertaken on site, as well as the rehabilitation activities and continuation incomplete activities such as the pedestrian walkway. The listed activities are provided in **Table 3-1**.

.

Table 3-1: Listed Activities Triggered

List and activity number	Listed activity	Description of activity
Listing 1 Activity 19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;	Construction of a culvert was undertaken within a watercourse. The attenuation dam within the watercourse and the area adjacent to the boundary wall was infilled with inert rubble. **Rehabilitation** The proposed rehabilitation activities includes the construction of energy dissipaters and gabions with reno mattress on the downstream side of the river crossing.
Listing 3 Activity 4	The development of a road wider than 4 meters with a reserve of less than 13.5m. Gauteng: iv: Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plan v: Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004) vi: Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority	According to information obtained from the South African National Biodiversity dataset, the study area falls within the Bronberg Mountain Bushveld which is characterized as a Critically Endangered Threatened Ecosystem in terms of the National List of Threatened Ecosystems (2009). The project also falls within and Ecological Support Area. In terms of the Gauteng EMF, the site falls with Zone 2: High Control Zone (within the urban development zone). A road of approximately 6m wide and 100m long has been constructed on site. Approximately 200m of existing gravel road has been paved on site. It is planned for the road to be extended by 1m to accommodate a pedestrian walkway.
Listing 3 Activity 12	The clearance of an area of more than 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. i Within any critically endangered or endangered ecosystem listed in terms of Section 52 of the NEMA or prior to the publication of such a list within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment; ii Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans	According to information obtained from the South African National Biodiversity dataset, the study area falls within the Bronberg Mountain Bushveld which is characterized as a Critically Endangered Threatened Ecosystem in terms of the National List of Threatened Ecosystems (2009). The project also falls within and Ecological Support Area. Clearance of vegetation has been undertaken in support of the access road. **Rehabilitation**

List and activity number	Listed activity	Description of activity
		Vegetation clearance will also be undertaken for rehabilitation activities such as slope stabilization and for the energy dissipaters.
Listing 3 Activity 14	The development of- (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs- (a) within a watercourse; (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; Gauteng: iv: Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plan v: Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004) vi: Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority	According to information obtained from the South African National Biodiversity dataset, the study area falls within the Bronberg Mountain Bushveld which is characterized as a Critically Endangered Threatened Ecosystem in terms of the National List of Threatened Ecosystems (2009). The project also falls within and Ecological Support Area. The construction of a road within 32m of the watercourse as well as the paving of the existing gravel road. The construction of a culvert within the watercourse. **Rehabilitation** The proposed rehabilitation activities includes the construction of energy dissipaters and rip rap structures on the downstream side of the river crossing.
Listing 3 Activity 18	The widening of a road by more than 4m, or the lengthening of a road by more than 1km. Gauteng: iv: Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plan v: Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004) vi: Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority	The existing access road to be widened along the watercourse crossing to allow for traffic in both directions and a pedestrian walkway.
Listing 3 Activity 23	The expansion of- (ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more; where such expansion occurs- (a) within a watercourse;	The existing access road will be widened along the watercourse crossing to allow for traffic in both directions and a pedestrian walkway. The new culvert wing walls will be widened to accommodate a pedestrian sidewalk.

List and activity number	Listed activity	Description of activity
	(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; Gauteng: iv: Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plan v: Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004) vi: Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority	

3.1.3 National Environmental Management Waste Act (59 of 2008)

NEMWA aims to provide regulation for waste management in order to protect health and the environment, for the prevention of pollution and ecological degradation and for securing ecologically sustainable development. Regulation 921 to the NEMWA identifies a number of activities which require a Waste Management License (WML) prior to being undertaken. **Table 3-2** provides the triggered activities.

Table 3-2 NEM:WA Triggered Activities

Listed Activities in Terms of GN 921 of the NEMWA	Applicability
Category A: Activity 9 The disposal of inert waste to land in excess of 25 tons but not exceeding 25000 tons, excluding the disposal of such waste for the purposes of levelling and building which has been authorised by or other legislation.	Building rubble was disposed on site and used for the infill of the attenuation dam. *Approximately 150^{3}of material has been stockpiled on site.*

3.1.4 National Environmental Management: Biodiversity Act (10 of 2004)

The National Environmental Management: Biodiversity Act (NEM:BA) serves to provide a framework for the management and conservation of South African biodiversity, under the auspices of the NEMA. The purpose of the act is to provide for the:

- Management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act,1998;
- The protection of species and ecosystems that warrant national protection;
- The sustainable use of indigenous biological resources;
- The fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources;
- The establishment and functions of a South African National Biodiversity Institute

Chapter 7 of the NEM:BA regulations govern the 'PERMIT SYSTEM FOR LISTED THREATENED OR PROTECTED SPECIES'. In order to remove or relocate any Threatened species or Protected species identified on the site, the relevant permits must be applied for.

According to the Aquatic Biodiversity Study undertaken by The Biodiversity Company (2022), no species of conservational concern (flora) are likely to have occurred recently within the region.

3.1.5 National Forests Act (84 of 1998)

The purpose of the Act is to promote the sustainable management and development of forests and to provide protection for certain forests and trees in terms of:

- Section 15 (1) of the National Forest Act (Act 84 of 1998), any person wishing to cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree must apply for a license from the Minister or any delegated institution or authority.
- Government Notice 38215, Notice of the List of Protected Tree Species under the National Forests Act, 1998 (Act No 84 of 1998) was gazetted in November 2014.

The activities undertaken on site and proposed in terms of the rehabilitation have and will include the removal of trees. These trees have been identified as Black wattle, *Acacia mearnsii* and are regarded as

exotic. According to the Aquatic Biodiversity Study undertaken by The Biodiversity Company (2022), no protected trees are likely to have occurred recently within the site.

3.1.6 National Water Act (36 OF 1998)

The purpose of the NWA is to ensure that the South Africa's water resources are protected, used, developed, conserved, managed and controlled. Chapter 4 of the act regulates water use, while Section 21 lists eleven water use types that are regulated [Section 21 (a) – (k)]. Watercourses and wetlands are protected in terms of this section, as both are regarded as water resources. The regulated area of a watercourse can be defined as follows:

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

Activities were undertaken within the watercourse , hence within the Department of Water and Sanitation's (DWS) regulated area. An application for a Water use Authorisation has been logged with DWS. The e-WULAAs reference number is WU21911. **Table 3-3** lists the water uses that require authorisation in terms of Section 21 of the National Water Act for the construction activities.

Table 3-3 List of Section 21 Water Uses to be applied for

Section 21 Water Use	Activities which require the Water Use Licence
(c) – impeding or diverting the flow of water in a watercourse (i) – altering the bed, banks, course or characteristics of a watercourse	• Construction of the culvert • Construction of the access road • Constructions of energy dissipation structures and rip rap • Stabilisation of the river bank

3.1.7 National Heritage Resources Act (25 of 1998)

The objective of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) is to introduce an integrated system for the management of national heritage resources. The identification, evaluation and assessment of any cultural heritage site, artefact or find in South Africa is required by this Act. Section 38 of this Act pertains to Heritage resources management and Section 38(1) states the following

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 50 m in length;

(c) any development or other activity which will change the character of a site—

(i) exceeding 5 000 m^2 in extent; or

(ii) involving three or more existing erven or subdivisions thereof; or

(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

(d) the re-zoning of a site exceeding 10 000 m^2 in extent; or

(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,

must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

No permitting requirements are triggered by the construction activities.

3.1.8 National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003)

The National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) provides for a range of protected areas: protected environments, special nature reserves and natures reserves. South Africa has much valuable biodiversity outside of protected areas, but this is disappearing at an alarming rate. It has been recognised that in order to effectively conserve South Africa's biodiversity, conservation efforts must focus outside of formerly protected reserves, considering 80% of the country's most scarce and threatened habitats are privately owned. It is clearly not possible for government to purchase all the land identified as high priority in terms of habitat or threatened ecosystems to add to the system of state-owned protected areas.

According to the Department of Forestry Fisheries and the Environment (DFFE) protected areas register, the site is not situated within a protected area.

3.1.9 City of Tshwane Metropolitan Municipality Integrated Development Plan (2021)

The Integrated Development Plan is an important tool used by municipalities to provide vision, guidance and ultimately a roadmap towards developing the municipal area. Municipalities play an important role in ensuring sustainable integration between the cross cutting inter-dimensional sectors in achieving development in the area that is socially, economically and environmentally sustainable.

The five strategic development pillars as provided in the 2021 IDP are as follows:

- A City that facilitates economic growth and job creation
- A City that cares for residents and promotes inclusivity
- A City that delivers excellent services and protects the environment
- A City that keeps residents safe
- A City that is open, honest and responsive

As the study area is regarded as having tourism potential, the applicant is optimizing the use of the property from a guest house to a lodge. The investment in demand-based activities such as the lodge, which includes a conference and wedding venue, provides benefits to local residents and the region. In a broader perspective, the proposed project will facilitate economic growth and job creation.

3.1.10 City of Tshwane Regional Spatial Development Framework (2018)

The site falls with Region 6 of the City of Tshwane. In terms of the Regional Spatial Development Framework (2018), the south eastern boundary is characterised as an area for tourism potential. The study area is also characterised as rural. The future activities (lodge) planned for within the study area are within the Regional Spatial Development Framework.

3.1.11 Gauteng Environmental Management Framework

The Gauteng Department of Agriculture and Rural Development have developed an Environmental Management Framework Tool to streamline the requirements for an Environmental Impact Assessment (EIA). In addition to reduce the need for the undertaking of EIA requirements and a reduction in timeframes for approvals and as a contribution towards reducing the cost of doing business in Gauteng. In this tool, a number of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) listed activities are excluded from the requirement to obtain an Environmental Authorisation (EA). Government Notice 164 in Government Gazette No. 41473 of 2 March 2018 presents a list of activities that are excluded from the need to obtain an Environmental Authorisation as they occur within Zones 1 and 5 of the Gauteng Provincial Environmental Management Framework (GPEMF). **Table 3-4** provides the GEMF Zones.

Table 3-4: GEMF Zones

Zone	Intention
Zone 1: Urban development zone	The intention with this zone is to streamline urban development activities in it and to promote development infill, densification and concentration of urban development, in order to establish a more effective and efficient city region that will minimise urban sprawl into rural areas.
Zone 2: High control zone (within the urban development zone)	This zone is sensitive to development activities. Only conservation should be allowed in this zone. Related tourism and recreation activities must be accommodated in areas surrounding this zone
Zone 3: High control zone (outside the urban development zone)	This zone is sensitive to development activities and in several cases also have specific values that need to be protected. Conservation and related tourism and recreation activities should dominate development in this zone
Zone 4: Normal control zone	This zone is dominated by agricultural uses outside the urban development zone. Agricultural and rural development that support agriculture should be promoted
Zone 5: Industrial and large commercial focus zone Intention	The intention with Zone 5 is to streamline non-polluting industrial and large-scale commercial (warehouses etc.) activities in areas that are already used for such purposes and areas that are severely degraded but in proximity to required infrastructure. The study area also falls with this zone.

In terms of the Gauteng Environmental Management Framework, majority of the study area falls with Zone 2: High Control Zone (within the urban development zone) and the remaining areas within Zone 4: Normal Control Zone. (**Figure 3-1**).

Figure 3-1: Project Area EMF

4 ENVIRONMENTAL STATUS QUO

4.1 Topography

The project area is located at around 1440 metres above mean sea level (mamsl) in the south west, sloping slightly downwards towards the downstream of the watercourse around 1436mamsl towards north east.

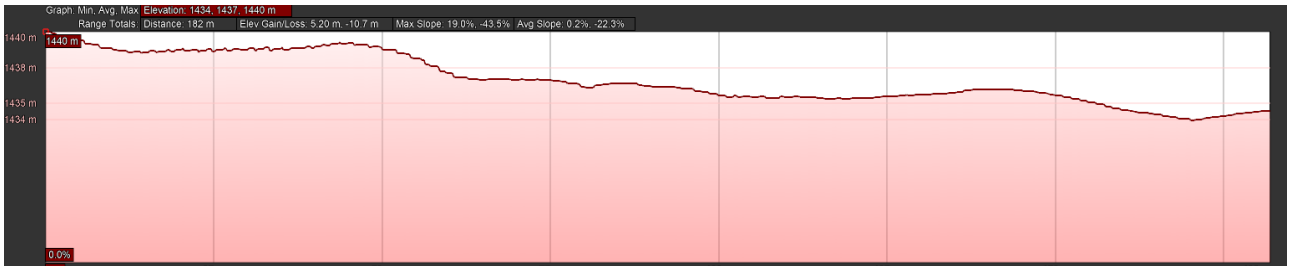


Figure 4-1 Google Earth elevation profile through the project area from south west to north east

4.2 Temperature and Rainfall

Pretoria has a humid subtropical climate with long hot rainy summers and short mild winters. An average high temperature of 29°C and an average low temperature of 18°C with January being the warmest month. June is the coldest month of the year with an average high temperature of 19°C and an average low temperature of 5°C (**Figure 4-2**).

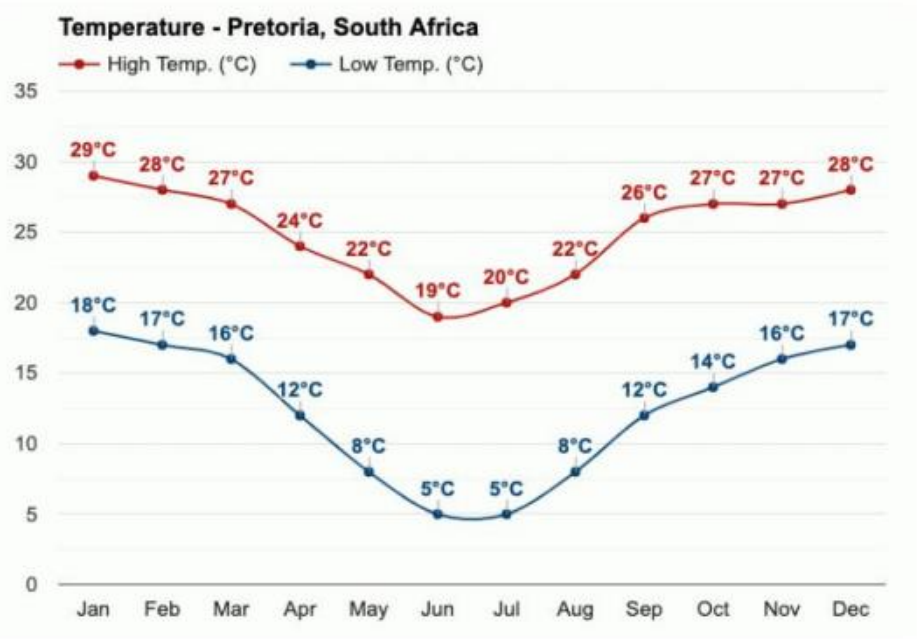


Figure 4-2 Average temperature for Pretoria (weather-atlas, 2023)

Pretoria experiences rainfall throughout the year, as there are approximately 88 rainfall days and 732mm is accumulated. The month with the most rainfall is January with an average of 155mm, and July has been recorded as the month with the least rainfall where 3mm has been recorded.

