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DRAFT BASIC ASSESSMENT REPORT

for

PROPOSED SPORTS FACILITY AND ASSOCIATED INFRASTRUCTURE AT THE NORTH-WEST UNIVERSITY: MAHIKENG CAMPUS, ON THE REMAINDER OF ERF 1090 MMABATHO UNIT 5, NORTH WEST PROVINCE

Report No : 25044-46-Rep-001-NWU Sports Facility-Rev0

Submitted to :

North West Department: Economic Development, Environment, Conservation and Tourism
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Submitted on behalf of :

North-West University
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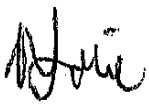
DOCUMENT APPROVAL

ACTION	DESIGNATION	NAME	DATE	SIGNATURE
Prepared	Environmental Assessment Practitioner	Ms. N. Lalie	6 August 2025	
Reviewed	Environmental Lead	Dr. Mathys Vosloo	6 August 2025	
Approved	Environmental Lead	Dr. Mathys Vosloo	6 August 2025	

RECORD OF REVISIONS

Date	Revision	Author	Comments

EXECUTIVE SUMMARY

A INTRODUCTION

Zitholele Consulting (Pty) Ltd (ZC) has been appointed by the Applicant, North-West University (NWU), to undertake the Application for Environmental Authorisation by way of a Basic Assessment (BA) and General Authorisation (GA) for the Sports Facility at the North-West University: Mahikeng Campus in North West Province.

The North West Department of Economic Development, Environment, Conservation and Tourism (NW DEDEC&T) is the Competent Authority for the BA process. The Department of Water and Sanitation (DWS) is the decision-making authority for the GA process.

This Basic Assessment Report (BAR) deals with the EA process for consideration by the NW DEDEC&T.

An Application for Environmental Authorisation form by way of a BA Process in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) as per the EIA Regulations of 2014 was submitted to the North West Department of Economic Development Environment, Conservation and Tourism (NW DEDEC&T) on 20 August 2025.

This BAR includes the following details:

- A description of the project, including project motivation;
- A description of the environment affected by the project, including Specialist Study findings;
- The Public Participation Process;
- Discussion of applicable alternatives;
- Assessment of impacts for the pre-construction, construction, operational and decommissioning phases; and
- The EAP's recommendations.

The purpose of this BAR is to provide the Interested and Affected Parties (I&APs), the approving authority, the NW DEDEC&T, and the Commenting authorities with all the required and relevant information regarding the proposed project during the public review of the Draft BAR i.e. from 20 August 2025 to 22 September 2025.

Subsequent to the public review period, the comments received during the public review period will be responded to by the Environmental Assessment Practitioner (EAP). The Comments and Responses Report (CRR) which will include all comments received and responses thereto, will be included in the Final BAR that will be submitted to the NW DEDEC&T for review and decision-making.

B LOCATION

The site earmarked for the proposed sports facility is located at the Mahikeng Campus of the North-West University in the North-West Province. Access to the site is gained from Dr. Albert Luthuli Road/Setlogelo Drive in Mahikeng in the North West Province.

C PROJECT DESCRIPTION

The North-West University (NWU) Mahikeng Campus plans to establish hockey and cricket sports facilities adjacent to the existing soccer and rugby sports fields at the Mahikeng Campus. Pavilions, change-rooms, club houses, parking areas, access roads on site and future sports fields are also planned. The site has a number of camel thorn trees and aloe sp. That will be removed to make way for the proposed development. A permit application is underway to remove these plants. These sports facilities/fields will have grass fields with adequate irrigation and lighting.

D KEY IMPACTS

The following key impacts were identified and assessed within this BAR.

Pre-construction Phase

- Disturbance to vegetation and habitats;
- Impact on disturbance of downstream wetland disturbance / degradation / to wetland soils or vegetation, and
- Increased erosion and sedimentation, potential contamination of downstream / downslope wetlands with machine oils and construction materials.

Construction Phase

- Impact on destruction, further loss and fragmentation of the habitats, ecosystems and vegetation community, including Species of Conservation Concern (SCCs) and protected species
- Increased spread of alien invasive plant species
- Displacement of faunal community
- Destruction of heritage and archaeological resources
- Destruction of palaeontological resources
- Altered hydrology of surface water resources
- Increased pollution of surface water resources
- Loss of land capability
- Erosion and sedimentation
- Decrease in subsurface lateral flow and return flow in the environment
- Alteration of visual character of the site

- Temporary job creation

Operational Phase

- Impact of fragmentation and degradation of ecosystems
- Increased spread of alien invasive plant species
- Loss of natural hydrological patterns
- Increased pollution of surface water resources
- Loss of land capability
- Alteration of aesthetic value of the site

Decommissioning Phase

- Potential loss or degradation of soil resources

E PROJECT ALTERNATIVES

To give effect to the principles of NEMA and Integrated Environmental Management (IEM), an Environmental Impact Assessment (EIA) should assess a number of reasonable and feasible alternatives that may achieve the same end result as that of the preferred project alternative.

E-1 Location / Site Alternatives

There are no location alternatives, as the site earmarked for the proposed sports facility and associated infrastructure is strategically located adjacent to the existing soccer and rugby fields within the NWU, Mahikeng Campus. Vacant land with sufficient space is available for the proposed development. This is an initiative by the NWU for student growth and development of sporting codes. There are irrigation dams that are located near the site, that are filled via an existing registered borehole, which also serves the campus as backup water supply. Site access via an internal road through the university is also available to gain entry onto site.

The current and proposed sports facility at the NWU site, will be a compatible land use activity within the surrounding area. The proposed sport facility will be compatible with the aesthetic value, character, and sense of the place of the site.

There will be no heritage or palaeontological resources that will be affected by the proposed construction activities. The site occurs on Klerksdorp Thornveld which has high ecological importance, as there are a number of protected plants such as camel thorn and aloe plants species that occurs on the site earmarked for the proposed sports facility and associated infrastructure. A permit application is underway to remove the protected plants to make way for the proposed development.

Given the reasons outlined above, there are no other site alternatives for the proposed sports facility. The preferred location/site alternative of the proposed sports facility is illustrated on the Site Layout Plan superimposed on the composite sensitivity map i.e. Figure 3-1.

E-2 Land Use Alternatives

There are no other land use alternatives for the site, since the site occurs on vacant land within the North-West University: Mahikeng Campus, and adjacent to the existing rugby and soccer fields.

Other land uses such as industrial, commercial, retail and office park development are therefore not compatible land uses within the university campus.

E-3 Design / Layout Alternatives

There are no design/layout alternatives for the proposed sports facility and associated infrastructure. Refer to the Site Layout Plan in Figure 2-1.

The Specialists have indicated that there are no fatal flaws that indicate that the proposed development layout should not proceed.

E-4 Technology Alternatives

As an alternative solution to cater for electricity requirements, NWU has allocated approximately three million Rands to renewable energy, such as solar energy that will be investigated in more detail. In addition, the proposed sports facility and associated infrastructure will be 10% “Green Building” which includes responsible efficient energy and water usage, use of sustainable materials, and the creation of a healthy environment.

E-5 No-go Alternatives

This alternative considers the option of ‘do nothing’ and maintaining the status quo.

This option assumes that a conservative approach would ensure that the environment is not impacted upon any more than is currently the case. It is important to state that this assessment is informed by the current condition of the area. Should the proposed development not be implemented, the study area will not be affected by any construction-related or operational phase impacts. Therefore, the present state of the biophysical, social and economic environment will remain, unaffected.

Should the North West Department: Economic Development, Environment, Conservation and Tourism (NW EDEC&T) decline the application, there would be no cricket and hockey fields to support interest by the students and these sporting codes would not be developed.

Therefore, the no-go alternative is not considered to be feasible.

F CONCLUSIONS AND RECOMMENDATIONS

It is the opinion of the EAP that the project should proceed, as impacts on the receiving environment can be minimised through the careful adherence to the suggested mitigation measures.

The following mitigation measures as recommended by the Terrestrial Ecologist, must be implemented by the Applicant prior to clearance of the site for the proposed development (mitigation measures are included in Appendix I: EMPr):

- A walkthrough must be conducted prior to the commencement of construction, to ensure that all individuals of the Nationally Protected Tree species, *Vachellia erioloba* and Provincially Protected plant species, *Aloe* sp, are accounted for and demarcated. The necessary permits must be applied for, through the relevant national and provincial authorities authorizing the removal and relocation of these individuals.
- Where possible, all Aloes present within the PAOI, must be transplanted and relocated.
- High visibility flags need to be place near protected plant species to prevent any damage associated with construction.
- If left undisturbed, the sensitivity and ecological importance of these protected species should be made a part of the environmental awareness program.

The following mitigation measures as recommended by the Soils/Agricultural Specialist, must be implemented by the Applicant prior to clearance of the site for the proposed development (mitigation measures are included in Appendix I: EMPr):

- The Site Layout Plan must avoid the north eastern portion of the site, where active crop fields are located;
- A stormwater management plan must be implemented for the development. Using drainage control measures and culverts to manage surface runoff. The plan must provide input into the road network and management measures;
- Losses of fuel and lubricants from vehicles to be contained during construction and the maintenance processes, use of biodegradable fluids where possible, avoid waste disposal on undesigned areas which are not contained;
- A General Authorisation (GA) must be obtained from the DWS for establishment of the proposed sports facility and associated infrastructure;
- Rehabilitation of the area must be initiated from the onset of the project. Soil stripped from infrastructure placement can be used for rehabilitation efforts; and
- An alien invasive plant species and control programme must be implemented from the onset of the project.

The following mitigation measures as recommended by the Hydropedologist, must be implemented by the Applicant prior to clearance of the site for the proposed development (mitigation measures are included in Appendix I: EMPr):

- Subsurface drainage on associated infrastructure such as the buildings or sports facilities must be included in the water management plan for stormwater, which can minimise overland flow from paved surfaces. This can also allow the water from the associated infrastructure like the buildings, parking lots or offices to percolate and re-infiltrate.

- Water pipes for domestic or sports facility use must be regularly inspected, and ensure measures are in place to prevent future leakages.

- Good quality water must be applied downstream with acceptable organic or inorganic elements following recommended practices for clean water discharge of the project area, to ensure recharges within the catchment.

Should archaeological resources become unearthed during construction, the Chance Finds Protocol CFP) must be implemented.

If fossil remains are discovered during any phase of construction, either on the surface or exposed by excavations, the CFP must be implemented by the Site Manager.

The findings of the specialist studies undertaken together with the broader environmental assessment conclude that there are no fatal flaws that should prevent the project from proceeding. However, the following key impacts (Table 9-1) have been identified which will require the application of site and activity specific mitigation measures. These mitigation measures are included within the Environmental Management Programme (EMPr) to ensure that they receive the necessary attention.

Having assessed all the potential environmental impacts associated with the proposed sports facility and associated infrastructure, it is the opinion of the EAP that the project may be issued with a positive Environmental Authorisation from the NW DEDEC&T, based on the following reasons:

- A project-specific draft EMPr has been compiled according to (*but not limited to*) the impacts and mitigation measures included in this assessment. The impacts associated with the terrestrial biodiversity, aquatic biodiversity, soils/agriculture, hydropedology, heritage and palaeontology can be reduced to acceptable levels, provided that the mitigation and monitoring measures impacts are implemented.
- The prescribed mitigation measures as mentioned above, is prudent in the decision to authorise this project.
- The proposed sports facility and associated infrastructure will have minimal impacts on the receiving biophysical and socio-cultural and socio-economic environment. There are no fatal flaws that hinder the proposed development from proceeding.

To ensure that the identified negative impacts are minimised, and the positive impacts are enhanced, the following clauses are recommended as conditions of the Environmental Authorisation:

- The EMPr is a legally binding document and the mitigation measures stipulated within the document and Basic Assessment Report must be implemented;
- An independent Environmental Control Officer (ECO) must be appointed to manage the implementation of the EMPr during the construction phase. Environmental Audit Reports must be compiled and made available for inspection;
- A permit from the National and Provincial Authorities are required prior to the removal and relocation of the Nationally Protected Tree species, *Vachellia erioloba* and Provincially Protected plant species, *Aloe* sp;
- A proper Stormwater Management Plan must be in place and implemented for the construction and operational phases of the proposed development;
- Rehabilitation of the study area must be initiated from the onset of the project till post construction;
- An alien invasive plant species and control programme must be implemented from the onset of the project and ongoing through the operational phase.
- All parties involved in the construction, operation and ongoing maintenance of the proposed sports facility and associated infrastructure (including Contractors, Engineers, and the Developer) are, in terms of NEMA's "Duty of Care" and "Remediation of Damage" principals (Section 28), required to prevent any pollution or degradation of the environment, be responsible for preventing impacts occurring, continuing, or recurring and for the costs of repair of the environment.

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LIST OF ACRONYMS

Acronym	Description
AEL	Air Emissions License
AIS	Alian and invasive species
BA	Basic Assessment
BAR	Basic Assessment Report
BPDM	Bojanala Platinum District Municipality
BID	Background Information Document
CFP	Chance Finds Protocol (used in heritage/palaeontology sections)
CARA	Conservation of Agricultural Resources Act
CA	Competent Authority
CBA	Critical Biodiversity Area
CRR	Comments and Responses Report
CR/CN/NT	Critically Endangered / Endangered / Near Threatened
DBAR	Draft Basic Assessment Report
DFFE	Department of Forestry, Fisheries and the Environment
DWS	Department of Water and Sanitation
DPE	Department of Public Enterprise
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioner Association of South Africa
EC	Electrical Conductivity
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
ESA	Ecological Support Area
GA	General Authorisation
GIS	Geographic Information System
GNR	Government Notice Regulation
GN R.921	Government Notice Regulation 921(waste activities)

Acronym	Description
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IEM	Integrated Environmental Management
IWULA	Integrated Water Use License Application
IS	Importance and Sensitivity
LC	Least Concern (Red List status)
NCW	Non-Conservation Worthy (heritage classification)
NEMA	National Environmental Management Act 107 of 1998 (as amended)
NEMWA	National Environmental Management Waste Act, 2008 (Act No. 59 of 2008)
NW DEDEC&T	Northwest Department of Economic Development, Environment, Conservation and Tourism
NWU	North West University
NWA	National Water Act 36 of 1998
NWMS	National Waste Management Strategy
NMMDM	Ngaka Modiri Molema District Municipality
NFEPA	National Freshwater Ecosystem Priority Area
OHS	Occupational Health and Safety Act 85 of 1993
PES	Present Ecological State
PAOI	Project Area of Influence
POPIA	Protection of Personal Information Act, 2013 (Act No. 4 of 2013)
PPP	Public Participation Process
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information Systems
SACNASP	South African Council for Natural and Scientific Professions
SANRAL	South African National Roads Agency Limited
SMS	Short Message Service (used in public participation)
SMME	Small, Medium and Micro Enterprises
SCC	Species of Conservation Concern
SCM	Site Conceptual Model
S&EIR	Scoping and Environmental Impact Reporting

Acronym	Description
SEI	Site Ecological Importance
SSVR	Site Sensitivity Verification Report
TRH	Technical Recommendations for Highway
VU	Vulnerable
VIA	Visual Impact Assessment
WUL	Water Use Licence
ZC	Zitholele Consulting

GLOSSARY OF TERMS

Term	Description
Alien species	A species that is not indigenous to the area or out of its natural distribution range.
Alternatives	Alternatives are different means of meeting the general purpose and need of a proposed activity. Alternatives may include location or site alternatives, activity alternatives, process or technology alternatives, temporal alternatives or the 'do nothing' alternative.
Assessment	The process of collecting, organising, analysing, interpreting and communicating information which is relevant.
Basic Assessment Process	As defined by NEMA.
Biological diversity	The variables among living organisms from all sources including, terrestrial, marine and other aquatic ecosystems and the ecological complexes they belong to.
Commence	The start of any physical activity, including site preparation and any other activity on site furtherance of a listed activity or specified activity, but does not include any activity required for the purposes of an investigation or feasibility study as long as such investigation or feasibility study does not constitute a listed activity or specified activity.
Construction	Construction means the building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity as per Regulations GNR 544, 545 and 546 of June 2010. Construction begins with any activity which requires Environmental Authorisation.
Cumulative impacts	The impact of an activity that in itself may not be significant, but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.
Decommissioning	To take out of active service permanently or dismantle partly or wholly, or closure of a facility to the extent that it cannot be readily re-commissioned. This usually occurs at the end of the life of a facility.
Direct impacts	Impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity (e.g. noise generated by blasting operations on the site of the activity). These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable.
'Do nothing' alternative	The 'do nothing' alternative is the option of not undertaking the proposed activity or any of its alternatives. The 'do nothing' alternative also provides the baseline against which the impacts of other alternatives should be compared.

Term	Description
Drainage	A drainage line is a lower category or order of watercourse that does not have a clearly defined bed or bank. It carries water only during or immediately after periods of heavy rainfall i.e. non-perennial, and riparian vegetation may or may not be present.
Ecosystem	A dynamic system of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.
Endangered species	Taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating. Included here are taxa whose numbers of individuals have been reduced to a critical level or whose habitats have been so drastically reduced that they are deemed to be in immediate danger of extinction.
Endemic	An "endemic" is a species that grows in a particular area (is endemic to that region) and has a restricted distribution. It is only found in a particular place. Whether something is endemic or not depends on the geographical boundaries of the area in question and the area can be defined at different scales.
Environment	the surroundings within which humans exist and that are made up of: The land, water and atmosphere of the earth; Micro-organisms, plant and animal life; Any part or combination of (i) and (ii) and the interrelationships among and between them; and The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.
Environmental assessment practitioner:	An individual responsible for the planning, management and coordinating of environmental management plan or any other appropriate environmental instruments introduced by legislation.
Environmental impact	An action or series of actions that have an effect on the environment.
Environmental management	Ensuring that environmental concerns are included in all stages of development, so that development is sustainable and does not exceed the carrying capacity of the environment.
Environmental management programme	An operational plan that organises and co-ordinates mitigation, rehabilitation and monitoring measures in order to guide the implementation of a proposal and its on-going maintenance after implementation.
Habitat	The place in which a species or ecological community occurs naturally.
Heritage	That which is inherited and forms part of the National Estate (Historical places, objects, fossils as defined by the National Heritage Resources Act of 2000).

Term	Description
Hazardous waste	Any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment.
Indigenous	All biological organisms that occurred naturally within the study area prior to 1800
Indirect impacts	Indirect or induced changes that may occur as a result of the activity (e.g. the reduction of water in a stream that supply water to a reservoir that supply water to the activity). These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken, or which occur at a different place as a result of the activity.
Interested and affected party	Individuals or groups concerned with or affected by an activity and its consequences. These include the authorities, local communities, investors, work force, consumers, environmental interest groups and the general public.
Pollution	A change in the environment caused by substances (radio-active or other waves, noise, odours, dust or heat emitted from any activity, including the storage or treatment or waste or substances.
Rare species	Taxa with small world populations that are not at present Endangered or Vulnerable but are at risk as some unexpected threat could easily cause a critical decline. These taxa are usually localised within restricted geographical areas or habitats or are thinly scattered over a more extensive range. This category was termed Critically Rare by Hall and Veldhuis (1985) to distinguish it from the more generally used word "rare".
Red data species	Species listed in terms of the International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species, and/or in terms of the South African Red Data list. In terms of the South African Red Data list, species are classified as being extinct, endangered, vulnerable, rare, indeterminate, insufficiently known or not threatened (see other definitions within this glossary).
Significant impact	An impact that by its magnitude, duration, intensity, or probability of occurrence may have a notable effect on one or more aspects of the environment.
Waste	Any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered and includes all wastes as defined in Schedule 3 to the Waste Amendment Act (as amended on June 2014); or any other substance, material or object that is not included in Schedule 3 that may be defined as a waste by the Minister.

Term	Description
Watercourse	As per the National Water Act means - (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.
Wetlands	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 under normal circumstances supports or would support vegetation typically adapted to life in saturated soil (Water Act 36 of 1998); land where an excess of water is the dominant factor determining the nature of the soil development and the types of plants and animals living at the soil surface (Cowardin et al., 1979).

DOCUMENT ROADMAP

This Basic Assessment Report (BAR) aims to conform to the requirements stipulated in Appendix 1 of the National Environmental Management Act 107 of 1998 (NEMA) Environmental Impact Assessment Regulations, 2014, as amended. The table below presents the document's structure, in terms of the aforementioned regulatory requirements. Based on the contents of this table, it is evident that the BAR conforms to the regulatory requirements and provides sufficient information to facilitate the Competent Authority (CA) to reach an informed decision with regards to granting or refusal of the Environmental Authorisation (EA).

Document Roadmap in terms of Appendix 1 NEMA EIA Regulations, 2014

Regulatory Requirement		Description	Document Section
3(a)		Details of - (i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vita;	Appendix A Section 1.5
3(b)		Details of the location of the activity, including: (i) the 21-digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; and (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	Section 2.2
3(c)		A plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is - (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	Figure 2-1
3(d)		(d) a description of the scope of the proposed activity, including- (i) all listed and specified activities triggered and being applied for; (ii) a description of the associated structures and infrastructure related to the development;	Section 2 Section 4.1
3(e)		a description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context.	Section 4
3(f)		a motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred location.	Section 2.10
3(g)		a motivation for the preferred development footprint within the approved site.	Section 2.10 and Section 3.2
3(h)		A full description of the process followed to reach the proposed development footprint within the approved site, including	
	(i)	details of the development footprint alternatives considered;	Section 3
	(ii)	details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Section 6
	(iii)	a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	To be provided in the Final BAR

Regulatory Requirement		Description	Document Section
	(iv)	the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section 5
	(v)	the impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts – (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;	Section 7
	(vi)	the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks	Section 7
	(vii)	positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section 7
	(viii)	the possible mitigation measures that could be applied and level of residual risk;	Section 7
	(ix)	if no alternative development locations for the activity were investigated, the motivation for not considering such; and	Section 3
	(x)	a concluding statement indicating the preferred alternative development location within the approved site	Section 3.2
3(i)		a full description of the process undertaken to identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred location through the life of the activity, including - (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures	Section 7
3(j)		an assessment of each identified potentially significant impact and risk, including- (i) cumulative impacts; (ii) the nature, significance and consequences of the impact and risk; (iii) the extent and duration of the impact and risk; (iv) the probability of the impact and risk occurring; (v) the degree to which the impact and risk can be reversed; (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) the degree to which the impact and risk can be mitigated;	Section 7
3(k)		where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;	Section 9.1 Section 10
3(l)		an environmental impact statement which contains – (i) a summary of the key findings of the environmental impact assessment: (ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	Section 9.2 Section 10.1 Section 10.2 Section 10.3

Regulatory Requirement	Description	Document Section
3(m)	based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation	Section 10.2 Section 10.3 Appendix I: EMPr
3(n)	any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation	Section 10.3
3(o)	a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed	Section 1.9 and 1.10.
3(p)	a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	Section 10
3(q)	where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded, and the post construction monitoring requirements finalised.	N/A
3(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 l&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 or affected parties.	Section 1.6
3(s)	where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	N/A
3(t)	any specific information that may be required by the competent authority; and	N/A
3(u)	any other matters required in terms of section 24(4)(a) and (b) of the Act.	N/A

1 INTRODUCTION

1.1 Project Background

The Applicant, North-West University (NWU) appointed Zitholele Consulting (Pty) Ltd to undertake the Application for Environmental Authorisation by way of a Basic Assessment (BA) and General Authorisation (GA) for the Sports Facility at the North-West University: Mahikeng Campus in North-West Province.

The North West Department of Economic Development, Environment, Conservation and Tourism (NW DEDEC&T) is the Competent Authority for the BA process. The Department of Water and Sanitation (DWS) is the decision-making authority for the GA process.

The North-West University (NWU) Mahikeng Campus plans to establish hockey and cricket sports facilities adjacent to the existing soccer and rugby sports fields at the Mahikeng Campus. Pavilions, change-rooms, club houses, parking areas, access roads on site and future sports fields are also planned. The site has a number of camel thorn trees and aloe sp. That will be removed to make way for the proposed development. A permit application is underway to remove these plants. These sports facilities/fields will have grass fields with adequate irrigation and lighting.

1.2 Purpose of this Report

In accordance with the National Environmental Management Act, No. 107 of 1998 (Act No. 107 of 1998) (NEMA) and the EIA Regulations of 4 December 2014 (Government Notice Regulation (GN R.982) (as amended), the issuing of an EA requires the undertaking of a BA process, with the associated Public Participation Process (PPP) and the required Specialist Studies. This will enable the Competent Authority (CA) to decide whether or not, to issue an EA for the proposed development.

The EIA Regulations of 2014 (as amended) allows for a BA process to be undertaken for activities with environmental impacts as listed in Listing Notice 1 (GN R.983), as well as for the undertaking of a more rigorous two-tiered Scoping and Environmental Impact Reporting (S&EIR) process for activities with potentially greater environmental impact. Activities that may trigger the need to undertake a S&EIR process are listed in Listing Notice 2, as stipulated in GN R.984.

In terms of the EIA regulations of 2014 (as amended), activities associated with the proposed development are listed under Listing Notice 1 (GN R.983), which requires a BA process to be undertaken. As such, a BA Process will be followed.

1.3 Report Structure

This Basic Assessment Report (BAR) aims to conform to the requirements stipulated in Appendix 1 of the National Environmental Management Act 107 of 1998 (NEMA) Environmental Impact Assessment Regulations, 2014, as amended.

This report documents the process and findings of the BA process and associated PPP for the proposed sports facility and associated infrastructure at the NWU: Mahikeng Campus. This report will be subject to a public comment period, after which it will be finalised, and submitted to the Competent Authority (CA) i.e. the North West Department: Economic Development, Environment, Conservation and Tourism (NW EDEC&T) for review and decision-making.

The BA Report is structured according to the following chapters:

- Chapter 1 provides background to proposed development and the BA process.
- Chapter 2 provides a description of proposed development.
- Chapter 3 provides details of the alternatives assessment.
- Chapter 4 outlines the policy and legislative context of the proposed development.
- Chapter 5 describes the affected biophysical and socio-economic environment.
- Chapter 6 outlines the approach to undertaking the BA and Public Participation Process.
- Chapter 7 describes the methodology for impact identification and assessment of impacts.
- Chapter 8 provides an assessment of the potential cumulative impacts
- Chapter 9 provides a summary of the key environmental findings.
- Chapter 10 presents the conclusions and recommendations based on the findings of the BA Report.
- Chapter 11 provides references used in the compilation of the BA Report.

1.4 Details of Environmental Assessment Practitioner

Zitholele is an empowerment company formed to provide specialist consulting services primarily to the public sector in the fields of Water Engineering, Integrated Water Resource Management, Environmental and Waste Services, Communication (public participation and awareness creation) and Livelihoods and Economic Development.

Zitholele has no vested interest in the proposed project and hereby declares its independence as required in terms of the EIA Regulations. Table 1-1 provides the Environmental Assessment Practitioner (EAP) details. CVs of the EAPs that undertook the assessment and compiled the report is included in Appendix A.

Table 1-1: Details of the Environmental Assessment Practitioner

Name and Surname	**Ms. Natasha Lalie (EAP and Project Manager)**
Highest Qualification	MSc (Environment and Society), University of Pretoria
Professional Registration	Registered EAP: Environmental Assessment Practitioners Association of South Africa (EAPASA), Registration No. 2021/3611.
Company Represented	Zitholele Consulting (Pty) Ltd
Physical Address	Building 1, Maxwell Office Park, Magwa Crescent West, Waterfall City, Midrand
Postal Address	P O Box 6002, Halfway House, 1685
Contact Number	011 207 2060
Facsimile	086 674 6121
E-mail	natashal@zitholele.co.za
Name and Surname	**Dr. Mathys Vosloo (Project Associate, Project Consultant)**
Highest Qualification	PhD (Zoology)
Professional Registration	Registered *Pr.Sci.Nat.* (Registration no. 400136/12) with South African Council for Natural Scientific Professions (SACNASP)
Company Represented	Zitholele Consulting (Pty) Ltd
Physical Address	Building 1, Maxwell Office Park, Magwa Crescent West, Waterfall City, Midrand
Postal Address	P O Box 6002, Halfway House, 1685
Contact Number	011 207 2079
Facsimile	086 674 6121
E-mail	mathysv@zitholele.co.za

1.5 Expertise of the Environmental Assessment Practitioner

Ms. Natasha Lalie has a MSc. Environment and Society from the University of Pretoria and has been an Environmental Assessment Practitioner (EAP) for almost twenty years. She has undertaken numerous Scoping Reports, Environmental Management Programmes (EMPr's), Environmental Screening and Feasibility Studies and Environmental Permitting and Licencing project, as required by NEMA and the EIA Regulations (as amended). She has been involved in a wide range of projects, which include waste management, industrial, township establishments, mixed-use development, road upgrades, infrastructure developments, change of land use, lodge developments, proposed bulk water pipelines, proposed transmission power lines, proposed filling stations, shopping centre developments and so on. Natasha Lalie is a registered EAP with the Environmental Assessment Practitioners Association of South Africa (EAPASA) since September 2021 and is a registered Professional Natural Scientist (*Pr. Sci. Nat*) in the field of Environmental Science with the South African Council for Natural Scientific Professionals (SACNASP) since 2024.

Dr Mathys Vosloo graduated from the Nelson Mandela Metropolitan University with a PhD in Zoology in 2012, after successfully completing a MSc in Zoology and BSc (Hons) in Zoology. Dr Vosloo is a member of the International Association for Impact Assessments (IAIA) and is a registered Professional Natural Scientist (*Pr. Sci. Nat*) in the field of Ecological Science with the South African Council for Natural Scientific Professionals (SACNASP) since 2012. He has been involved in electricity generation, transmission and distribution projects and their potential impacts on the environment for a large part of his career. Mathys has gained extensive experience in managing integrated environmental authorisation processes and has successfully managed large projects through the phases of EIA in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and National Environmental

Management Waste Act, 2008 (Act No. 59 of 2008). Mathys has also been involved in Water Use Licensing as a component of integrated authorisation processes.

Dr. Vosloo has been involved in electricity generation, transmission and distribution projects and their potential impacts on the environment for a large part of his career. Mathys has gained extensive experience in managing integrated environmental authorisation processes and has successfully managed large projects through the phases of EIA in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and National Environmental Management Waste Act, 2008 (Act No. 59 of 2008). Mathys has also been involved in Water Use Licensing as a component of integrated authorisation processes. Mathys has a comprehensive understanding of the relevant environmental legislation and works intimately with specialist consultants to ensure that potential impacts are accurately identified, assessed and mitigated.

1.6 Statement of Zitholele's Independence and EAP Affirmation

Neither Zitholele, nor any of the authors of this Report have any material interest in the outcome of this Report, nor do they have any pecuniary or other interest that could be reasonably regarded as being capable of affecting their independence or that of Zitholele. Zitholele has no beneficial interest in the outcome of the assessment which is capable of affecting its independence.

EAP AFFIRMATION:

Section 16 (1) (b) (iv), Appendix 1 Section 3 (1) (r), Appendix 2 Sections 2 (I) and (j) and Appendix 3 Section 3 (s) of the Environmental Impact Assessment (EIA) Regulations, 2014 (promulgated in terms of the NEMA), require an undertaking under oath or affirmation by the EAP in relation to:

- The correctness of the information provided in the report;
- The inclusion of comments and inputs from stakeholders and interested and affected parties;
- The inclusion of inputs and recommendations from the specialist reports where relevant; and
- 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.

Zitholele and the EAPs 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.

The EAP Declaration of Interest is included in Appendix B.

1.7 DFFE Screening Tool Assessments

In terms of GN R 960 (promulgated on 5 July 2019) and Regulation 16(1)(b)(v) of the 2014 EIA Regulations (as amended), the submission of a Screening Report generated from the Department of Forestry, Fisheries and the Environment (DFFE's) national web based environmental screening tool (https://screening.environment.gov.za) is compulsory for the submission of applications in terms of Regulation 19 and 21 of the 2014 EIA Regulations.

The screening tool assessments were undertaken for the project study area and the results of the screening tool assessments are presented in Table 1-2 and Table 1-3 below.