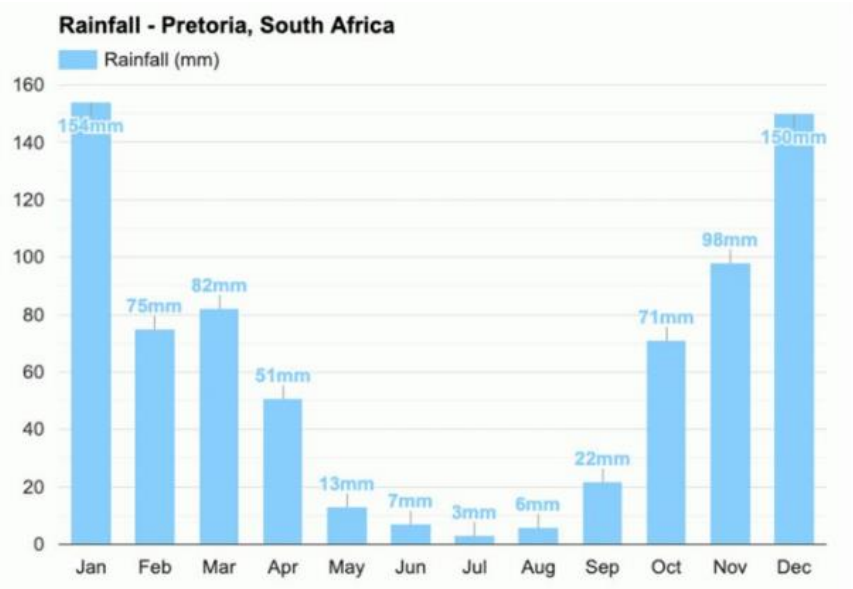


Figure 4-3: Average rainfall for Pretoria(weather-atlas, 2023)

4.3 Regional Geology

The geology of the proposed Tiegerpoort S24G application is indicated on the 1:250 000 Pretoria 2528 (1978) Geological Map (Council for Geosciences, Pretoria) (**Figure 4-4**). The northern portion of the study area is underlain by intrusive diabase rocks (di; green) as well as the Silverton (Vs, khaki) and Daspoort (Vdq; purple with black dots) Formations of the Pretoria Group (Transvaal Supergroup).

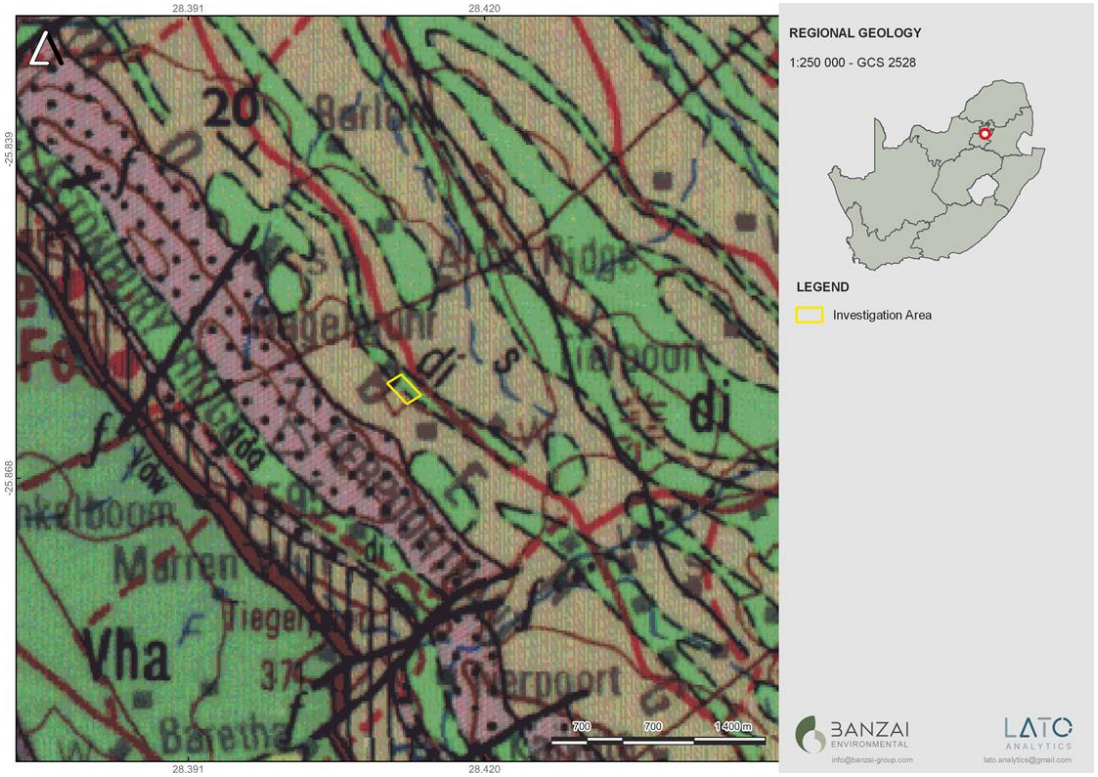


Figure 4-4: Extract of the 1:250 000 Pretoria 2528 (1978) Geological Map (Banzai, 2022

4.4 Biodiversity

4.4.1 Vegetation

The project area is situated within the savanna biome. The savanna vegetation of South Africa represents the southernmost extension of the most widespread biome in Africa. Major macroclimatic traits that characterise the Savanna biome include:

- Seasonal precipitation; and
- (Sub) tropical thermal regime with no or usually low incidence of frost

Most savanna vegetation communities are characterised by a herbaceous layer dominated by grasses and a discontinuous to sometimes very open tree layer. The savanna biome is the largest biome in South Africa, extending throughout the east and north-eastern areas of the country. Savannas are characterised by a dominant grass layer, over-topped by a discontinuous, but distinct woody plant layer. At a structural level, Africa's savannas can be broadly categorised as either fine-leaved (microphyllous) savannas or broad-leaved savannas. Fine-leaved savannas typically occur on nutrient rich soils and are dominated by microphyllous woody plants of the Mimosaceae family and a generally dense herbaceous layer (Scholes & Walker, 1993).

On a fine-scale vegetation type, the project area overlaps with one vegetation type: the Marikana Thornveld (**Figure 4-5).**

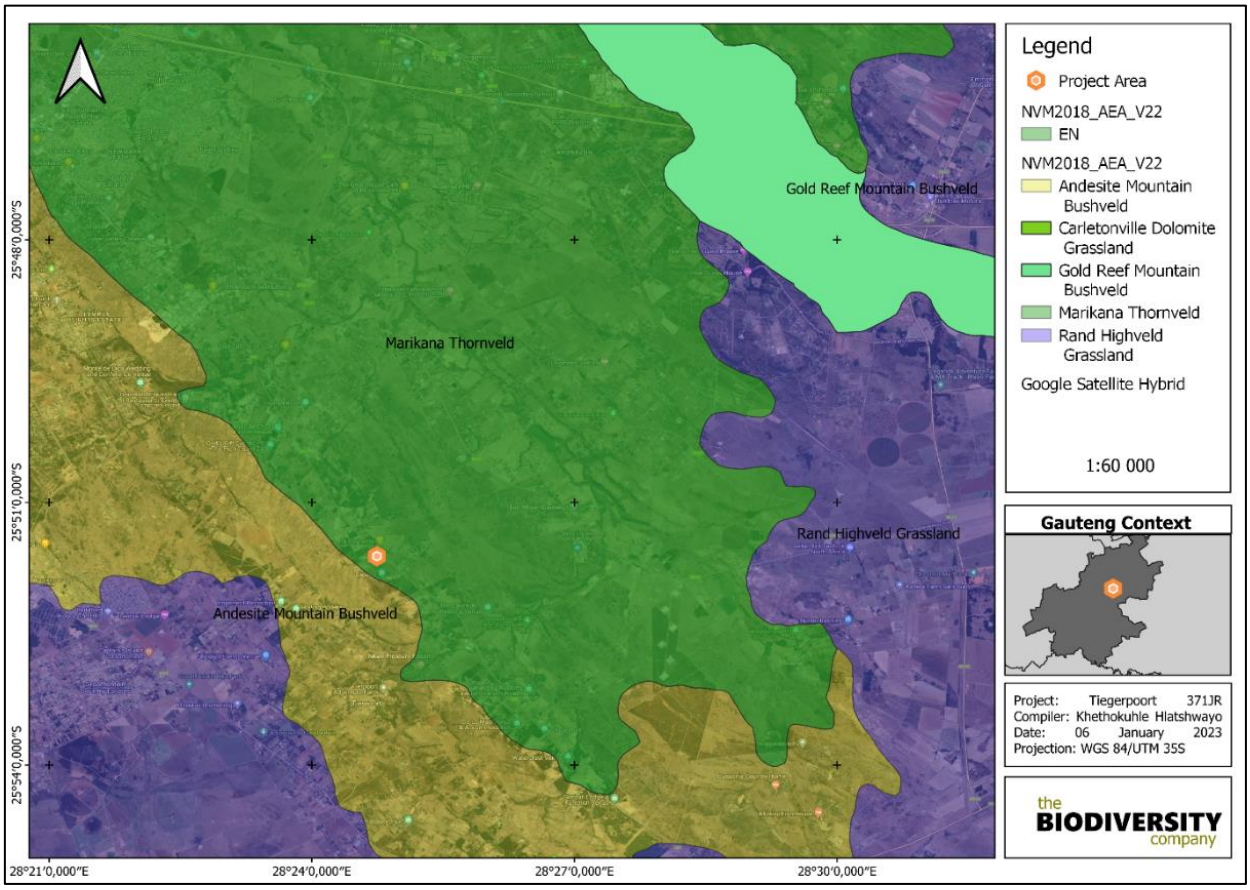


Figure 4-5 Vegetation map (TBC, 2022)

Marikana Thornveld extends on the broad plains from Rustenburg in the West, through Marikana and Brits, and towards Pretoria in the East . It is characterised by open *Vachellia karroo* woodland, which occurs in valleys and

on undulating plains and hills. Fire-protected habitats, such as drainage lines, rocky outcrops and termitaria are typically dominated by denser, shrub-dominated vegetation.

Important Plant Taxa in Marikana Thornveld

Based on Mucina and Rutherford's (2006) vegetation classification, important plant taxa are those species that have a high abundance, a frequent occurrence (not being particularly abundant) or are prominent in the landscape within a particular vegetation type. They note the following species are important taxa in the Marikana Thornveld vegetation type:

Tall Tree: *Senegalia burkei*.

Small Trees: *Senegalia caffra*, *Vachellia gerrardii*, *Vachellia karroo*, *Combretum molle*, *Searsia lancea*, *Ziziphus mucronata*, *Vachellia nilotica, Vachellia tortilis* subsp. *heteracantha*, *Celtis africana*, *Dombeya rotundifolia*, *Pappea capensis*, *Peltophorum africanum*, *Terminalia sericea*.

Tall Shrubs: *Euclea crispa* subsp. *crispa*, *Olea europaea* subsp. *africana*, *Searsia pyroides* var. *pyroides*, *Diospyros lycioides* subsp. *guerkei*, *Ehretia rigida* subsp. *rigida*, *Euclea undulata*, *Grewia flava*, *Pavetta gardeniifolia*.

Low Shrubs: *Asparagus cooperi*, *Rhynchosia nitens*, *Indigofera zeyheri*, *Justicia flava*.

Woody Climbers: *Clematis brachiata*, *Helinus integrifolius*.

Herbaceous Climbers: *Pentarrhinum insipidum*, *Cyphostemma cirrhosum*.

Graminoids: *Elionurus muticus*, *Eragrostis lehmanniana*, *Setaria sphacelata*, *Themeda triandra*, *Aristida scabrivalvis* subsp. *scabrivalvis*, *Fingerhuthia africana*, *Heteropogon contortus*, *Hyperthelia dissoluta*, *Melinis nerviglumis*, *Pogonarthria squarrosa*.

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

Geophytic Herbs: *Ledebouria revoluta*, *Ornithogalum tenuifolium*, *Sansevieria aethiopica*.

Conservation Status

According to Mucina and Rutherford (2006), this vegetation type is classified as EN, with its national conservation target being 19%. Over 48% has already been transformed by urban expansion and cultivation (Mucina & Rutherford, 2006).

In addition, according to information obtained from the South African National Biodiversity dataset, the study area falls within the Bronberg Mountain Bushveld which is characterized as a Critically Endangered Threatened Ecosystem in terms of the National List of Threatened Ecosystems (2009).

4.4.1.1 Riparian vegetation

The project area is already disturbed with alien invasives plant species dominating the riparian area (**Figure 4-6**), such as A) *Solanum mauritianum,* D) *Manihot grahamii*, E) *Ipomoea purpurea*, F) *Bidens Pilosa,* G) *Agave americana*, and *Acacia mearnsii* (known as Black wattle, **Figure 4-8**). However, there were few scattered indigenous plant species such as B) *Crassula ovata*, C) *Typha capensis*, H) *Leonotis leonurus* and I) *Aloidendron barberae.* The delineated riparian area for the project area is presented in **Figure 4-9**.

The vegetation on site is insensitive and no protected trees or species of conservational concern flora are likely to have occurred recently within the region. The numerous category 1b invasives must be controlled according to an Invasive Alien Plant Management Plan, in line with NEM:BA legislation.