Table 1-2: Development Site Environmental Sensitivities assigned by the DFFE Screening Tool Assessment

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme			X	
Animal Species Theme				X
Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme				X
Civil Aviation Theme	X			
Defense Theme				X
Paleontology Theme		X		
Plant Species Theme				X
Terrestrial Biodiversity Theme				X

Table 1-3: Specialist assessments identified in terms of the DFFE Screening Tool Assessment

Specialist Assessment / Theme	Sensitivity Rating as per Screening Report	Sensitivity Rating as per the EAP / Specialist Verification	Response
Landscape/Visual Impact Assessment	None Provided	Low	The nature of the development (*sports facilities and associated infrastructure*) will not alter the character, nor sense of place of the study area, as the proposed facilities will be located within the existing university campus and will be located next to the existing soccer and rugby fields. The sports facility will be at ground level and will not be visible to receptors located near the proposed study area. Furthermore, visual impacts will only occur during the construction period which will be of a short-term duration. With the implementation of mitigation measures to minimise the impacts on a limited number of sensitive receptors, occurring in proximity to the site for majority of the study area, the visual character of the site will not be compromised by views by these receptors. A Landscape/VIA is therefore not deemed necessary.
Archaeological and Cultural Heritage Impact Assessment	Low	Low	Disputed - During the fieldwork by the Archaeologist, no heritage features or resources of conservation worthy status were identified. However, a single, out-of-context, Stone Age findspot (Nwu01) was observed and was deemed to be Non Conservation Worthy (NCW).
Palaeontology Impact Assessment	High	Medium	Disputed - During the fieldwork by the Palaeontologist, it was observed that the site is generally highly vegetated with no fossiliferous outcrops detected. Based on the site investigation, as well as desktop research, it is concluded that fossil heritage of scientific and conservational interest in this specific development footprint is rare. This is in contrast with the High Sensitivity allocated to the development area by the SAHRIS Palaeosensitivity Map and DFFE Screening Tool. A medium Palaeontological Significance has been allocated for the construction phase of the development pre-mitigation and a low significance post-mitigation.
Terrestrial Biodiversity Impact Assessment	Low	Klerksdorp Thornveld habitat-Medium	Disputed - Although no fauna and/or flora SCC were detected within this habitat type, Klerksdorp Thornveld within the PAOI was ecologically intact and functional. The sensitivity for this habitat has been categorised as Medium owing to the limited size of the developmental footprint in

Specialist Assessment / Theme	Sensitivity Rating as per Screening Report	Sensitivity Rating as per the EAP / Specialist Verification	Response
			conjunction with Klerksdorp Thornveld being a LC habitat (RLE, 2022).
		Modified habitat – Low	Validated – These habitats have been cleared of indigenous and consequently lack ecological integrity and functionality. No flora and/or fauna SCC were detected in modified habitats, and none are expected to occur.
		Drainage Lines – Low	Validated – These habitats have been subjected to anthropogenic impacts resulting in their modification. No flora and/or fauna SCC were detected, and none are expected to occur within these habitats. More information on the drainage line habitats can be accessed in the accompanying aquatic report (TBC, 2025).
Aquatic Biodiversity Impact Assessment	Very High	Drainage lines- Low	Disputed – No wetlands are located within the 500 m PAOI. Several minor non-perennial drainage lines are located within the project area. These drainage features lack a well-defined channel and offer minimal to no ecological benefits. Their primary function is to convey excess stormwater through the area during periods of heavy rainfall, therefore the drainage features have been assigned a low freshwater sensitivity rating.
		Remaining area – Low	Disputed – No wetlands are located within the 500 m PAOI. The remaining area contains historical and current disturbances such as developments, roads, agricultural fields and disturbed topography. Therefore, the remaining area does not significantly contribute to the hydrological characteristics of the area and has been assigned a low freshwater sensitivity rating.
Hydrology Assessment	None Provided	Low	The EAP disputes the requirement for a Hydrology Assessment. There are no major rivers within a 1km radius of the site earmarked for the proposed development. A Hydrological Assessment is therefore not deemed necessary.
Socio-Economic Assessment	None Provided	Low Based on the observations made on site, the potential socio-economic impacts are expected to be negligible, due to the limited extent and short duration of the proposed construction activities. The potential socio-economic sensitivity is therefore expected to be negligible.	The EAP disputes the requirement for a Socio-Economic Impact Assessment as the impacts during the construction phase will be of a short-term duration and a limited extent. Potential socio-economic impacts are addressed in Section 7.3.12 of the Draft BAR. A limited number of jobs will be provided during the construction phase which will be of a short- term duration that will have a positive impact on the local community residing the local municipal area.

Specialist Assessment / Theme	Sensitivity Rating as per Screening Report	Sensitivity Rating as per the EAP / Specialist Verification	Response
			Comments received during public review of the Draft Basic Assessment Report will be included in the Comments and Responses Report of the Final BAR. Comments received during the public review period will be addressed by the EAP directly with the Interested and Affected Parties (I&APs).
Plant Species Assessment	Low	High	Disputed – The PAOI is largely ecologically intact and comprised of a high diversity of indigenous vegetation. Several individuals of the nationally protected tree Vachellia erioloba were observed within the PAOI. Moreover, several Aloes were observed some of which could be Aloe c.f. *braamvanwykii.* Given that these were not easily identifiable owing to seasonal constraints, it is recommended that all species be relocated to a predetermined location.
Animal Species Assessment	Low	Low	Validated – Owing to the limited size of the developmental footprint, fauna diversity within the PAOI is low, limited predominantly to small vertebrate species including rodents and hares. Not fauna SCC were detected and none are expected to occur within the PAOI.

The DFFE Screening Tool Report and Site Sensitivity Verification Report is presented in Appendix C.

1.8 Specialist Team

Specialist input in the fields of Terrestrial Ecology (flora and fauna), Freshwater and Aquatic Ecologists, Archaeologist and Palaeontologist were identified to undertake the Specialist Studies for the proposed sports facility at the NWU: Mahikeng Campus. These specialists were appointed by Zitholele to undertake the necessary assessments to identify, assess impacts and propose appropriate mitigation and management measures for the identified impacts in their respective fields. The specialists commissioned for the project, including qualifications and professional registrations are provided in Table 1-4.

Table 1-4: Specialist team commissioned for the proposed sports facility development at NWU: Mahikeng Campus

Specialist Field	Company	Specialist	Qualifications and Professional Registration
Terrestrial Ecology	The Biodiversity Company	Dr. Gareth Walker	PhD Zoology *Pr. Nat. Sci.,* Registration No. 163013
Aquatic and Wetland Ecology	The Biodiversity Company	Divan van Rooyen	PhD Environmental Science with Aquatic Ecosystem Health *Pr. Nat. Sci.,* Registration No. 151272

Specialist Field	Company	Specialist	Qualifications and Professional Registration
Soils and Agriculture	The Biodiversity Company	Dr. Matthew Mamera	PhD Soil Science *Pr. Nat. Sci.,* Registration No. 116356
Heritage and Archaeology	PGS Heritage	Mr. Daniel Tasker	MSc. Archaeology *Accredited Professional Archaeologist*
Palaeontology	Banzai Environmental	Ms. Elize Butler	MSc. Cum laude (Zoology) *Palaeontological Society of South Africa (PSSA)*
Geotechnical	Geopotential (Pty) Ltd	S. Potgieter	PhD (Environmental Science – Dolomite Risk Management) *Pr.Sci.Nat., MSAIEG, MGSSA, NHBRC*

The specialist Declaration of Interests are provided in Appendix D.

1.9 Gaps, Assumptions and Limitations

The following assumptions and limitations were applicable to the studies undertaken within this BA Process:

- All information provided by the applicant to the environmental team was assumed to be accurate, correct and valid at the time it was provided.

1.10 Assumptions and Limitations

The following assumptions and limitations were applicable to the studies undertaken within this BA Process:

- All information provided by the Developer and I&APs to the environmental team was correct and valid at the time it was provided.

- It is assumed that the development site identified by the Applicant represents a suitable site for the proposed sports facility site and associated infrastructure.

- Studies assume that any potential impacts on the environment associated with the proposed development will be avoided, minimised or mitigated.

- This report and its investigations are project-specific.

- This report was informed by the information provided by the Applicant, project engineers and findings of various specialist studies and site investigations undertaken at the time of compilation of this report.

- The specialist studies conducted meet the minimum requirements, and as such, no additional studies were undertaken.

- All spatial data available to the EAP was utilised in the assessment of the proposed development. It was not deemed necessary for additional spatial data to be obtained.

(a) Terrestrial Biodiversity Impact Assessment

The following assumptions and limitations are applicable for this assessment:

- The assessment area was based on the spatial data provided for by the Applicant and any alterations to the layout and/or missing GIS information pertaining to the assessment area would have affected the area surveyed;

- The Project Area of Influence (PAOI) was surveyed during a single site visit, thus discounting potential seasonal variations in species diversity present on site. Although it is the opinion of the specialist stipulated herein that meaningful baselines can be derived from the field survey conducted, seasonal constraints did limit the accuracy of identifying certain flora species (particularly Aloes);

- The GPS used in the assessment has an accuracy of 5 m and consequently any spatial features may be offset by 5 m; and

- Whilst every effort is made to cover as much of the PAOI as possible, representative sampling is completed and by its nature, it is possible that some plant and animal species that are present across the PAOI were not recorded during the field investigations.

(b) Aquatic Biodiversity Compliance Statement

The following limitations should be noted for the assessment:

- The assessment area was based on the spatial file provided by the client and any alterations to the development area may affect the results;

- Ground truthing was restricted to the Project Site with a representative sampling being undertaken in the greater 500 m PAOI; and

- The seasonality of the site survey is not considered to be a limiting factor for this project.

(c) Soil and Agriculture Compliance Statement

The following limitations were applicable to the above assessment:

- Only the slopes affected by the proposed development have been assessed;
- It has been assumed that the extent of the development area provided by the responsible party is accurate;
- The GPS used for ground truthing is accurate to within five meters. Therefore, the soil and the observation site's delineation plotted digitally may be offset by up to five meters to either side; and
- No heavy metals have been assessed, nor fertility been analysed for the relevant classified soils.

(d) Hydropedological Assessment

The following aspects were considered as limitations;

- Only the slopes affected by the project have been assessed;
- It has been assumed that the extent of the project area provided by the responsible party is accurate; and
- The GPS used for ground truthing is accurate to within five meters. Therefore, the observation soil site's delineation plotted digitally may be offset by at up to five meters to either side.

(e) Heritage Impact Assessment

The following assumptions and limitations were applicable to the above assessment:

Not detracting in any way from the comprehensiveness of the fieldwork undertaken, it is necessary to realise that the heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the area. Various factors account for this, including the subterranean nature of some archaeological sites and existing vegetation cover. It should be noted most of the study area was accessible for the fieldwork survey.

Therefore, should any heritage features and/or objects be located or observed outside the identified heritage sensitive areas during the construction activities, a heritage specialist must be contacted immediately. Such observed or located heritage features and/or objects may not be disturbed or removed in any way until such time that the heritage specialist has been able to make an assessment as to the significance of the site (or material) in question. This

applies to graves and cemeteries as well. If any graves or burial places are located during the development, the procedures and requirements pertaining to graves and burials will apply.

(f) Palaeontological Impact Assessment

The following assumptions and limitations were applicable to the above assessment:

The geology of the area is the focal point of geological maps, and the sheet explanations of the Geological Maps were not intended to focus on palaeontological heritage. Many inaccessible areas of South Africa have never been examined by palaeontologists, and data is typically dependent solely on aerial pictures. Locality and geological information in museums and university databases is out of date, and data acquired in the past is not always adequately documented.

Comparable Assemblage Zones in other places are also used to provide information on the existence of fossils in areas that have not before been recorded. When similar Assemblage Zones and geological formations are used for Desktop studies, it is commonly assumed that exposed fossil exists within the footprint.

2 PROJECT DESCRIPTION

This chapter provides an overview of the proposed project and details the project scope which includes details relating to the planning/design, construction, operation, and decommissioning activities.

2.1 Regional Setting

The site earmarked for the proposed sports facility is located at the Mahikeng Campus of the North-West University in the North-West Province. Access to the site is gained from Dr. Albert Luthuli Road/Setlogelo Drive in Mahikeng in the North West Province. Refer to the location of the development site in Figure 2-2 and Figure 2-3.

The site is approximately 10ha in extent and is located on the remainder of Erf 1090 Mmabatho Unit 5 – SG Code: T0JO00330000109000000. Refer to the property details in Table 2-2.

Table 2-1: Details relating to project location

Local Municipality	Mahikeng Local Municipality
District Municipality	Ngaka Modiri Molema District Municipality (NMMDM)
Ward Number	Ward 10
Access to the site	Access to the site is gained from Dr. Albert Luthuli Road/Setlogelo Drive in Mahikeng.
Co-ordinates of the centre point of the site	25°49'15.62"S 25°36'38.86"E

2.2 Project Site Description

The North-West University (NWU) Mahikeng Campus plans to establish hockey and cricket sports facilities adjacent to the existing soccer and rugby sports fields at the Mahikeng Campus. Pavilions, change-rooms, club houses, parking areas, access roads on site and future sports fields are also planned. The site has a number of camel thorn trees and aloe sp. That will be removed to make way for the proposed development. A permit application is underway to remove these plants.

These sports facilities/fields will have grass fields with adequate irrigation and lighting. The Site Layout Plan of the proposed sports facility and associated infrastructure is illustrated on Figure 2-1. It is to be located adjacent to the existing soccer and rugby fields at the unutilised open space.

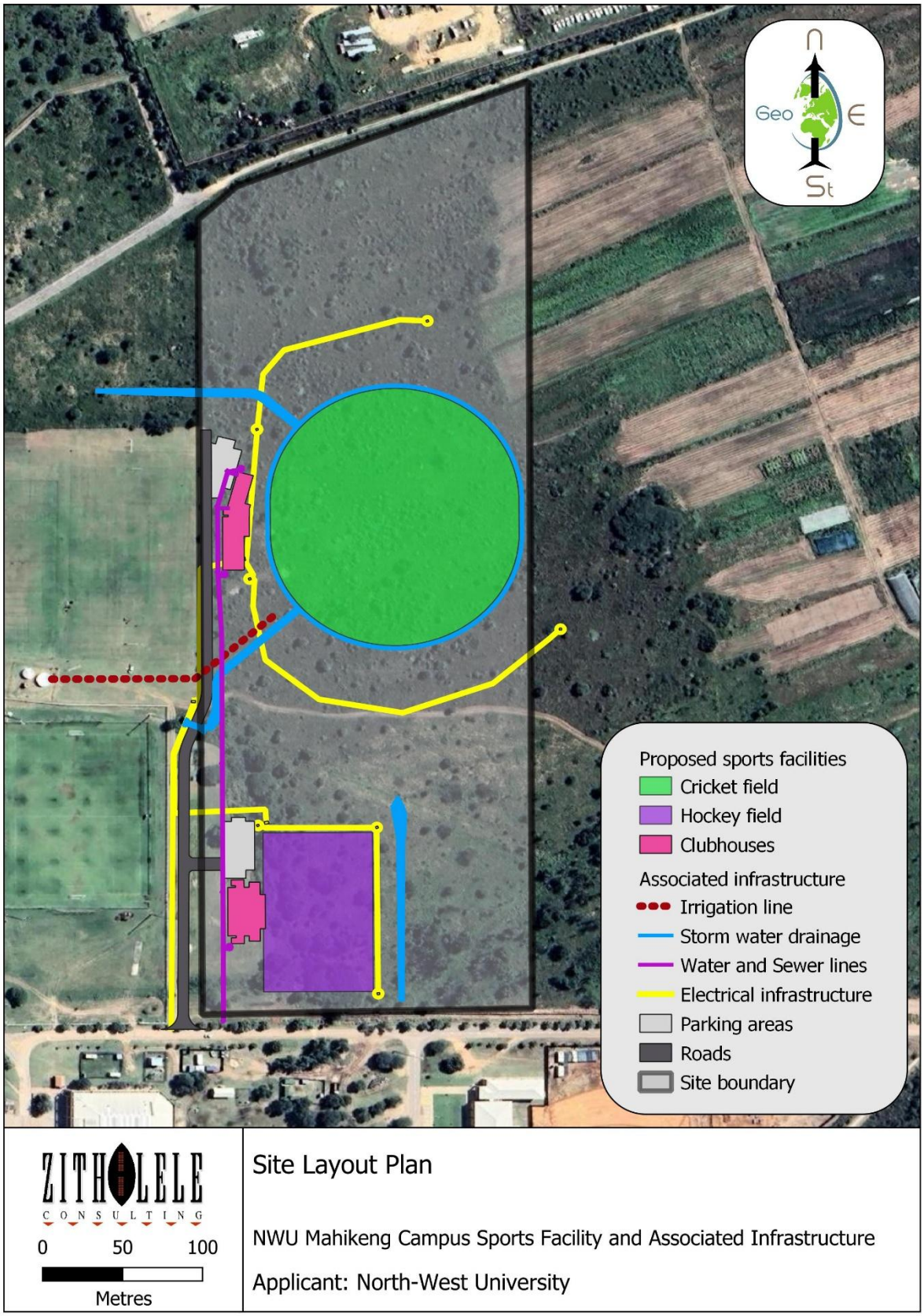


Figure 2-1: Proposed Site Layout Plan for the sports facility and associated infrastructure

The project is estimated <R50m which will trigger an open tender process by the NWU. Main contractors will be required to tender for the project and will be awarded to the successful candidate. Nominated &/or selected sub-contractor will also be utilized during construction for specialist's work required to develop the sports facilities such as landscape contractors, electricians etc. Thirty (30%) local participation scored by the NWU point system will be applicable to promote local SMME's.

Table 2-2: Development property details on the remainder of Erf 1090 Mmabatho Unit 5

Parcel No.	1090
Portion of Property	Remainder of Erf 1090
Property Type	Erven
Registration Division	JO
Surveyor-General Cadastral Code	T0JO00330000109000000
Property Area Size (ha)	246.01ha
Development Area Size (ha)	10ha
Property Owner	University of Bophuthatswana (name changed to North-West University (refer to Title Deed in Appendix E).
Title Deed Number	T2635/1983
Registration Date	24 August 1982

2.3 Adjacent Land Uses

The adjacent land uses to the development site is provided in Table 2-3.

Table 2-3: Adjacent land uses

Direction	Land use
North	Government office
South	NWU
East	Sports field at NWU
West	Vacant land
North west	NWU
South west	NWU
South east	NWU
North east	Government office

2.4 Proposed stormwater management

The topography of the site is very flat. Storm water drains under natural conditions in a north-western direction mostly as sheet flow. As part of the management of storm water on the Campus, an open natural storm water channel has been constructed to divert storm water generated on the eastern part of the Campus away from the Soccer Institute which separates the Soccer Institute from the Rugby Fields. This storm water channel will also separate the proposed Hockey Field (south) from the proposed new Cricket Field (north).

To avoid flooding and ponding of the proposed new infrastructure, it is proposed that both the Cricket Field and Hockey Field be elevated above natural ground level and that adequate measures be implemented to manage and drain storm water away from facilities to existing storm water infrastructure and natural drainage systems.

The Cricket Field has been designed in accordance with International Cricket Council (ICC) Standards both in terms of size and slopes from the pitch towards the outfield. It is proposed that new concrete field drains be installed around the outfield to effectively collect storm water generated both on the field and natural storm water approaching the field. Storm water collected will flow around the field in a clockwise and anticlockwise direction to be dispersed into the existing storm water channel to the south and to natural daylight to the north respectively.

It is proposed that the hockey field be constructed on a sufficiently designed platform that is elevated above natural ground level. The platform will be designed to be able to accommodate a grass surfacing initially but also possible astro surfacing in future. It is proposed that an open storm water channel be constructed in a north-south direction to the east of the Hockey Field to connect to the existing storm water channel which will serve to cut off any storm water generated on the eastern part of the Campus flowing towards the Hockey Field.

2.5 Proposed water and sewer requirements

Water for irrigation of the proposed sports field as part of Phase 1, will be obtained from the existing irrigation dams to the north of the soccer field, via a 110mm irrigation line towards the cricket field.

When the clubhouses are constructed as part of Phase 2, sewer will be collected in an underground tank and pumped in a southern direction to the main outfall sewer line, which is located next to the existing paved road to the south of the fields.

2.6 Proposed electrical services requirements

a) Cricket Field

The Cricket field shall be at most 1 Hectare (Ha) in size with approximate dimensions of 92.29m x 94.12m with adequate lighting suitable for non-professional competitive sports and minimum illumination requirements for television broadcasting. The club house must have adequate lighting and electrical supplies for any auxiliaries (cooling, heating, food preparation etc) that may be required.

b) Hockey field

Similarly, the Hockey field shall be at least half a Hectare or located precisely within an overall space of 95m x 64.4m with adequate lighting suitable for non-professional competitive sports and minimum illumination requirements for television broadcasting. The club house must have adequate lighting and electrical supplies for any auxiliaries (cooling, heating, food preparation etc.) that may be required.

c) Cricket field lighting standards

The Illuminating Engineering Society (IES) publishes a guideline standard document titled: “IES RP-6-15, Sports and Recreational Area Lighting” which is used by various bodies regulating the Cricket sport globally. The IES standard categories provide minimum illuminance requirements for Cricket fields. The categories are classified in accordance with the intended use as tabulated on Table 2-4 below.

Table 2-4: Minimum standard illumination for Cricket fields

Type of cricket field	Cricket pitch lux standard	Cricket outfield lux standard	Lighting uniformity
Class I (National, international cricket tournaments)	750 lux	500 lux	>0.7
Class II (High school cricket ground, regional cricket competitions, etc)	500 lux	300 lux	>0.7
Class III (Amateur cricket field, local cricket club, training, etc.)	300 lux	200 lux	> 0.5

d) Hockey field lighting standards

The International Hockey Federation (FIH) that regulates Hockey sport throughout the world have issued and published guidelines for artificial lighting for hockey fields for televised and non-televised hockey matches. The matches are categorised according to the level of competition (namely: amateur, professional, international etc.). There is Class I and II categories whereby Class I is described as being suitable for high-level and non-televised national and international competitions whilst the latter is suitable for training and club competition. Class I would require at least 500 lux and 350 lux for Class II.

The televised matches are categorised into three categories, i.e. TV1, TV2, and TV3 categories with a minimum requirement of 2000 lux, 1650 lux and 1000 lux respectively. TV1 is classified as suitable for top level matches with high definition and slow-motion requirements, TV2 is for ordinary matches but still with HDTV and TV 3 has no HD and slow-motion requirements.

e) The electrical wiring standard

The Code of practice for wiring of premises in South African Standard, SANS 10142-1, will be the applicable standard for all the electrical installations required in the two club houses as well as the proposed lighting fixtures for the additional fields. A standard guideline (SANS 10142-2) for the safe design, construction, and modification of medium-voltage (nominal voltages between 1kV and 22kV) electrical installations will be used in the design of the 11kV networks for bulk power supply to the additional sports fields and their respective future additional facilities.

f) Metal Halide fixtures vs. LED fixtures

The Metal Halide luminaires are tried and tested fixtures in the industry with no shortage of suppliers and have well known lifespans. However, the metal halide efficiency is very low as compared to the LEDs. The use of LED luminaires would result in about 40% to 60% energy saving which is critical these days in view of the trends in electricity prices in South Africa.

Maintainability has also become a critical consideration when planning these kind of installations. The LED technology will require that adequate spares of luminaires be stocked up to assist in expeditiously replacing non-functional parts of the light since LED lights are not similar to the metal halide type that may require a replacement of a bulb when a bulb fails. The repair works of the luminaire may be too technical for on-site personnel to repair. However, adequate spare luminaires will come in handy to avoid replacement delays whilst repair work is being procured.

The LED lights have been reported as having low failure rates and long lifespans as compared to the traditional metal halide luminaires. A lifespan of between 60 000 to 100 000 hours for LEDs as compared to a 6000 to 15 000 hours for metal halide lights has been reported. The LED lights prices are starting to match the price of the traditional lights due to the large number of available manufacturers.

It is recommended that the NWU Mahikeng Campus install LED luminaires on the lighting masts for the additional sports fields to save energy and maintenance costs.

g) Recommended Illumination Option

Understanding the proposed development by the NWU of the additional sports field, the appropriate class for the proposed Cricket field would be Class II which has minimum lux requirements of 500 lux on the pitch and 300 lux outpitch. However, broadcasting illumination requirements are at much higher levels since cricket stadiums that host international broadcasting competitions require illumination of between 1500 to 3000 lux.

Furthermore, it is understood that Cricket as a sport is being introduced at the NWU Mahikeng Campus and thus a need for broadcasting facilities at this stage may not be necessary. However, the design will be based on a minimum of 500 lux but with provision for future broadcasting requirements of up to 1500 lux. The design will be based on 500 lux illumination with provision for future broadcasting facilities suitable for TV3 categories in accordance with the FIH guidelines.

Since the scope assumed the required lux level of 500 Lux for each of the two respective fields, and deducing from the simulation results, it is suggested that four lighting masts of 20 to 25 meters high be erected for the Cricket field and another four for the Hockey field. The Cricket mast must be equipped with a luminaire bracket suitable for mounting 80 luminaires but fitted with 16 Luminaires at the initial phase of the project. The Hockey field lighting mast

to be equipped with a luminaire bracket suitable for mounting 12 luminaires but fitted with 6 Luminaires. The uniformity of the lighting lux on both fields will be optimised at stage 3 or detailed design stage of the project by working out the best positioning and angles of the fittings.

h) Recommended electrical supply option

The existing sports field which comprises of a soccer field and rugby fields and spectators' stands facilities is currently powered by an 11/0.04kV 315kVA miniature substation (the Sport Grounds minisub). The Sports Ground minisub does not have adequate capacity to supply the additional sports fields since the envisaged 500 lux lighting structure for both fields will require a minimum of 320kW excluding electrical technical losses. Therefore, the use of the Sports Ground minisub is not recommended.

The additional sports fields must be powered from an 11/0.04kV 500kVA miniature substation (the new minisub). However, the new minisub must be integrated into the existing 11kV ring networks within the Mahikeng Campus. The network was modelled on DIgSILENT PowerFactory version 15.1.7 software package.

The modelling and simulation of the existing network took into account the National Regulatory Standards on quality of supply (NRS 048) that requires that voltage regulation on the 11kV network to be between 92.5% and 105% of the nominal voltage being 11kV. The simulation also takes into account the thermal loading of the cables and the transformers in order to avoid overloading that would result in nuisance tripping. The modelling also took into consideration the previous maximum demand recorded at the Campus which was 5.6MVA that occurred during the examination period of November 2024. This is used as the worst-case scenario for planning purposes.

The additional sports fields load may increase the maximum demand to a value close or above 6MVA and thus should the contracted capacity with Eskom for Mahikeng Campus be below 6MVA, a request to Eskom to increase the contracted capacity must be considered to avoid penalties levied for exceeding contracted capacity.

The simulation results indicate that there would not be violation of voltage regulation requirements as well as thermal loading as aforementioned should the new minisub be integrated.

The best and closest 11kV cable to cut into is the 11kV cable currently connecting the two minisub labelled as MR1-MS4 and MR1-MS5. The new minisub must be connected by cutting and jointing two new 300m 11kV 95sqmm Cu PILC 3Core Cable to be laid underground and terminating at the new minisub. 11kV 95sqmm Cu PILC 3Core Cable to be laid underground and terminating at the new minisub.

The 11kV cables from the existing cable network connection point to the new Miniature substation position will be laid at a minimum depth of 1000mm below ground level with a trench width of 450mm. The LV feeder cables, i.e. cables from the new miniature substation to the light masts, will be laid at a minimum depth of 800mm with a trench width of 300mm.

The lighting masts heights will be between 18m and 25m high at most and the foundation or reinforced concrete footings for the lighting masts will require a hole dimension of 1400mm deep, 4000x4000mm for each mast.

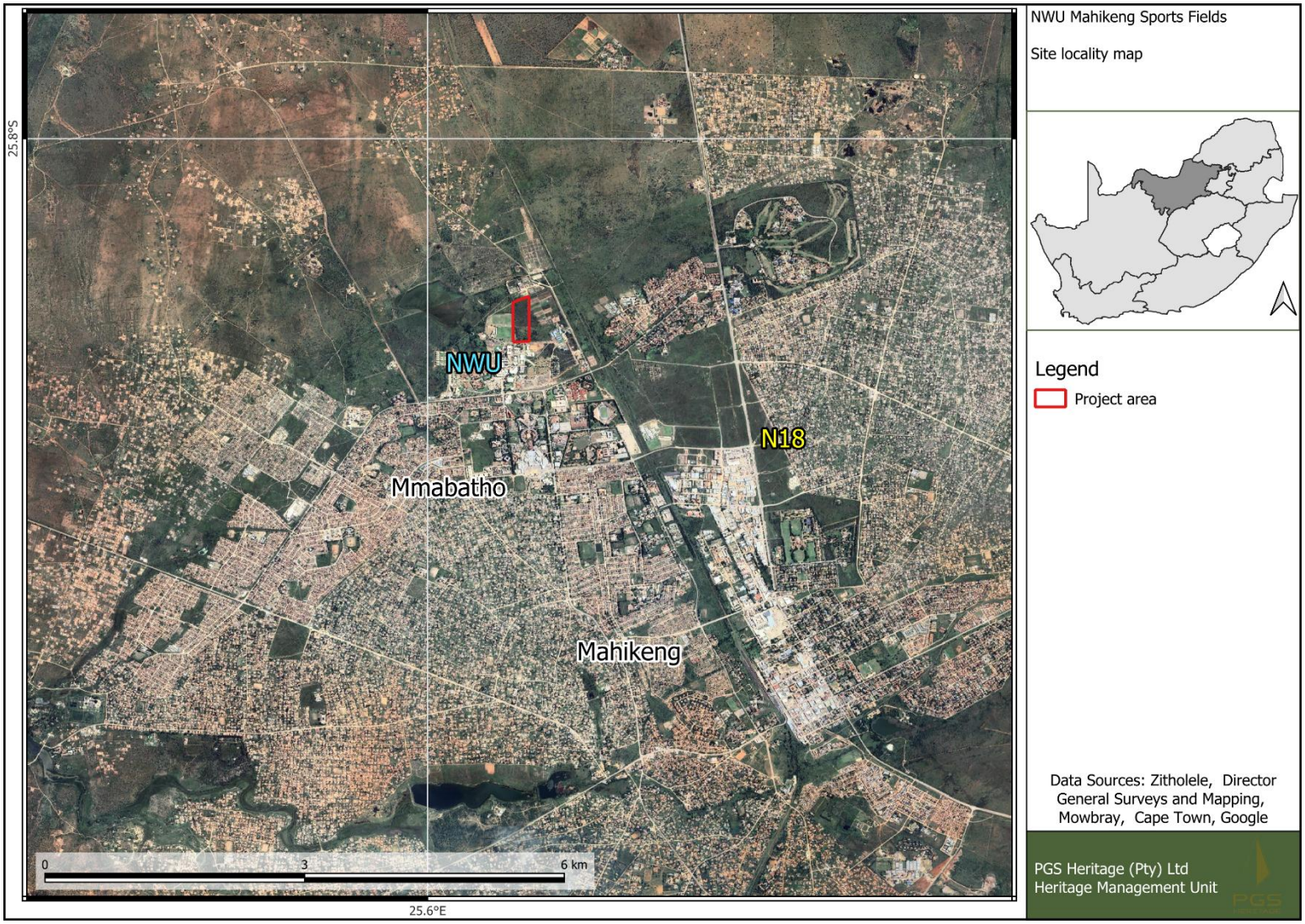


Figure 2-2: Regional Locality Map

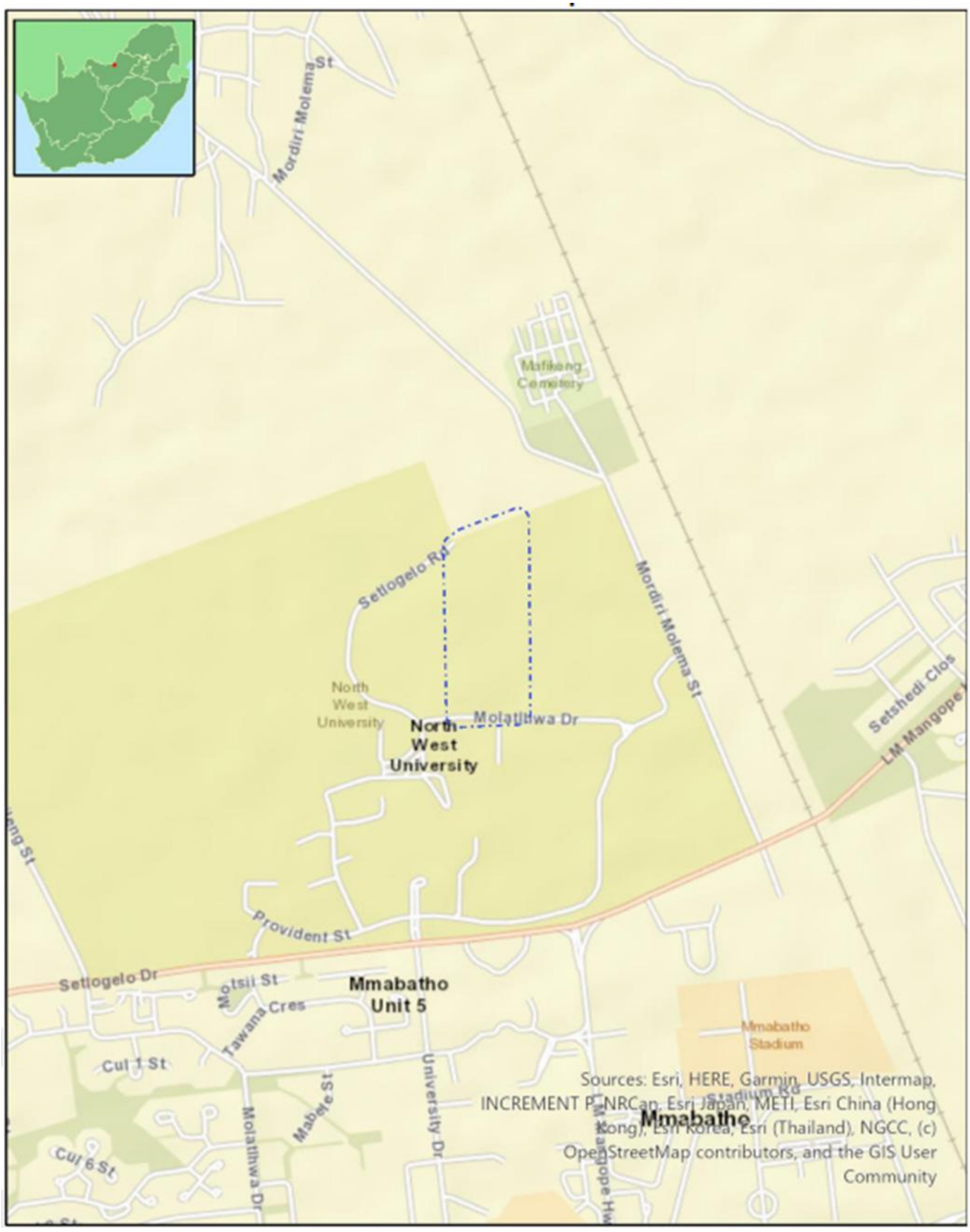


Figure 2-3: Site Locality Map

Figure 2-4: Location of the development site within the context of the larger property

2.7 Lifespan of the facility

The facility is designed for an indefinite lifespan.

2.8 Footprint of the facility

The available footprint of the development site is approximately 10ha in extent.

2.9 Actions to be undertaken during each lifecycle phase

a) Pre-Construction and Construction Process for proposed development

The pre-construction and construction of the proposed development will be undertaken in the following steps:

- Undertaking and completion of proposed development concept;
- Obtain the relevant permits and siting approval (Undertake the BA, permit application for the removal of Species of Conservation Concern (SCC) and General Authorisation Processes);
- Pre-Construction site work;
- Undertaking of, and compliance with pre-construction activities and conditions in terms of the Environmental Authorisation, permit application and GA;
- Demarcation of the no-go areas (*with special emphasis on the north eastern portion of the site that has high agricultural sensitivity that is currently used for agricultural research trials for the University*); and
- Site preparation for the proposed sports facility and associated infrastructure.