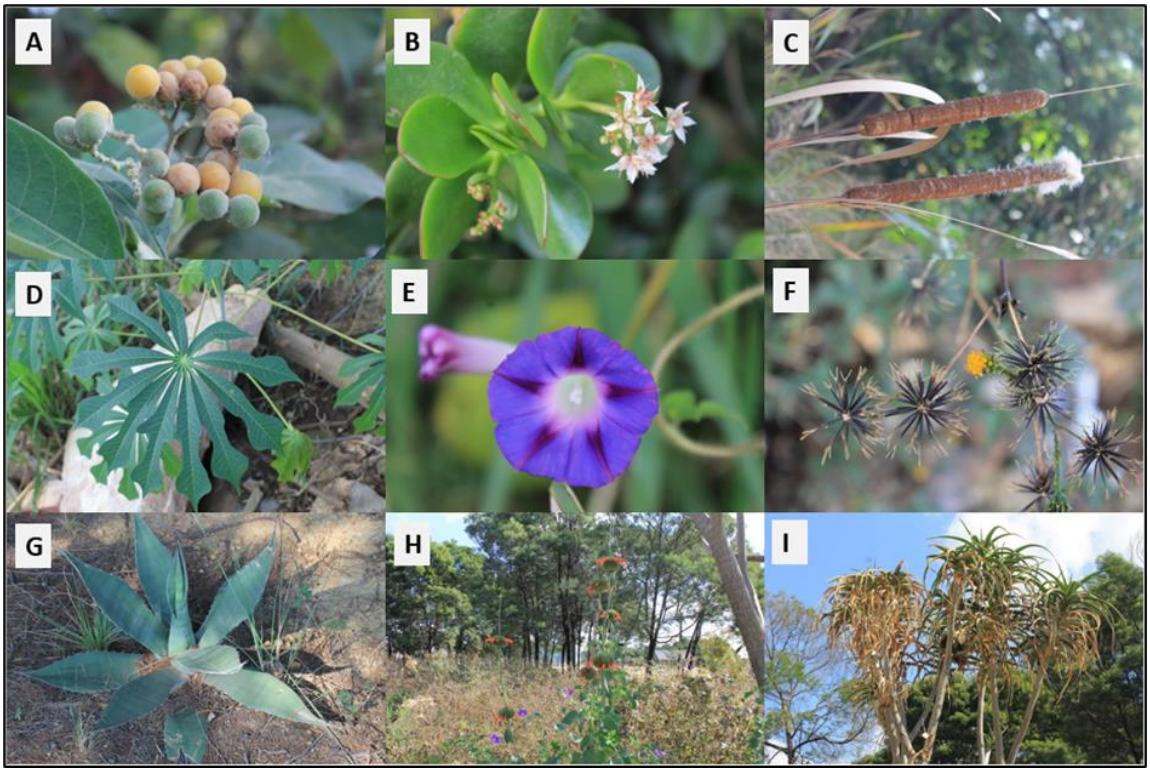


Figure 4-6: Plant species dominating the riparian area (TBC, 2022)

Figure 4-7: The right riverbank facing upstream (TBA, 2022)

Figure 4-8: The left riverbank facing upstream (TBA, 2022)

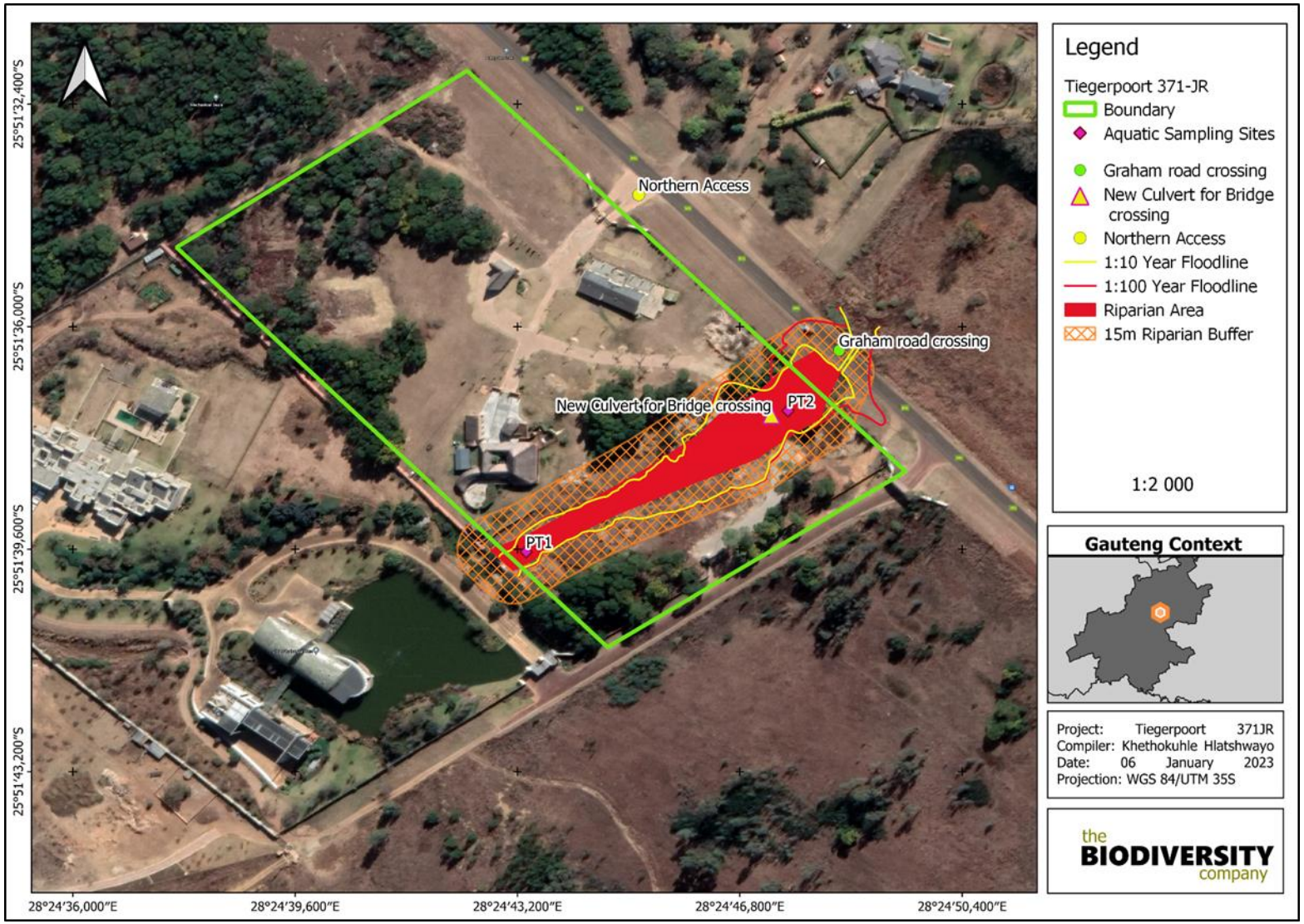


Figure 4-9: Riparian delineation for the associated tributary of the Pienaars River. Red = Highly sensitive area, Orange = Moderately sensitive area (May 2022) (TBC, 2022)

4.4.2 Gauteng Biodiversity Conservation Plan

The Critical Biodiversity Areas (**CBAs**) are terrestrial and aquatic areas of the landscape that need to be maintained in a natural or near-natural state to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. CBAs are areas of high biodiversity value and need to be kept in a natural state, with no further loss of habitat or species. Thus, if these areas are not maintained in a natural or near natural state then biodiversity targets cannot be met. Maintaining an area in a natural state can include a variety of biodiversity compatible land uses and resource uses. Other Natural Areas (ONAs) consist of all those areas in good or fair ecological condition that fall outside the protected area network and have not been identified as CBAs or Ecological Support Areas (ESAs). **Figure 4-10** illustrates the project area with the Gauteng Biodiversity Conservation Plan CBA, ESA. As shown in **Figure 4-10**, the Farm Tiegerpoort 371JR, unauthorized culvert crossing, and proposed activities are situated within the ESA area and in close proximity to Irreplaceable areas.

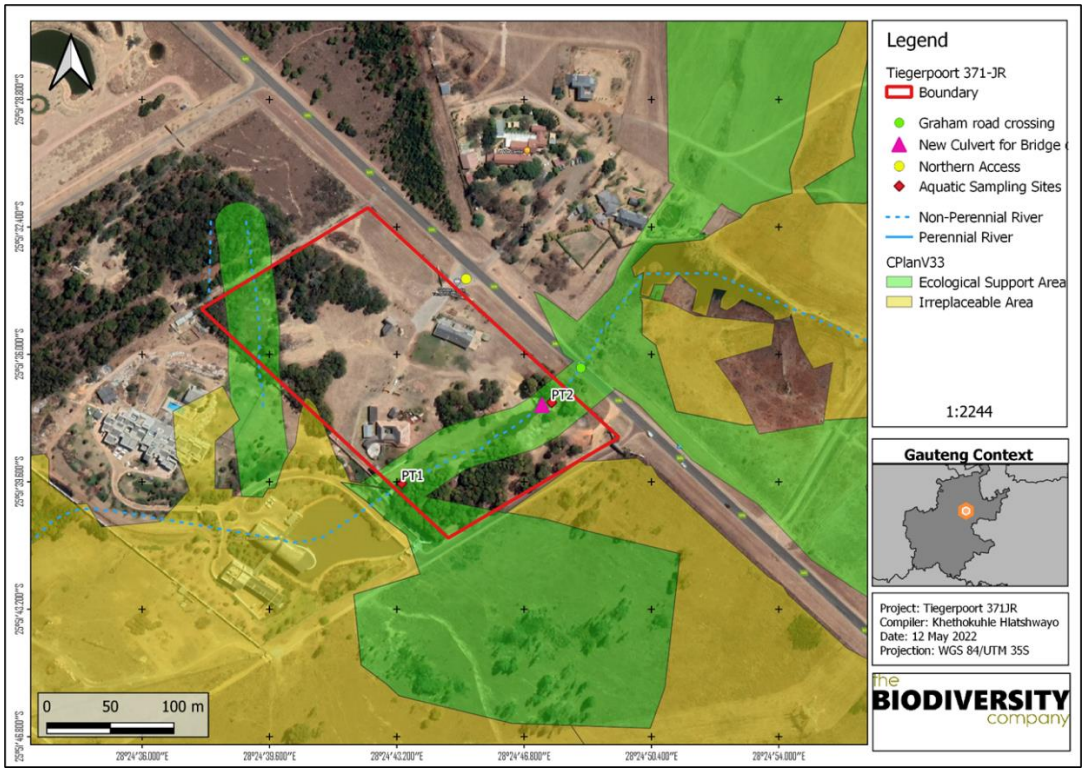


Figure 4-10 Gauteng Conservation Plan (TBC, 2022)

4.4.3 Protected Areas

According to the protected area spatial datasets from South Africa Protected Areas Database (SAPAD) (2021), the project area is area is approximately 13 km away from the Rietvlei Nature Reserve (**Figure 4-11**).

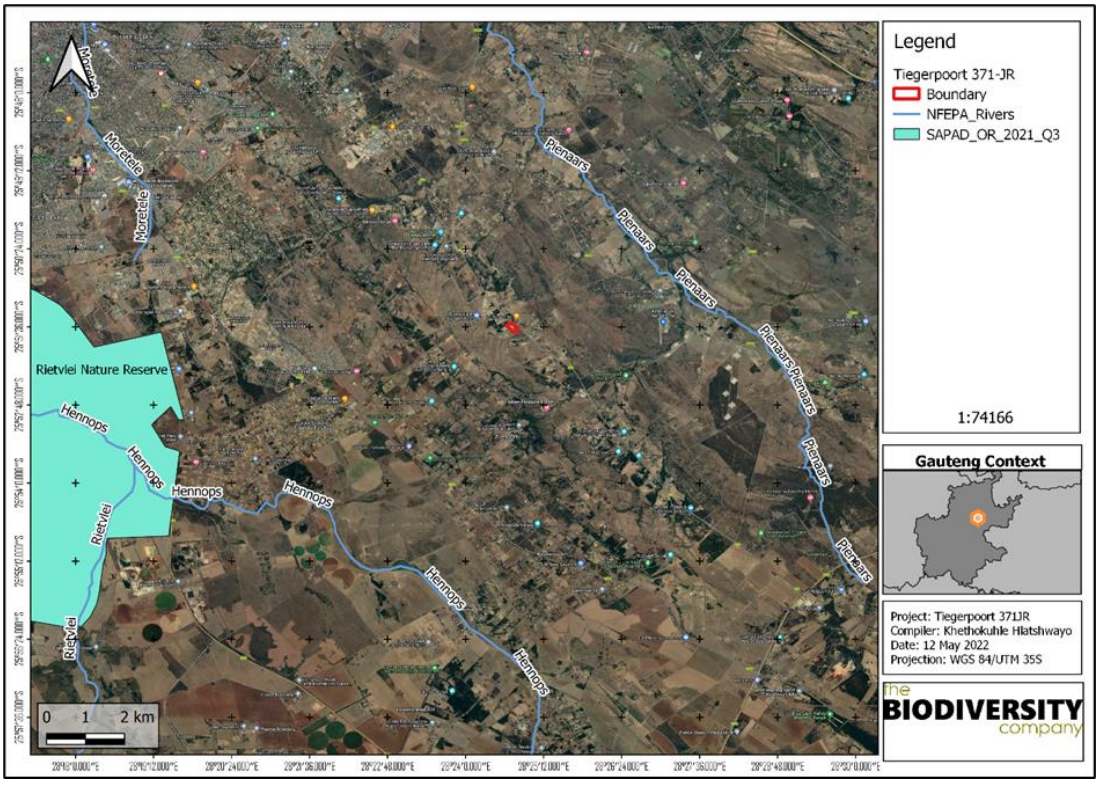


Figure 4-11 The project area in relation to Protected Areas(TBC, 2022)

4.5 Floodline Assessment

A Floodline assessment was undertaken by Chris Etsebeth Engineers (Pty) Ltd for the project area. The project area falls within the 1: 50 year and 1: 100 year floodline. (**Figure 4-12**).

Figure 4-12: Floodline layout (Chris Etsebeth Engineers (Pty) Ltd, 2022)

4.6 Hydrological Setting

Information provided in this Section has been sourced by the Aquatic Biodiversity Assessment undertaken by The Biodiversity Company (2022).

4.6.1 Catchments and Rivers

The project area is within the Limpopo Water Management Area (WMA), Highveld – Lower Aquatic Ecoregion and within the A23A quaternary catchment. The watercourses which drain the project area is a single non-perennial tributary of the Pienaars River.

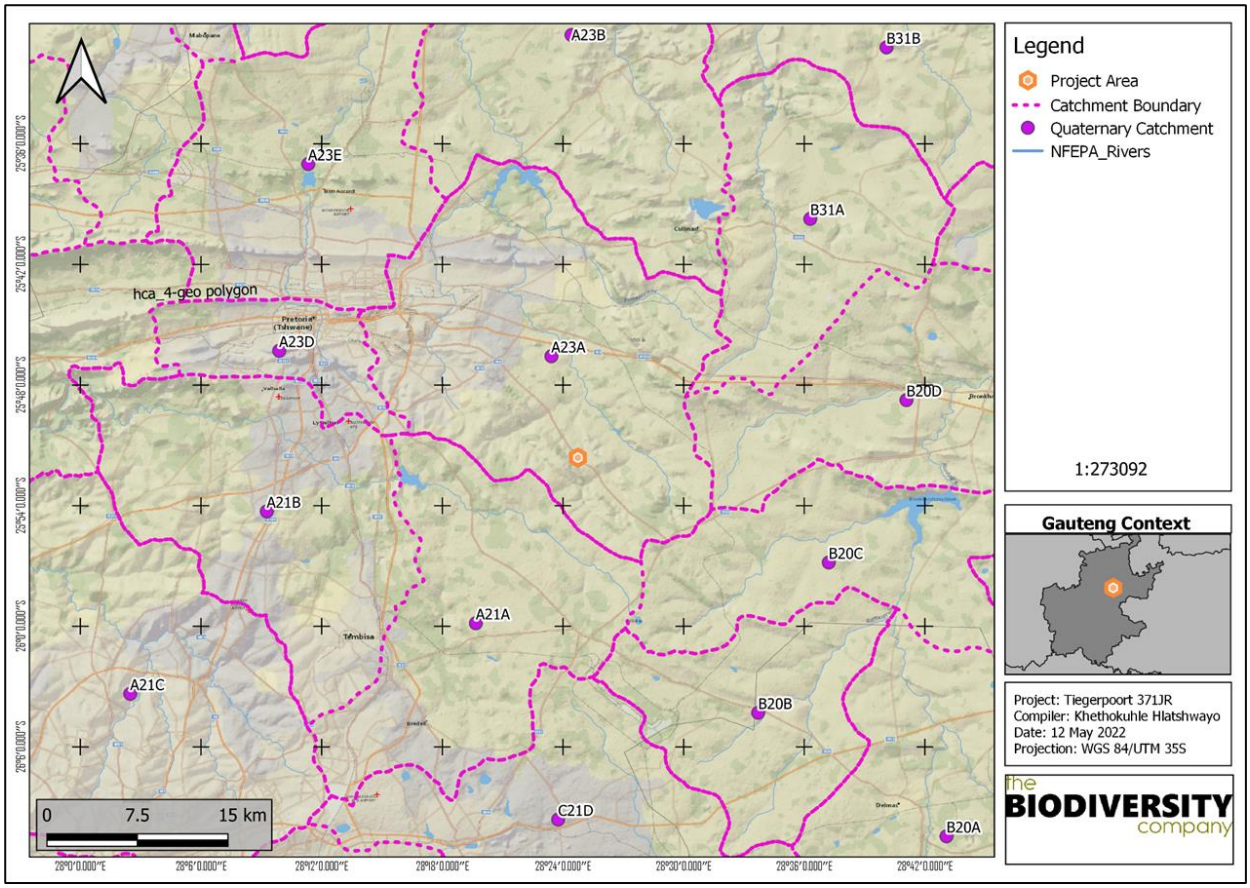


Figure 4-13: Quaternary Catchment Map

The proposed activities and unlicenced culvert crossing are located within an unnamed and unclassified non-perennial tributary of the Pienaars River. Therefore, the data for the classified Pienaars River was utilised. The unnamed tributary subjected to development joins the Pienaars River at the A23A-1056 Sub-quaternary Reach (SQR). The A23A-1056 SQR spans 45.97 km of the Pienaars River. The PES category of the reach is classed as Largely modified (class D). The largely modified state of the reach was attributed to serious potential flow modifications activities, large impacts to wetland and riparian zone, small impacts to the instream habitat continuity, riparian and wetland zone continuity, physico-chemical conditions (water quality) and moderate to potential instream habitat modification activities. The reach has a high Ecological Sensitivity (ES) and a moderate Ecological Importance (EI) with a largely natural (class B) default ecological category.

No wetlands were found close to the study area (**Figure 4-14**).

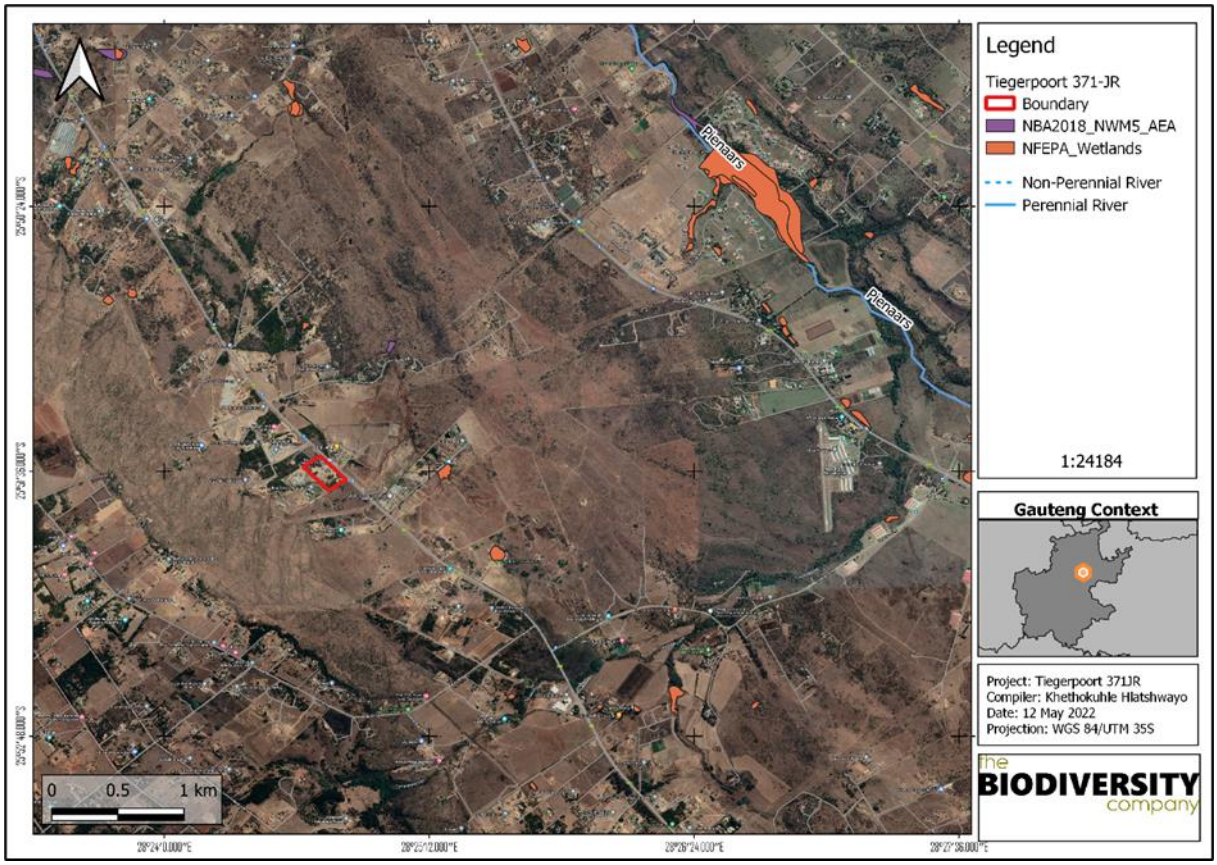


Figure 4-14 Closest wetlands to the project area (TBC, 2022)

4.6.2 Ecosystem Threat Status

Ecosystem threat status outlines the degree to which ecosystems are still intact or alternatively losing vital aspects of their structure, function and composition, on which their ability to provide ecosystem services ultimately depends. 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.

As seen in this figure, the project area is approximately 4 km away from a CR Pienaars River (**Figure 4-15**). This specifically pertains to the downstream watercourse receptor, indicating that impacts within the regulated area could potentially result in degradation of the downstream CR system.

Ecosystem protection level tells us whether ecosystems are adequately protected or under-protected. Ecosystem types are categorised as not protected, poorly protected, moderately protected or well protected, based on the proportion of each ecosystem type that occurs within a protected area recognised in the Protected Areas Act.

The project area was superimposed on the ecosystem protection level map to assess the protection status of aquatic ecosystems associated with the development (**Figure 4-16**). Based on **Figure 4-16** the project area is approximately 5 km away from Pienaars River reach that is rated as Not protected. This specifically pertains to the downstream watercourse receptor, indicating that impacts within the regulated area could potentially result in degradation of the downstream system.

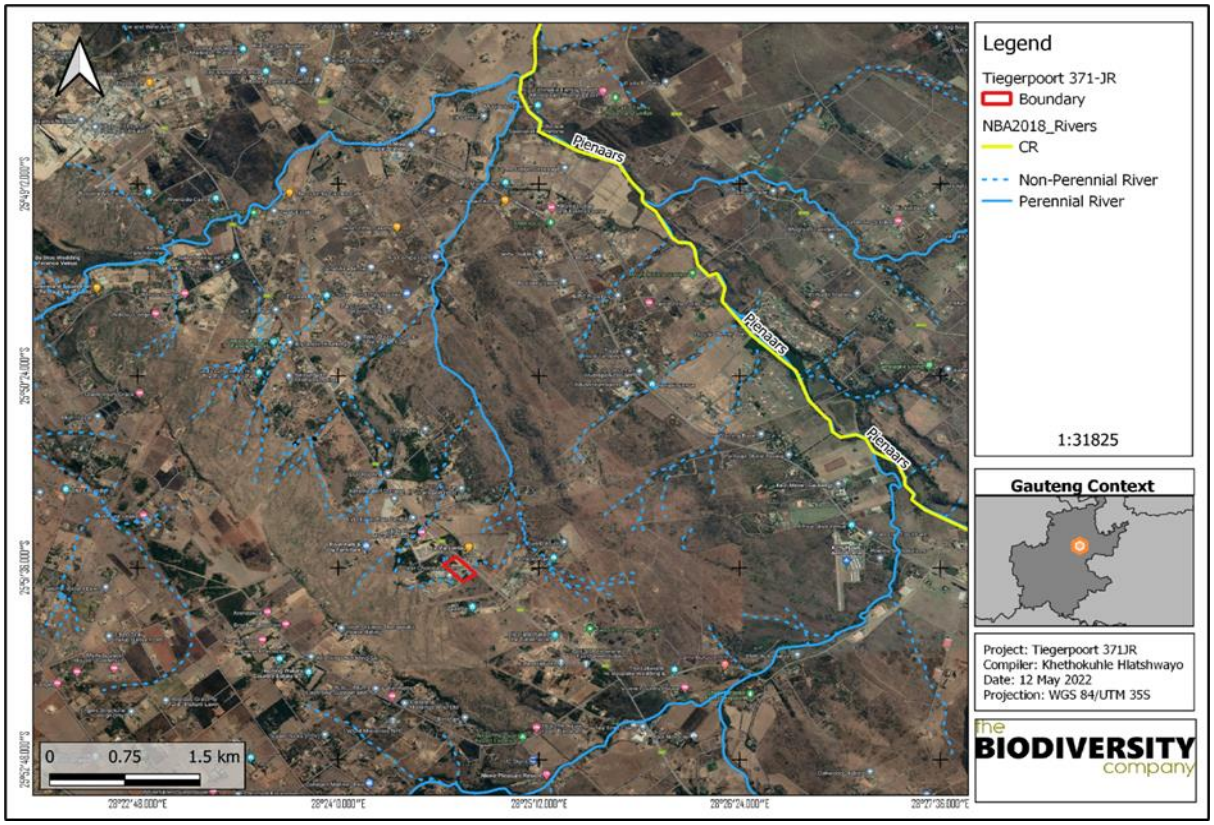


Figure 4-15: The project area showing the regional ecosystem threat status of the associated aquatic ecosystems (NBA, 2018) Ecosystem Protection Level (TBC, 2022)

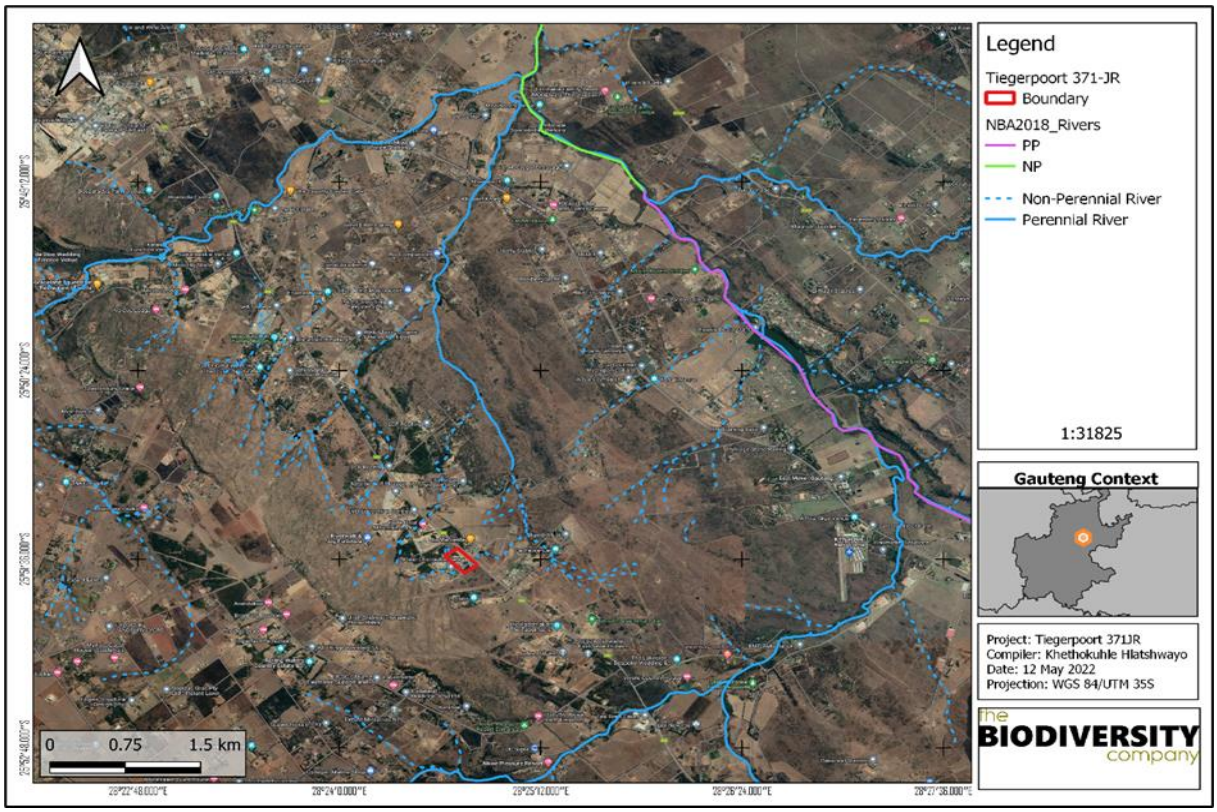


Figure 4-16: The project area showing the regional level of protection of aquatic ecosystems (NBA, 2018)(TBC, 2022)

4.6.3 Water Quality

The in-situ results are important to assist in the interpretation of biological results due to the direct influence water quality has on aquatic life forms. The in-situ results recorded in May 2022 assessment are presented in Table 4-1. Results have been compared to the Target Water Quality Range (TWQR) for aquatic ecosystems and RQOs limits for the catchment.