The construction phase for the proposed project will take approximately 5 years (*i.e. expected completion date of construction is 30 June 2030*).

b) Operational and Maintenance Activities

After the commissioning of the proposed sports facility, the responsibility for safe operation, maintenance and asset management will be transferred to the NWU operation team. Maintenance will take place according to the scheduled maintenance guidelines, but may also change according to the bookings made for the fields.

It is important to conduct daily monitoring of the sports facility, its associated infrastructure and its surrounding environment. Regular cleaning and maintenance procedures will ensure efficient operations. Maintenance activities will include irrigation that will take place in accordance with weather conditions. Other maintenance activities includes grass cutting, field marking, application of fertiliser and herbicides and cricket pitch rolling.

c) Decommissioning and Recycling Activities

The phase will include closure and ceasing of the sports facility and associated infrastructure activities. Some of the infrastructure will be removed from the site for decommissioning, this will be done with an ECO on the site. Increased traffic will occur on-site, though the effects are expected to be minimal and manageable and mitigation measures will already be implemented.

The decommissioning of the infrastructure installed on site will have similar activities to those that are performed during construction. The decommissioning activities anticipated once the facility reached its end of life are the following:

- Site preparation, removal of all equipment for disposal and re-use.
- Site Rehabilitation to acceptable level as per Environmental Management Programme (EMPr) guidelines.

2.10 Project Need and Desirability

It is the objective of the NWU to construct new Cricket and Hockey facilities at the NWU Mahikeng Campus to promote access to sporting facilities while simultaneously improving student welfare.

NWU Mahikeng Campus does not have these facilities and the need for such facilities is imperative for the growth and development of sporting codes within Mahikeng campus as compared to their sister/brother campuses. This will also spark interest to prospective students to join NWU MHK in future given that they are cricket &/or hockey enthusiast. Furthermore, this will improve the student life experience.

Even though full-service facilities including playing surfaces, embankments, parking, access roads, club houses and pavilions are planned, a phased approach is envisaged to promote sustainable capital expenditure.

The new facilities are planned to be constructed on the northern part of the Campus to the east of the existing Soccer Institute and Rugby Fields.

This is a strategic project. The core rationale is to better student life and improve user experience on NWU Mahikeng Campus. The new sports facilities are not planned to generate capital, however aimed at growing sports offering at the NWU Mahikeng campus. However, this project will contribute to local Small, Medium and Micro-Enterprises (SMME's) as part of the development phase.

3 CONSIDERATION OF ALTERNATIVES

In terms of the EIA Regulations, reasonable and feasible alternatives are required to be considered within the EIA process. All identified, feasible alternatives are required to be assessed in terms of social, biophysical, economic and technical factors. A key challenge of the EIA process is the consideration of alternatives. Most guidelines use terms such as 'reasonable', 'practicable', 'feasible' or 'viable' to define the range of alternatives that should be considered. Essentially there are two types of alternatives:

- Incrementally different (modifications) alternatives to the project; and
- Fundamentally (totally) different alternatives to the project.

Fundamentally different alternatives are usually assessed at a strategic level, and EIA practitioners recognise the limitations of project specific EIAs to address fundamentally different alternatives.

Incrementally different alternatives relate specifically to the project under investigation. "Alternatives", in relation to a proposed activity, means different ways of meeting the general purposes and requirements of the activity, which may include alternatives to:

- the property on which, or location where, it is proposed to undertake the activity;
- the type of activity to be undertaken;
- the design or layout of the activity;
- the technology to be used in the activity; and
- the operational aspects of the activity.

These alternatives are discussed below.

3.1 Approach to the assessment of alternatives

This section discusses the alternatives that will be considered as part of the EIA. NEMA requires that alternatives to a proposed activity must be considered (NEMA, Section 24). Alternatives are different means of meeting the general purpose and need of a proposed activity. In the BA process, the consideration of alternatives is always important, should the proposed site not fit into the parameters of the EIA framework. The alternatives can be categorised as follows.

- Location **/** Site alternatives
- Layout Alternatives
- Technology Alternatives
- No-Go alternative

3.2 Location / Site Alternatives

There are no location alternatives, as the site earmarked for the proposed sports facility and associated infrastructure is strategically located adjacent to the existing soccer and rugby fields within the NWU, Mahikeng Campus. Vacant land with sufficient space is available for the proposed development. This is an initiative by the NWU for student growth and development of sporting codes. There are irrigation dams that are located near the site, that are filled via an existing registered borehole, which also serves the campus as backup water supply. Site access via an internal road through the university is also available to gain entry onto site.

The current and proposed sports facility at the NWU site, will be a compatible land use activity within the surrounding area. The proposed sport facility will be compatible with the aesthetic value, character, and sense of the place of the site.

There will be no heritage or palaeontological resources that will be affected by the proposed construction activities. The site occurs on Klerksdorp Thornveld which has high ecological importance, as there are a number of protected plants such as camel thorn and aloe plants species that occurs on the site earmarked for the proposed sports facility and associated infrastructure. A permit application is underway to remove the protected plants to make way for the proposed development.

Given the reasons outlined above, there are no other site alternatives for the proposed sports facility. The preferred location/site alternative of the proposed sports facility is illustrated on the Site Layout Plan superimposed on the composite sensitivity map i.e. Figure 3-1.

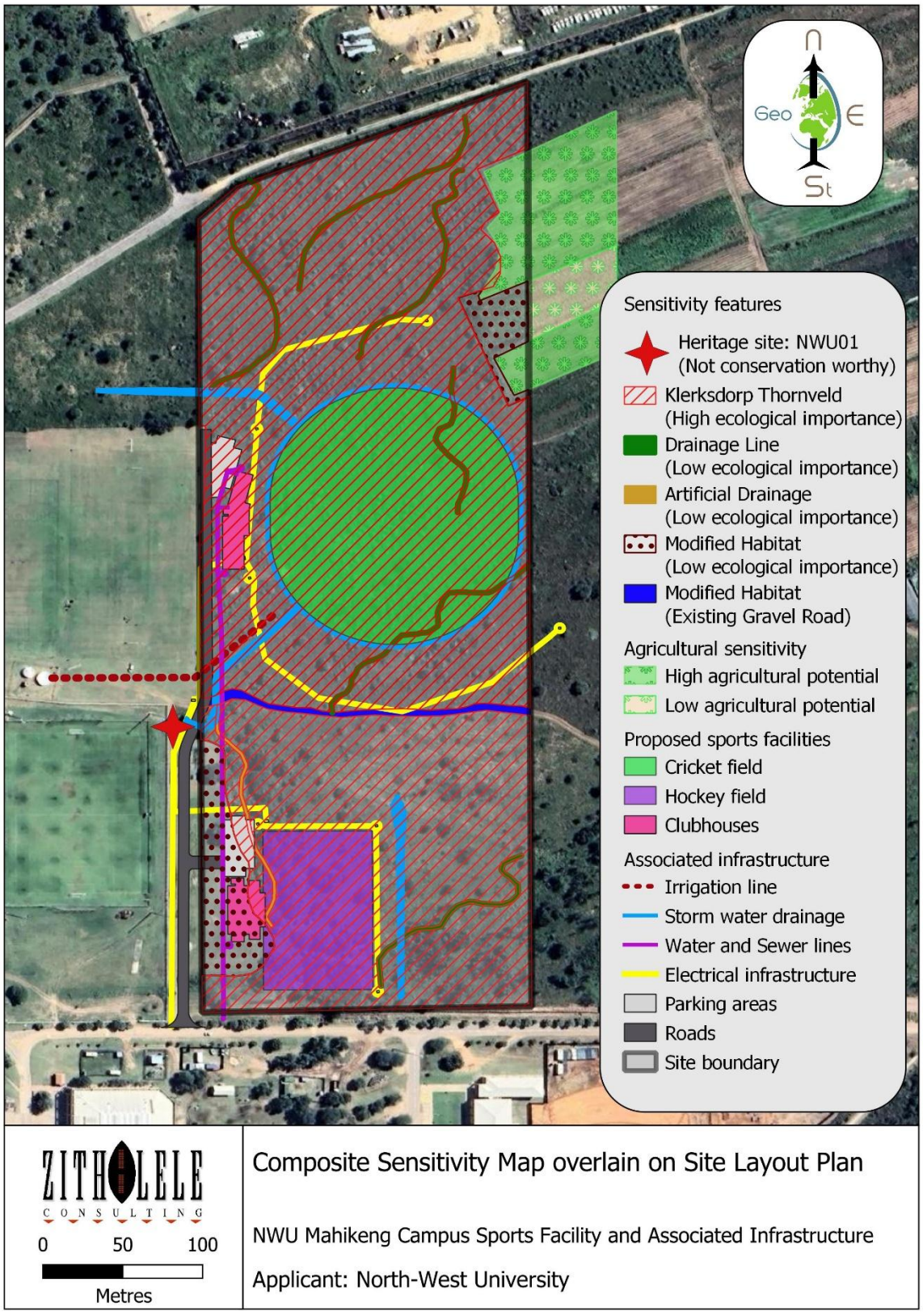


Figure 3-1: Site Layout plan superimposed on the site sensitivities

3.3 Land Use Alternative

There are no other land use alternatives for the site, since the site occurs on vacant land within the North-West University: Mahikeng Campus, and adjacent to the existing rugby and soccer fields.

Other land uses such as industrial, commercial, retail and office park development are therefore not compatible land uses within the university campus.

3.4 Design / Layout Alternatives

There are no design/layout alternatives for the proposed sports facility and associated infrastructure. Refer to the Site Layout Plan in Figure 2-1.

The Specialists have indicated that there are no fatal flaws that indicate that the proposed development layout should not proceed.

3.5 Technology Alternatives

As an alternative solution to cater for electricity requirements, NWU has allocated approximately three million Rands to renewable energy, such as solar energy that will be investigated in more detail. In addition, the proposed sports facility and associated infrastructure will be 10% “Green Building” which includes responsible efficient energy and water usage, use of sustainable materials, and the creation of a healthy environment.

3.6 No-go Alternatives

This alternative considers the option of ‘do nothing’ and maintaining the status quo.

This option assumes that a conservative approach would ensure that the environment is not impacted upon any more than is currently the case. It is important to state that this assessment is informed by the current condition of the area. Should the proposed development not be implemented, the study area will not be affected by any construction-related or operational phase impacts. Therefore, the present state of the biophysical, social and economic environment will remain, unaffected.

Should the North West Department: Economic Development, Environment, Conservation and Tourism (NW EDEC&T) decline the application, there would be no cricket and hockey fields to support interest by the students and these sporting codes would not be developed.

Therefore, the no-go alternative is not considered to be feasible.

4 POLICY AND LEGISLATIVE CONTEXT

This chapter provides an overview of the legal context of the proposed project, including the applicable legislation, guidelines and information that will inform the BA process.

4.1 Requirement for an EIA

In terms of Sections 24 and 24D of NEMA, as read with Government Notices R983, as amended, a Basic Assessment process is required for the proposed development. The table below contains the listed activities in terms of the EIA Regulations of December 2014, as amended, which apply to the proposed development, and for which an application for an EA has been applied. Table 4-1 also includes a description of those project activities, which relate to the applicable listed activities.

Table 4-1: Listed activities triggered by the proposed project

Activity No(s):	Basic Assessment Activity(ies) as set out in Listing Notice 1 and 3 of the EIA Regulations, 2014 as amended	Applicability of listed activities to the proposed development
Activity No 19: GNR 327 (Listing Notice 1)	**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.**	Several natural drainage features, classified as non-perennial minor drainage lines were identified throughout the project area. Additionally, one artificial drainage channel was identified within the project area as a result of berms causing runoff along them. As a result of the establishment of the sports facility and associated infrastructure, there will be infilling or depositing of material of approximately 2000m^3 into the drainage lines on site.
Activity No 27: GNR 327 (Listing Notice 1)	**The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for—** **(i) the undertaking of a linear activity; or** **(ii) maintenance purposes undertaken in accordance with a maintenance management plan.**	The site for the proposed sports facilities is located in an area where camel thorn trees (indigenous trees) and Aloes sp. dominate the area. The site earmarked for the development is approximately 10ha and the camel thorn trees and Aloes will be removed to make way for the proposed development footprint.
Activity No. 12: GNR 324 (Listing Notice 3)	**The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.** **h. North West Province** **(iv) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority.**	There will be approximately 100 000m^2 of indigenous vegetation consisting of camel thorn trees (indigenous trees) and Aloes sp. that will be cleared, as a result of the proposed development which will occur within ESA1 and ESA2 for aquatic resources.
Activity No. 14: GNR 324 (Listing Notice 3)	**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;**	The proposed sports facility will have a physical footprint of 100 000m^2. Several natural drainage features, classified as non-perennial minor drainage lines occur on site and the proposed development will occur within these watercourses and within 32m from

Activity No(s):	Basic Assessment Activity(ies) as set out in Listing Notice 1 and 3 of the EIA Regulations, 2014 as amended	Applicability of listed activities to the proposed development
	(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour. **h. In North West** **iv. In Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority**	the edge of the watercourse. The proposed development will occur within ESA1 and ESA2 for aquatic resources.

4.2 Regulatory and Legal Context

4.2.1 Legislation and Guidelines that have informed the preparation of this Basic Assessment Report

The following legislation and guidelines have informed the scope and content of this BAR:

- National Environmental Management Act (NEMA) 107 of 1998
- EIA Regulations, published under Chapter 5 of NEMA (GNR R982 in Government Gazette No 40772 of December 2014, as amended)
- Guidelines published in terms of the NEMA EIA Regulations, in particular:
    i. Public Participation in the EIA Process
    ii. Integrated Environmental Management Information Series (published by DFFE)

Several other Acts, standards or guidelines have also informed the project process and the scope of issues assessed in this report. A listing of relevant legislation is provided in Table 4-2.

Table 4-2: Relevant legislative permitting requirements applicable to the proposed development

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
National Legislation			
National Environmental Management Act (Act No 107 of 1998)	The EIA Regulations have been promulgated in terms of Chapter 5 of the Act. Listed activities which may not commence without an environmental authorization are identified within these Regulations. In terms of S24(1) of NEMA, the potential impact on the environment associated with these listed activities must be assessed and reported on to the competent authority charged by NEMA with granting of the relevant environmental authorization. In terms of GN R982, R983 and R985 of December 2014, a Basic Assessment Process is required to be undertaken for the proposed project.	NW EDEC&T – Competent Authority.	An Environmental Authorisation (EA) is required, by way of a BA process. The BAR report has been submitted to the NW EDEC&T.
National Environmental Management Act (Act No 107 of 1998)	In terms of the Duty of Care Provision in S28(1) the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to ensure that any pollution or degradation of the environment associated with this project is avoided, stopped or minimized. In terms of NEMA, it has become the legal duty of a project proponent to consider a project holistically, and to consider the cumulative effect of a variety of impacts.	DFFE	The licensing requirements above applies to the project. The Duty of Care Provision will continue to be applied throughout the life cycle of the project.
Environment Conservation Act (Act No 73 of 1989)	National Noise Control Regulations (GN R154 dated 10 January 1992)	Mahikeng Local Municipality	There is no requirement for a noise permit, in terms of the legislation. Noise impacts may result from specific activities carried out during the construction phase of the project and could present an intrusion impact to the workers employed at the proposed site.
National Water Act (Act No 36 of 1998)	Water uses under S21 of the Act must be licensed, unless such water uses falls into one of the categories listed in S22 of the Act or falls under the general authorization (and then registration of the water use is required). Consumptive water uses may include the taking of water from a water resource and storage - Sections 21a and b. non-consumptive water uses may include impeding or diverting of flow in a water course -	Department of Water and Sanitation (DWS)	The aquatic ecologist delineated freshwater resources, namely the non-perennial drainage lines on site which are rated as “Low”. The risk assessment was completed in accordance with the requirements of GN

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
	Section 21c; and altering of bed, banks or characteristics of a watercourse – Section 21i.		4167 by the DWS in terms of Section 21(c) & (i) water uses. The overall risk status was determined to be low risk. Therefore, a General Authorisation (GA) is required in terms of Section 21(c) and 21 (i) of the National Water Act, 1998 (Act No. 36 of 1998).
National Environmental Management: Air Quality Act (Act No 39 of 2004)	Sections 18, 19 and 20 of the Act allow certain areas to be declared and managed as "priority areas" in terms of air quality. Declaration of controlled emitters (Part 3 of Act) and controlled fuels (Part 4 of Act) with relevant emission standards. Section 32 makes provision for measures in respect of dust control. Section 34 makes provision for: i. the Minister to prescribe essential national noise standards – (a) for the control of noise, either in general or by specified machinery or activities or in specified places or areas; or (b) for determining – (i) a definition of noise (ii) the maximum levels of noise (2) When controlling noise, the provincial and local spheres of government are bound by any prescribed national standards.	NW EDEC&T – air quality Mahikeng Local Municipality - Noise	The proposed sports facility does not require an Atmospheric Emissions License (AEL). During the construction phase, the Applicant and its appointed contractors must adhere to strict measures to minimise dust and noise impacts.
National Heritage Resources Act (Act No 25 of 1999)	Section 38 states that Heritage Impact Assessments (HIAs) are required for certain kinds of development including: • the construction of a road, power line, pipeline, canal or other similar linear development or barrier exceeding 300 m in length. • any development or other activity which will change the character of a site exceeding 5 000 m^2 in extent. The relevant Heritage Resources Authority must be notified of developments such as linear developments (such as roads and power lines), bridges exceeding 50 m, or any development or other activity which will change the character of a site exceeding 5 000 m^2; or the re-zoning of a site exceeding 10 000 m^2 in extent. This notification must be provided in the early stages of initiating that development, and details regarding the location, nature and extent of the proposed development must be provided. Standalone HIAs are not required where an EIA is carried out, as long as the EIA contains an	South African Heritage Resources Agency (SAHRA) where heritage assessment is a component of the BA process.	A Heritage Impact Assessment (HIA) was undertaken (refer to Appendix F6) as the proposed development will change the character of the site exceeding 5 000m^2 in extent. During the fieldwork no heritage features or resources of conservation worthy status were identified. However, a single, out-of-context, Stone Age findspot (Nwu01) was

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
	adequate HIA component that fulfils the provisions of Section 38. In such cases only those components not addressed by the EIA should be covered by the heritage component.		identified and was deemed to be Not Conservation Worthy (NCW).
National Environmental Management: Biodiversity Act (Act No 10 of 2004)	• Provides for the MEC/Minister to identify any process or activity in such a listed ecosystem as a threatening process (S53) • A list of threatened and protected species has been published in terms of S 56(1) - Government Gazette 29657. • Three government notices have been published, i.e. GN R 150 (Commencement of Threatened and Protected Species Regulations, 2007), GN R 151 (Lists of critically endangered, vulnerable and protected species) and GN R152 (Threatened or Protected Species Regulations). • Provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), vulnerable (VU) or protected. The first national list of threatened terrestrial ecosystems has been gazetted, together with supporting information on the listing process including the purpose and rationale for listing ecosystems, the criteria used to identify listed ecosystems, the implications of listing ecosystems, and summary statistics and national maps of listed ecosystems (National Environmental Management: Biodiversity Act: National list of ecosystems that are threatened and in need of protection, (G 34809, GN 1002), 9 December 2011). • DFFE published Regulations on Alien and Invasive Species (AIS) in terms of the National Environmental Management: Biodiversity Act, on Friday 1st August2014. A total of 559 alien species are now listed as invasive, in four different categories. A further 560 species are listed as prohibited, and may not be introduced into the country	DFFE Application for tree removal permit	Under this Act, a permit would be required for any activity which is of a nature that may negatively impact on the survival of a listed protected species. A Terrestrial Biodiversity Impact Assessment has been undertaken as part of the Basic Assessment Process. Several Aloes were observed on site, some of which could be *Aloe c.f. braamvanwykii*. Given that these were not easily identifiable owing to seasonal constraints, it is recommended that all species be relocated to a predetermined location. The proposed relocation site is indicated on Figure 5-33 and occurs within the existing NWU: Mahikeng Campus, on the Remainder of Erf 1090 Mmabatho Unit 5, North West Province in an area that is currently undeveloped. A permit will be applied for through the relevant provincial authorities authorizing their removal and relocation. It is suggested that a walkdown be conducted prior to commencement of the development to locate and – where possible – relocate all Aloes present within the Project Area of Influence (PAOI).

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
Conservation of Agricultural Resources Act (Act No 43 of 1983)	• Regulation 15 of GNR1048 provides for the declaration of weeds and invader plants, and these are set out in Table 3 of GNR1048. Declared Weeds and Invaders in South Africa are categorized according to one of the following categories: • Category 1 plants: are prohibited and must be controlled. • Category 2 plants: (commercially used plants) may be grown in demarcated areas providing that there is a permit and that steps are taken to prevent their spread. Category 3 plants: (ornamentally used plants) may no longer be planted; existing plants may remain, as long as all reasonable steps are taken to prevent the spreading thereof, except within the floodline of watercourses and wetlands. • These regulations provide that Category 1, 2 and 3 plants must not occur on land and that such plants must be controlled by the methods set out in Regulation 15E.	DFFE	• While no permitting or licensing requirements arise from this legislation, this Act will find application during the EIA phase and will continue to apply throughout the life cycle of the project. In this regard, soil erosion prevention and soil conservation strategies must be developed and implemented. In addition, a weed control and management plan must be implemented.
National Forests Act (Act No. 84 of 1998)	» Protected trees: According to this act, the Minister may declare a tree, group of trees, woodland or a species of trees as protected. The prohibitions provide that 'no person may cut, damage, disturb, destroy or remove any protected tree, or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a license granted by the Minister'. » Forests: Prohibits the destruction of indigenous trees in any natural forest without a license.	DFFE	As per the Terrestrial Biodiversity Impact Assessment, numerous individuals of the protected tree species *Vachellia erioloba* (Camelthorn) were detected during the field survey. *Vachellia erioloba* is protected by the List of Protected Tree Species under the National Forests Act, 1998 (Act No. 84 of 1998) (NFA). In terms of the NFA, no person may 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 product derived from a protected tree, except under a licence or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated. Contravention of this declaration is regarded as a first category offence.

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
			A Permit Application will be submitted to the DFFE for the removal of the *Vachellia erioloba* trees that occur on the site earmarked for the proposed sports field.
National Veld and Forest Fire Act (Act 101 of 1998)	In terms of S12 the applicant must ensure that the firebreak is wide and long enough to have a reasonable chance of preventing the fire from spreading, not causing erosion, and is reasonably free of inflammable material. In terms of S17, the applicant must have such equipment, protective clothing, and trained personnel for extinguishing fires.	DFFE	No permitting or licensing requirements arise from this legislation, as fires will not occur on site.
Hazardous Substances Act (Act No 15 of 1973)	This Act regulates the control of substances that may cause injury, or ill health, or death by reason of their toxic, corrosive, irritant, strongly sensitizing or inflammable nature or the generation of pressure thereby in certain instances and for the control of certain electronic products. To provide for the rating of such substances or products in relation to the degree of danger; to provide for the prohibition and control of the importation, manufacture, sale, use, operation, modification, disposal or dumping of such substances and products. » Group I and II: Any substance or mixture of a substance that might by reason of its toxic, corrosive etc., nature or because it generates pressure through decomposition, heat or other means, cause extreme risk of injury etc., can be declared to be Group I or Group II hazardous substance; » Group IV: any electronic product; » Group V: any radioactive material. The use, conveyance or storage of any hazardous substance (such as distillate fuel) is prohibited without an appropriate license being in force.	Department of Health	It is necessary to identify and list all the Group I, II, III and IV hazardous substances that may be on the site and in what operational context they are used, stored or handled. If applicable, a license is required to be obtained from the Department of Health.
Occupational Health and safety Act, 1993 (Act No.85 of 1993)	Relevant sections include Section 8. General duties of employers to their employees. Relevant sections include Section 9. General duties of employers and self-employed persons to person other than their employees.	Department of Labour	A permit or a license is not required, however the Applicant must take note and implement Section 8 and 9 of the Occupational Health and Safety Act.
National Environmental Management: Waste	The Minister may by notice in the Gazette publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment. The Minister may amend the list by – » Adding other waste management activities to the list. » Removing waste management activities from the list.	DFFE	N/A

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
Act, 2008 (Act No. 59 of 2008)	» Making other changes to the particulars on the list. In terms of the Regulations published in terms of this Act (GN 921), a Basic Assessment or Environmental Impact Assessment is required to be undertaken for identified listed activities. Any person who stores waste must at least take steps, unless otherwise provided by this Act, to ensure that: » The containers in which any waste is stored, are intact and not corroded or in any other way rendered unlit for the safe storage of waste. » Adequate measures are taken to prevent accidental spillage or leaking. » The waste cannot be blown away. » Nuisances such as odor, visual impacts and breeding of vectors do not arise; and » Pollution of the environment and harm to health are prevented.		
NEM:WA: National Waste Management Strategy (GN 344 of 4 May 2012)	The objects of the NEM:WA and National Waste Management Strategy (NWMS) are structured around the steps in the waste management hierarchy, which is the overall approach that informs waste management in South Africa. The waste management hierarchy consists of options for waste management during the lifecycle of waste, arranged in descending order of priority: waste avoidance and reduction, re-use and recycling, recovery, and treatment and disposal as the last resort.	DFFE	It is therefore necessary to consider the re-use and recycling of all waste products by the NWU.
National Road Traffic Act (Act No 93 of 1996)	» The technical recommendations for highways (TRH 11): "Draft Guidelines for Granting of Exemption Permits for the Conveyance of Abnormal Loads and for other Events on Public Roads" outline the rules and conditions which apply to the transport of abnormal loads and vehicles on public roads and the detailed procedures to be followed in applying for exemption permits are described and discussed. » Legal axle load limits and the restrictions imposed on abnormally heavy loads are discussed in relation to the damaging effect on road pavements, bridges, and culverts. » The general conditions, limitations, and escort requirements for abnormally dimensioned loads and vehicles are also discussed and reference is made to speed restrictions, power/mass ratio, mass distribution, and general operating conditions for abnormal loads and vehicles. Provision is also made for the granting of permits for all other exemptions from the requirements of the National Road Traffic Act and the relevant Regulations.	Provincial Department of Transport (Provincial Roads) South African National Roads Agency Limited (SANRAL) (National Roads)	An abnormal load / vehicle permit may be required to transport the various components to site for construction. These include: Route clearances and permits will be required for vehicles carrying abnormally heavy or abnormally dimensioned loads. Transport vehicles exceeding the dimensional limitations (length) of 22m. Depending on the trailer configuration and height when loaded.
Promotion of Access to Information Act, 2000 (Act No. 2 of 2000)	The Act recognises that everyone has a Constitutional right of access to any information held by the state and by another person when that information is required to exercise or protect any rights. The purpose of the Act is to foster a culture of transparency and accountability in public and private bodies and to promote a society in which people have access to information that enables them to exercise and protect their rights.	DFFE	The Public Participation Process (PPP) has been undertaken in an open and transparent manner to ensure all stakeholders have access to information regarding the proposed development and have the opportunity to register and comment on the application (refer to the

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
			Public Participation Process that was undertaken in Section 6).
Provincial Legislation			
North West Biodiversity Sector Plan, 2015	The North West Biodiversity Sector Plan contains various classes of environmental features i.e. Critical Biodiversity Areas (CBAs), which have two sub-categories of CBA (CBA Irreplaceable and CBA Optimal), and Ecological Support Areas (ESAs).	North West Department of Economic Development, Environment, Conservation and Tourism (NW EDEC&T)	According to the North West Biodiversity Sector Plan, 2015, the site earmarked for the proposed development overlaps with the ESA and 2 in terms of Aquatic Critical Biodiversity Areas.
Municipal By-Laws			

Mahikeng Local Municipality By-Laws	"By-laws are laws passed by the Executive Council of a municipality to regulate the affairs and the services it provides within its area of jurisdiction". A municipality derives the powers to pass a by-law from the Constitution of the Republic of South Africa, which gives certain specified powers and competencies to local government as set out in Part B of Schedules 4 and Part B of 5 to the Constitution."
	
	By-laws for the following may be applicable for the project:
	
	• Advertising signs
	• Encroachment on Property
	  • Public Space;
	  • Public Roads & Miscellaneous;
	  • Relating to Nuisances;
	  • Relating to the Removal of Refuse;
	  • Cemetery;
	  • Street Trading;
	  • Waste Management;
	  • Disaster Management Bylaws;
	  • Electricity Supply Bylaws;
	  • Environmental Health;
	  • Keeping of Animals;
		Mahikeng Local Municipality	NWU must consider the above during the implementation of the project.

Legislation	Applicable Requirements	Relevant Authority	Compliance requirements
	• Storm Water Management Bylaws; and • Water Services Bylaws.		

5 DESCRIPTION OF THE AFFECTED ENVIRONMENT

This section of the report provides a description of the environment that may be affected by the proposed Project. This information is provided in order to assist the reader in understanding the receiving environment within which the proposed Project is situated. Features of the biophysical, social and economic environment that could directly, or indirectly be affected by, or could affect, the proposed development has been described. This information has been sourced from existing information available for the area, and aims to provide the context within which this BA is being conducted. A comprehensive description of each aspect of the affected environment is included within the Specialist Report contained within the Appendices.

5.1 Biophysical Environment

5.1.1 Climate

The project area falls within the Klerksdorp Thornveld vegetation. The area receives summer rainfall with high temperatures. The area has an overall mean average precipitation (MAP) of 533 mm. Frost incidences are frequent only in winter (Mucina & Rutherford, 2006; Figure 5-1).

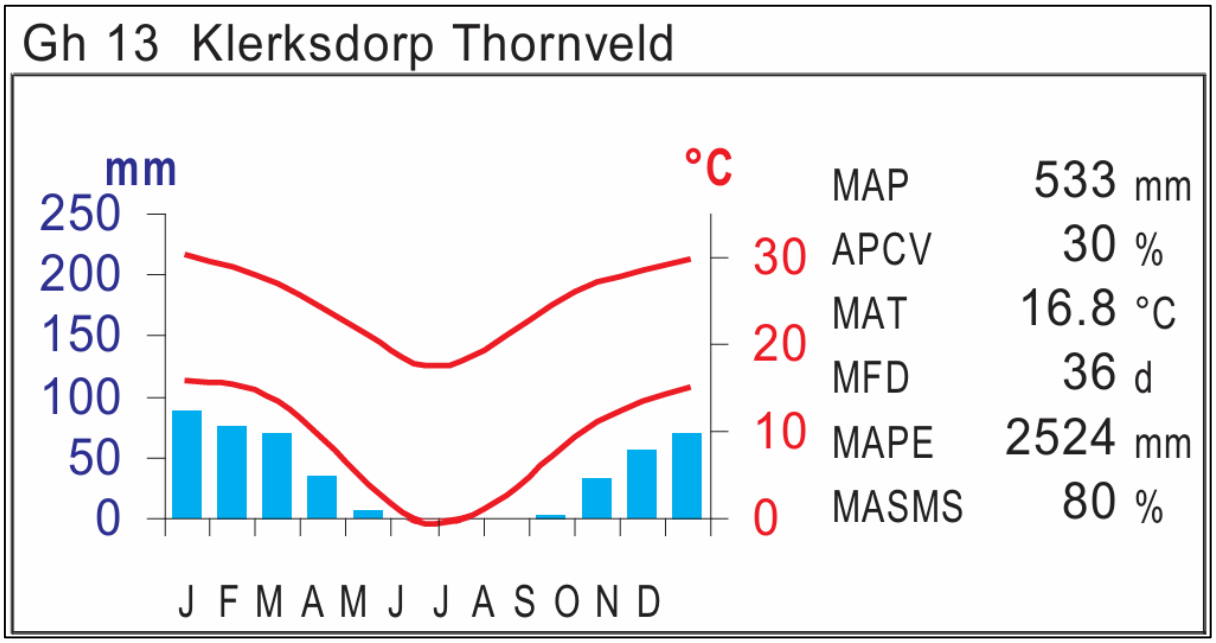


Figure 5-1: Summarised climate for the region

5.1.2 Freshwater Resources

An Aquatic Biodiversity Compliance Statement that included and wetland baseline and impact assessment was undertaken by The Biodiversity Company (refer to Appendix F1) within the Project Area of Influence (POAI) i.e. within a 500m radius of the site earmarked for the proposed sports facility.

This assessment was conducted in accordance with the amendments to the Environmental Impact Assessment Regulations, 2014 (No. 326, 7 April 2017) of the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998). The approach has taken cognisance of the recently published Government Notice 320 in terms of NEMA dated 20 March 2020 as well as the Government Notice 1150 in terms of NEMA dated 30 October 2020: “Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation”.

5.1.2.1 National Freshwater Ecosystem Priority Ecosystems

The National Freshwater Ecosystem Priority Areas (NFEPA) database forms part of a comprehensive approach for the sustainable and equitable development of South Africa’s scarce water resources. This database provides guidance on how many rivers, wetlands and estuaries, and which ones, should remain in a natural or near-natural condition to support the water resource protection goals of the NWA. This directly applies to the NWA, which feeds into Catchment Management Strategies, water resource classification, reserve determination, and the setting and monitoring of resource quality objectives (Nel *et al*. 2011). The NFEPAs are intended to be conservation support tools and envisioned to guide the effective implementation of measures to achieve the National Environment Management Biodiversity Act’s biodiversity goals (Act No.10 of 2004) (NEM:BA), informing both the listing of threatened freshwater ecosystems and the process of bioregional planning provided for by this Act (Nel *et al.,* 2011).

A 500 m radius has been demarcated surrounding the initial project area to facilitate the identification of wetlands within the regulatory zone, this area is referred to as the Project Area of Influence (PAOI).

According to Nel *et al.* (2011), one unchannelled valley bottom wetland and a depression wetland are located within the PAOI (Figure 5-2).

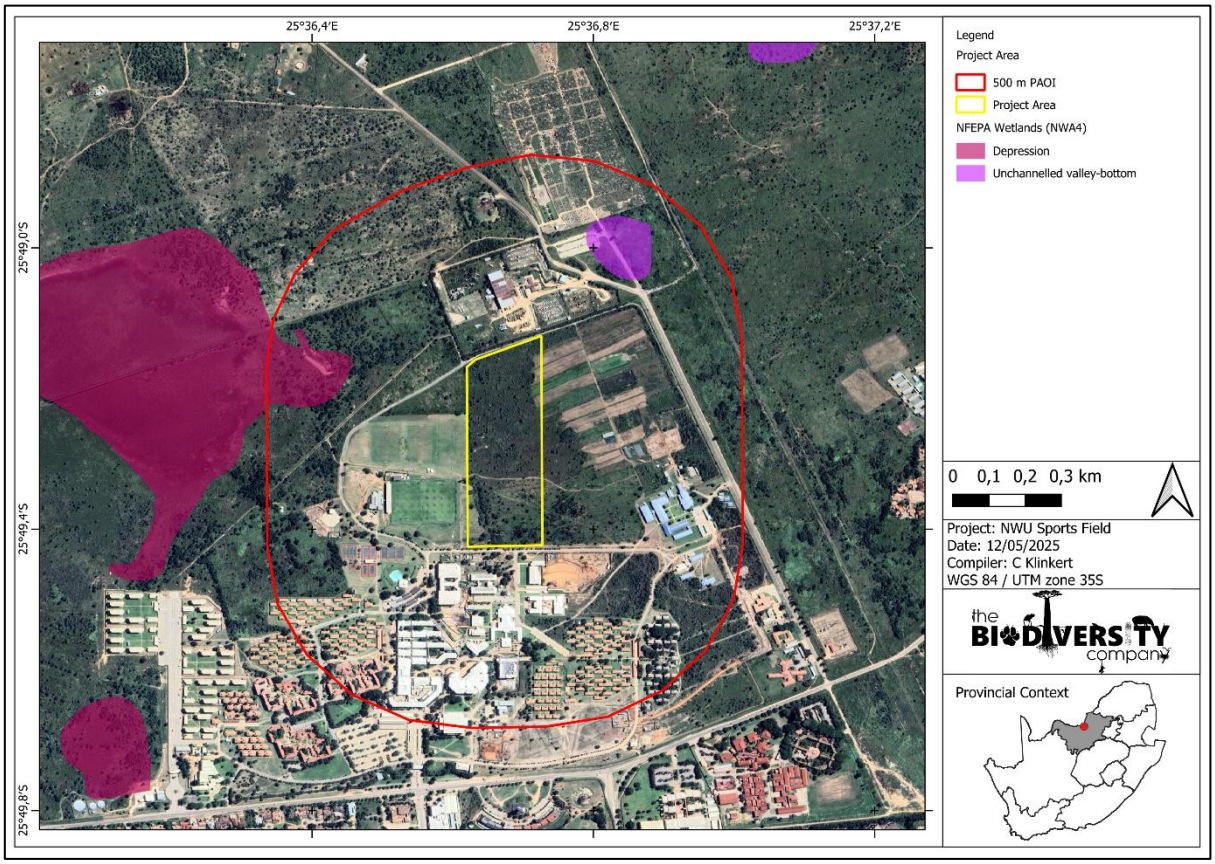


Figure 5-2: Wetland features identified within the PAOI according to the National Freshwater Ecosystem Priority Ecosystems dataset

5.1.2.2 South African Inventory of Inland Aquatic Ecosystems

This spatial dataset is part of the South African Inventory of Inland Aquatic Ecosystems (SAIIAE) which was released as part of the National Biodiversity Assessment (NBA 2018). National Wetland Map 5 includes inland wetlands and estuaries, associated with river line data and many other data sets within the South African Inventory of Inland Aquatic Ecosystems (SAIIAE, 2018).

One wetland is located within the PAOI, namely a depression wetland. According to the dataset, the depression wetland is classified as being “A/B – Largely Natural”. The threat and protection status of the wetland are “Least Concern” and “Poorly Projected”, respectively (Figure 5-3).

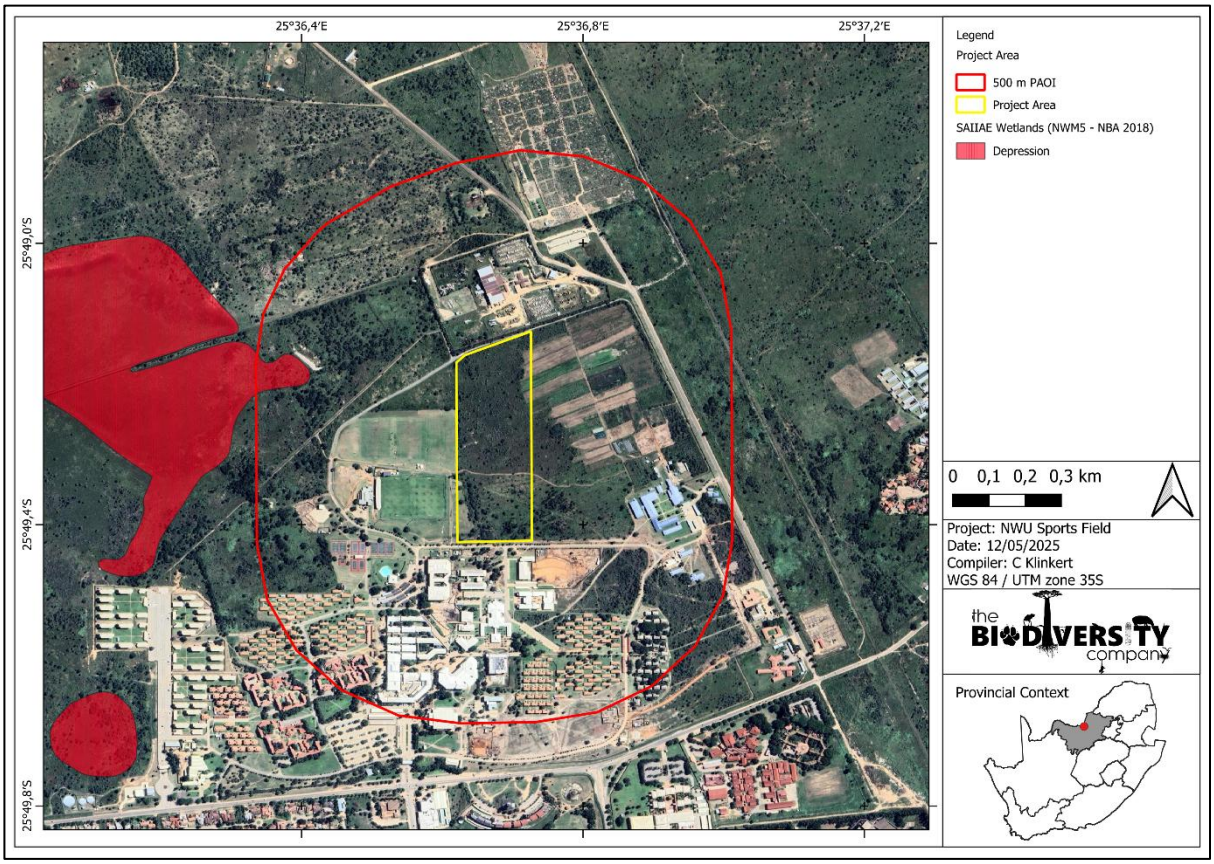


Figure 5-3: Wetland features identified within the PAOI according to the South African Inventory of Inland Aquatic Ecosystems dataset

5.1.2.3 North-West Aquatic Biodiversity Sector Plan

The North-West Biodiversity Sector Plan (READ, 2015) classifies biodiversity priority areas, namely Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) together with protected areas, which are important for the persistence of a viable representative sample of all ecosystem types and species, as well as the long-term ecological functioning of the landscape as a whole.

- CBAs are areas of the landscape that need to be maintained in a natural or near-natural state to ensure the continued existence and healthy functioning of important species and ecosystems and the delivery of ecosystem services. Thus, if these areas are not maintained in a natural or near natural state then provincial biodiversity targets cannot be met (SANBI, 2017).
- ESAs are areas that are not essential for meeting biodiversity representation targets but play an important role in supporting the ecological functioning of ecosystems as well as adjacent Critical Biodiversity Areas, and/or in delivering ecosystem services that support socio-economic development (SANBI, 2017).

The PAOI overlaps with a CBA, as well as ESAs 1 and 2 regions located throughout the PAOI (Figure 5-4).

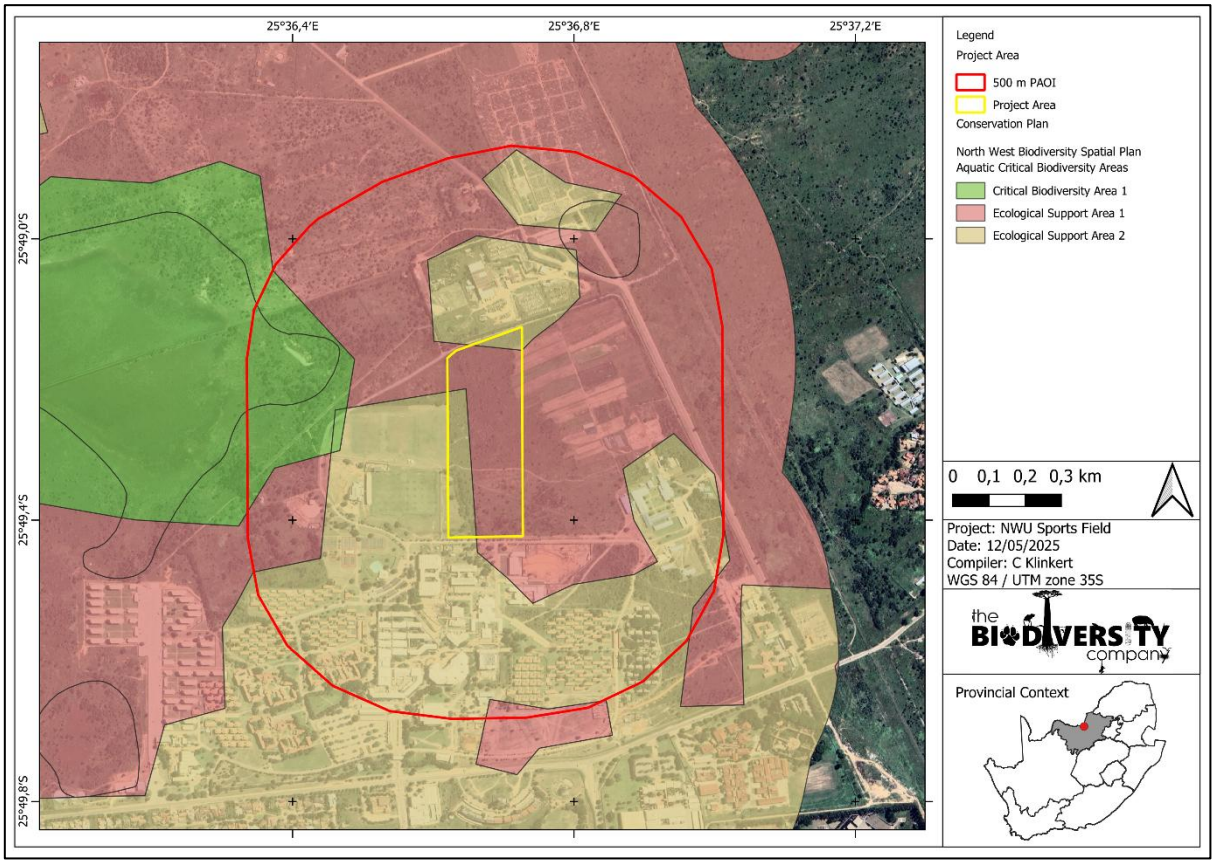


Figure 5-4: North-West Biodiversity Sector Plan dataset presenting CBAs and ESAs identified within the PAOI

5.1.2.4 Site survey

No natural wetlands or river systems are located within the PAOI. However, several natural drainage features, classified as non-perennial minor drainage lines were identified throughout the project area (Figure 5-5 and Figure 5-6). Additionally, one artificial drainage channel was identified within the project area as a result of berms causing runoff along them.

The drainage lines are classified as an A Section watercourse. The DWAF (2005) manual separates the classification of watercourses into three (3) separate types of channels or sections defined by their position relative to the zone of saturation. The classification system separates channels into:

- those that do not have baseflow ('A' Sections);
- those that sometimes have baseflow ('B' Sections) or non-perennial; or
- those that always have baseflow ('C' Sections) or perennial.

An ephemeral drainage line is considered a low sensitivity system because it only carries water during specific periods, typically after heavy rainfall, and does not support permanent aquatic habitats. Its transient nature means that it is less likely to sustain sensitive or rare species that

require consistent water availability, making it more resilient to disturbances compared to perennial water systems.

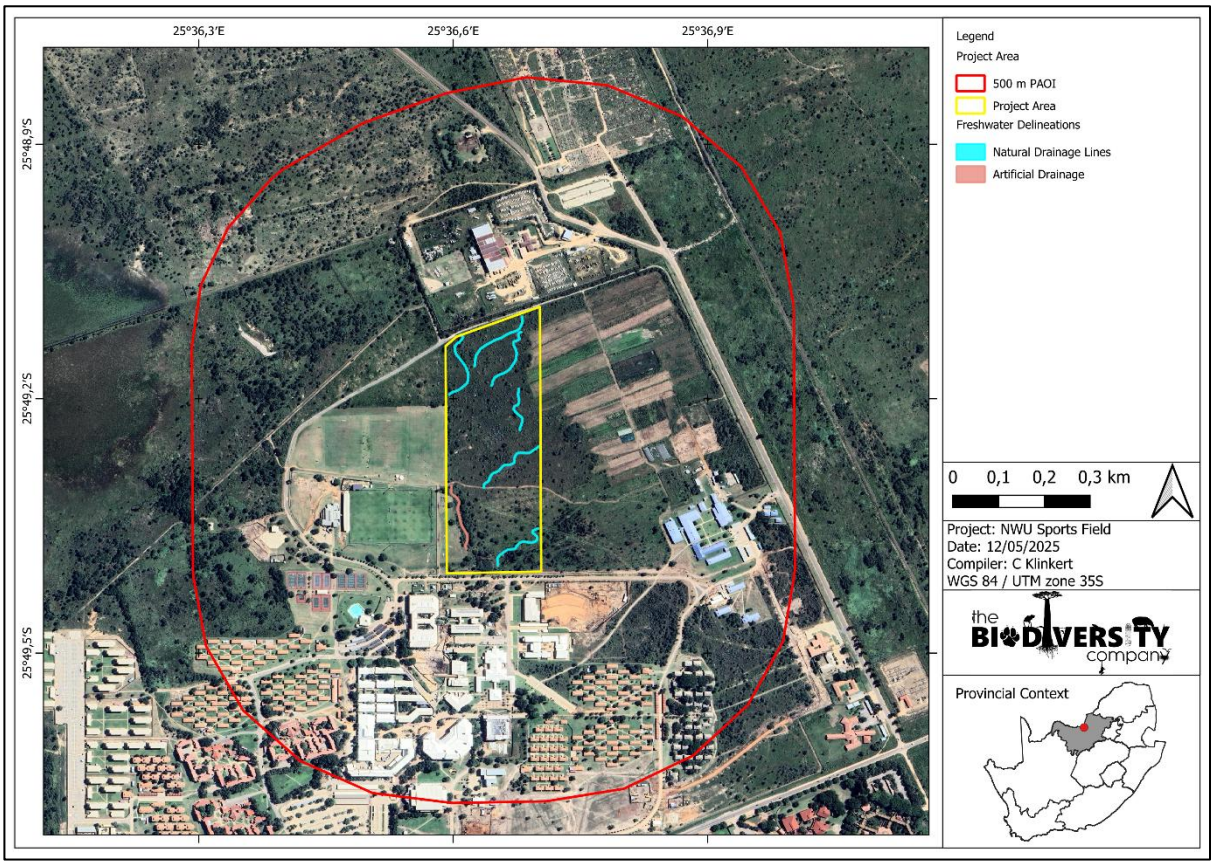


Figure 5-5: Delineation of the drainage features within the PAOI

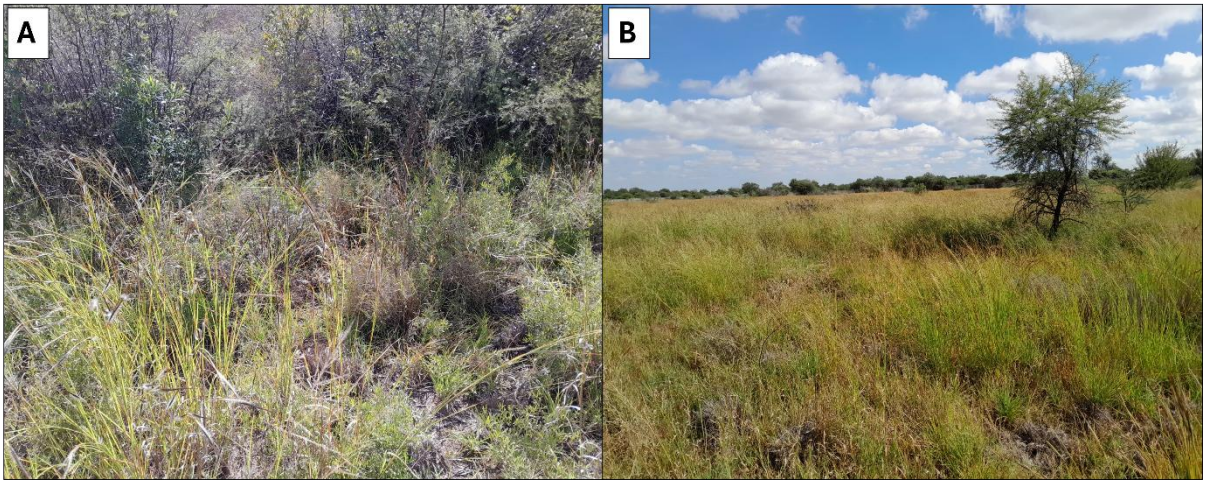


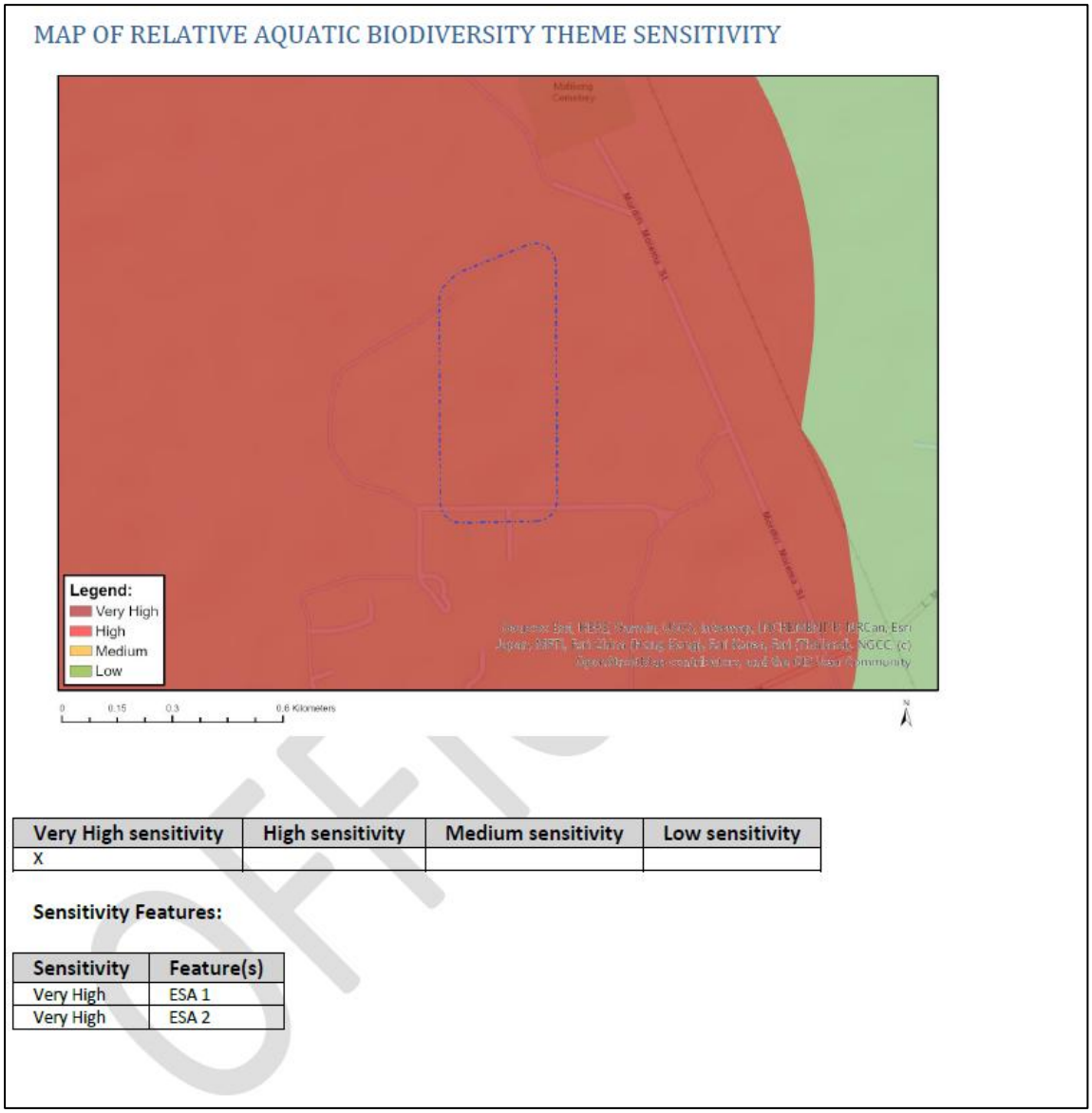
Figure 5-6: Photographs of the watercourses identified within the PAOI. A & B) Drainage Line

5.1.2.5 Site Sensitivity Verification

a) Desktop Ecological Sensitivity

The following is deduced from the National Web-based Environmental Screening Tool (Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended) shown in Figure 5-7:

- Aquatic Biodiversity Theme sensitivity as “Very High” for the proposed project area and PAOI are attributed to the presence of ESAs 1 and 2; and
- Aquatic Biodiversity Theme sensitivity as “Low” for the remaining area where no watercourse features have been identified.



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	ESA 1
Very High	ESA 2

Figure 5-7: Aquatic Biodiversity Theme Sensitivity

b) Ecological Sensitivity

The National Web based Environmental Screening Tool has characterised the aquatic theme sensitivity of the project area as “Very High” sensitivity (Figure 5-8).

Table 5-1 provides a comparison between the Environmental Screening Tool and the specialist determined Site Ecological Importance (SEI) of the project. The specialist-assigned sensitivity ratings are based largely on the SEI process.

Table 5-1: Summary of the Screening Tool Sensitivity versus the Specialist assigned Site Ecological Importance (SEI) for the Field Survey Area of the Project Area

Screening Tool Theme	Screening Tool	Aspect	Specialist	Tool Validated or Disputed by Specialist - Reasoning
Aquatic Biodiversity Theme	Very High	Drainage Lines	Low	Disputed – No wetlands are located within the 500 m PAOI. Several minor non-perennial drainage lines are located within the project area. These drainage features lack a well-defined channel and offer minimal to no ecological benefits. Their primary function is to convey excess stormwater through the area during periods of heavy rainfall, therefore the drainage features have been assigned a low freshwater sensitivity rating.
Aquatic Biodiversity Theme	Very High	Remaining Area	Low	Disputed – No wetlands are located within the 500 m PAOI. The remaining area contains historical and current disturbances such as developments, roads, agricultural fields and disturbed topography. Therefore, the remaining area does not significantly contribute to the hydrological characteristics of the area and has been assigned a low freshwater sensitivity rating.

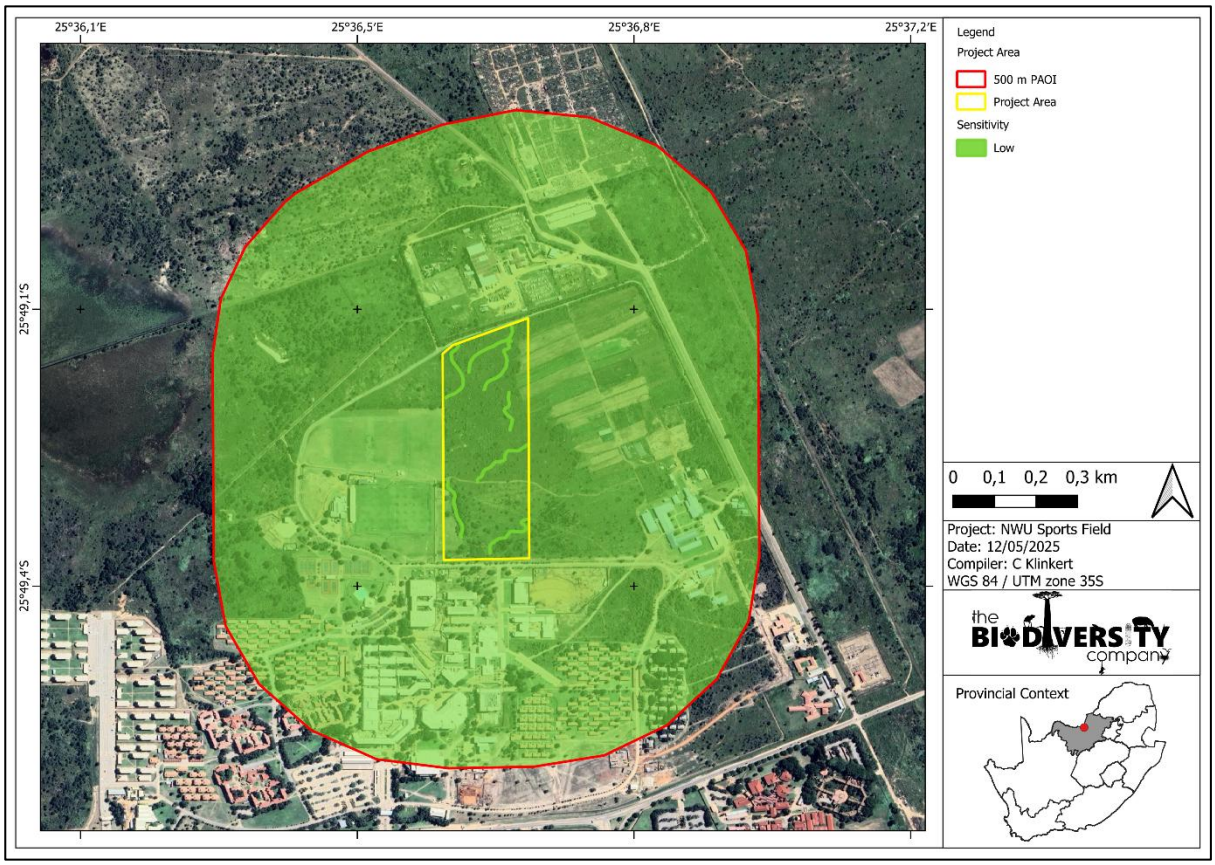


Figure 5-8: Aquatic biodiversity sensitivity

5.1.3 Hydropedology

A Hydropedological Impact Assessment was undertaken by The Biodiversity Company. Refer to Appendix F2. The findings of the study are discussed below.

The three hillslope types which were identified, includes the presence of recharge (deep and shallow), interflow (Soil/Bedrock) and responsive saturated hydropedological types. The NWU sports facility and associated infrastructure will have an acceptable effect on the hillslope hydrology due to the extent of the sports field, building concrete foundations, pipelines or associated infrastructure. Most of the hillslopes with recharge (deep and shallow) dominating throughout as well as the size of the greater catchment have acceptable impacts. Lateral flow from interflow (Soil/Bedrock) changes can occur in the hillslopes which may increase surface run-offs, surface return flows and overland flows. However, their effects will have acceptable impacts on the total streamflow or total deductible water regime losses of watercourses in the larger catchment as both lateral and vertical flow paths will occur in response to the flow impediment.

The NWU sports facility and associated infrastructure will require mitigation measures being implemented due to impacts expected on some of the identified hillslopes in the assessment area. Changes in water regime stores will occur, which can require mitigations. Measures which can promote infiltration will result in the addition of the water regimes back in the catchment. Measures can also be set on soils which will experience some changes in flow paths following the development and associated infrastructure. Flow impediment can be managed well to minimise saturation conditions and surface return flows to promote subsurface groundwater recharge and storage. Valley bottom soils are responsive hydromorphic soils due to long periods of saturation. Usually, development should avoid areas with responsive (saturated) hydropedological soil types mostly associated to, and found in areas like wetlands (not present in the current site) which act as water regime receptors for the water balance in the hillslopes` catchment. These soils also have a high tendency to promote migration of inorganic (chemical elements) and organic (faecal bacteria) from a pollution source towards water resources in the catchment.

5.1.4 Geotechnical

A Geotechnical Assessment was undertaken by Geopotential (Pty) Ltd in February 2025 (refer to Appendix F3). The findings of this study are discussed below.

The purpose of this investigation was to assess the general geological and geotechnical conditions to provide essential information in support of the planning and design of a proposed pavilion and clubhouse. This report outlines the scope of the investigation, methodology employed, together with the key findings and recommendations.

According to the published geological map and site observations, the project area is underlain by Tertiary age calcrete. The regional geological map is included as Figure 5-9. The study area contains no water-soluble strata as defined by SANS 1936 (2012), and as such classifies as non-dolomite land.

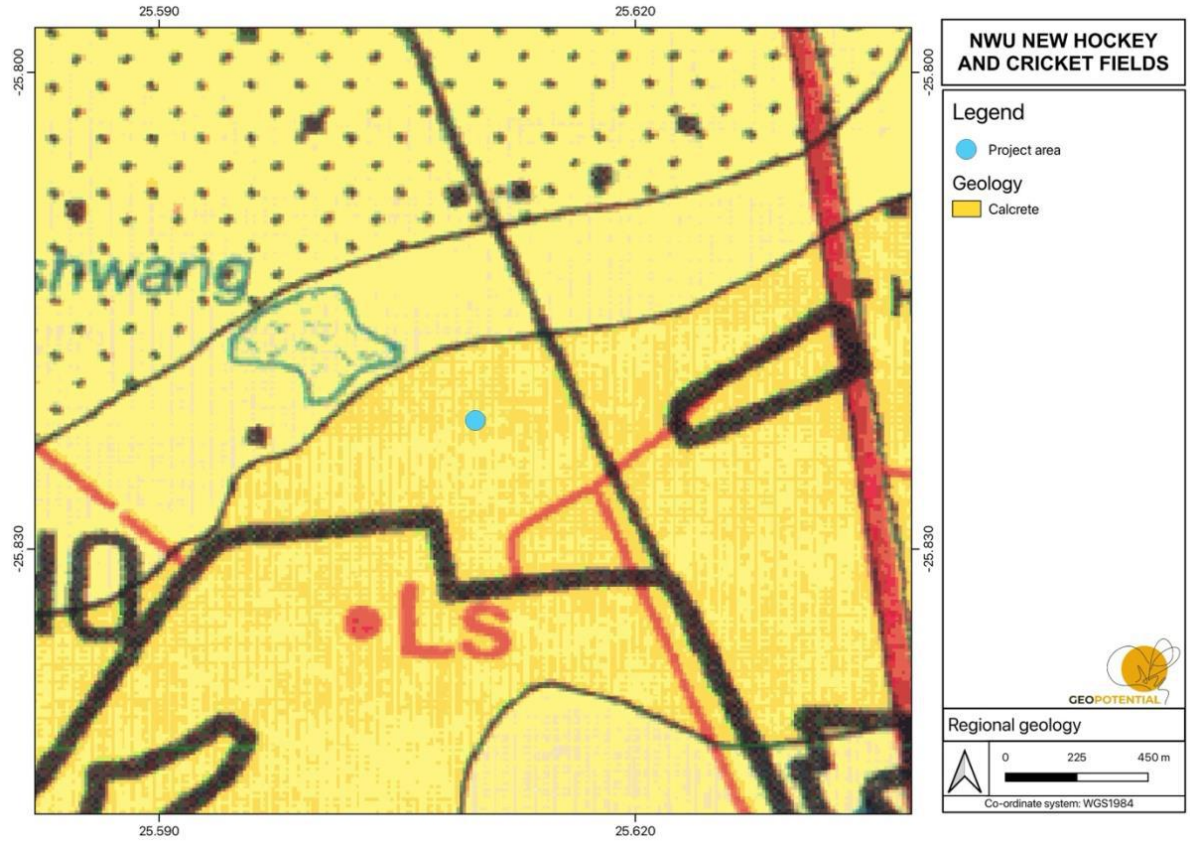


Figure 5-9: Regional geological map

The available regional geological information shows no significant geological structures within or adjacent to the project area.

No significant deposits of minerals of economic importance are indicated to occur in or in the direct vicinity of the study area. The area is not deemed to be at risk of adverse effects associated with undermining.

With regards to the regional seismicity, the ground conditions are classified as Ground Type 1. The project area is not deemed to be at risk of natural or mining-induced seismic events. The proposed buildings to be erected is deemed to classify as Importance Class III with an Importance Factor of 1,2.

Although shallow perched groundwater was not observed within the soil profile, the presence of ferricrete nodules within the soil horizons indicates the potential development of a weak seasonal perched groundwater table or at least high soil moisture content for extended periods.

On a regional scale, the project area drains mainly towards the west and northwest. The project area itself is nearly flat and the drainage gradient and direction should only be obtained from high resolution contour survey.

(a) Expansiveness

Laboratory testing indicates that the colluvium is slightly to moderately expansive. This results in an expected movement of at least 7,5 to 15 mm for the soil horizons exposed in the project area.

(b) Collapsibility

The soil is deemed to not have characteristics associated with a collapsible nature.

(c) Compressibility

The soil is deemed to not have characteristics associated with a compressible nature.

(d) Slope stability

Due to the near level terrain, instability of natural slopes is not expected.

(e) Dispersivity

No evidence of potentially dispersive material (e.g., a weakly to strongly developed prismatic soil structure), considered highly prone to erosion especially under the influence of gully or sheetwash, was observed in the test pits or at surface.

(f) Erodibility

The near level slope in the area is not conducive to erosion.

(g) Excavatibility

Excavatibility is generally not deemed to be a problem to a depth of 1,4 to 2,3 m.