Table 4-1: Water Quality

Site	pH	Conductivity (µS/cm)	DO (mg/l)	Temperature (°C)
TWQR*	6.5-9.0*	-	>5.00*	5-30*
RQOs**	6.5-9.0**	650**	>6.00**	-
PT1	7.21	81.0	6.3	19.6
PT2	7.32	84.0	6.7	18.7
*** TWQR – Target Water Quality Range** **** RQOs – Resource Quality Objectives**				

The in-situ water quality results indicated pH levels, dissolved oxygen (DO) and water temperature in the assessed tributary of the Pienaars River fell within the TWQR for aquatic life and RQO limits for the catchment. The dissolved solids concentrations (measured by Conductivity) fell within the RQO limit and deemed suitable for the local aquatic biota. The water quality results from the downstream of the culvert crossing were comparable to water quality upstream of the constructed culvert crossing. According to the in-situ water quality results, water in the assessed tributary would not limit the abundance and diversity of the local aquatic biota.

4.6.4 Intermediate Habitat Integrity Assessment

The Intermediate Habitat Integrity Assessment (IHIA) model was used to assess the integrity of the habitats from a riparian and instream perspective as described in Kleynhans (1996). The habitat integrity of a river refers to the maintenance of a balanced composition of physico-chemical and habitat characteristics on a temporal and spatial scale which are comparable to the characteristics of natural habitats of the region (Kleynhans, 1996). The focus of this assessment was therefore a tributary of the main Pienaars River.

Table 4-2: Results for the instream habitat integrity assessment for the Pienaars River tributary (May 2022) (TBC,2022)

Instream	Tributary of the Pienaars River	
	Average Impact Score	Weighted Score
Water abstraction	12	6.7
Flow modification	19	9.9
Bed modification	15	7.8
Channel modification	16	8.3
Water quality	3	1.7
Inundation	20	8.0
Exotic macrophytes	5	1.8
Exotic fauna	0	0.0
Solid waste disposal	10	2.4
Total Instream	**53**	
Category	**D**	

Riparian	Tributary of the Pienaars River	
	Average Impact Score	Weighted Score
Indigenous vegetation removal	10	5.2
Exotic vegetation encroachment	20	9.6
Bank erosion	11	6.2
Channel modification	15	7.2
Water abstraction	13	6.8
Inundation	18	7.9
Flow modification	19	9.1
Water quality	3	1.6
Total Riparian	**47**	
Category	**D**	

According to the IHIA results (Table 4-2), the instream habitat integrity of the assessed tributary reach was rated as largely modified (class D). This status was attributed to inundation (numerous impoundments within the tributary), bank erosion that resulted in bed and channel modification trough sedimentation and subsequent flow modification. The riparian habitat integrity was also rated as largely modified (class D), with the highest impact score being exotic vegetation which has encroached into the riparian zones, competing with indigenous vegetation and altered the riparian zone from natural (pre-urbanized) conditions. An overall large loss of natural habitat, biota and basic ecosystem functions has occurred within the assessed reach.

Figure 4-17: Instream Wall and Rock dump on site

Figure 4-18: Erosion at Site PT1 (TBC, 2022)

4.6.5 Macroinvertebrates: Habitat Assessment System

A biotope rating of available habitat was conducted at each macroinvertebrate sampling site assessed to determine the diversity of habitat available for macroinvertebrate communities. A rating system of 0 to 5 was applied, 0 being not available and 5 being abundant and diverse. The results of the biotope and biotope weightings assessment for the May 2022 survey are presented in **Table 4-3**.

Table 4-3: Biotope diversity scores for the May 2022 assessment (TBC, 2022)

Biotopes	Weightings (Upper Foothills)	PT1	PT2
Stones in current	20	2	2
Stones out of current	10	2.5	2
Bedrock	5	0	0
Aquatic vegetation	0.5	0	1
Marginal vegetation in current	2	2	1
Marginal vegetation out of current	2	2.5	2
Gravel	3.5	2	2
Sand	1	3	2
Mud	0.5	1	1
Biotope Score		**15**	**13**
Weighted Biotope Score (%)		**38**	**34**
Biotope Category (Tate and Husted, 2015)		**E**	**E**

4.6.6 South African Scoring System

The list of macroinvertebrates collected at each site during the May 2022 assessment are presented in **Table 4-4** while the overall aquatic macroinvertebrate assessment results and associated ecological categories for the assessment are presented in **Table 4-5**.

Table 4-4: Macroinvertebrate assessment results (May 2022) (TBA, 2022)

Taxon	Sensitivity Score	PT1	PT2
Crustacea			
Potamonautidae* (Crabs)	3	1	A
Ephemeroptera (Mayflies)			
Baetidae 1 sp. (Mayflies)	4	A	A
Odonata (Dragonflies & Damselflies)			
Coenagrionidae (Sprites & Blues)	4	A	A
Gomphidae (Clubtails)	6	1	
Libellulidae (Skimmers)	4	1	1
Hemiptera (Bugs)			
Corixidae* (Water boatmen)	3	1	
Gerridae* (Water striders)	5	A	A
Notonectidae* (Backswimmers)	3	A	1
Veliidae* (Ripple bugs)	5	A	
Coleoptera (Beetles)			
Dytiscidae* (Diving beetles)	5	A	
Hydraenidae* (Minute moss beetles)	8	1	1
Diptera (Flies)			
Ceratopogonidae (Biting midges)	5		1
Chironomidae (Midges)	2	A	A
Simuliidae (Blackflies)	5	A	B
Total Taxa		**13**	**10**
Sensitivity scores: **1 – 5: Highly tolerant to pollution** **6 -10: Moderately tolerant to pollution** **11 – 15: Very low tolerance to pollution**		*Airbreathing taxa A 2-10 sampled B 11-100 sampled	

Table 4-5: Macroinvertebrate assessment results (May 2022) (TBC, 2022)

Site	PT1	PT2
SASS5 Score	57	43
No. of Taxa	13	10
ASPT*	4.4	4.3
Category	**D**	**D**

Based on the macroinvertebrate community assessment, the calculated ASPT score the indicated macroinvertebrate communities were largely modified (class D) at both sites. Multiple expected families were absent, while airbreathing taxa were dominant. This can be attributed to limited and poor instream habitat for sensitive taxa with no different flow and depth classes, confirmed by the sampled biotopes (**Table 4-3**). Limited instream habitat is considered the primary contributor to the poor ASPT than water quality (measured by in situ water quality).

4.6.7 Fish Assessment

Fish have different sensitivities or levels of tolerance to various aspects that they are subjected to within the aquatic environment. These tolerance levels are rated with a sensitivity score as presented in **Table 4-6**. These tolerance levels are scored to show each fish species' sensitivity to flow and physico-chemical modifications. The results indicate that fish collected in the assessed Pienaars River tributary are largely tolerant to flow and physico-chemical modifications, respectively (**Table 4-7**). This applies as an average of the whole class and not each individual species.

Table 4-6: Intolerance rating and sensitivity of fish species (TBC, 2022)

Sensitivity Score	Tolerance/Sensitivity Level
0-1	Highly tolerant = Very low sensitivity
1-2	Tolerant = Low sensitivity
2-3	Moderately tolerant = Moderate sensitivity
3-4	Moderately intolerant = High sensitivity
4-5	Intolerant = Very high sensitivity

Table 4-7: Summary of the Sampled fish species sensitivity within the Pienaars River tributary (May 2022)

Scientific name	Sensitivity	
	No-flow	Phys-chem
Enteromius paludinosus	2.3	1.8
Pseudocrenilabrus philander	1.0	1.4
Sampled Average Sensitivity	**1.7**	**1.6**

4.7 Air quality

Main sources of air pollution in the study area include the following:

- Vehicle tailpipe emissions from the M6 Graham Road
    - Atmospheric pollutants emitted from motor vehicles include hydrocarbons, CO, NOx, SO_2 and particulates;
- Wind-blown dust:
    - Wind erosion of exposed, open areas;

4.8 Noise

As previously explained, the project area is situated adjacent to the M6 Graham Road. Noise pollution is evident in the project area through road traffic noise.

4.9 Visual

The visual aesthetes of the project area have already been impacted on by the following:

- Dumping of building waste
- Extensive erosion

4.10 Heritage and palaeontology

4.10.1 Heritage

A Heritage Impact Assessment has not been commissioned as part of the proposed project. Refer to **Section 3.1.7** for the legal requirements pertaining to the Heritage Impact Assessment.

4.10.2 Palaeontology

According to the SAHRA Paleontological map the paleontological sensitivity of the western section of the project area (along the boundary wall) is high and warrants a desktop assessment. Refer to **Figure 4-19.**

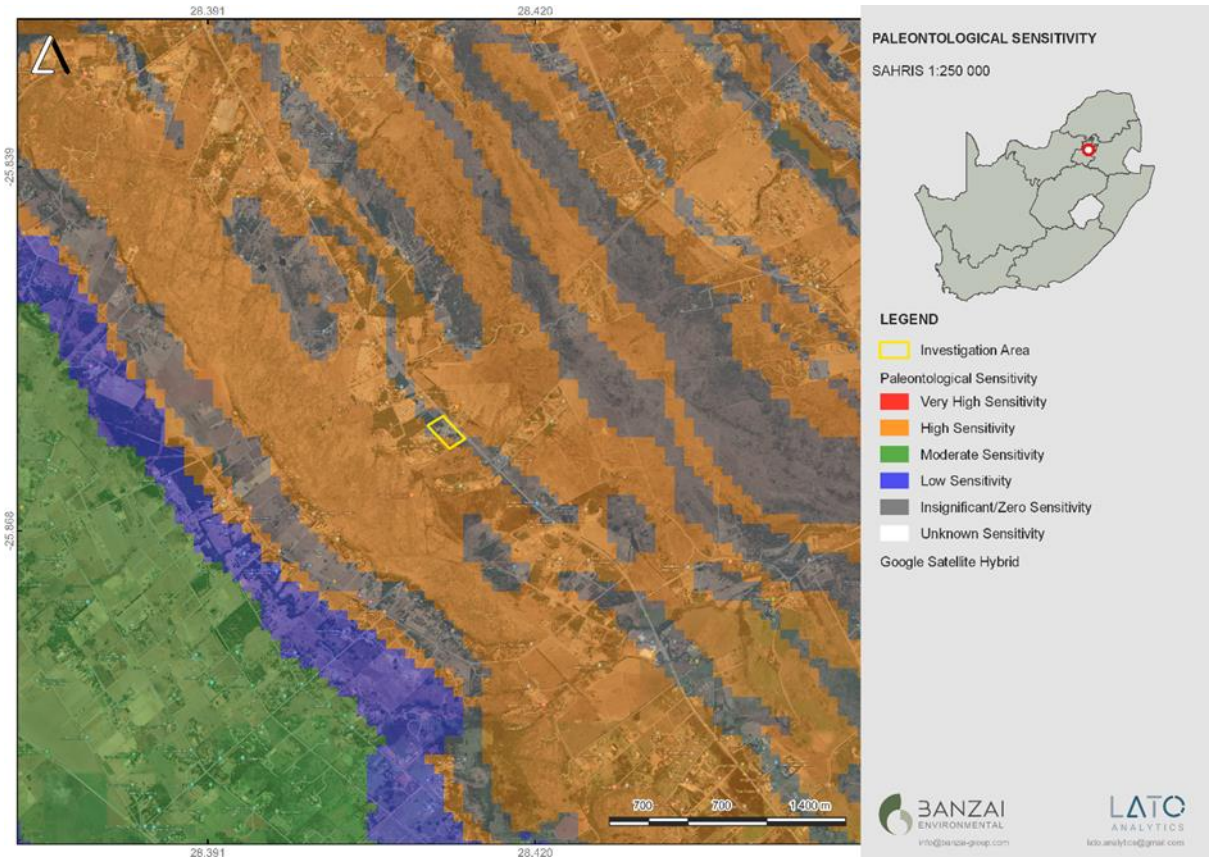


Figure 4-19: Paleontological sensitivity of the study area as indicated on the SAHRA Palaeontological sensitivity map

A desktop Palaeontological Impact Assessment has been commissioned as part of this application process. The findings of the assessment are provided in **Section 5**.

4.11 Social

4.11.1 Demographic parameters

As stated previously, the project area is located in the City of Tshwane Metropolitan Municipality. Information on socio-economic aspects was obtained from the Metropolitan's Integrated Development Plan (2020/2021). With an estimated 3.31 million population, the City of Tshwane Metropolitan Municipality housed 5.8% and 24.1% of South Africa's and Gauteng's total population in 2017 respectively. The City of Tshwane's population comprised of: 78.94% of the African population (2.61 million); 17.11% of the White population (566 000); 2.07% of the Coloured (68 500); and 1.88% of the Asian (62 100).

4.11.2 Education

The number of people without any schooling decreased between 2007 and 2017 by an average annual rate of -1.58%, while the number of people in the 'matric only' category increased from 533,000 to 802,000. The number of people with 'matric and a certificate/diploma' increased by an average annual rate of 4.35%, while the number of people with a 'matric and a Bachelor's' degree increased by an average annual rate of 6.18%. A total of 2.27 million individuals in the City of Tshwane were considered functionally literate in 2017, while 224 000 people were considered to be illiterate.

4.11.3 Free basic water

Access to safe water is a fundamental human need and plays an important role in socio-economic development. City of Tshwane had 694 453 (or 67.59%) households with piped water inside the dwelling; 231 258 (22.51%) households had piped water inside the yard; and 40 760 (3.97%) households had no formal piped water.

4.11.4 Sanitation

Sanitation is one of the basic necessities, which contributes to human dignity and quality of life and is an essential pre-requisite for success in the fight against poverty, hunger and child deaths among other pressing socio-economic challenges South Africa faces. The City of Tshwane had a total of 833 818 flush toilets (81.16% of total households), 25 894 VIP toilets (2.52% of total households) and 146 439 (14.25%) of total household pit toilets

4.11.5 Electricity

Electrification provides a solid basis for development of local communities. Once a community has access to electricity, it can also have access to safe potable water, food security, as well as lighting. In the City of Tshwane, looking at households categorised into three electricity usage categories: (1) households using electricity for cooking; (2) households using electricity for heating and; (3) households using electricity for lighting, in 2016, the City had 33 800 (3.29%) households with electricity for lighting only; 872 000 (84.92%) households had electricity for lighting and other purposes and 121 000 (11.79%) households did not use electricity

5 SUMMARY OF ENGINEERING REPORTS & SPECIALIST ASSESSMENTS

This Section provides a summary of the specialist assessments and engineering reports undertake in support of the project. It is important to note that the following specialist assessments were undertaken as part of the *Section 24G application*:

- Aquatic Biodiversity S24G Study and Impact Assessment
- Desktop Palaeontological Impact Assessment
- Engineering Designs
- Method Statement

As part of the *Change in Consent of Use application* the following engineering reports were undertaken

- Floodline Assessment
- Traffic Impact Assessment
- Road and Stormwater Assessment

It is important to note that at this stage the client does not intend to apply for any activities associated with the lodge (where applicable). The Traffic Impact Assessment and Stormwater Assessment do make reference to the Consent Use Application for lodge development however, the client intends to hold on with the establishment of the lodge. The client wishes to undertake the required Section 24 G application, once concluded the client will proceed with the required authorisations (if applicable) for the establishment of a lodge.

The specialist assessments have been included under **Appendix F**.

5.1 Aquatic Biodiversity S24G Study and Impact Assessment

An Aquatic Biodiversity S24 Study and Impact Assessment was undertaken by the Biodiversity Company. According to the Biodiversity Impact Assessment, as part of the scope of work, [Section 24(G)] for the culvert crossing that have been built as well as the other developments that have taken place on the project area, such as the road, infilling the attenuation dam, placing rocks south east of the site at the boundary wall, storage of building waste on site for levelling of the river banks. The potential state the area cleared as well as the areas where construction had occurred before these impacts had to be determined, historical Google Earth Images were compiled and can be seen in **Figure 5-1** in order to assist in the determination. It is evident that a large portion of the areas cleared, especially in relation to the road construction and bank alteration had occurred on areas that had been impacted historically by the attenuation pond and clearance of trees.

Figure 5-1: ***Comparison between the historic image before the majority of the impacts/changes occurred and most recent satellite image for the project area. The 2018 image: illustrate an instream dam; 2021 image: illustrate infilled of the instream dam (Google Earth, 2021) (TBC, 2022)***

The construction phase of the culvert crossing was poorly executed with many expected risks during construction having occurred on a large scale, with little to no rehabilitation having occurred. However, with

low water levels experienced on site, the water was still flowing past the newly constructed culvert crossing. Which then suggests that the newly constructed culvert does cater for low flow conditions of the tributary and the movement of aquatic biota such as *Enteromius paludinosus* and *Pseudocrenilabrus philander*. The second old culvert will then serve as an alternative flow path for high flow conditions **Figure 5-2** and **Figure** 5-3.

Figure 5-2: The newly constructed culvert crossing (TBC, 2022)

Figure 5-3: The position of the newly constructed culvert and the old culvert (TBC, 2022)

Impacts from the unauthorised instream culvert crossing were noted at the time of the survey. The identified current impacts were the increase in sediment inputs, siltation, erosion and the major impact being the alteration to flow volumes due to changes in drainage patterns by the constructed culvert crossing. These impacts including the operational impacts could be lowered with the application of mitigation and rehabilitation. The vegetation on site is tolerant and no protected trees or SCC flora are likely to have occurred recently within the site. The numerous category 1b invasives must be controlled according to an Invasive Alien Plant Management Plan, in line with NEM:BA legislation. There is evidence of large modification to the tributary and therefore the ascribed mitigation and rehabilitation must be enforced. The risks for decommissioning have been considered in the specialist report if the application is rejected. It should be noted that there are more risks posed by decommissioning phase when compared to the risks posed by the operation phase.

5.2 Palaeontological Impact Assessment

In line with Instruction 8.6.3.1.1 of the Directive issued, a Desktop Palaeontological Impact Assessment was undertaken. The assessment revealed that the study area is underlain by intrusive diabase rocks as well as the Silverton and Daspoort Formations of the Pretoria Group (Transvaal Supergroup). According to the PalaeoMap of the South African Heritage Resources Information System (SAHRIS) the Palaeontological Sensitivity of the intrusive metamorphic diabase rocks is Zero while that of the Silverton and Daspoort Formations is High. The Updated Geology compiled by the Council for Geosciences (Pretoria) indicates that the S24G application is entirely underlain by the Daspoort Formation of the Pretoria Group (Transvaal Supergroup).

The Pretoria Group sedimentary rocks in and near the study area are extensively intruded, and locally metamorphosed by the intrusion of diabase. These rocks would have had a thermal metamorphic effect on the nearby sediments of the Pretoria Group that would in turn decrease the chance of fossil preservation. **It is therefore considered that the development will not lead to damaging impacts on the palaeontological resources of the area and that the S24G Application be granted from a Palaeontological view.**

The Palaeontological Impact Assessment has been included under **Appendix F.**

5.3 Floodline Assessment

The delineated floodlines are provided in **Section 4.5**. The floodline Assessment revealed the following:

- The crossing of the internal road was insufficient for both the 50-year as well as the 100-year flood Events.
- The existing Graham Road crossing is sufficient to accommodate the 50-year event, but will overtop in the 100 year event.
- The upstream boundary to the site poses a safety risk for collapse (the boundary wall south west of the property owned by the adjacent landowner). The boundary wall should be suitable reinforced based on inputs from a structural engineer. It is proposed that dam-breach analysis be done to ensure that a resulting flood-wave can be safely managed.
- Access to the northern portion of The Site, which is currently gained across the embankment of the farm dam, is affected by both the 1:50 and 1:100-year flooding events. Suitable improvements should be made to ensure that access can be provide above the 1:50-year floodline, or alternative access arrangements should be made.

It is important to note that the access road within the 1:50 and 1:100-year flood line always existed. As provided in Section 2.1, comments received from the CoT: Transportation Planning Division indicated that the current access point to the facility shall be relocated as it is not in line with the CoT Roads Master Plan (RMP). The CoT also advised that they are not in agreement with the comments provided by GAUTRANS and the CoT requested that access to the property should be gained from the right of way servitude that intersects with Graham Road. Whereby the access route that forms part of this application shall be used.

The applicant appointed, Mr Pieter Wilken (PrTech (Eng) to undertake the design in line with the delineated floodlines. According to the Roads and Stormwater Assessment compiled by Mr Pieter Wilken, the access road is also located at a level lower than the 1:50-year floodline. The existing access road crossing the river, needs to be upgraded to a paved route to comply with the City of Tshwane's requirements. The current access at Graham Road will be kept as an emergency access.

A Water Use License Application for Section 21 c & I is underway with the Department of Water and Sanitation Reference WU21911.

The Floodline Assessment has been included under **Appendix G**.

5.4 Stormwater Management Plan

In line with instruction 8.6.3.4, the Stormwater Management Plan for the site has been compiled and included under **Appendix G**.

5.5 Traffic Impact Assessment

In line with Instruction 8.6.3.1.1 of the Directive issued, a Traffic Impact Assessment has been compiled and included under **Appendix G**. It is important to note that this application is applicable to activities undertaken unlawfully and the associated rehabilitation measures. This application does not include any activities associated with the establishment of the lodge. The Traffic Impact Assessment was undertaken in support of the Consent of Use Application. The Traffic Impact Assessment did however conclude that the establishment of the lodge (*when applicable*) would not result in any significant changes in the street peak hour traffic flow in the region.

6 ENVIRONMENTAL SENSITIVITIES

The following sensitive features were identified in the project area:

- A riparian area was delineated and the 15m buffer
- The project area falls within the 1:50 and 1:100 floodline
- The project area falls within an Ecological Support Area

The Environmental sensitivity map is provided in **Figure 6-1**.

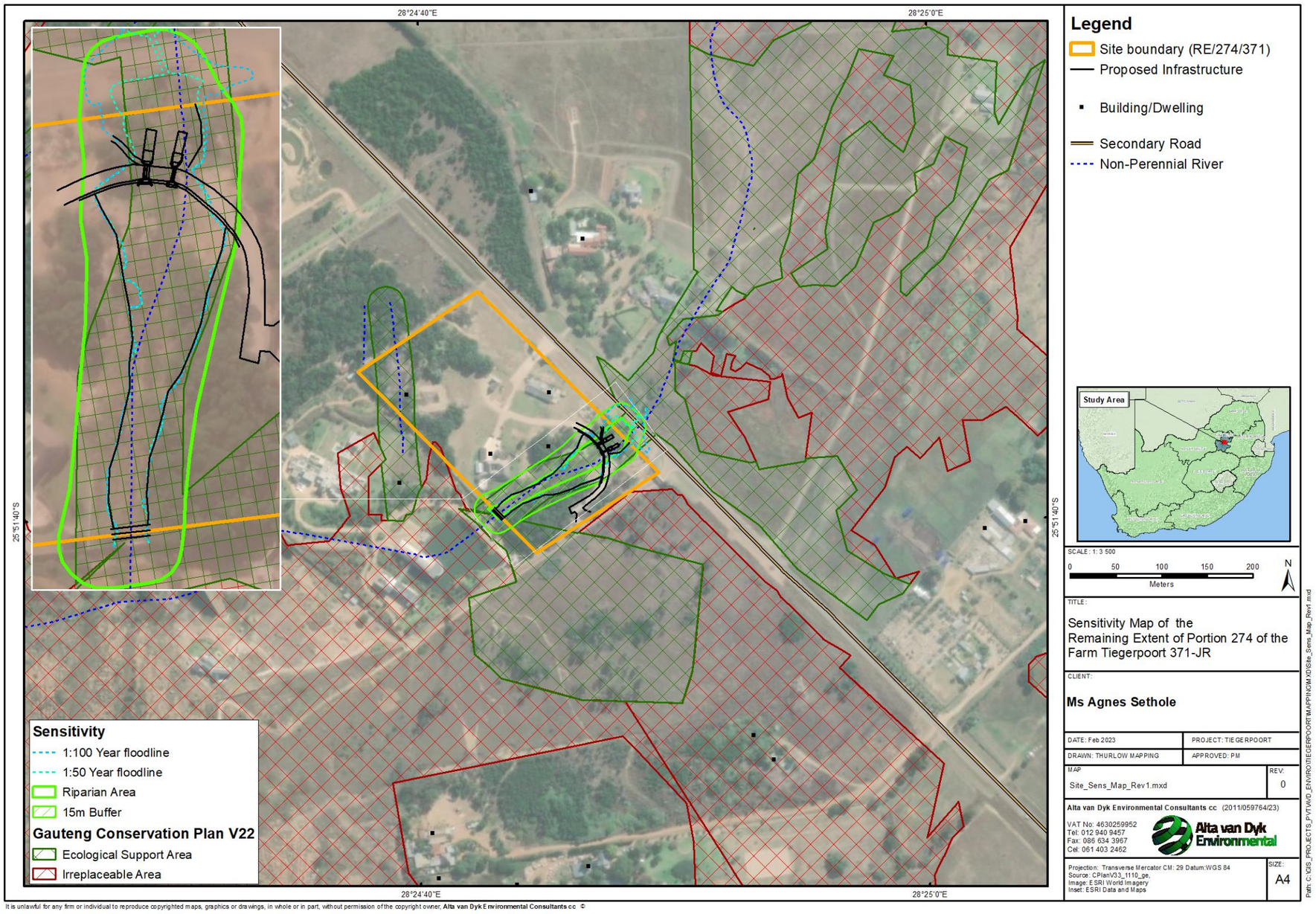


Figure 6-1: Environmental Sensitivity Map

7 MANAGEMENT PLANS

The directive issued to the applicant requires management plans to be compiled and submitted as part of the Section 24G application. **Table 7-1** provides details of the management plans submitted as part of the application.

Table 7-1: Management Plans

Management Plan	Directive Instruction	Document Reference
Wetland Rehabilitation Plan	8.6.3.9	Appendix H
Environmental Management Programme	8.6.3.12	Appendix I
Emergency Response Plan	8.6.3.13	Appendix J

8 ENVIRONMENTAL IMPACT ASSESSMENT

8.1 Methodology to be used

The significance of the identified impacts will be determined using an accepted methodology from the Department of Environmental Affairs and Tourism Guideline document on EIA Regulations, April 1998. As with all impact methodologies, the impact is defined in a semi-quantitative way and will be assessed according to methodology prescribed in the following section.