(h) Groundwater seepage

No groundwater seepage was encountered. The presence of occasional ferricrete nodules in the soil is indicative of a high soil moisture content over extended periods and potentially a seasonal perched groundwater table.

(i) Corrosiveness

The material tested potentially mildly to highly corrosive to steel.

The results of the geotechnical investigation revealed the following conditions. The primary constraints are as follows:

- Slightly to moderately expansive soil (movement 7,5 to 15 mm).
- Low bearing capacity of the colluvium. The secondary constraints are:
- Seasonal high moisture content in depth.
- Mildly to highly corrosive to steel.
- Flat topography with potential poor surface water drainage.
- Slightly variable soil profile.

The project area would typically and provisionally classify as NHBRC Site Class H1-(P) Perched.

5.1.4.1 Foundations

Heavily loaded footings should not be placed in the unconsolidated expansive transported material. Where required, further design stage investigation of the properties and load bearing capacity of the soil at depth should be undertaken.

The design of foundations for single and double-storey type structures should take into consideration the low bearing capacity and the heave characteristics of the unconsolidated overburden material. Typical options include the following:

- Modified normal with reinforced strip footings, articulation joints, reinforcement in masonry.
- Soil rafts, where all or parts of the expansive soil is removed and replaced with a suitably constructed engineered fill. Normal construction is then carried out on top of the soil raft as per engineering design.
- Removal of colluvium and pebble marker horizon with suitably designed founding on honeycomb calcrete, ideally in-situ compacted or removed, reinstated and compacted, depending on the desired outcome required.

The moderate to high corrosivity of the natural soil moisture within the soil with regard to steel should be considered in the design and construction of facilities.

An environmentally friendly pesticide should be applied below foundations in order to combat termite activity.

5.1.4.2 Earthworks

The colluvium is deemed unsuitable for use as fill underneath surface beds or for use in the construction of roads and paved areas in its natural state.

The pebble marker horizon and honeycomb calcrete is deemed suitable for selected applications. However, due to the depth at which it occurs, it is foreseen and recommended that all necessary engineered fill material be sourced commercially.

5.1.4.3 Drainage

Proper site drainage, including water runoff from roofs, is essential to prevent seasonal ponding of surface water and large-scale changes in soil moisture beneath and near future buildings. The floor level of the proposed structure should be high enough to allow for the necessary surface water drainage interventions.

Suitable damp-proofing measures are essential to protect against the effects of rising damp.

Implementation of sub-surface drains is not deemed to be necessary. However, if in doubt, it may be applied in certain areas to prevent a build-up of soil moisture that could over time lead to degradation of structures and roads. Care must, however, be taken to ensure that these only remove excess water and without causing desiccation of the material, as this could lead to localized shrinkage thereof beneath the structures, as well as those on adjacent properties or structures.

5.1.4.4 Conclusion

Although the project area exhibits geotechnical properties that may have an adverse effect on the proposed development, these characteristics do not disqualify the site from being used. All of these can be overcome with cost effective measures to be included in the design and construction of the facilities.

This investigation is intended as support for the planning and design phase of the proposed development. For heavily loaded foundations for multi storey structures site specific design investigations may be required.

5.1.5 Soils and Agricultural Potential

A Soil and Agricultural Compliance Statement was undertaken by The Biodiversity Company in May 2025 (refer to Appendix F4). The findings of this study are discussed below.

A map presenting the regional context of the project area and the 50 m buffer area for the soil and agricultural assessment is presented in Figure 5-100.

The approach adopted for this assessment has taken cognisance of Government Notice 320 in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) dated 20 March 2020: “Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the NEMA, 1998, when applying for Environmental Authorisation”. The National Web based Environmental Screening

Tool (DFFE, 2025) has characterised the agricultural theme sensitivity of the project area as “Medium” sensitivity, with a key consideration of this assessment being the determination of agricultural theme sensitivities for the project. Based on the verified baseline findings, the proposed project area was found to have a predominately low sensitivity with marginal medium and high sensitivity areas along the natural veld and active crop fields, respectively. An agricultural compliance statement is considered sufficient for the proposed project area because the identified highly sensitive areas were determined to be solely agricultural research trials for the University and are not intended for subsistence or commercial farming. Additionally, the specialist highly recommends avoiding and preserving these highly sensitive areas. The GNR 320 requirements of an Agricultural Compliance Statement stipulate that a 50 m buffered development envelope be considered.

The paragraphs below discuss the findings from the soil resources identified within the 50 m buffered area. The Soils and Agricultural Compliance Statement identifies the soil suitability and land potential of these soils, the land uses within the assessment area and the risks associated with the proposed project from an agricultural and soil resources management perspective.

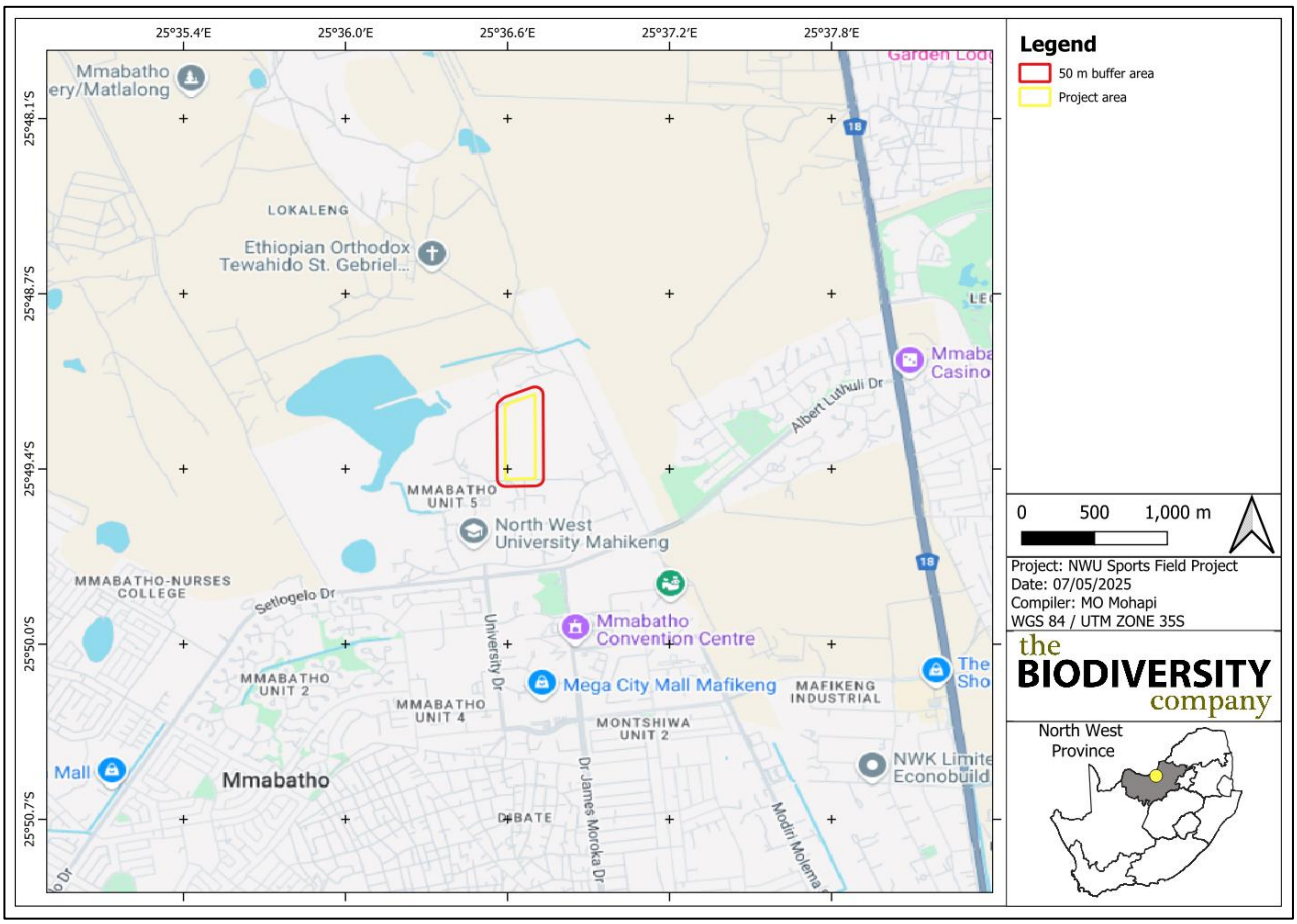


Figure 5-10: Spatial regional context of the proposed development

5.1.5.1 Geology & Soils

The geology of the proposed project area includes shale, slate and quartzite of the Pretoria Group. Other underlying parent materials include the interlaid diabase sills and Hekpoort lava, which weathers into the shallow rocky Mispah and Glenrosa soil forms of the Fb, Bd and Ae land types.

According to the land type database (Land Type Survey Staff, 1972 - 2006) the assessment area to be focused on mainly falls within the Fb 4 land type (Figure 5-11). The Fb 4 land type consists of Mispah, Glenrosa, Rensburg, Willowbrook, Valsrivier and Milkwood soil forms according to the Soil classification working group (1991), with the occurrence of other soils within the landscape. The Fb land type is also characterised by Glenrosa and/ or Mispah soil forms, with the absence of lime in upland soils but generally present in low-lying soils. The land terrain units for the featured Fb 4 land type are illustrated in

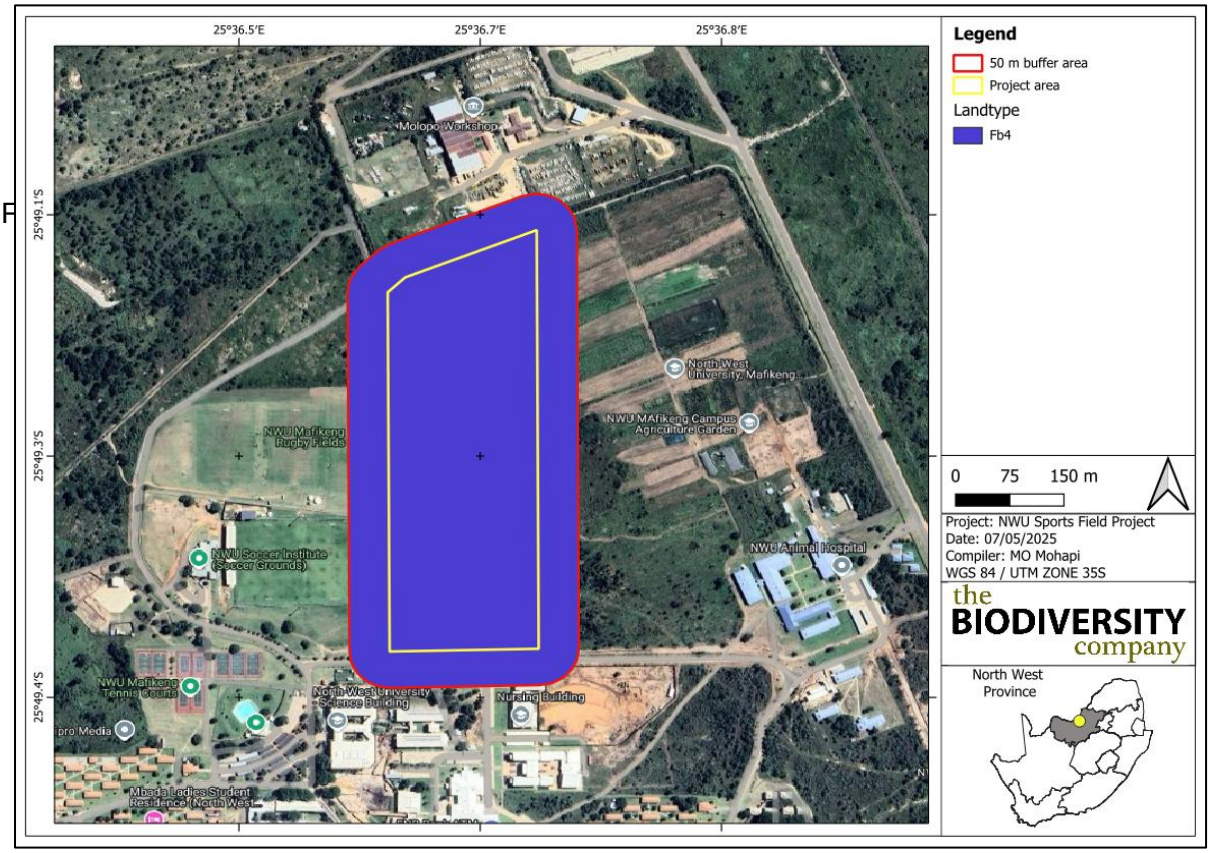


Figure 5-11: Land type associated with the proposed project area

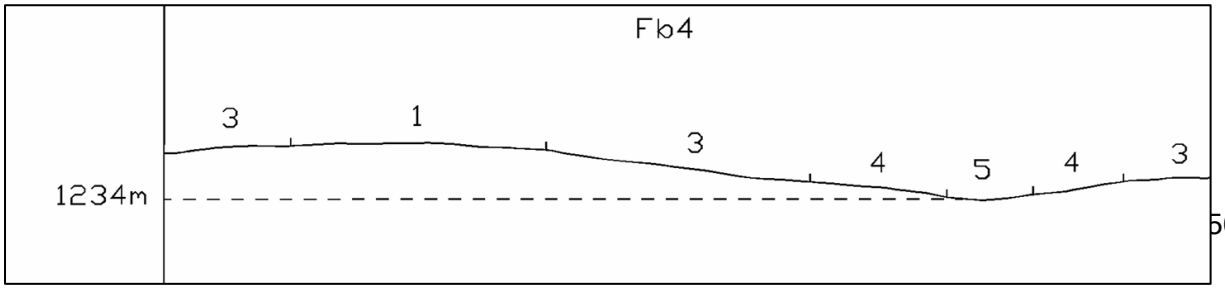


Figure 5-12: Illustration of land type Fb 4 terrain units (Land Type Survey Staff, 1972-2006)

Table 5-2: Soils expected at the respective terrain units within the Fb 4 land type (Land Type Survey Staff, 1972 - 2006)

Terrain Units							
1 (30%)		3 (45%)		4 (20%)		5 (5%)	
Mispah	58%	Mispah	51%	Mispah	58%	Rensburg, Willowbrook	40%
Glenrosa	13%	Glenrosa	18%	Valsrivier, Milkwood	22%	Valsrivier, Milkwood	30%
Hutton	10%	Clovelly, Glencoe	11%	Glenrosa	15%	Mispah	10%
Clovelly, Glencoe	7%	Hutton	9%	Bare rock	5%	Bare rock	10%
Westleigh	7%	Westleigh	7%			Glenrosa	10%
Bare Rock	5%	Bare rock	4%				

a) Baseline Findings

The seven (7) representative soil forms identified within the proposed project area include Prieska, Carolina, Bethesda, Glenrosa, Mispah, Coega, and Grabouw soil forms (Figure 5-13). The area is predominantly characterized by the Mispah and Coega soil forms, which are marked by shallow depth, impermeable underlying horizons, and the presence of parent materials. The Mispah soil form consists of an orthic topsoil over a hard rock horizon, while the Coega soil form comprises an orthic topsoil over a hard carbonate horizon. Due to their restricted permeability, these soil forms have limited root penetration and water movement, which inhibits crop production. Consequently, these dominant soils are concluded to have a low sensitivity and low productivity, which are more suitable for grazing and supporting natural vegetation rather than intensive crop production.

In addition, other low sensitive soil forms identified within the proposed project area include Glenrosa and Grabouw soil forms. The Glenrosa soil form consists of an orthic topsoil on top of a lithic subsoil horizon, while the Grabouw soil form consists of natural soils which have underwent physical disturbance that has resulted in severe compaction. The Glenrosa soil form has a moderate drainage capability, that can support certain types of vegetation but may pose challenges for deep rooted crops. Generally, these soils exhibit low to moderate productivity due to fertility, often necessitating soil amendments for optimal agricultural use. Due to these characteristics, Glenrosa soils are also more suitable for grazing and supporting natural vegetation. On the other hand, the Grabouw soil forms were found along construction and excavated areas. The Grabouw soils are generally natural soils that are in a disturbed state and are no longer arranged in a recognizable order, which result in the incapability of natural ecological functioning which highly prohibits crop production.

The moderately sensitive soils identified within the project area include the Carolina and Bethesda soil forms. The soils were found to have a profile depth that is less than 50 cm, with an underlying hard rock horizon. The Carolina soil form is usually characterised by apedal overlying horizons that are freely drained, with good aeration that promotes water and nutrients movement. The Bethesda soil form comprises of the neocutanic subsoil horizon, which is characterised by an increase in clay content of the underlying horizon. As a result, the underlying horizon increases water retention and limit nutrients and water leaching. However, due to these soils' restrictive depths and available climatic conditions, for this specific area, they are deemed to have a limited productivity.

Lastly, the most sensitive soil form identified within the proposed project area is the Prieska soil form, as it was found along actively cultivated areas and natural veld. The Prieska soil form consists of an orthic topsoil over a neocarbonate subsoil, which is underlain by a hard carbonate horizon. This soil features a weakly structured orthic horizon that promotes drainage and a moderately structured subsoil horizon that enhances water retention and limits the leaching potential of base cations. Available irrigation system was also confirmed during the site survey, increasing the agricultural productivity of the soil. Although carbonate soils are generally considered unsuitable for crop production due to potential high pH levels leading to nutrient imbalances, with effective management practices, such as the use of organic matter, fertilizers, selecting short-rooted crops, and utilizing available irrigation, agricultural potential of the soil can be enhanced. Some of the identified soil horizons within the proposed project area, as well as the current land uses are illustrated in Figure 5-14 and Figure 5-15, respectively.

Accordingly, following Smith, (2006) which the national DAFF, (2017) land capabilities protocols were further expanded from, the above-mentioned identified soil forms associated with the active crop field is restricted to land capability classes IV (i.e. Prieska soil form under active cropping) categorised by LC 9-10 (Moderate to High), land capability IV (i.e. Prieska, Carolina and Bethesda soil forms) categorised by LC 6-8 (Low to Moderate), land capability VI (i.e. Glenrosa, Mispah and Coega soil forms) categorised by LC 1-5 (Very low to Low), and land capability VII (i.e. Grabouw soil form) categorised by LC 1-5 (Very low). The baseline soil land capability was aligned and compared to the National Land Capability data (DAFF, 2017). A climate capability level 8 has been assigned to the area given the low Mean Annual Precipitation (MAP) and the high Mean Annual Potential Evapotranspiration (MAPE) rates.

By using the determined land capability for the most sensitive soil (Prieska soil form) and the determined climate capability, a land potential of "L6" was calculated. According to Guy and Smith (1998), if irrigation water system is confirmed along active crop fields, the land potential class must be upgraded a unit higher. The land potential L6 was therefore upgraded to land potential L5. Furthermore, the calculated land potential of the moderately sensitive soils (i.e. Prieska, Carolina and Bethesda soil forms) is L6, less sensitive soils (i.e. Glenrosa, Mispah, Coega soil forms) is land potential L7, and Grabouw soil form is land potential L8. According to Smith (2006), the "L5" land potential is characterised by restricted potential with regular and or moderate to severe limitations due to soil, slope, temperature or rainfall. The "L6" land potential level is characterised by very restrictive potential with regular and/or severe limitations due to soil, slope,

temperatures, or rainfall. The “L7” land potential level is characterized by a low potential with a severe limitation due to soil, slope, temperatures, or rainfall. The “L8” land potential level is characterised by a very low potential with very severe limitations due to soil, slope, temperatures, or rainfall. The areas associated with the “L5” land potential are considered as “arable”; and areas associated with the “L6, L7 and L8” land potentials are considered non-arable (Figure 5-16). Therefore, the proposed project area falls predominately on non-arable soils, with a marginal portion of the arable land along active crop fields.

The following land potential levels have been determined;

- Land potential level 5 (this land potential is characterised by restricted potential. Regular and/ or moderate to severe limitations due to soil, slope, temperatures or rainfall. Arable with restrictions;
- Land potential level 6 (this land potential is characterised by very restricted potential. Regular and/ or severe limitations due to soil, slope, temperatures or rainfall). Non-arable;
- Land potential level 7 (this land potential is characterised by low potential. Severe limitations due to soil, slope, temperatures or rainfall). Non-arable; and
- Land potential level 8 (this land potential is characterised by very low potential. Very severe limitations due to soil, slope, temperatures or rainfall). Non-arable.

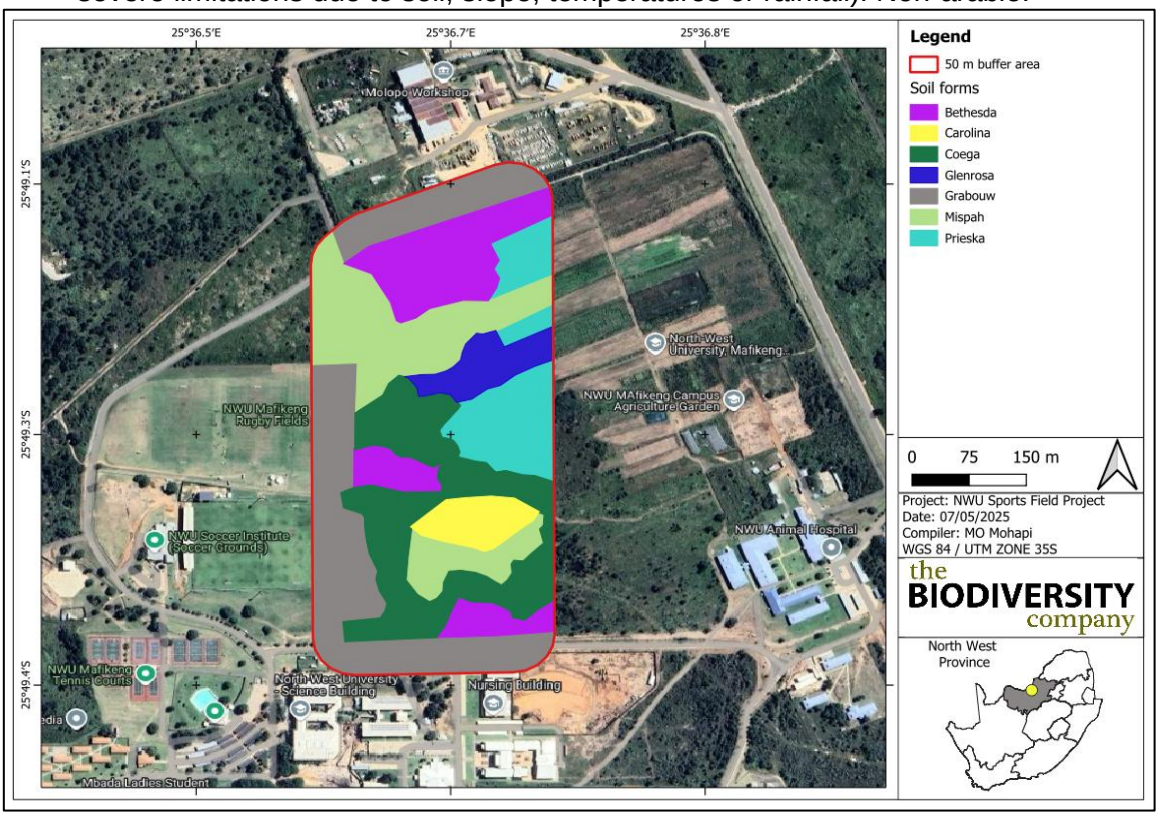


Figure 5-13: Soil forms found within the proposed project area

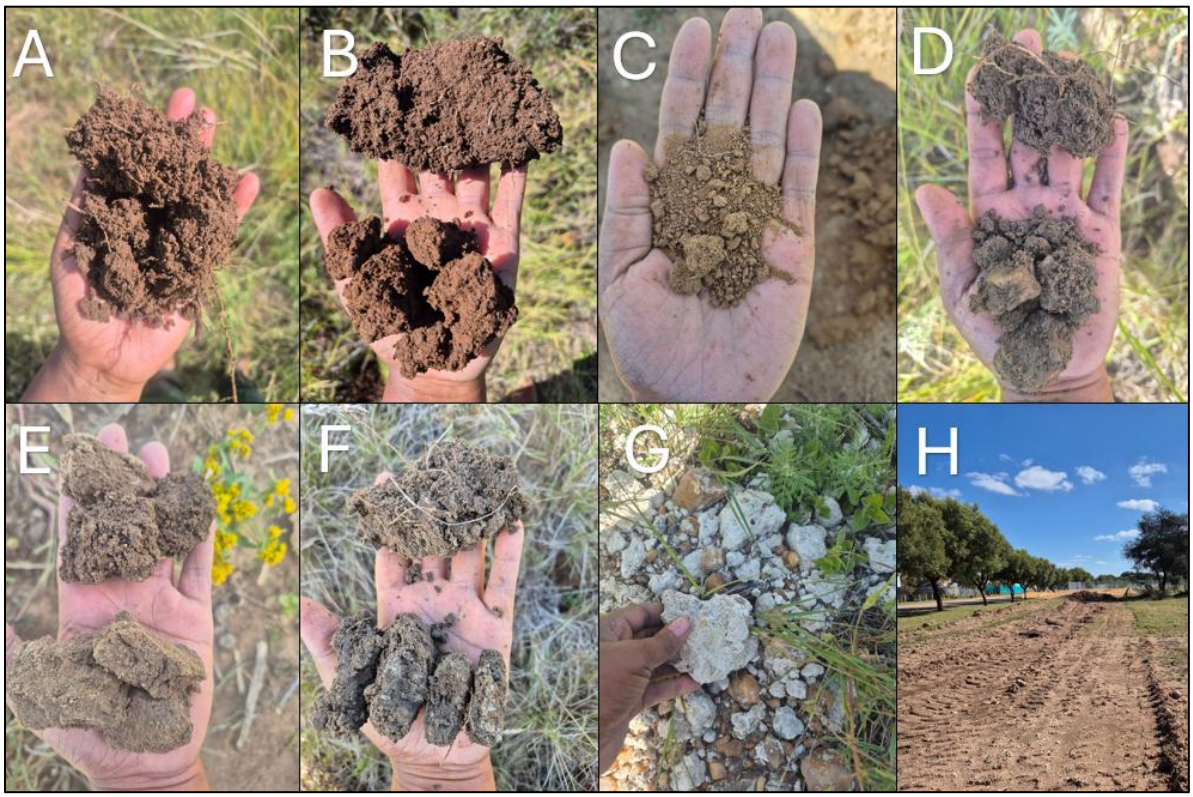


Figure 5-14: Diagnostic soil horizons identified on-site: A) Orthic topsoil; B) Bethesda soil form; C) Yellow-brown apedal subsoil horizon; D) Glenrosa soil form; E and F) Prieska soil form; G) Coega soil form; and H) Grabouw soil form

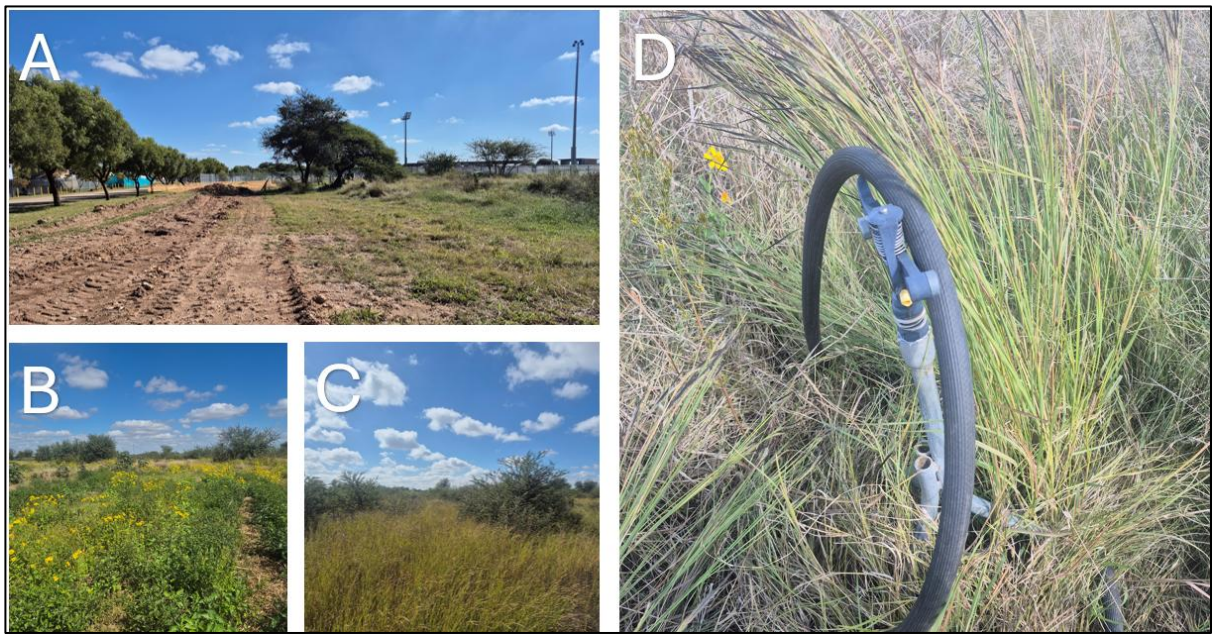


Figure 5-15: Current land use; A) Construction site; B) Active crop fields; C) Natural veld; and D) Irrigation system

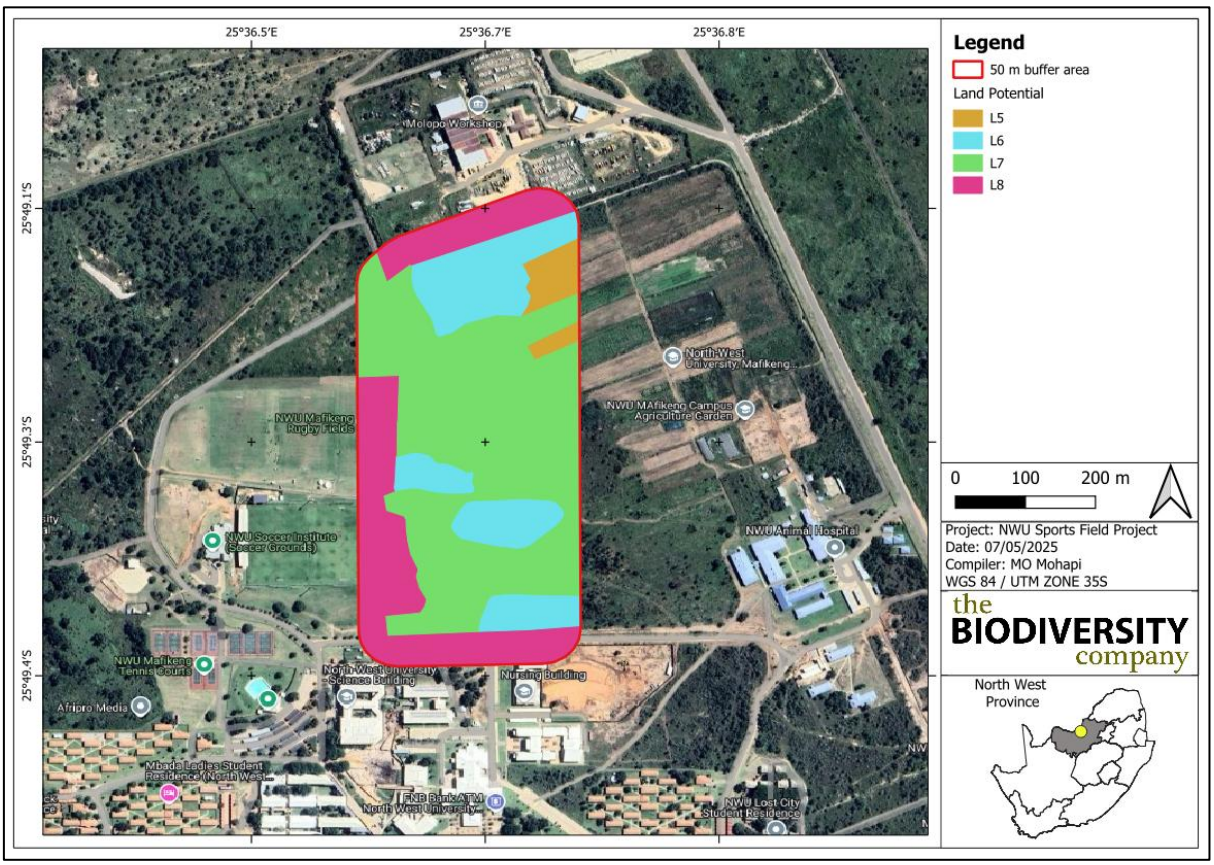


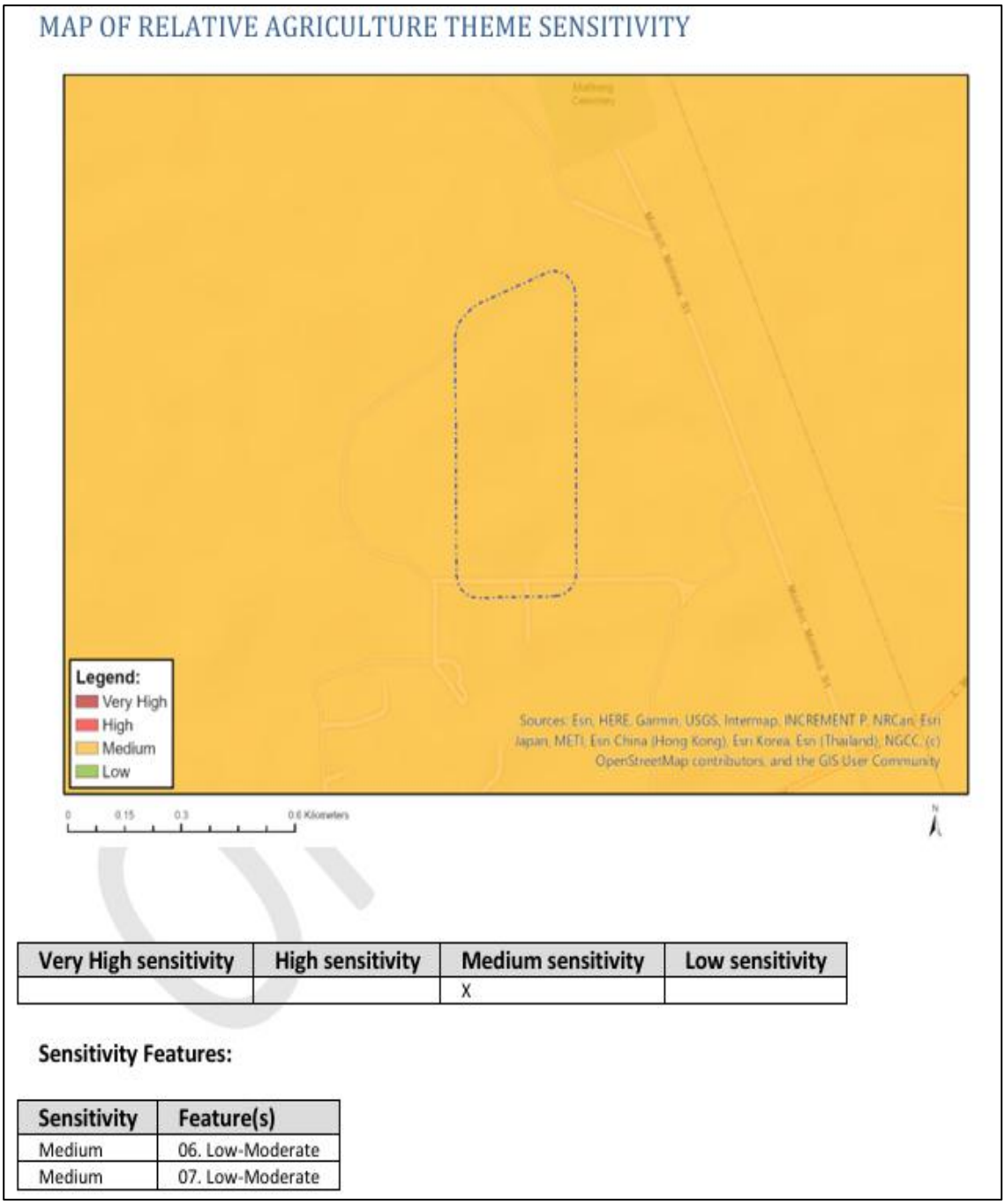
Figure 5-16: Land Potential of the proposed project area

5.1.5.2 Sensitivity Verification

a) Screening Report – NWU Sports Field Project

The following is deduced from the National Web-based Environmental Screening Tool Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended):

- Agriculture Theme Sensitivity indicates that the proposed 50 m buffer of the project area falls within the 'Medium' agricultural sensitivity (Figure 5-17).