Table 8-1: Scale utilised for the evaluation of the Environmental Risk Ratings

Evaluation Component	Rating Scale and Description/criteria
MAGNITUDE of negative impact (at the indicated spatial scale)	**10 - Very high**: Bio-physical and/or social functions and/or processes might be *severely* altered. **8 - High**: Bio-physical and/or social functions and/or processes might be *considerably* altered. **6 - Medium**: Bio-physical and/or social functions and/or processes might be *notably* altered. **4 - Low** : Bio-physical and/or social functions and/or processes might be *slightly* altered. **2 - Very Low**: Bio-physical and/or social functions and/or processes might be *negligibly* altered. **0 - Zero**: Bio-physical and/or social functions and/or processes will remain *unaltered.*
MAGNITUDE of POSITIVE IMPACT (at the indicated spatial scale)	**10 - Very high (positive)**: Bio-physical and/or social functions and/or processes might be *substantially* enhanced. **8 - High (positive)**: Bio-physical and/or social functions and/or processes might be *considerably* enhanced. **6 - Medium (positive)**: Bio-physical and/or social functions and/or processes might be *notably* enhanced. **4 - Low (positive)**: Bio-physical and/or social functions and/or processes might be *slightly* enhanced. **2 - Very Low (positive)**: Bio-physical and/or social functions and/or processes might be *negligibly* enhanced. **0 - Zero (positive)**: Bio-physical and/or social functions and/or processes will remain *unaltered.*
DURATION	**5 - Permanent** **4 - Long term**: Impact ceases after operational phase/life of the activity > 60 years. **3 - Medium term**: Impact might occur during the operational phase/life of the activity – 60 years. **2 - Short term**: Impact might occur during the construction phase - < 3 years. **1 - Immediate**
EXTENT (or spatial scale/influence of impact)	**5 - International**: Beyond National boundaries. **4 - National**: Beyond Provincial boundaries and within National boundaries. **3 - Regional**: Beyond 5 km of the proposed development and within Provincial boundaries. **2 - Local**: Within 5 km of the proposed development. **1 - Site-specific**: On site or within 100 m of the site boundary. **0 -** None

Evaluation Component	Rating Scale and Description/criteria
IRREPLACEABLE loss of resources	**5 – Definite** loss of irreplaceable resources. **4 – High** potential for loss of irreplaceable resources. **3 – Moderate** potential for loss of irreplaceable resources. **2 – Low** potential for loss of irreplaceable resources. **1 – Very low** potential for loss of irreplaceable resources. **0 - None**
REVERSIBILITY of impact	**5 –** Impact **cannot** be reversed. **4 – Low** potential that impact might be reversed. **3 – Moderate** potential that impact might be reversed. **2 – High** potential that impact might be reversed. **1 –** Impact **will be** reversible. **0 –** No impact.
PROBABILITY (of occurrence)	**5 - Definite:** >95% chance of the potential impact occurring. **4 - High probability:** 75% - 95% chance of the potential impact occurring. **3 - Medium probability:** 25% - 75% chance of the potential impact occurring **2 - Low probability:** 5% - 25% chance of the potential impact occurring. **1 - Improbable:** <5% chance of the potential impact occurring.
Evaluation Component	**Rating Scale and Description/criteria**
CUMULATIVE impacts	**High**: The activity is one of several similar past, present or future activities in the same geographical area, and might contribute to a very significant combined impact on the natural, cultural, and/or socio-economic resources of local, regional or national concern. ***Medium****:* The activity is one of a few similar past, present or future activities in the same geographical area, and might have a combined impact of moderate significance on the natural, cultural, and/or socio-economic resources of local, regional or national concern. ***Low****:* The activity is localised and might have a negligible cumulative impact. ***None****:* No cumulative impact on the environment.

Once the Environmental Risk Ratings have been evaluated for each potential environmental impact, the Significance Score of each potential environmental impact is calculated by using the following formula:

- **SS (Significance Score) = (magnitude + duration + extent + irreplaceable + reversibility) x probability.**

The maximum Significance Score value is 150.

The Significance Score is then used to rate the Environmental Significance of each potential environmental impact as per **Table 8-2** below. The Environmental Significance rating process is completed for all identified potential environmental impacts both before and after implementation of the recommended mitigation measures.

Table 8-2 Scale used for the evaluation of the Environmental Significance Ratings

Significance Score	Environmental Significance	Description/criteria
125 – 150	**Very high (VH)**	An impact of very high significance will mean that the project cannot proceed, and that impacts are irreversible, regardless of available mitigation options.
100 – 124	**High (H)**	An impact of high significance which could influence a decision about whether or not to proceed with the proposed project, regardless of available mitigation options.

Significance Score	Environmental Significance	Description/criteria
75 – 99	**Medium-high (MH)**	If left unmanaged, an impact of medium-high significance could influence a decision about whether or not to proceed with a proposed project. Mitigation options should be relooked
40 – 74	**Medium (M)**	If left unmanaged, an impact of moderate significance could influence a decision about whether or not to proceed with a proposed project.
<40	**Low (L)**	An impact of low is likely to contribute to positive decisions about whether or not to proceed with the project. It will have little real effect and is unlikely to have an influence on project design or alternative motivation.
+	**Positive impact (+)**	A positive impact is likely to result in a positive consequence/effect, and is likely to contribute to positive decisions about whether or not to proceed with the project

8.2 Identified impacts

Activities already undertaken on site and included in the impact assessment include the following:

- The culvert crossing that have been built as well as the other developments that have taken place on the project area, such as the road, infilling the attenuation dam, placing rocks south east of the site at the boundary wall, storage of building waste on site for levelling of the river banks

It is evident that a large portion of the areas cleared, especially in relation to the road construction and bank alteration had occurred on areas that had been impacted historically. Most of the identified impacts resulted in alternation to flow volumes followed by the increase in sediment inputs and turbidity and siltation of the watercourse.

As the applicant intents to undertake rehabilitation of the project area which forms part of the activities applied for, this includes the re-shaping of river embankments to prevent erosion as well as the construction of flow dissipating structures. During the construction phase potential impacts include siltation of the watercourse, loss of embankment, and alteration of flow volumes.

In terms of the operational phase, potential impacts identified are associated with maintenance activities, and impacts are generally low even before the implementation of mitigation measures. However, the designs of the Reno mattress and rip rap require limited maintenance, which includes regular inspections to detect any signs of erosion and dislodged stones and broken baskets.

The impacts associated with the project for the construction phase is provided in **Table 8-3** and for the operational phase is **Table 8-4**.

Table 8-3 Identified impacts during the construction phase

POTENTIAL ENVIRONMENTAL IMPACT	ACTIVITY	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								CUMULATIVE	STATUS	RECOMMENDED MITIGATION MEASURES / REMARKS	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
		M	D	S	I	R	P	TOTAL	SS				M	D	S	I	R	P	TOTAL	SS
Soils																				
Loss of soils due to erosion from cleared surfaces and compaction	Clearance of vegetation for construction of the of the reno mattresses	6	2	1	3	3	3	45		Low	Negative	• Vegetation clearing must be limited to as small an area as possible. • Topsoil should be stripped and stockpiled for use during rehabilitation of the site after construction is completed. • Erosion and sedimentation in channels must be minimized through the effective stabilisation if required (gabions and Reno mattresses) and the re-vegetation of any disturbed banks • Any exposed earth should be rehabilitated promptly by planting suitable vegetation (vigorous indigenous grasses) to protect the exposed soil.	2	2	1	1	1	2	14	
Contamination of soils resources due to construction activities	Construction machinery and vehicles on site during the construction phase.	4	2	1	3	3	4	52		Low	Negative	• The construction vehicles and machinery must make use of existing access routes as much as possible, before adjacent areas are considered for access. • The contractors used for the project should have spill kits available to ensure that any fuel or oil spills are cleaned-up and discarded correctly • All machinery and equipment should be inspected regularly for faults and possible leaks, these should be serviced off-site;	2	2	1	2	2	2	18	
Terrestrial Biodiversity																				
Loss of natural vegetation and Flora	Vegetation clearance for access road, reshaping of the embankments.	4	2	1	2	2	4	44		Low	Negative	• Clearing of vegetation should be limited to the project footprint area. No additional areas are allowed to be cleared beyond this footprint • Any exposed earth should be rehabilitated promptly by planting suitable vegetation (vigorous indigenous grasses) to protect the exposed soil • Relandscape to gentler gradients and re-vegetate all cleared areas as soon as possible to limit erosion potential. Sandbags and geotextiles should be used to assist until vegetation has established in these reworked areas • All areas that have been significantly denuded of vegetation due to the construction of the culvert crossing, which includes the incised and excavated banks and adjacent eroded areas must be landscaped to gentle gradients and revegetated • Re-vegetation should follow landscaping activities with follow- up seeding taking place in bare/ exposed areas taking place over consecutive growing seasons for the life of the project • No existing or emerging vegetation should be destroyed or damaged during this process and where plants are emerging sloping should be done in a controlled manner such as using a shovel	2	2	1	2	2	2	18	
Spread and/or establishment of alien and/or invasive species	Vegetation clearance for access road, reshaping of the embankments.	6	2	1	2	2	4	52		Low	Negative	• All alien invasive vegetation must be cleared and controlled on site. • All vegetation cleared on site must be removed from site. Alien trees that are felled must have their stumps removed or treated with a suitable herbicide • Cleared areas must be rehabilitated with indigenous vegetation. • Alien vegetation management must take place in the established 15 m buffer zone and thereby allow for the natural succession of native riparian species. All identified alien invasive species are to be removed	4	2	1	2	1	3	30	
Loss of faunal habitat due to the disturbance within the riparian habitat	Vegetation clearance for access road, reshaping of the embankments.	4	3	1	3	4	3	45		Low	Negative	• Construction impacts associated with the proposed project must be contained within the footprint of the demarcated areas as indicated on the final approved project layout plan • Construction impacts associated with the proposed project must be contained within the footprint of the demarcated areas as indicated on the final approved project layout plan. • Education of the construction staff about the value of wildlife and environmental sensitivity • Intentional killing of any faunal species (in particular invertebrates and snakes) should be avoided by means of awareness programmes presented to the contractor. • Any person found deliberately harassing any animal in any way should face disciplinary measures, following the possible dismissal from the site	4	3	1	2	2	2	24	
Surface Water (Riparian Area)																				
Impeding the flow of water	Temporary Channel Diversion	4	3	1	1	2	5	55		Low	Negative	• Alteration of the culverts must be undertaken during the low flow period to avoid the need for river diversions and associated impacts. • A qualified Environmental Control Officer (ECO) be appointed to oversee the project activities and ensure strict environmental practices and compliance is carried out to minimise environmental degradation	4	2	1	1	1	4	36	
Increase in sediment inputs & turbidity	Vegetation removal	8	3	1	2	4	5	90		Low	Negative	• Revegetating eroded areas with indigenous vegetation such as *Cynodon dactylon* (Kweek/ couch grass) and/or *Melinis repens* (Natal redtop) for bare areas and steep road margins; • Adherence to the storm water management plan compiled for the site	0	2	1	1	2	3	18	
Siltation of watercourse	Excavated streambed for culvert construction	8	3	1	2	4	5	90		Low	Negative	• Silt traps and fences must be placed in the preferential flow paths to prevent sedimentation of the watercourse, these should be monitored and serviced regularly	2	2	1	1	2	3	24	
Erosion of watercourse		4	2	1	1	2	4	40		Low	Negative	• Revegetating eroded areas with indigenous vegetation such as *Cynodon dactylon* (Kweek/ couch grass) and/or *Melinis repens* (Natal redtop) for bare areas and steep road margins	2	2	1	0	1	2	12	

POTENTIAL ENVIRONMENTAL IMPACT	ACTIVITY	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								CUMULATIVE	STATUS	RECOMMENDED MITIGATION MEASURES / REMARKS	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
		M	D	S	I	R	P	TOTAL	SS				M	D	S	I	R	P	TOTAL	SS
Loss of embankments	Removal of embankment vegetation areas Cutting/reshaping of embankments	4	2	1	1	2	3	30		Low	Negative	• Flow dissipaters will need to be in place to prevent further erosion and damming below the culvert. Rip rap structure or large rocks from the dump upstream can also be placed here for dissipation	2	2	1	0	1	2	12	
Inundation of aquatic habitat	Potential temporary damming (inundation) of upstream of the culvert	6	1	1	0	1	3	27		Low	Negative	• Inlets and outlets of the culvert must be positioned below the stream bed for the continuation of the streambed and natural movement of riverine substrates	2	1	1	0	0	1	4	
Alteration to flow volumes	Drainage patterns change due to crossing	8	5	1	2	4	5	100		Medium	Negative	• It is recommended that the material surrounding and holding the culverts in place should include a coarse rock layer that has been specifically incorporated to increase the porosity and permeability to accommodate flooding and high flows (to be confirmed with the design engineer, based on the flow and velocity calculations of the tributary)	2	2	1	1	2	2	16	
Water quality impairment	Storage/leakage of chemicals, mixes and fuel	6	2	1	1	1	5	55		Low	Negative	• All equipment, materials, waste material and litter should be removed from the site following construction. • All chemicals stored outside the defined watercourse • Carefully control all on-site operations that involve the use of cement and concrete. • Limit cement and concrete mixing to single sites where possible. • Use plastic trays or liners when mixing cement and concrete: Do not mix cement and concrete directly on the ground. • No mixing or storage of cement or concrete within the buffer of the watercourse • In the case of accidental spills or leaks from vehicles or machinery within the construction footprint absorbent materials used, and contaminated soil should be disposed of at a registered hazardous waste site. • All hydrocarbons, such as diesel and oil, should be stored in a way that will allow any spillages to be easily and quickly isolated (e.g., stored on plastic sheeting or on impermeable bunded areas), and spills should be cleaned-up with approved absorbent materials • All dangerous goods must be stored in containers or buildings appropriate for the nature of the goods being stored and with the aim of preventing leakages or spillages to the environment. • If spills or leaks are possible during storage or transport to and from the storage areas, appropriate secondary containment measures must be put in place to prevent any spills or leaks of hazardous materials from reaching the wetlands/watercourses	2	2	1	0	1	2	12	
Heritage /Palaeontological Resources																				
Loss of fossil heritage	Excavated streambed for culvert construction	1	2	5	2	2	2	24		Low	Negative	• If fossil remains are discovered during any phase of construction, either on the surface or exposed by excavations the Chance Find Protocol must be implemented by the ECO/site manager in charge of these developments • Should fossils be unearthed the Contractor shall notify SAHRA	1	2	5	2	2	1	12	
Expose or damage features of heritage and cultural value beneath the surface	Clearance of vegetation for construction of the of the Reno mattresses	4	2	1	1	1	4	36		Low	Negative	• Chance-find procedures must be implemented should any heritage resources be discovered. • Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered, shall cease immediately and the Environmental Control Officer shall be notified as soon as possible	2	5	1	1	2	2	22	
Noise																				
General rise in ambient noice levels	Noise generated from the construction vehicles and the construction activities	4	2	1	1	1	2	18		Low	Negative	• Construction may only occur during the day. • All machinery and equipment must be maintained in good working order. • The Contractor shall take preventative measures where practical to minimize complaints regarding noise and vibration nuisance from sources. • All equipment shall be turned off when not in use. • Assess and manage all noise complaints.	2	2	1	1	1	2	14	
Air Quality																				
Change in ambient air quality	Vehicular movement and disturbance associated with construction activities may lead to generation of duct and exhaust gases from construction vehicles working on site will compromise the ambient air quality.	4	2	2	1	1	4	40		Low	Negative	• The construction site must be watered during the dry and windy conditions to control dust fallout • Dust production must be controlled by regular watering of access roads and working areas, should the need arise • Construction vehicles must adhere to low speeds to avoid the generation of dust on the construction site. • All construction vehicles must be maintained to avoid adverse impacts on air quality as a result of a lack of maintenance.	2	2	1	1	1	2	14	
Waste Management																				
Increase waste generation due to construction activities	The clearing of site will result in waste generation (vegetation). Building and domestic waste will be generated during the construction activities. Littering and improper waste management may attract vagrants	4	2	2	2	1	3	33		Low	Negative	• Remove all waste, including cleared vegetation from site as soon as possible unless the material will be reused on site. • A dedicated area for the placement of waste must be identified and demarcated. • Waste skips must be covered and emptied regularly. No overflowing to be allowed.	2	2	1	1	1	2	14	
Visual and Aesthetic impacts																				

POTENTIAL ENVIRONMENTAL IMPACT	ACTIVITY	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								CUMULATIVE	STATUS	RECOMMENDED MITIGATION MEASURES / REMARKS	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
		M	D	S	I	R	P	TOTAL	SS				M	D	S	I	R	P	TOTAL	SS
Change in visual character of the site	Visual intrusion due to the stockpiling of building rubble on site	4	2	2	2	1	3	33		Low	Negative	• Remove all waste, including cleared vegetation from site as soon as possible unless the material will be reused on site • A dedicated area for the placement of waste must be identified and demarcated. • Waste skips must be covered and emptied regularly. No overflowing to be allowed.	2	2	1	1	1	2	14	
Traffic																				
Increase in Traffic	Movement of construction and haulage vehicles	4	2	2	2	1	3	33		Low	Negative	• Construction vehicles are not to be parked on the roads thereby blocking the way to the neighbouring properties. • Ensure an appropriate access procedure to avoid backlog of traffic at the entry point to the site	2	2	1	1	1	2	14	
Social																				
Benefits resulting from employment and income opportunities created by the project.	Construction activities	4	2	2	2	1	3	33		Low	Positive	• Employ local works if qualified applicants with the appropriate skills are available. • Purchase goods and services at a local level if available.	4	2	2	2	1	3	33	

Table 8-4 Identified impacts during the operational phase

POTENTIAL ENVIRONMENTAL IMPACT	ACTIVITY	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION								CUMULATIVE	STATUS	RECOMMENDED MITIGATION MEASURES / REMARKS	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION							
		M	D	S	I	R	P	TOTAL	SS				M	D	S	I	R	P	TOTAL	SS
Soils																				
Failure of intervention leading to increased erosion	Large-scale failure of intervention, repair/rebuilding	4	2	1	2	2	2	22		Low	Negative	• Ensure that reno mattress is properly maintained in order to minimize soil erosion. • Any damage must be repaired within 1 month of being noted.	2	2	1	2	2	2	18	
Terrestrial Biodiversity																				
Disturbance and loss of biodiversity and habitat	Inspections, repair and maintenance of reno mattress and culverts	4	2	1	2	2	2	22		Low	Negative	• Vegetation should be allowed to establish within reno mattress and should not be removed.	2	2	1	2	2	2	18	
Establishment of alien and/or invasive species	Inspections, repair and maintenance of reno mattress and culverts	4	2	1	2	2	2	22		Low	Negative	• Alien/invasive vegetation must be cleared and destroyed immediately • Ensure that re-vegetation of cleared areas is established and free of alien/invasive species.	2	2	1	2	2	2	18	
Surface Water (Riparian Area)																				
Alteration to flow volumes (impediment)	Alteration of surface drainage and runoff	4	5	1	1	4	5	75		Medium	Negative	• Inspections, repair and maintenance of reno mattress and culverts	4	3	1	2	3	3	39	
Alteration of patterns of flows (increased flood peaks and altered hydraulic processes)		6	5	1	2	5	5	95		Medium	Negative		2	3	1	3	2	3	33	
Solid waste	Foot traffic on bridge	6	1	1	0	1	2	18		Low	Negative	• Place a sign stating "No littering of any kind" on both end of the crossing and regularly monitor and remove all solid waste in the watercourse. • Placement of waste bins at the watercourse area	0	1	1	0	1	1	3	
Impairment to water quality		6	2	1	1	1	5	55		Low	Negative		0	1	1	0	1	1	3	
Heritage /Paleontological Resources																				
No additional impacts on heritage & Paleontological resources are expected during the operational phase																				
Noise																				
No additional impacts are expected during the operational phase.																				
Air Quality																				
No additional impacts are expected during the operational phase.																				
Visual and Aesthetic impacts																				
Positive visual impact	Improvement of erosion on site by shaping of the embankments & removal of building rubble	2	2	1	2	1	2	16		Low	Positive	• Ensure that the infrastructure is well-maintained in working order.	2	2	1	2	1	1	8	
Traffic																				
No additional impacts are expected during the operational phase.																				
Social																				
Protection of infrastructure	Maintenance of reno mattress	2	2	1	2	1	2	16		High	Positive	• Ensure that the infrastructure is well-maintained in working order.	2	2	1	2	1	1	8	

8.3 Cumulative impacts

Construction and operational activities from the proposed project can result in several effects on the natural and social environment. Although many of these are direct, the environmental effects of individual activities can combine and interact with other activities in time and space which results in cumulative impacts. Effects from different activities could potentially accumulate to cause additional effects that may not be apparent when assessing the individual activities.

Table 8-5 provides a summary of the potential cumulative impacts of the proposed project.

Table 8-5 Cumulative impacts

Aspect	Cumulative impact	Significance
Soil erosion	The construction of the reno mattress for bank stabilisation will prevent further erosion of the riverbank, as the culvert infrastructure will improve the channels capacity to effectively manage stormwater	Low (-)
Biodiversity (Fauna & Flora)	Construction of the development will temporarily disturb vegetation and faunal habitat in the development footprint areas however this will be addressed following rehabilitation.	Low (-)
Surface water	Construction activities may result in cumulative impact to the watercourses within the local catchments and beyond. Should mitigation measure not be implemented unstable channel conditions may result in unintended changes to downstream hydrology.	Low (-)
Air quality	Cumulative dust generation in the area will increase due to construction activities but will be limited to the construction phase only and is therefore considered a temporary impact. By implementing the proposed management measures, this impact will be well managed and will not have a lasting impact on the surrounding community.	Low (-)
Noise	Noise generated by the construction activities will add to the cumulative noise level. Construction activities, mainly earthmoving activities and movement of construction vehicles will add to the cumulative noise levels in the area. Noise pollution is evident in the project area through road traffic noise.	Low (-)
Heritage & Paleontological	The potential for cumulative impacts is low as construction is undertaken within privately owned land and within the watercourse or immediately adjacent for bank stabilisation.	Low (-)
Visual and Aesthetic impacts	The potential for cumulative impacts is low as construction will be temporary and there will be no negative legacies of the development left behind.	Low (-)
Traffic	The potential for cumulative impacts is low as construction will be temporary.	Low (-)

9 PUBLIC PARTICIPATION PROCESS

The purpose of the Public Participation Process is to provide all potential and / or registered Interested and Affected Parties (I&APs hereafter), including the competent authority and any other stakeholder or organ of state, an opportunity to become involved in the Section 24G process and provide comments during the various phases of the project. Involvement by I&APs is critical, as it contributes to a better understanding of the project among I&APs, raises important issues that need to be assessed and provides local insight that will enhance the Section 24G process. This Section of the report provides details on the Public Participation Process followed for the Section 24G process.

9.1 Pre-Liminary Notification

Pre-liminary notification was undertaken prior to the submission of the Section 24G Application Form. The 20-day comment period was from the 13th of April until the 10th of May 2022.

The Section 24G Application form was submitted to GDARD on the 13th of May 2022. Details of the pre-liminary notification is provided in the sections below.

9.1.1 Background Information Document

Commenting Authorities, identified I&Aps including adjacent landowners were identified and provided with a Background Information Document which included the following:

- The applicant's intention to undertaken a Section 24G application
- Details of the unlawful activities undertaken
- Project Locality
- Applicable Environmental legislation
- Details of the 20 day review period and how to provide comments.

A Background Information Document is provided in **Appendix K1**. Proof of Notification has been provided in **Appendix K2**.

9.1.2 Newspaper Advertisements

Newspaper advertisements, in compliance with the requirements outlined in Annexure A, Section D of the Section 24G Fine Regulations, 2017 was placed in the Pretoria News on the 13th of April 2022. A second advertisement was placed in the Bronnie the Bronberger local magazine in the April 2022 edition which was distributed on the 13th of April 2022. The proof of the advertisement is provided in **Appendix K3**.

9.1.3 Interested and Affected Party Database

An Interested and Affected Party (I&AP) database was compiled and includes the following stakeholders:

- Adjacent landowners
- Key regulatory authorities
- Organs of state that may have an interest in the project
- The local Ward councillor
- All registered I&APs.

The I&AP database is provided under **Appendix K4.**

9.2 Draft EIR & Notification of the Directive

GDARD confirmed that a newspaper advert would not be required when advertising the Draft EIR, and that the site notice and email notifications will suffice. GDARD also confirmed that the notification of the Directive and the 30-day review period of the Draft EIR can be undertaken at the same time.

The Draft EIR which includes details of the Directive will be made available for review from the 3rd of March until the 20th of April 2023. The report will be available through the following means:

- On Site, Portion 274 of the Farm Tiegerpoort 371-JR
- Alta van Dyk Environmental Consultants Office.
    - 9 Mountain Sherman Crescent, Midlands Estate
- Electronically on the AvDE website : https://www.altavandykenvironmental.co.za/public-documents/

Comments received during the comment period of the Draft EIR will be included in the Comment and Response Report (CRR) and will be submitted with the Final EIR to the GDARD. for decision making.

9.3 Final EIR

All comments obtained from stakeholders during the pre-liminary notification, Draft EIR comment periods, will be captured and addressed in the CRR. The CRR will be submitted as an Appendix to the Final EIR, to be submitted to GDARD for review.

10 FINANCIAL CONSIDERATION

In line with instruction 8.6.4, this application is subjected to a fine not exceeding R5 000 000.00 to be determined by the Competent Authority. In order to provide the competent Authority with a description for the financial profile of the applicant to assist in this determination the following is required:

8.6.4.3 Where the person is an individual, bank statements of that person for the preceding three-year period or for the period from the date of commencement until the submission of this application, whichever is the longest.

The above-mentioned will be submitted with the Final EIR to GDARD.

11 CONCLUSION AND RECOMMENDATIONS

This Environmental Impact Report has identified and assessed the impacts that have emanated and will emanate from the development. The identified current impacts were the increase in sediment inputs, siltation, erosion and the major impact being the alteration to flow volumes due to changes in drainage patterns by the constructed culvert crossing. These impacts including the operational impacts could be lowered with the application of mitigation and rehabilitation as proposed by the Applicant for the benefit of the riparian area. With the aforementioned in mind, it can be concluded that authorisation can be issued subject that all Mitigation Measures provided in this report be strictly adhered to and closely monitored to avoid adverse environmental Impacts.

12 UNDERTAKING BY THE EAP

In accordance with Appendix 1 of the NEMA EIA Regulations, 2014, as amended, this serves as an affirmation by the Environmental Assessment Practitioner (EAP) in relation to:

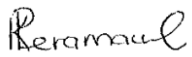
Section 3(1)(r)

An undertaking under oath or affirmation by the EAP in relation to-

(i) The correctness of the information provided in the reports;
(ii) The inclusion of comments and inputs from stakeholders and I&APs:
(iii) The inclusion of inputs and recommendations from the specialist reports where relevant; and
(iv) Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties.

AVDE and the EAP managing this project hereby affirm that:

- To the best of our knowledge the information provided in the report is correct, and no attempt has been made to manipulate information to achieve a particular outcome. Some information, especially pertaining to the project description, was provided by the applicant and/or their sub-contractors.
- To the best of our knowledge, all comments and inputs from stakeholders and interested and affected parties have been captured in the report and no attempt has been made to manipulate such comment or input to achieve a particular outcome. Written submissions are appended to the report while other comments are recorded within the report. For the sake of brevity, not all comments are recorded verbatim and are mostly captured as issues, and in instances where many stakeholders have similar issues, they are grouped together, with a clear listing of who raised which issue(s).
- Information and responses provided by the EAP to interested and affected parties are clearly presented in the report. Where responses are provided by the applicant (not the EAP), these are clearly indicated.



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Signature of Environmental Assessment Practitioner

Alta van Dyk Environmental Consultants cc

Name of Company

Date: 01 March 2023

13 REFERENCES

Banzai Environmental (2022) Palaeontological Desktop Assessment.

Chris Etsebeth Engineers (2022) Floodline Report. Pretoria

City of Tshwane Metropolitan Municipality Integrated Development Plan (2021). Pretoria

City of Tshwane Metropolitan Municipality Regional Spatial Development Framework (2018)

The Biodiversity Company (2022) The Aquatic Biodiversity S24G Study and Impact Assessment For the Tiegerpoort Project. Pretoria

Pieter Wilken (2022) Consent Use Application for Lodge Development: Roads and Storm Water Assessment. Pretoria

Pieter Wilken (2022) Consent Use Application for Lodge Development: Traffic Impact Assessment. Pretoria

Pieter Wilken (2022) Consent Use Application for Lodge Development: Method Statement Improvement of River Crossing and Erosion Protection

14 APPENDICES

APPENDIX A: DIRECTIVE

APPENDIX B: CURRICULUM VITAE OF THE EAP

APPENDIX C: MAPS

APPENDIX D: SITE LAYOUT

APPENDIX E: SITE PHOTO

APPENDIX F: SPECIALIST REPORTS

APPENDIX F1: PALAEONTOLOGICAL IMPACT ASSESSMENT

APPENDIX F2: AQUATIC ASSESSMENT

APPENDIX G: ENGINEERING REPORTS

APPENDIX GI: TRAFFIC IMPACT ASSESSMENT

APPENDIX G2: FLOODLINE ASSESSMENT

APPENDIX G3: ROADS & STORMWATER ASSESSMENT

APPENDIX G4: METHOD STATEMENT

APPENDIX H: REHABILITATION PLAN

APPENDIX I: EMPR

APPENDIX J: EMERGENCY RESPONSE PLAN

APPENDIX K: PUBLIC PARTICIPATION

APPENDIX K1: BACKGROUND INFORMATION DOCUMENT

APPENDIX K2: PRE-NOTIFICATION

APPENDIX K3: ADVERT

APPENDIX K4: STAKEHOLDER DATABASE

APPENDIX L: APPLICANT AFFIDAVIT

To be submitted with the Final EIR

APPENDIX M: FINANCIAL CONSIDERATION

To be submitted with the Final EIR