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	06. Low-Moderate
Medium	07. Low-Moderate

Figure 5-17: Map of Relative Agricultural Theme Sensitivity for the NWU Sports Field generated by the Environmental Screening Tool Site Ecological Importance (SEI generated by the Environmental Screening Tool Site Ecological Importance (SEI)

Fifteen land capabilities have been digitised by (DAFF, 2017) across South Africa, of which two potential land capability classes are located within the assessment area, including;

- Land Capability 6 to 7 (Low-Moderate to Moderate Sensitivity).

The land capability dataset (DAFF, 2017) indicates that the proposed project area falls predominately within the “Low to Moderate” sensitivity (see Figure 5-18**Error! Reference source not found.**). Furthermore, no highly sensitive field crop boundaries were identified within the 50 m buffer area of the proposed project area using the agricultural theme tool (DFFE, 2025).

The baseline soil findings, current land uses, and the calculated land potential correlates with the DAFF (2017) in areas associated with sensitivities ranging from low to moderate to an extent. During the site survey, restrictive soil forms were determined, indicating a very low to low land capability. Also, active crop fields were also confirmed, indicating a moderate to high land capability. It is the specialist opinion to reclassify the land capability sensitivity of the proposed project, accordingly, ranging from very low to high.

The verified baseline findings confirmed that the proposed activities fall predominately on the very low to low land capability sensitivity, with non-arable soils due to the restrictive limitations of permeability and available climatic conditions. A marginal area of the proposed project area is confirmed to be actively cultivated, with a high land capability sensitivity. The remaining areas have moderate sensitive soils with a restricted permeability. The construction of the proposed sports field across these farming areas may lead to land fragmentation of the natural soils suitable for cropping activities, rendering these areas unfeasible for most cropping practices. It is the specialist’s opinion that the active crop fields be avoided and preserved. Refer to the overall agricultural sensitivity in Figure 5-19.

The current project area and associated activities related to the proposed project are expected to result in acceptable changes to soil resources, provided that areas with active crop fields are avoided. Consequently, based on the verified baseline findings, the proposed development is anticipated to have a minimal impact on soil resources.

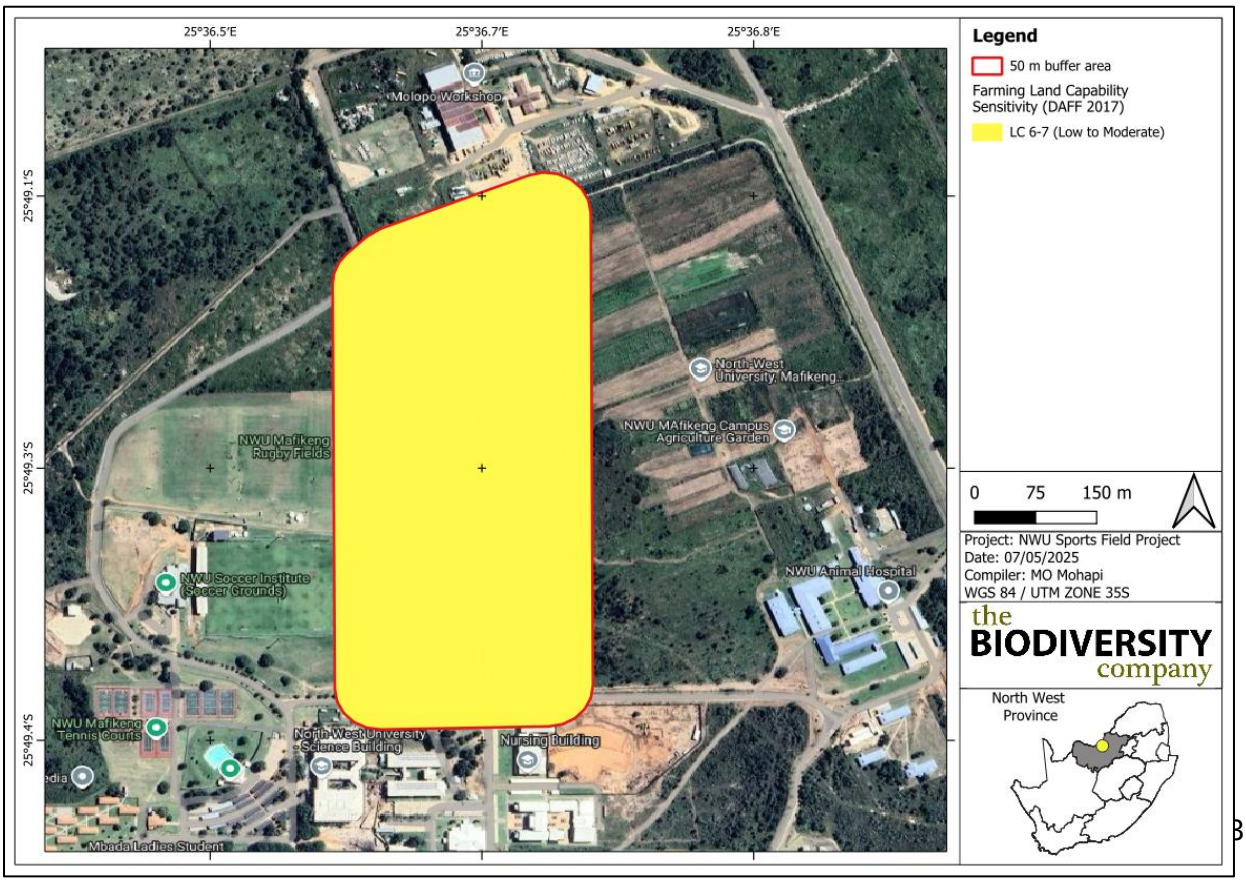


Figure 5-18: Land Capability Sensitivity (DAFF, 2017)

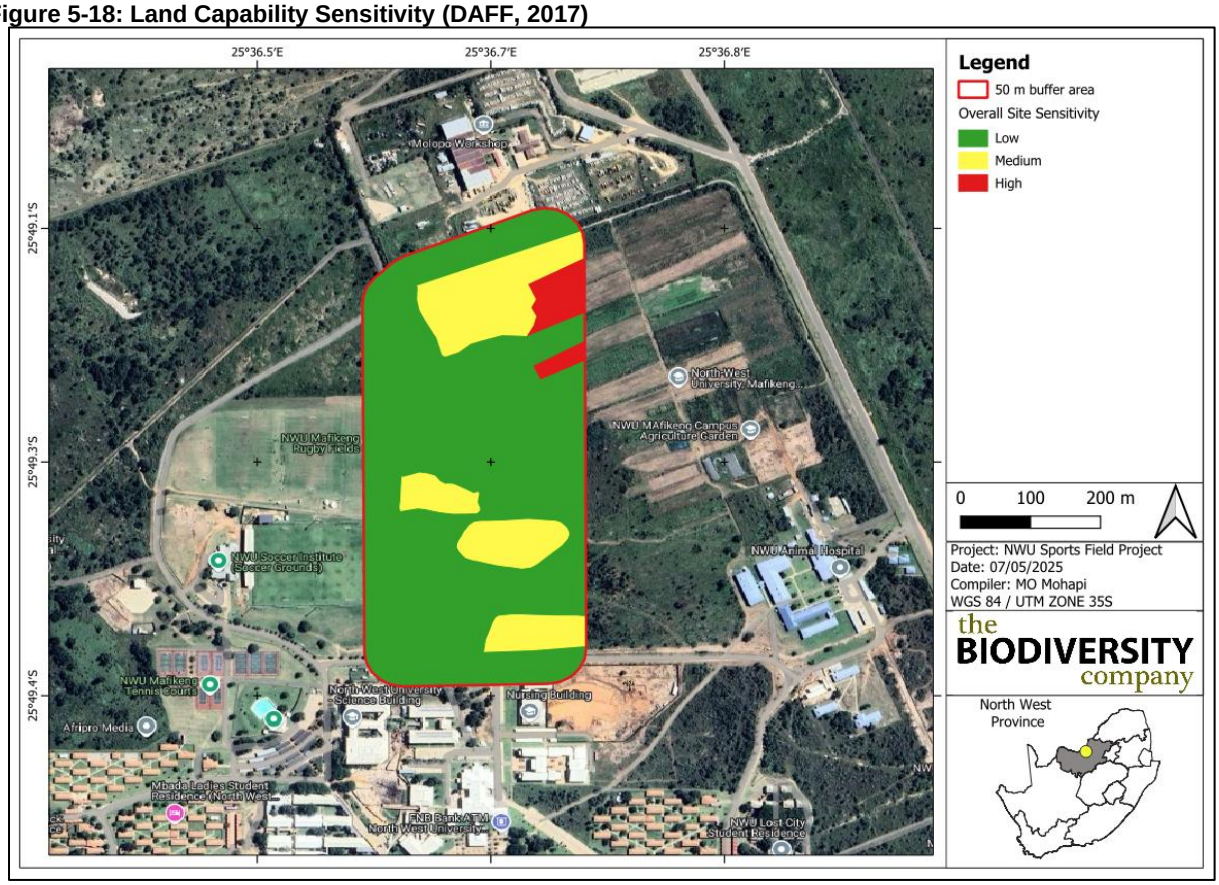


Figure 5-19: Overall site verified sensitivity of the project area

Considering the soil properties, agricultural potential as well as the current land use of the proposed development area, the overall sensitivity of the proposed project area is categorized as "Low," with "Medium" sensitivities and marginal High sensitivity on active crop fields. The allocated sensitivities for the theme are either disputed or validated in Table 5-3 below.

Table 5-3: Summary of the screening tool vs specialist assigned sensitivities

Screening Tool Theme	Feature	Screening Tool	Specialist	Tool Validated or Disputed by Specialist - Reasoning
Agricultural Theme	LC 7 Low to Moderate	Medium	High	Disputed – Land Capability Moderate to High. Presence of active crop fields.
	LC 6 Low to Moderate	Medium	Medium	Validated – Land Capability Low to Moderate. Presence of moderately potential soils including Carolina and Bethesda soil forms.
	LC 6 Low to Moderate	Medium	Low	Disputed. Land Capability Very Low to Low. The presence of restrictive soils including Carolina, Bethesda,

5.1.5.3 CARA Requirements

Under the Conservation of Agricultural Resources Act (no. 43 of 1983, CARA), approvals are necessary for various activities, such as cultivating virgin land, veld burning, cultivating localized alien plants for commercial purposes and the draining of wetland systems.

For the cultivation of virgin land, CARA specifies that only arable land should be cultivated. However, disturbances to topsoil resulting from the construction of proposed activities does not fall under this category of cultivation as defined by CARA but rather soil disturbance. Therefore, the construction and operation of the camps do not require consent under CARA.

Additionally, since the proposed development does not involve veld burning or the commercial cultivation of localized alien plants, it does not require consents under those provisions of CARA.

Furthermore, the proposed project will not result in the direct draining of the water regimes due to the activities. The overall residual impact to the wetland systems was determined to be low. The project is compliant and will not require consent under CARA for any activities.

In summary, NWU Sports Field Project and the associated infrastructure is compliant with CARA regulations and does not necessitate consent under the Act following the site confirmation.

5.1.6 Terrestrial Biodiversity

A Terrestrial Biodiversity Impact Assessment was undertaken by The Biodiversity Company (Pty) Ltd in May 2025. Refer to Appendix F5.

This assessment was conducted in accordance with the amendments to the Environmental Impact Assessment Regulations. 2014 (GNR 326, 7 April 2017) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). The approach has taken cognisance of the recently published Government Notices (GN) 320 (20 March 2020) and GN 1150 (30 October 2020) in terms of NEMA, dated 20 March and 30 October 2020: “Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation” (Reporting Criteria). The National Web-based Environmental Screening Tool has characterised the terrestrial theme for the PAOI as follows:

- Terrestrial Biodiversity Theme Sensitivity: Low
- Animal Species Theme Sensitivity: Low
- Plant Species Theme Sensitivity: Low

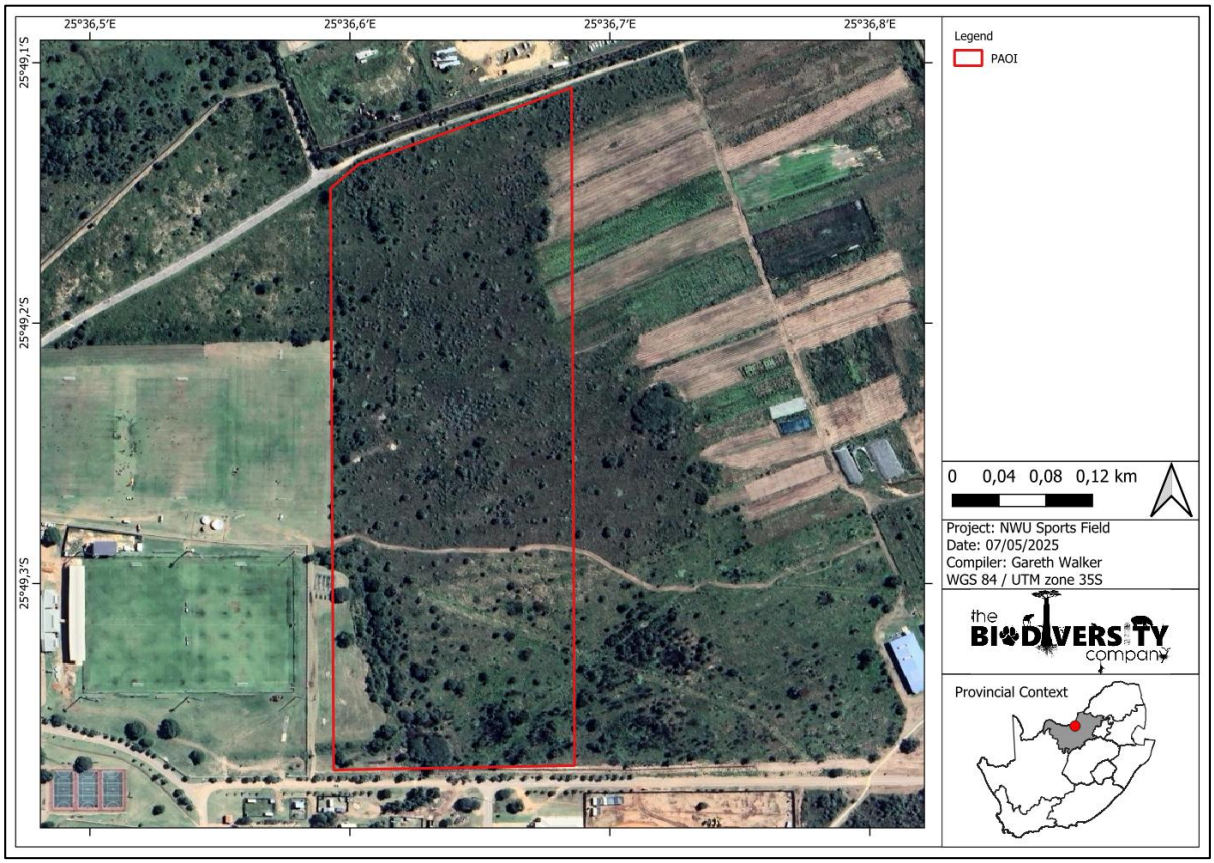


Figure 5-20: Map illustrating the geographical boundaries of the PAOI

a) Ecosystem Threat Status

The Ecosystem Threat Status is an indicator of an ecosystem's wellbeing, based on the level of change in structure, function or composition. Ecosystem types are categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU) or Least Concern (LC), based on the proportion of the original extent of each ecosystem type that remains in good ecological condition. According to the spatial dataset the proposed development overlaps with a LC ecosystem (Figure 5-21).

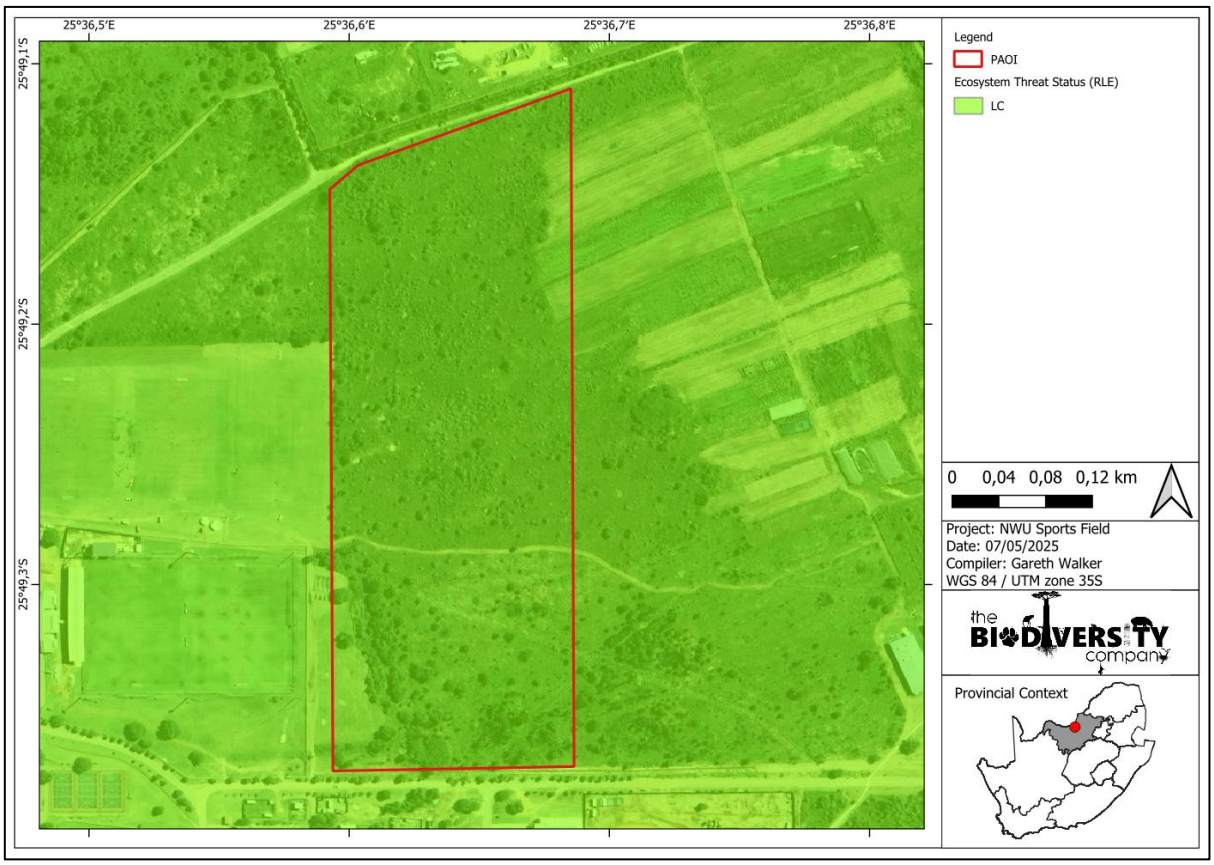


Figure 5-21: Map illustrating the ecosystem threat status associated with the PAOI.

b) Ecosystem Protection Level

The Ecosystem Protection Level is an indicator of the extent to which ecosystems are adequately protected or under-protected. Ecosystem types are categorised as Well Protected (WP), Moderately Protected (MP), Poorly Protected (PP), or Not Protected (NP), based on the proportion of the biodiversity target for each ecosystem type that is included within one or more protected areas. NP, PP or MP ecosystem types are collectively referred to as under-protected ecosystems. The proposed PAOI overlaps with a PP ecosystem (Figure 5-22).

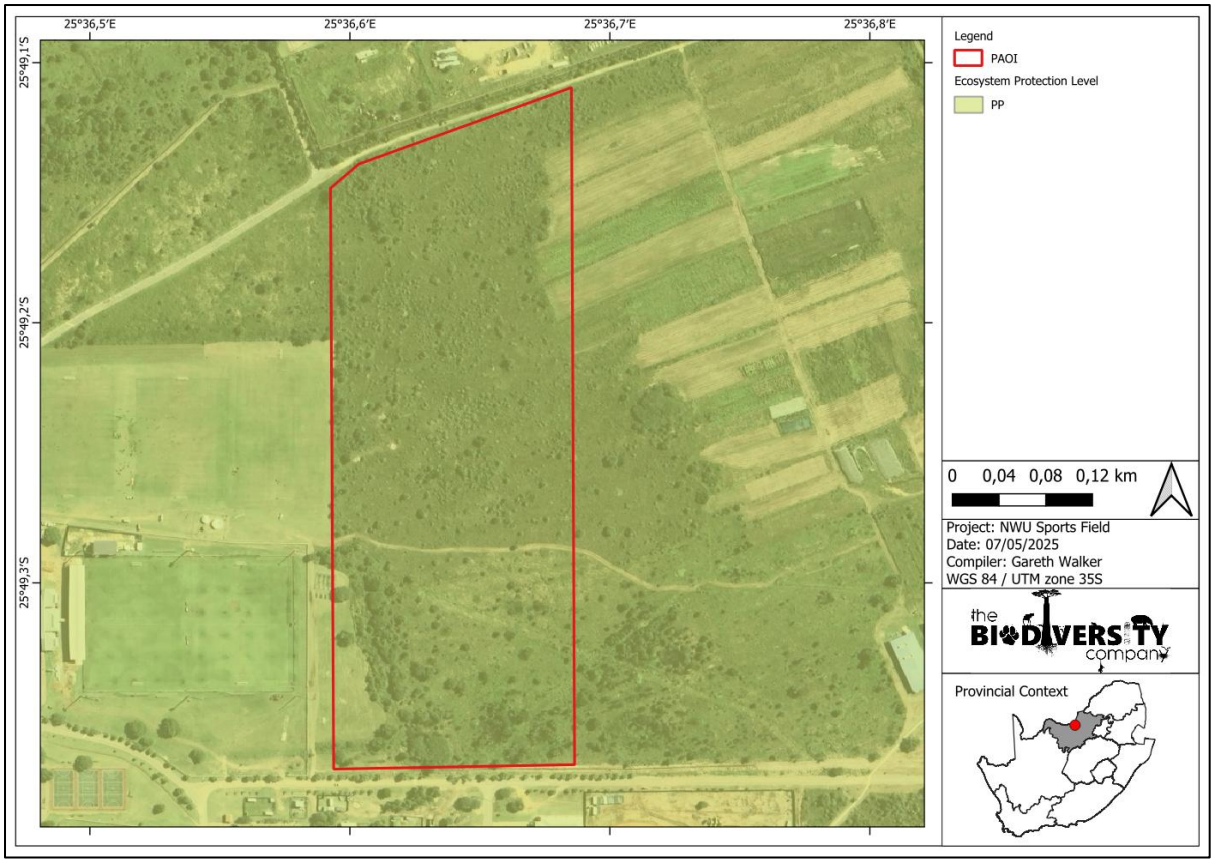


Figure 5-22: Map illustrating the ecosystem protection level associated with the PAOI

c) Strategic Water Source Areas

Strategic Water Source Areas (SWSAs) are areas that supply a disproportionate amount of mean annual runoff to a geographical region of interest. The areas supplying ≥ 50% of South Africa's water supply (which were represented by areas with a mean annual runoff of ≥ 135 mm/year) represent national Strategic Water Source Areas (SANBI, 2013).

According to the latest dataset on SWSAs of South Africa, Lesotho and Swaziland, the PAOI overlaps with the Bo-Molopo Karst Belt Groundwater SWSA (Figure 5-23).

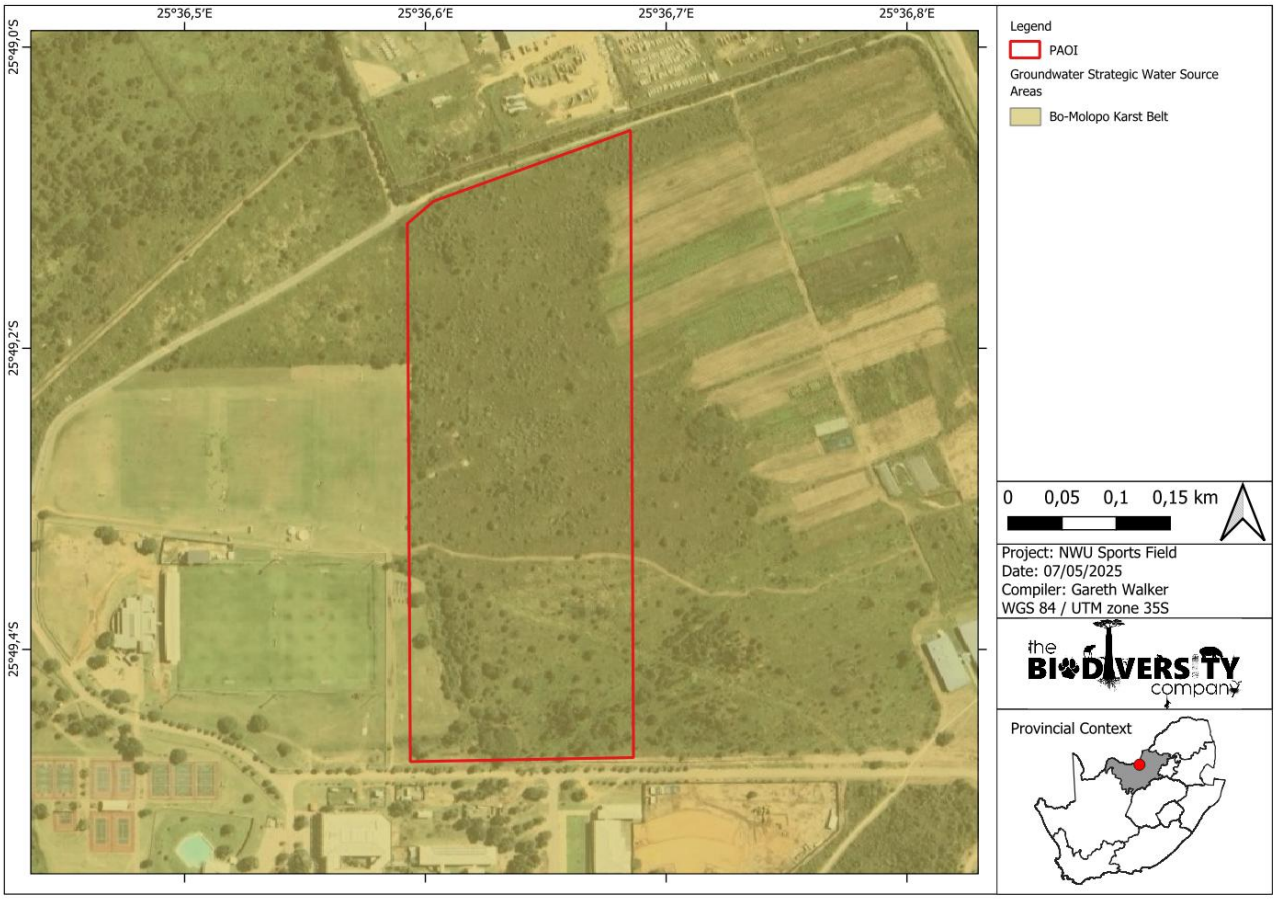


Figure 5-23: Map depicting the PAOI relative to the Bo-Molopo Karst Belt Groundwater SWSA

5.1.7 Floral Assessment

5.1.7.1 Vegetation Type

The PAOI is situated within the grassland biome. A description of the grassland biome can be seen below. On a finer scale, the PAOI occurs within the Klerksdorp Thornveld vegetation type (Mucina & Rutherford, 2006). Refer to Figure 5-24.

a) Grassland Biome

In South Africa, the Grassland Biome occurs mainly on the high central plateau (Highveld), the inland areas of the eastern seaboard, the mountainous areas of KwaZulu-Natal and the central parts of the Eastern Cape (Mucina & Rutherford, 2006). However, grasslands can also be found below the Drakensberg, both in KwaZulu-Natal and the Eastern Cape, with floristic links to the high-altitude Drakensberg grassland (Mucina & Rutherford, 2006). The topography is mainly flat to rolling but also includes mountainous regions and the Escarpment (Mucina & Rutherford, 2006). Altitude is mostly from about 300 to 400 m (above sea level), but reaches up to 3 482 m on Thabana Ntlenyana, the highest mountain in southern Africa (Mucina & Rutherford, 2006).

In terms of climate, the temperate grasslands of the Highveld in South Africa have cold and dry conditions, with rainfall during the summer (which can sometimes be a strong summer rainfall)

and winter drought (Mucina & Rutherford, 2006). Frost is common and there is a high risk of lightning-induced fires (Mucina & Rutherford, 2006).

In terms of vegetation structural composition, grasslands are characteristically dominated by grasses of the Poaceae Family (Mucina & Rutherford, 2006). On the Lesotho Plateau and highest peaks of the Drakensberg, grassland plants have developed xeromorphic characteristics due to the severity of the climate associated with these areas (Mucina & Rutherford, 2006).

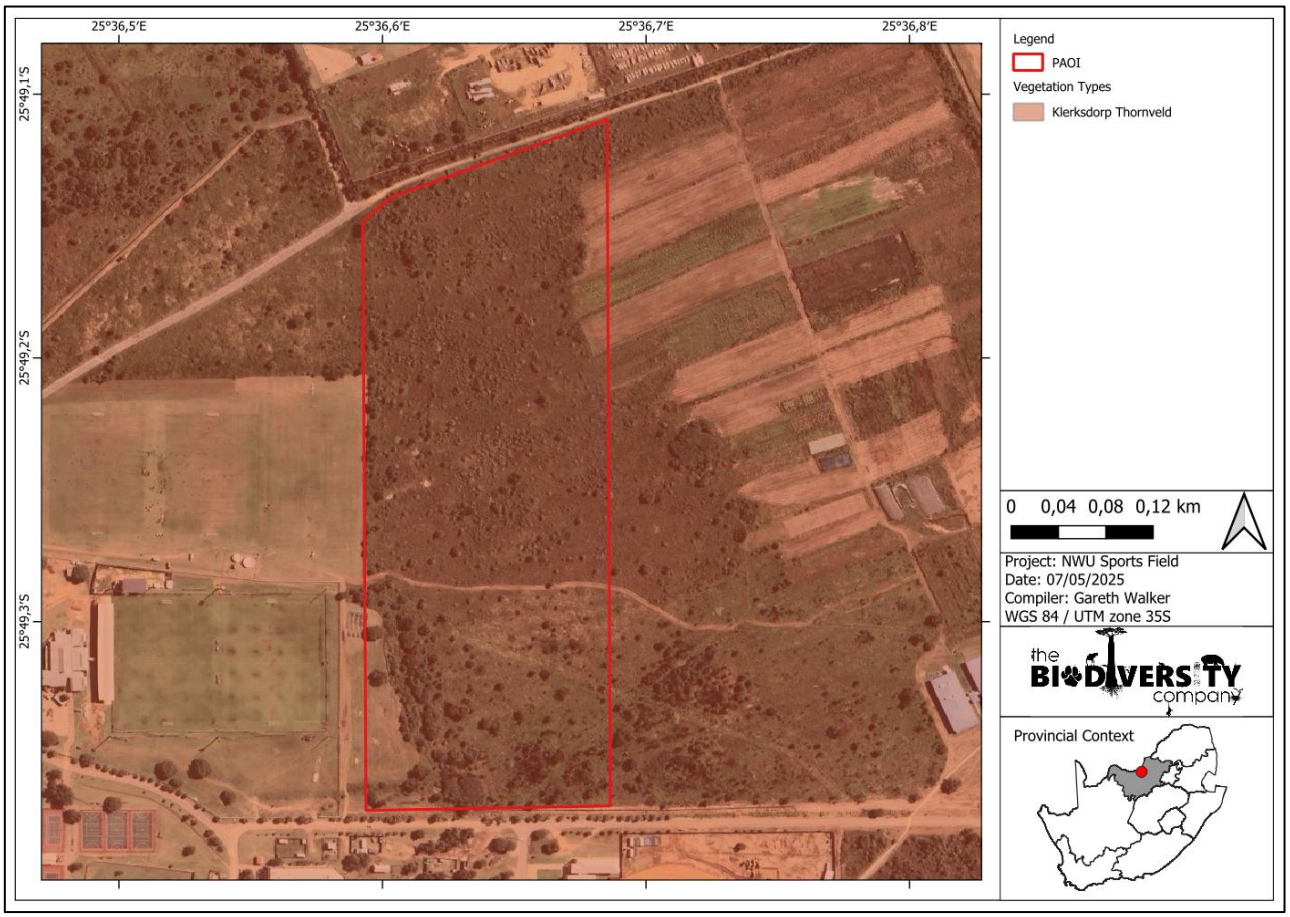


Figure 5-24: Map illustrating the vegetation type associated with the PAOI

b) Klerksdorp Thornveld

This vegetation type occurs in two sets of patches in the North West Province, one in the Wolmaransstad, Ottosdal and Hartebeespoort region, and the other from the Botsolano Game Park north of Mafikeng to the vicinity of Madibongo in the south, occurring at altitudes ranging from 1260 to 1580m above mean sea level. Klerksdorp Thornveld is characterised by plains or slightly irregular undulating plains with open to dense *Vachellia karoo* bush clumps in dry grassland. This vegetation type encounters summer rainfall with over 533mm of rain recorded annually. Warm-temperate conditions characterise Klerksdorp Thornveld, with high summer temperatures and frequent frost occurring in the winter period (Mucina & Rutherford, 2006).

c) Important Plant Taxa

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

Small Trees: *Vachellia karoo* (d), *V. caffra*, *Celtis africana*, *Rhus lancea*, *Ziziphus mucronata*.

Tall Shrubs: *Vachellia hebeclada*, *Diospyros lycioides* subsp. *lycioides*, *Ehretia rigida*, *Grewia flava*, *Gymnosporia buxifolia*, *Rhus pyroides*, *Tarchonanthus camphoratus*.

Woody Climber: Asparagus africanus.

Low Shrubs: *Asparagus laricinus* (d), *A. suaveolens* (d), *Felicia muricata* (d), *Anthospermum hispidulum*, *A. rigidum* subsp. *pumilum*, *Aptosimum elongatum*, *Gnidia capitata*, *Gomphocarpus fruticosus* subsp. *fruticosus*, *Helichrysum dregeanum*, *Leucas capensis*, *Pavonia burchellii*, *Pentzia globosa*, *Solanum supinum* var. *supinum*, *Triumfetta sonderi*, *Ziziphus zeyheriana*.

Graminoids: *Aristida congesta* (d), *Cynodon dactylon* (d), *Eragrostis lehmanniana* (d), *E. trichophora* (d), *Microchloa caffra* (d), *Panicum coloratum* (d), *Sporobolus fimbriatus* (d), *Themeda triandra* (d), *Andropogon schirensis*, *Anthephora pubescens*, *Aristida junciformis* subsp. *galpinii*, *A. stipitata* subsp. *graciliflora*, *Brachiaria nigropedata*, *B. serrata*, *Bulbostylis burchellii*, *Cymbopogon pospischilii*, *Digitaria eriantha*, *Diheteropogon amplectens*, *Elionurus muticus*, *Eragrostis curvula*, *E. obtusa*, *E. racemosa*, *E. superba*, *Eustachys paspaloides*, *Heteropogon contortus*, *Setaria sphacelata*, *Sporobolus africanus*, *Tragus berteronianus*, *Trichoneura grandiglumis*, *Triraphis andropogonoides*.

Herbs: *Acalypha angustata*, *Acanthospermum australe*, *Berkheya onopordifolia* var. *onopordifolia*, *B. setifera*, *Blepharis integrifolia* var. *clarkei*, *Chamaesyce inaequilatera*, *Chascanum adenostachyum*, *Dicoma macrocephala*, *Helichrysum nudifolium* var. *nudifolium*, *Hermannia lancifolia*, *Hibiscus pusillus*, *Justicia anagalloides*, *Lippia scaberrima*, *Nidorella microcephala*, *Nolletia ciliaris*, *Pollichia campestris*, *Rhynchosia adenodes*, *Salvia radula*, *Selago densiflora*, *Teucrium trifidum*, *Tolpis capensis*.

Geophytic Herbs: *Bulbine narcissifolia*, *Ledebouria marginata*, *Ornithogalum tenuifolium* subsp. *tenuifolium*, *Raphionacme hirsuta*.

Herbaceous Climber: *Rhynchosia venulosa*.

d) Conservation Status

According to the Mucina and Rutherford (2006), Klerksdorp Thornveld is classified as Vulnerable (VU). The conservation target for this vegetation type is 24% however only about 2.5% is

statutorily conserved in the Mafikeng Game Reserve, private Botsolano Game Park, and Faan Meintjies Nature Reserve. This vegetation type has a high grazing capacity which leads to overutilisation and degradation, and subsequent invasion by *Vachellia karoo* into the adjacent grasslands. Consequently, almost a third of Klerksdorp Thornveld is already transformed. Due to the great habitat and floristic diversity associated with this vegetation type, and for aesthetical reasons, the landscape should be conserved. It is, however, important to note that according to the Red Listed Ecosystems (RLE, 2022) database, Klerksdorp Thornveld is Least Concern (LC) thus contradicting Mucina and Rutherford (2006). It is therefore possible that the 24% conservation target has likely been met. Irrespective, it is likely that some of the risks highlighted above still exist within Klerskdorp Thornveld vegetation.

Expected Flora Species

The Plants of Southern Africa (POSA) database indicated that 275 flora species are expected to occur within or near the PAOI (Appendix C). None of these are listed as SCC. Moreover, according to the Screening Tool, no flora SCC are predicted to occur within the PAOI.

5.1.8 Faunal Assessment

a) Avifauna

The SABAP2 database provided for by the Animal Demography Unit (ADU, 2023) lists 244 avifauna species that have the potential to occur within the PAOI (Appendix D). Of these, 8 are identified as SCC (Table 5-4). The Screening Tool indicates that no avifauna SCC are predicted to occur within the PAOI. Apart from *Certhilauda chuana* and *Falco biarmicus* – which have a Moderate potential of occurring within the PAOI – there is an overall Low potential likelihood of other avifauna SCC occurring within the PAOI owing to the lack of suitable habitat present. Refer to Table 5-4.

Table 5-4: List of avifauna SCC with the potential to occur within the PAOI. CR = Critically Endangered; EN = Endangered; NT = Near Threatened; VU = Vulnerable; and LC = Least Concern

Family	Taxonomic name	Common name	Regional conservation status*	Global conservation status+	Likelihood of occurrence	Reason
Accipitridae	*Gyps africanus*	White-backed Vulture	CR	CR	Low	**Lack of suitable habitat present within the PAOI.** The species is primarily associated with pen wooded savanna, particularly

Family	Taxonomic name	Common name	Regional conservation status*	Global conservation status+	Likelihood of occurrence	Reason
						areas of Acacia. It requires tall trees for nesting, but has also been recorded nesting on electricity pylons in South Africa.
Accipitridae	*Gyps coprotheres*	Cape Vulture	EN	VU	Low	**Lack of suitable habitat present within the PAOI.** The species has be known to display a preference for protected areas and woody vegetation for foraging, and optimal nest sites were locations with a ledge depth of 1m, at a height of 180m.
Accipitridae	*Torgos tracheliotos*	Lappet-faced Vulture	EN	EN	Low	**Lack of suitable habitat present within the PAOI.** The species inhabits dry savanna, arid plains, deserts and open mountain slopes, up to 3,500 m

Family	Taxonomic name	Common name	Regional conservation status*	Global conservation status+	Likelihood of occurrence	Reason
Alaudidae	*Certhilauda chuana*	Short-clawed Lark	NT	LC	Moderate	**Patches of suitable habitat present within the PAOI.** It prefers open habitat, sparsely vegetated with short grass and scattered trees or bushes, particularly where grass has been severely grazed. In South Africa it is associated with *Tarchonanthus* bushveld.
Ciconiidae	*Ciconia abdimii*	Abdim's Stork	NT	LC	Low	**Lack of suitable habitat present within the PAOI.** The species frequents open grassland, pastures, areas of cultivation and savanna woodland, often near water.
Falconidae	*Falco biarmicus*	Lanner Falcon	VU	LC	Moderate	**Patches of suitable habitat present within the PAOI.** The Lanner Falcon is a widespread raptor,

Family	Taxonomic name	Common name	Regional conservation status*	Global conservation status+	Likelihood of occurrence	Reason
						primarily found in open grasslands, cleared woodlands, and agricultural lands, especially in sub-Saharan Africa.
Pelecanidae	*Pelecanus rufescens*	Pink-backed Pelican	VU	LC	Low	**Lack of suitable habitat present within the PAOI.** The species inhabits a wide range of aquatic habitats, but prefers to feed in quiet backwaters and weed-grown lagoons.
Sagittariidae	*Sagittarius serpentarius*	Secretarybird	VU	EN	Low	**Lack of suitable habitat present within the PAOI.** The species inhabits open landscapes, ranging from open plains and grasslands, to lightly wooded savanna, but is also found in agricultural areas and sub-desert.

*(Taylor et al. 2015), +(IUCN 2021)

Certhilauda chuana (Short-clawed Lark) is listed as NT regionally, and as LC globally. It prefers open habitat, sparsely vegetated with short grass and scattered trees or bushes, particularly where grass has been severely grazed. In South Africa it is associated with *Tarchonanthus* bushveld. In Botswana it is restricted to areas under traditional agricultural regimes, especially fallow land with coppiced *Vachellia tortilis* and heavy livestock grazing (Harrison et al. 1997b).

Falco biarmicus (Lanner Falcon) is listed as VU regionally, and as LC globally. The species is native to South Africa and inhabits a wide variety of habitats, from lowland deserts to forested mountains (IUCN, 2017). They may occur in groups up to 20 individuals but have also been observed solitary. Their diet is mainly composed of small birds such as pigeons and francolins.

b) Mammals

According to the Global Biodiversity Information Facility (GBIF, 2025), four (4) mammalian species have the potential to occur in and around the PAOI. Of these, one (i.e., *Giraffa camelopardis*) is predicted to occur within the PAOI (Table 5-5). Given the limited size and lack of suitable habitat present, there is a Low likelihood potential of the species occurring in the PAOI. The remaining three species predicted to occur within the PAOI are of the family Muridae. Given that these are not classified as SCC, they are not further elaborated on. The Screening Tool indicates that no mammalian SCC are predicted to occur within the PAOI. Refer to Table 5-5.

Table 5-5: List of mammal Species of Conservation Concern that may occur in the PAOI. VU = Vulnerable; and LC = Least Concern

Family	Scientific name	Common name	Regional Conservation Status	Global Conservation Status	Likelihood of Occurrence	Reason
Giraffidae	*Giraffa camelopardalis*	African Giraffe	LC	VU	Low	**Lack of suitable habitat present within the PAOI**. Confined predominantly to protected and conservation areas in South Africa.

c) Herpetofauna

Based on GBIF, three (3) herpetofauna species are predicted to occur within the PAOI (Appendix E). None of these are listed as SCC. Moreover, according to the Screening Tool, no herpetofauna SCC are predicted to occur within the PAOI.

5.1.8.1 DFFE Screening Tool

The following is deduced from the National Web-based Environmental Screening Tool Regulation 16(1)(v) of the Environmental Impact Assessment Regulations 2014, as amended):

- Terrestrial Biodiversity Theme sensitivity is Low with no environmentally sensitive receptors coinciding with the PAOI (Figure 5-25);
- Plant Species Theme sensitivity is Low with no flora SCC predicted to occur within the PAOI (
-
-

- Figure 5-26); and
- Animal Species Theme is Low with no fauna SCC predicted to occur within the PAOI (Figure 5-27).

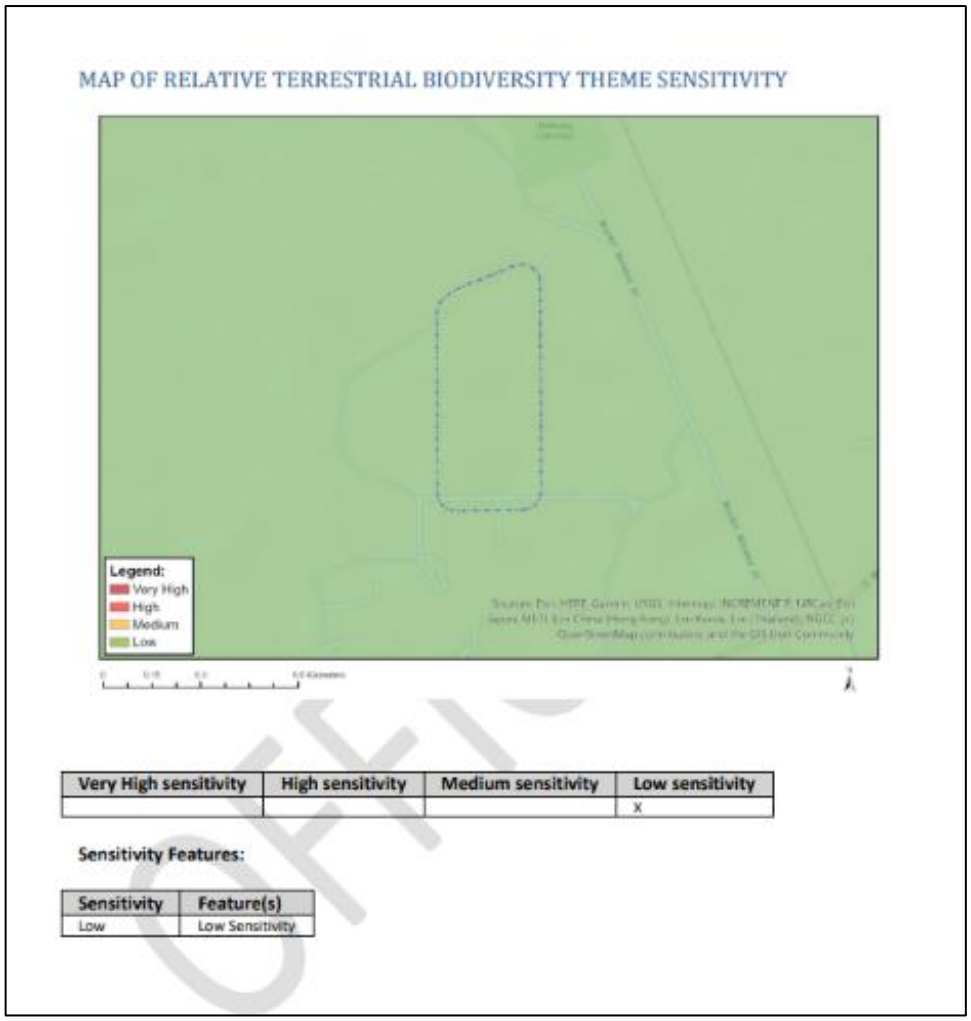


Figure 5-25: Terrestrial Biodiversity Theme Sensitivity

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY

Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

Figure 5-26: Plant Theme Sensitivity

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY

Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Subject to confirmation

Figure 5-27: Animal Theme Sensitivity

5.1.8.2 Fieldwork Findings

a) Floral Assessment

This section is divided into two sections:

- Indigenous flora; and
- Invasive Alien Plants (IAPs).

(i) Indigenous flora

The vegetation assessment was conducted throughout the extent of the PAOI. In total, 16 flora species were easily identifiable, and were recorded as such. However, owing to seasonal constraints, eight species were not easily identifiable at the time of conducting the field survey. These have been identified to the taxonomic levels of genus and tribe (Table 5-6). Of the species identified, one (i.e., *Vachellia erioloba*) is nationally protected and is explained in detail further below. It is important to note that several individuals of the genus *Aloe* were located within the PAOI. However, seasonal constraints limited the accuracy of correctly identifying these individuals to species level. It is strongly recommended that the necessary relocation permits be applied for through the relevant provincial authorities to remove and re-plant all individual Aloes within the PAOI prior to the commencement of construction. This is particularly important given that Klerksdorp Thornveld is a suitable habitat for the EN *Aloe braamvanwykii* which may occur within the PAOI. The proposed relocation site is indicated on Figure 5-33 and occurs within the existing NWU: Mahikeng Campus, on the Remainder of Erf 1090 Mmabatho Unit 5, North West Province in an area that is currently undeveloped.

The plant species recorded is by no means comprehensive, and repeated surveys during a different seasonal period may yield up to 20% additional flora species for the PAOI. Example photographs of some flora species identified within and around the PAOI can be seen in Figure 5-28.

Table 5-6: Trees, shrub and herbaceous plant species recorded in the PAOI

Family	Taxonomic name	Conservation status	Endemism
Acanthaceae	*Baleria macrostegia LC*	LC	Not endemic to SA
Asphodelaceae	*Bulbine narcissifolia*	LC	Not endemic to SA
Ruscaceae	*Eriospermum cooperi*	LC	Not endemic to SA
Asphodelaceae	*Genus Aloe*	*	*
Asteraceae	*Genus Gazania*	*	*

Family	Taxonomic name	Conservation status	Endemism
Asteraceae	*Genus Helichrysum*	*	*
Asteraceae	*Genus Tagetes*	*	*
Asteraceae	*Genus Tarchonanthus*	*	*
Asteraceae	*Genus Verbesina*	*	*
Asteraceae	*Genus Zinnia*	*	*
Malvaceae	*Grewia flava*	LC	Not endemic to SA
Celastraceae	*Gymnosporia buxifolia*	LC	Not endemic to SA
Poaceae	*Heteropogon contortus*	LC	Not endemic to SA
Asteraceae	*Hilliardiella elaeagnoides*	LC	Not endemic to SA
Hyacinthaceae	*Ledebouria luteola*	LC	Not endemic to SA
Amaryllidaceae	*Nerine laticoma*	LC	Not endemic to SA
Asteraceae	*Polydora angustifolia*	LC	Not endemic to SA
Anacardiaceae	*Searsia lancea*	LC	Not endemic to SA
Poaceae	*Themeda triandra*	LC	Not endemic to SA
Santalaceae	*Tribe Visceae*	*	*
Fabaceae	*Vachellia erioloba*	LC (Nationally Protected)	Not endemic to SA
Fabaceae	*Vachellia hebeclada*	LC	Not endemic to SA
Fabaceae	*Vachellia karroo*	LC	Not endemic to SA
Rhamnaceae	*Zizphus mucronata*	LC	Not endemic to SA

Figure 5-28: Examples photos of some flora species identified in and around the PAOI. A: *Baleria macrostegia*; B: *Heteropogon contortus*; C: *Ziziphus mucronata*; D: *Searsia lancea*

(ii) Protected Flora Species

Numerous individuals of the protected tree species *Vachellia erioloba* (Camelthorn) were detected during the field survey (Figure 5-29, Figure 5-30). The number of individuals detected is not necessarily a true reflection of the population abundance present within the PAOI, and it is recommended that a walkthrough be conducted prior to the commencement of construction to ensure that all individuals present are accounted for. *Vachellia erioloba* is protected by the List of Protected Tree Species under the National Forests Act, 1998 (Act No. 84 of 1998) (NFA). In terms of the NFA, no person may 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 product derived from a protected tree, except under a licence or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated. Contravention of this declaration is regarded as a first category offence.

Figure 5-29: Example photographs illustrating the presence of Vachellia erioloba present within the PAOI

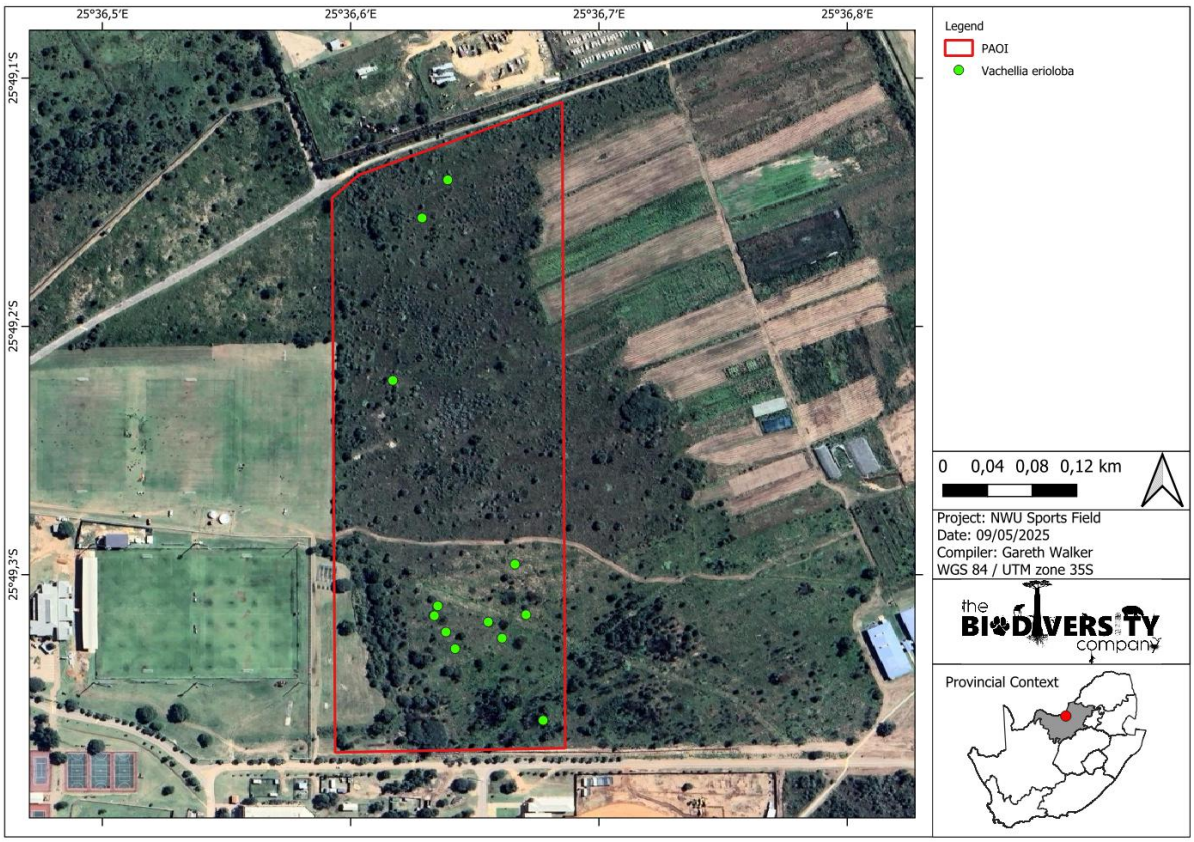


Figure 5-30: Map illustrating the locations of *Vachellia erioloba* present within the PAOI

(iii) Aloe Species Removal

As highlighted, seasonal constraints impeded on the accuracy of identifying Aloe species present within the PAOI. Given that almost all indigenous vegetation cover within the PAOI will be

removed prior to construction, it is strongly recommended that all Aloes be removed and re-planted in a pre-determined area. In this instance, a walkthrough should be conducted prior to construction to locate all Aloes, and the necessary permits should be applied for through the relevant provincial authorities authorizing the removal and relocation of these individuals. The locations of some Aloes detected (including a 10m buffer) during the field survey are depicted in Figure 5-31. The proposed relocation site is indicated on Figure 5-33 and occurs within the existing NWU: Mahikeng Campus, on the Remainder of Erf 1090 Mmabatho Unit 5, North West Province in an area that is currently undeveloped.

Figure 5-31: Example photographs of individuals of the genus Aloe detected within the PAOI

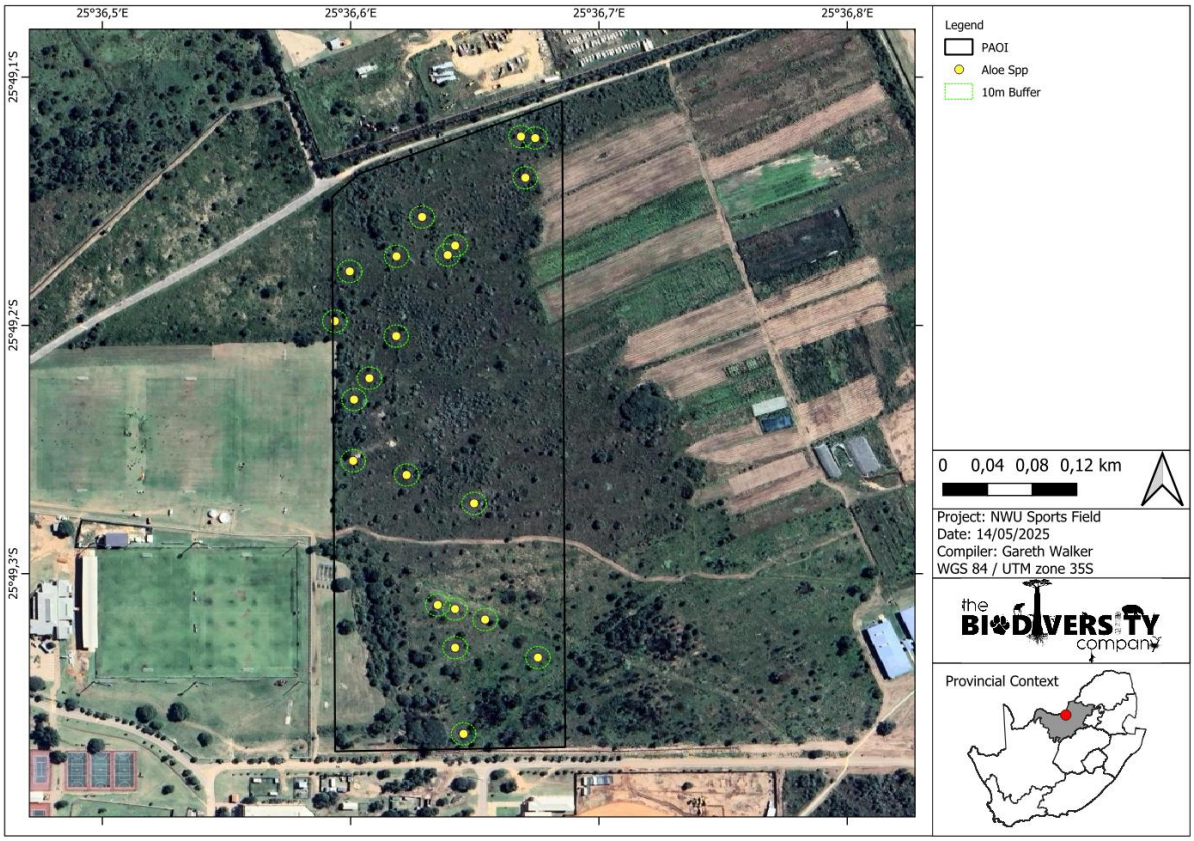


Figure 5-32: Map depicting the locations of some Aloes detected during the field survey

Figure 5-33: Proposed site for relocation of Protected plant species

(iv) Alien Invasive Plants

Alien Invasive Plants (AIPs) tend to dominate or replace indigenous flora, thereby transforming the structure, composition and functioning of ecosystems. Therefore, it is important that these plants are controlled by means of an eradication and monitoring programme. Some invader plants may also degrade ecosystems through superior competitive capabilities to exclude native plant species.

NEMBA is the most recent legislation pertaining to AIPs. In August 2014, the list of Alien Invasive Species was published in terms of the NEMBA. The Alien and Invasive Species Regulations were published in the Government Gazette No. 44182, 24th of February 2021. The legislation calls for the removal and / or control of AIP species (Category 1 species). In addition, unless authorised thereto in terms of the NWA, no land user shall allow Category 2 plants to occur within 30 meters of the 1:50 year flood line of a river, stream, spring, natural channel in which water flows regularly or intermittently, lake, dam or wetland. Category 3 plants are also prohibited from occurring within proximity to a watercourse. Below is a brief explanation of the three categories in terms of the NEMBA:

- Category 1a: Invasive species requiring compulsory control. Remove and destroy. Any specimens of Category 1a listed species need, by law, to be eradicated from the environment. No permits will be issued.

- Category 1b: Invasive species requiring compulsory control as part of an invasive species control programme. Remove and destroy. These plants are deemed to have such a high invasive potential that infestations can qualify them to be placed under a government sponsored invasive species management programme. No permits will be issued.

- Category 2: Invasive species regulated by area. A demarcation permit is required to import, possess, grow, breed, move, sell, buy, or accept as a gift any plants listed as Category 2 plants. No permits will be issued for Category 2 plants to exist in riparian zones.

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

Note that according to the Alien and Invasive Species Regulations, a person who has under his or her control a category 1b listed invasive species must immediately:

- Notify the competent authority in writing;

- Take steps to manage the listed invasive species in compliance with:

    - Section 75 of the NEMBA;

    - The relevant invasive species management programme developed in terms of regulation 4; and

- Any directive issued in terms of section 73(3) of the NEMBA.

A single AIP was observed beyond the boundaries of the PAOI. This species (in green) (Table 5-7) must be controlled by implementing an IAP Management Programme, in compliance of section 75 of the NEMBA, as stated above.

Table 5-7: Summary of AIP recorded within the PAOI of Influence (PAOI) during the field survey period

Scientific Name	NEMBA Category Rating
Ricinus communis	NEMBA 1b

b) Faunal Assessment

(i) Herpetofauna

No herpetofauna species were detected during the field survey. This is unlikely to be a true representation of the herpetofauna diversity within the PAOI and repeated surveys during various temporal periods would likely yield a more accurate representation of species present. Irrespective, however, it is improbable that any herpetofauna SCC will occur within the PAOI.

(ii) Mammals

The mammalian diversity on site was low likely owing to the limited size of the PAOI. In total, three (3) mammalian species were detected during the field survey (Table 5-8). All three were physically sited and the scat of one species (i.e., *Lepus saxatilis*) was observed at numerous sites within the PAOI. None of the species recorded are SCC.

Table 5-8: Summary of mammal species recorded within the PAOI

Family	Species	Common Name	Conservation Status	
			Regional	IUCN
Herpestidae	*Cynictis penicillata*	Yellow Mongoose	LC	LC
Sciuridae	*Xerus inauris*	Cape Ground Squirrel	LC	LC
Leporidae	*Lepus saxatilis*	Scrub Hare	LC	EN

5.1.8.3 Site Sensitivity Verification

a) Habitat Assessment and Site Ecological Importance

(i) Habitats

The main habitat types identified across the PAOI were initially identified based largely on aerial imagery. These main habitat types were then refined based on the field coverage and data collected during the field survey. The delineated habitats can be seen in Figure 5-34. Emphasis

was placed on limiting timed meander searches within the natural habitats and therefore habitats with a higher potential of hosting a higher flora and fauna diversity. From a terrestrial perspective, two (2) habitats (i.e., Klerksdorp Thornveld and Modified) were identified within the PAOI and are discussed in the sub-sections below. Furthermore, several drainage lines were detected within the PAOI. More information on the drainage lines present within the PAOI can be found in the accompanying aquatic report (TBC, 2025).

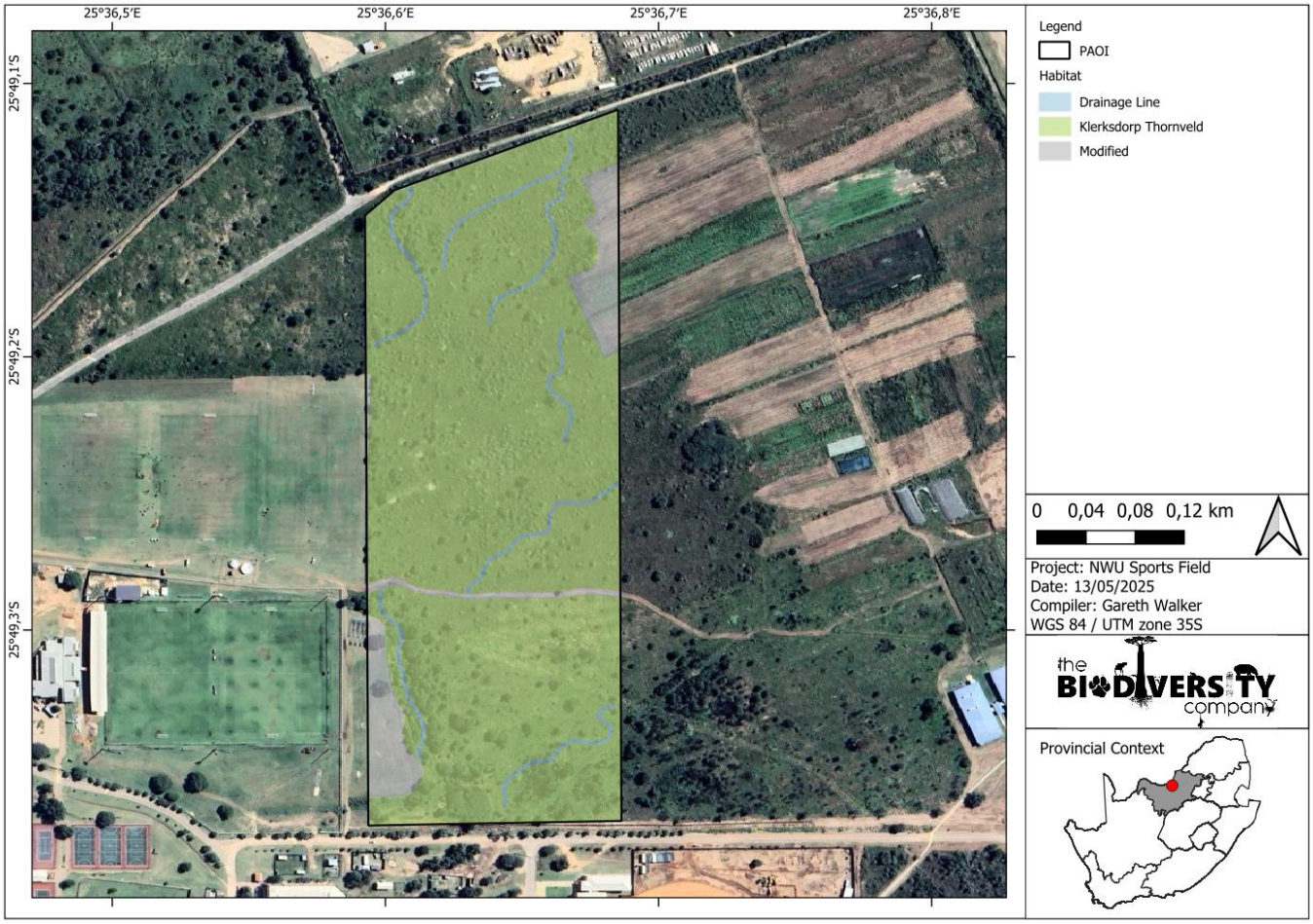


Figure 5-34: Habitats delineated within the PAOI

Table 5-9: Table providing descriptions of the habitat types delineated for the PAOI

Habitat	Description and condition	Ecosystem Processes and Services
Klerksdorp Thornveld	This habitat type is largely ecologically intact and functional, having been partially impacted by edge effects from human and vehicular traffic, pollution, and human ingress. Klerksdorp Thornveld vegetation is characterized by *Vachellia karroo* dominated thickets within a grassland matrix. These thickets are interspersed with various grassland communities dominated by different species of the genus Cympogon and Themeda. Numerous individuals of the nationally protected tree species *Vachellia erioloba* were observed in this habitat type, along with several Aloes. Given the limited size of the developmental footprint, it is unlikely that Klerksdorp Thornveld in this instance will	Klerksdorp Thornveld provides a range of ecosystem processes including soil formation, water regulation, carbon storage, nutrient cycling, pollination, and food web interactions. Some of the ecosystem services provided for by this habitat type include provisioning services like food (through grazing animals and plants), raw materials (such as wood from trees), and energy (potentially through biomass). Additionally, Klerksdorp Thornveld offers regulating services such as carbon storage and flood control, as well as supporting services that underpin others, such as soil formation and pollination.

Habitat	Description and condition	Ecosystem Processes and Services
	house a high fauna diversity, however smaller species, particularly rodents and hares, are likely to occur within this habitat type. Fauna SCC are unlikely to occur in Klerksdorp Thornveld vegetation within the PAOI. Given that the entire PAOI will be cleared of indigenous vegetation prior to the commencement of construction, the ecological functionality and integrity of Klerksdorp Thornveld within the PAOI will be eliminated.	
Modified	Modified habitats, in this instance, include areas that are entirely or predominantly devoid of indigenous vegetation having been cleared for recreational purposes, infrastructure development and for subsistence agriculture. This habitat type lacks ecological functionality and integrity and consequently, a low fauna and flora diversity is associated with modified areas. No flora and fauna SCC were detected, and none are expected to occur within these habitats.	Modified habitats are largely ecologically dysfunctional and lack ecological integrity. These habitats could serve as possible dispersion corridors for fauna species. Recreational areas provide cultural importance and improve human wellbeing. Areas of subsistence agriculture provide food provisioning services and can facilitate pollination opportunities for invertebrates, and small mammalian and avifauna species.
Drainage Lines	The drainage lines present within the PAOI are of a lower overall ecological sensitivity having been subjected to anthropogenic impacts such as infrastructure development, human ingress, and subsistence agriculture around the PAOI. These areas are of a lower overall intrinsic value for biodiversity and ecosystem health. The drainage lines present within the PAOI are not synonymous with high levels of fauna and flora diversity. More information on these habitats can be found in the accompanying aquatic report (TBC, 2025).	Overall, drainage lines provide a range of ecosystem services and processes related primarily to water regulation and other supporting services. These include water purification, flood attenuation, and habitat provision for certain fauna species. Drainage lines also contribute to climate regulation, water storage, and the provision of water for human usage.

Figure 5-35: Examples photographs of Klerksdorp Thornveld habitat within the PAOI

Figure 5-36: Examples photographs of Modified habitats within the PAOI

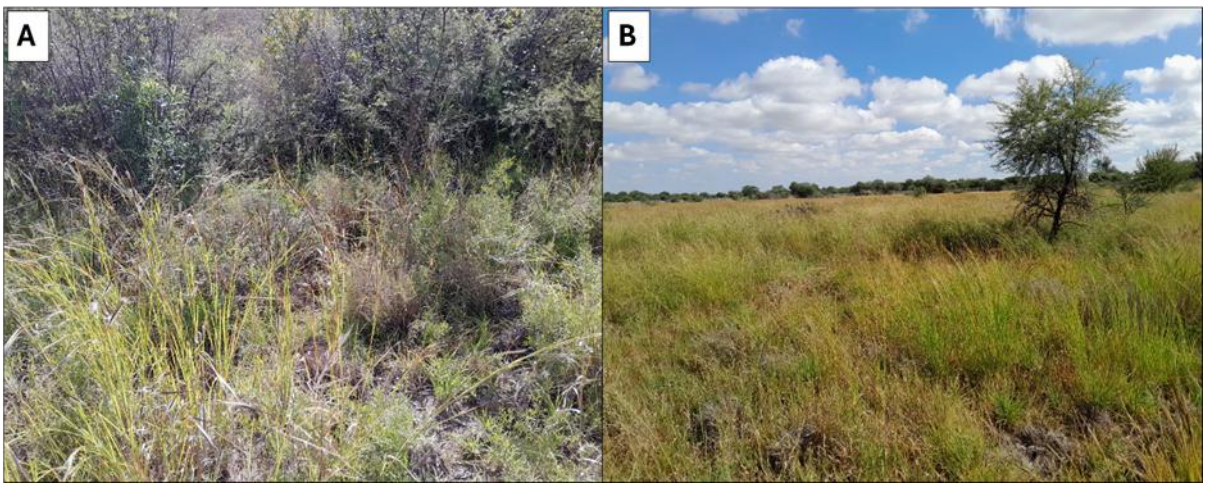


Figure 5-37: Photographs of drainage lines identified within the PAOI. More information on these habitats can be accessed in the accompanying aquatic report (TBC, 2025)

(ii) Site Ecological Importance

The different habitat types within the PAOI were delineated and identified based on observations during the field survey, and on available satellite imagery. These habitat types were assigned Ecological Importance (EI) categories based on their ecological integrity, conservation value, the presence of SCC and their ecosystem processes. As per the terms of reference for the project, GIS sensitivity maps are required to identify sensitive features in terms of the relevant specialist discipline/s within the PAOI. The sensitivity scores identified during the field survey for each terrestrial habitat are mapped. All habitats within the assessment area of the proposed PAOI were allocated a sensitivity category (Table 5-10). The sensitivities of the habitat types delineated are illustrated in Figure 5-38.

Table 5-10: Summary of the terrestrial habitat types delineated within the PAOI

Habitat Type	Conservation Importance (CI)	Functional Integrity (FI)	Biodiversity Importance (BI)	Receptor Resilience (RR)	Site Ecological Importance (SEI) Guidelines for interpreting SEI in the context of the proposed development activities
Klerksdorp Thornveld	Medium Presence of range restricted species. >50% of receptor contains natural habitat with potential to support SCC.	Low Small (> 1ha but <5ha) area.	Low	Low Habitat that is unlikely to recover fully after a relatively long period: > 15 years required to restore ~less than 50% of the original species composition and functionality of the receptor functionality, or species that have a low likelihood of: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) returning to site once the disturbance or impact has been removed.	Medium Minimisation and restoration mitigation – development activities of medium impact acceptable followed by appropriate restoration activities.
Modified	Low <50% of receptor contains natural habitat with limited potential to support SCC.	Low Low rehabilitation potential. Several minor and major current negative ecological impacts.	Low	Medium Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a moderate likelihood of: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) returning to a site once the disturbance or impact has been removed.	Low Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities.
Drainage Lines	Low <50% of receptor contains natural habitat with limited potential to support SCC.	Low Low rehabilitation potential. Several minor and major current negative ecological impacts.	Low	Medium Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a moderate likelihood of: (i) remaining at a site even when a disturbance or impact is occurring, or (ii) returning to a site once the disturbance or impact has been removed.	Low Minimisation and restoration mitigation – development activities of medium to high impact acceptable followed by appropriate restoration activities.

(iii) Screening Tool Comparison

The allocated sensitivities for each of the relevant themes are either disputed or validated for the assessed areas in Table 5-11. A summative explanation for each result is provided as relevant. The specialist-assigned sensitivity ratings are based largely on the SEI process followed in the previous section, and consideration is given to any observed or likely presence of SCC or protected species.

Table 5-11: Summary of the screening tool vs specialist assigned sensitivities

Screening Tool Theme	Screening Tool	Specialist	Tool Validated or Disputed by Specialist - Reasoning
Animal Theme	**Low**	**Low**	Validated – Owing to the limited size of the developmental footprint, fauna diversity within the PAOI is low, limited predominantly to small vertebrate species including rodents and hares. Not fauna SCC were detected and none are expected to occur within the PAOI.
Plant Theme	**Low**	**High**	Disputed – The PAOI is largely ecologically intact and comprised of a high diversity of indigenous vegetation. Several individuals of the nationally protected tree *Vachellia erioloba* were observed within the PAOI. Moreover, several Aloes were observed some of which could be *Aloe c.f. braamvanwykii*. Given that these were not easily identifiable owing to

Screening Tool Theme	Screening Tool	Specialist	Tool Validated or Disputed by Specialist - Reasoning
			seasonal constraints, it is recommended that all species be relocated to a predetermined location.
Terrestrial Theme	**Low**	**Klerksdorp Thornveld – Medium**	Disputed – Although no fauna and/or flora SCC were detected within this habitat type, Klerksdorp Thornveld within the PAOI was ecologically intact and functional. The sensitivity for this habitat has been categorised as Medium owing to the limited size of the developmental footprint in conjunction with Klerksdorp Thornveld being a LC habitat (RLE, 2022).
		Modified – Low	Validated – These habitats have been cleared of indigenous and consequently lack ecological integrity and functionality. No flora and/or fauna SCC were detected in modified habitats, and none are expected to occur.
		Drainage Lines – Low	Validated – These habitats have been subjected to anthropogenic impacts resulting in their modification. No flora and/or fauna SCC were detected, and none are expected to occur within these habitats. More information on the drainage line habitats can be accessed in the accompanying aquatic report (TBC, 2025).

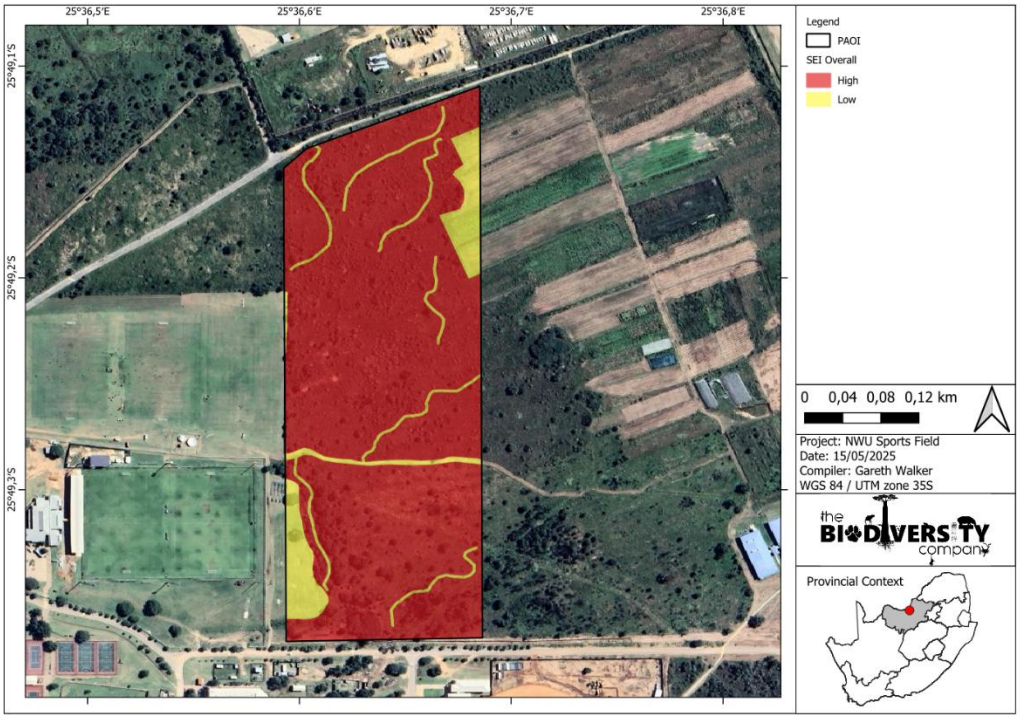


Figure 5-38: Site sensitivities (i.e., SEI) within the PAOI (Unmitigated)

5.1.8.4 Conclusion

The completion of a comprehensive desktop study, in conjunction with the results from the field survey, suggest there is a medium-high confidence in the information provided. The survey ensured that there was suitable ground-truth coverage of the open-spaces and natural habitats, and ecosystems were assessed to obtain a general species (fauna and flora) overview, and the major current impacts were observed. The PAOI occurs in a fragmented landscape surrounded predominantly by anthropogenically transformed habitats attributed to [predominantly] infrastructure development. Consequently, the natural Klerksdorp Thornveld habitat present within the PAOI is the last remaining patch of ecologically functional habitat present within the landscape. As such, the management outcomes presented in this report need to be implemented and adhered to, to properly mitigate the adverse environmental impacts that will result from the proposed project activities.

The PAOI is comprised of the following themes and sensitivities:

- Plant Theme: High
- Animal Theme: Low
- Terrestrial Theme:
    - Klerksdorp Thornveld: Medium
    - Modified: Low
    - Drainage Lines: Low

Several individuals of the nationally protected tree [*Vachellia erioloba*] were detected. Appropriate licencing for the removal of this species needs to be obtained prior to the commencement of construction. In this instance, it is recommended that a follow-up walkdown be conducted during which time all individuals of this species can be demarcated. In addition to *Vachellia erioloba*, numerous Aloes were observed within the PAOI. Owing to seasonal constraints, however, accurate identification of the Aloe species present was not possible. Given the fragmented state of the landscape, it is strongly recommended that relocation permits be applied for through the relevant provincial authorities permitting the removal and relocation of these Aloe species from the PAOI.

Completion of the terrestrial biodiversity assessment led to a dispute of the Low terrestrial biodiversity classification theme sensitivity as allocated by the National Environmental Screening Tool. Instead, given that most of the PAOI is comprised of intact Klerksdorp Thornveld habitat, the PAOI is assigned a terrestrial biodiversity theme sensitivity of Medium. Antithetically, Modified habitats and Drainage Lines are assigned an overall terrestrial biodiversity theme sensitivity of Low.

5.2 Socio-Economic Aspects

The Mahikeng Local Municipality (previously Mafikeng Local Municipality) is a Category B municipality located within the Ngaka Modiri Molema District in Mahikeng (previously Mafikeng), the capital city of the North West Province. It is situated next to the Botswana border, and is just a three-hour drive from Johannesburg and about 294km from Pretoria. Mahikeng is the smallest of the five municipalities in the district. It is the seat of the Provincial Legislature and the majority of the National State Departments regional offices. It was brought about by the new Local Government transformation in South Africa. Its rich and diverse history dates back to 1852, when the town was founded, and 1899 to 1902 during the Anglo-Boer War, the Mafikeng Siege. Its town is home to the Mahikeng Museum, with its antique steel ceiling, old town clock, Sol Plaatje's history, and display of rock species. The Mahikeng Airport, situated 5km west of the Mmabatho CBD, boasts a landing strip of 4.6km, one of the longest runways in the world. The towns of Mahikeng, Mmabatho and Ottoshoop forms part of this Municipality.

5.2.1 Demographic Profile

	2022
Population	354 504
Age Structure	
Population under 15	28.9%
Population 15 to 64	66.0%
Population over 65	5.2%

5.2.2 Education

Education (aged 20 +)	
No schooling	7.0%
Matric	n/a
Higher education	13.6%

5.2.3 Economic Drivers

No statistics were available for the unemployment and employment rates within the Mahikeng Local Municipality.

The main economic sectors in the Mahikeng Local Municipality are in agriculture, mining, manufacturing, trade and tourism.

The following permanent job opportunities will be created during the operational phase:

a) NWU Mahikeng Hockey

- Possible 1x Hockey Coach: Ladies and gents
- Possible 1x Manager/Officer: MC Hockey
- General landscape maintenance and general upkeep will be done by the NWU MC Facilities Maintenance Services by appointing yearly contractors offering landscape maintenance and general upkeep services. This will create a lot of contract employment and offer opportunity to service providers in and around the NWP.

b) NWU Mahikeng Cricket

- Possible 1x Cricket Coach: Ladies and gents
- Possible 1x Manager/Officer: MC Cricket
- General landscape maintenance and general upkeep will be done by the NWU MC Facilities Maintenance Services by appointing yearly contractors offering landscape maintenance and general upkeep services. This will create a lot of contract employment and offer opportunity to service providers in and around the NWP.

5.2.4 Aesthetic Environment

The Visual / Landscape Impact Assessment was not undertaken. However, below is a motivation for not undertaking the Visual Impact Assessment (VIA). A site visit was undertaken by the EAP on 11 April 2025.

The nature of the development (sports facilities and associated infrastructure) will not alter the character, nor sense of place of the study area, as the proposed facilities will be on flat terrain and located within the existing university campus and will be located next to the existing soccer and rugby fields. Refer to the Site Photoplate in Photoplate 1. The sports facility will be at ground level and will not be visible to receptors located near the proposed study area. There are no sensitive receptors surrounding the site earmarked for development, such as residential areas and therefore, direct views of the activities proposed on site is not significant.

The visual impacts will occur during the construction period which will be of a short-term duration. With the implementation of mitigation measures to minimise the impacts on a limited number of sensitive receptors, occurring in proximity to the site for majority of the study area, the visual character of the site will not be compromised by views by these receptors.

During the operational phases of the development, the following mitigation measures must be implemented:

- The site must at all times be neat and tidy.
- All litter must be collected and removed (daily) and disposed of appropriately.
- Equipment and vehicles must be stored or parked in designated areas.
- Light sources should be directed inwards and downwards to prevent obtrusive lighting and light pollution.

The visual impact is therefore not significant, and a motivation is hereby provided that a VIA is not undertaken for the proposed sports facility at the Mahikeng Campus.

Site earmarked for the proposed Sports Field at Mahikeng Campus of North-West University		
 Existing cricket nets on site earmarked for proposed hockey field on southern portion of site	 Existing soccer field adjacent to the proposed hockey field at the NWU (looking in a westerly direction from the proposed hockey field)	 Existing rugby field at NWU occurring west of the proposed cricket pitch
 Western boundary between the existing rugby field and proposed cricket field consists of camel thorn trees	 Northern portion of the site (grassland and camel thorn trees)	 Northern portion of site (proposed cricket pitch)

North eastern portion of site consists of grassland and camel thorn trees

Eastern portion of site (grassland and camel thorn trees)

North eastern portion of site (grassland and camel thorn trees)

South western portion of site (grassland)

Grassland on southern portion of site

South western portion of site (grassland and camel thorn trees)

 Large number of camel thorn trees on the south western portion of the site	 North western portion of site	 South western portion of site
 Central portion of site	 Eastern portion of site from proposed hockey field	 Proposed hockey field (looking in a southerly direction)

Photoplate 1: visual representation of the existing site conditions

5.2.5 Heritage

PGS Heritage undertook a Heritage Impact Assessment (HIA) for the proposed sports facility and associated infrastructure in May 2025. Refer to the HIA in Appendix F6.

a) Heritage screening

A heritage screening report was compiled by the Department of Forestry, Fisheries and the Environment (DFFE) National Web-based Environmental Screening Tool as required by Regulation 16(1)(v) of the EIA Regulations 2014, as amended. According to the heritage screening report, the project area has a Low Heritage Sensitivity (Figure 5-39). The fieldwork has shown that some archaeological and heritage resources were present in the area and thus have a higher rating than the original screening rating. This is in part due to the low resolution of the available data that the screening data is based on.

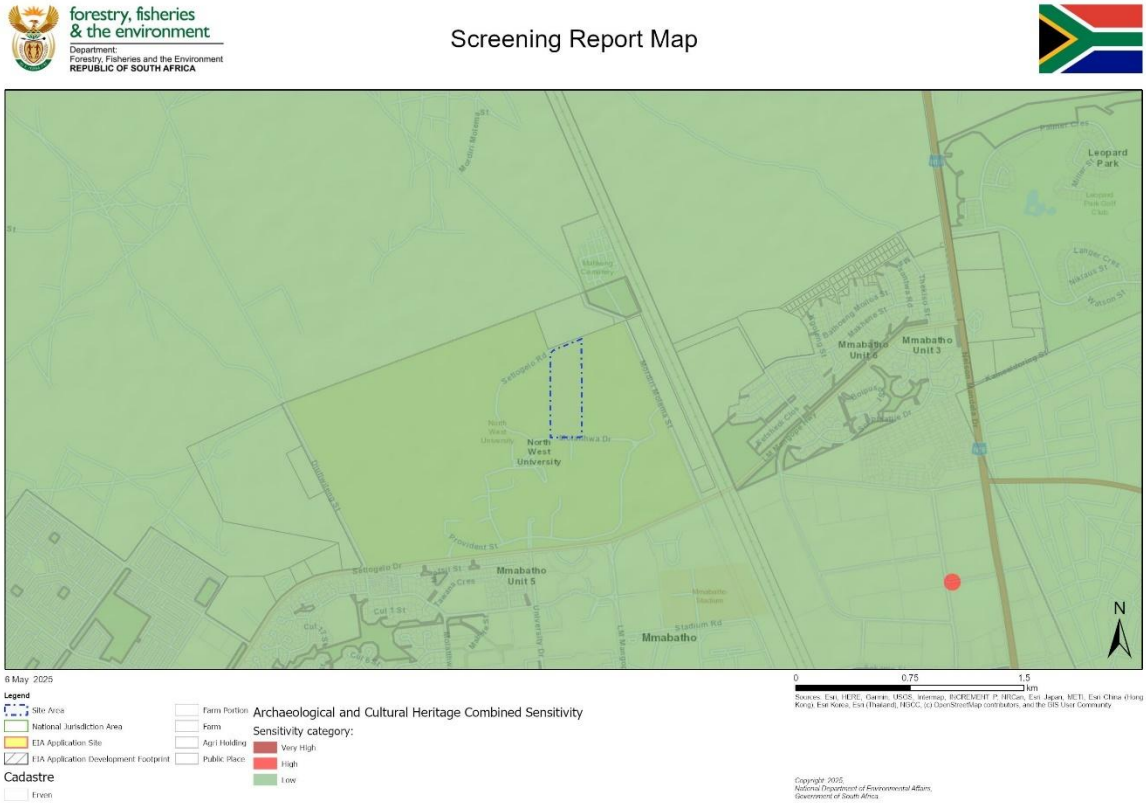


Figure 5-39: Screening tool map indicating a low sensitivity rating for archaeology and heritage

a) Heritage sensitivity

Analysis of maps and satellite imagery enabled the identification of possible heritage sensitive areas. By superimposition and analysis, it was possible to rate these structures according to age and thus their level of protection under NHRA. Table 5-12 lists the possible tangible heritage sites identified in the vicinity of the study area and the relevant legislative protection.

Table 5-12: Tangible heritage site in the study area

Name	Description	Legislative protection
Archaeology	Older than 100 years	NHRA Sections 3 and 35
Structures	Possibly older than 60 years	NHRA Sections 3 and 34
Burial grounds	Graves	NHRA Sections 3 and 36

Additionally, evaluation of satellite imagery has indicated the following areas that may be sensitive from a heritage perspective. The analysis of the studies conducted in the area assisted in the development of the following landform type to heritage find matrix (Table 5-13).

Table 5-13: Landform type to heritage find matrix

LANDFORM TYPE	HERITAGE TYPE
Water holes/pans/rivers	MSA and LSA sites, LIA settlements
Farmsteads	Historical archaeological material
Ridges and drainage lines	LSA sites, LIA settlements

During the fieldwork, no heritage resources of conservation worthy status are currently threatened in the direct development footprint.

However, a single, out-of-context, Stone Age findspot (Nwu01) was observed and was deemed to be non-conservation worthy.

However, not detracting in any way from the comprehensiveness of the fieldwork undertaken, it is necessary to realise that the heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the area. Various factors account for this, including the subterranean nature of some archaeological sites and existing vegetation cover. It should be noted most of the study area was accessible for the fieldwork survey, but the vegetation is thick bush and visibility of sites such as Stone Age or Iron Age are difficult to locate. The identification of the NCW findspot **Nwu01** emphasises the need for a Chance Finds Protocol (CFP).

During the construction phase, it is important to recognize any significant material being unearthed, making the correct judgment on which actions should be taken.

5.2.6 Palaeontological Resources

Banzai Environmental was appointed by PGS to conduct the Palaeontological Impact Assessment (PIA) for the proposed development. Refer to Appendix F7. Under NEMA and to comply with the NHRA, this PIA is necessary to confirm if fossil material could potentially be present in the approved development area and to evaluate the potential impact of the proposed changes to the development on the Palaeontological Heritage.

The proposed development is underlain by superficial deposits, as well as Tertiary to Quaternary calcrete or surface limestones (Figure 5-40). The SAHRIS PalaeoMap indicates that the Palaeontological Sensitivity of the Superficial deposits is Moderate, while that of the calcretes is High (Almond and Pether, 2009; Almond et al., 2013) (Figure 5-41). In the Geotechnical report of the North West Province, Groenewald et al (2014) described these superficial sediments as “aeolian sand, alluvium, colluvium, spring tufa (calcareous) and sinter (siliceous), lake deposits, peats, pedocretes or duricrusts (calcrete, ferricrete), soils and gravel (diamondiferous in places)”. The suggested location is classified as having a High Palaeontology Theme Sensitivity in the DFFE National Environmental Web-Based Screening Report (Figure 5-42). This is in agreement with the High Sensitivity indicated for the development area on the SAHRIS Palaeosensitivity Map.

A site-specific field survey of the development footprint was conducted on foot and by motor vehicle on 2 May 2025. No fossiliferous outcrops were identified during the site investigation. Based on the site investigation as well as desktop research, it was concluded that fossil heritage of scientific and conservational interest in this specific development footprint is rare. This is in contrast with the High Sensitivity assigned to the development area by the SAHRIS Palaeosensitivity Map and DFFE Screening Tool. A medium Palaeontological Significance is indicated for the construction phase of the development pre-mitigation and a low significance post-mitigation. The construction phase will be the only development phase impacting Palaeontological Heritage, and no significant impacts are expected for the Operational and Decommissioning phases. As the No-Go Alternative considers the option of ‘doing nothing’ and maintaining the status quo, it will have a Neutral impact on the Palaeontological Heritage of the development. The Cumulative impacts of the development are considered to be Low pre- and post-mitigation and fall within the acceptable limits for the project. Therefore, the proposed development will not lead to damaging impacts on the palaeontological resources of the area. The development construction may thus be permitted to its whole extent, as the development footprint is not considered sensitive in terms of palaeontological resources. It is consequently recommended that no further palaeontological heritage studies, ground truthing and/or specialist mitigation are required pending the discovery of newly discovered fossils.

Figure 5-40: Extract of the 1:250 000 Mafikeng 2524 (1991) Geological map (Council of Geoscience, Pretoria) indicates that the study area in Mahikeng in the North West Province is underlain by Superficial deposits (Qs), as well as Tertiary to Quaternary calcretes (T-Qc, yellow)

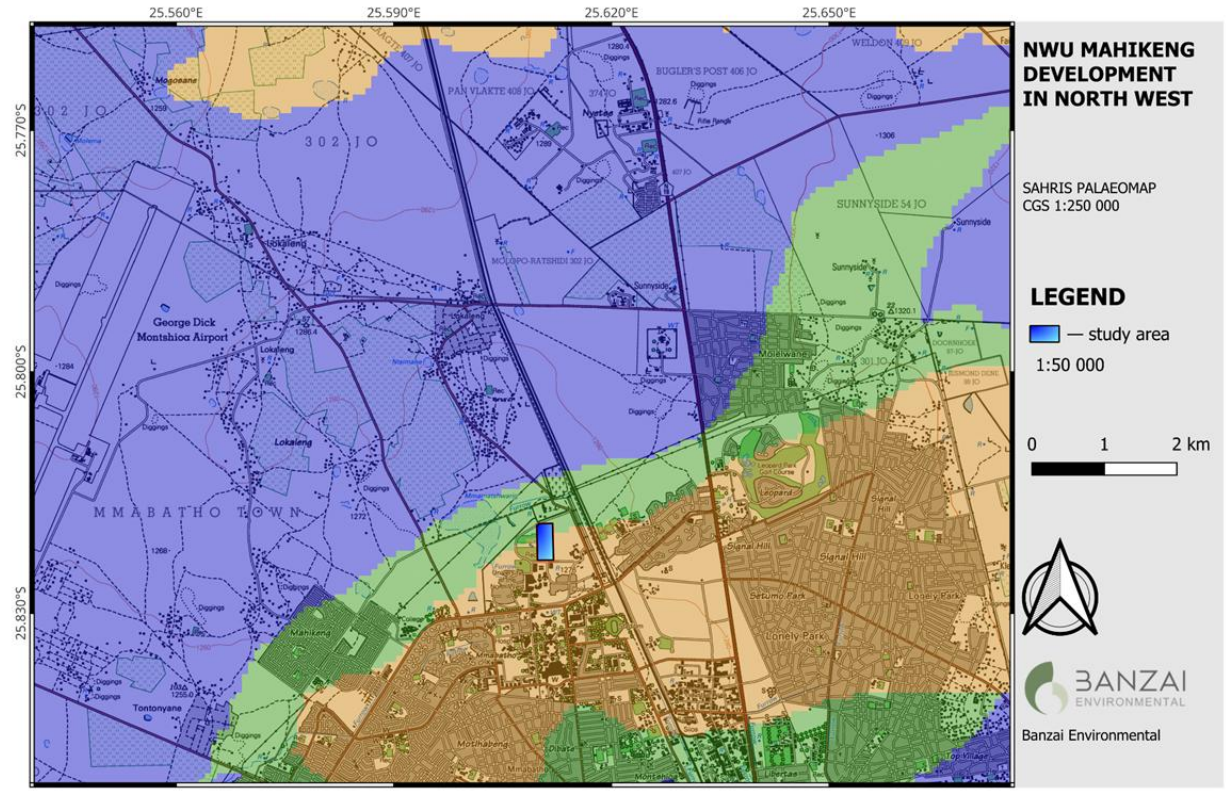


Figure 5-41: Extract of the SAHRIS PalaeoMap (Council of Geosciences, Pretoria) indicates that the study area is underlain with sediments with a High (orange) and Moderate (green) Palaeontological Sensitivity

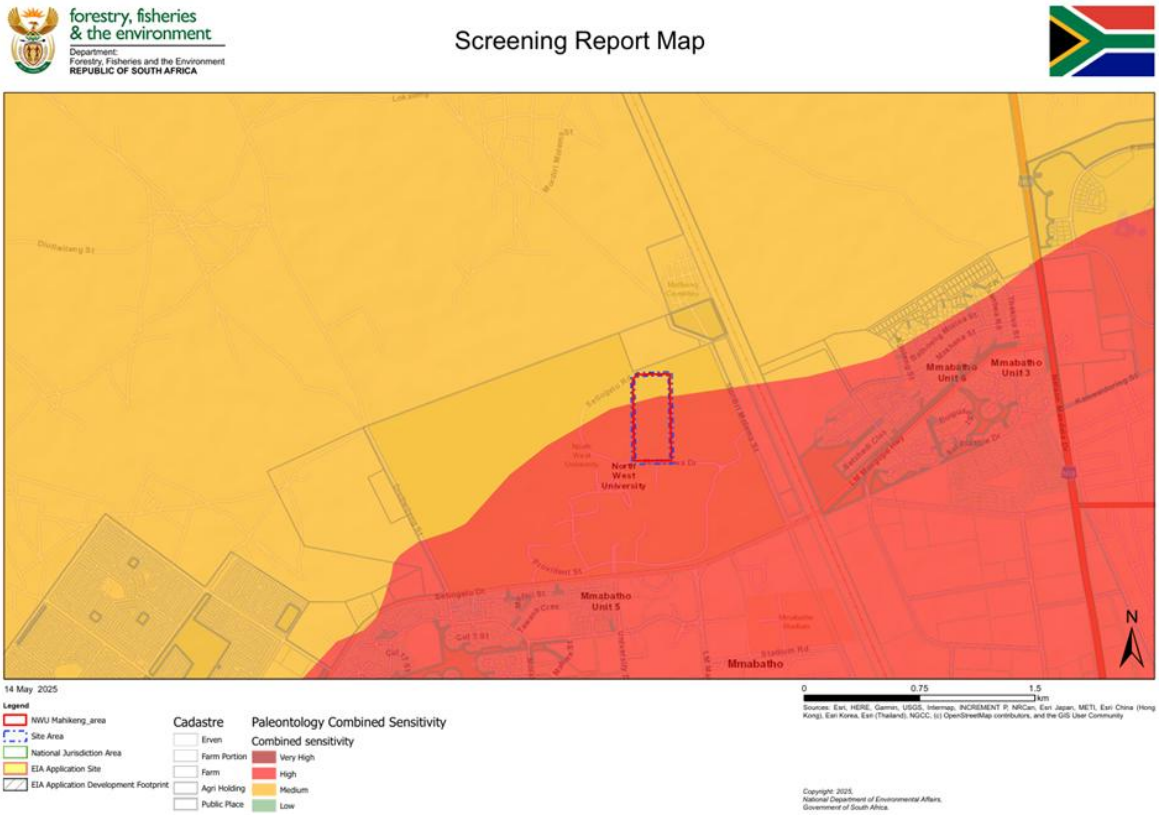


Figure 5-42: Palaeontological Sensitivity generated by the DFFE National Environmental Web-Based Screening indicating the High (red) and Medium (orange) Palaeontological Sensitivity of the proposed development

6 PUBLIC PARTICIPATION PROCESS

The Basic Assessment process refers to that process (in line with the EIA Regulations) which involves the identification and assessment of direct, indirect, and cumulative environmental impacts associated with a proposed project/ activity. The BA process culminates in the submission of a Final BAR (including an Environmental Management Programme (EMPr)) to the Competent Authority for decision-making. The BA process is illustrated below:

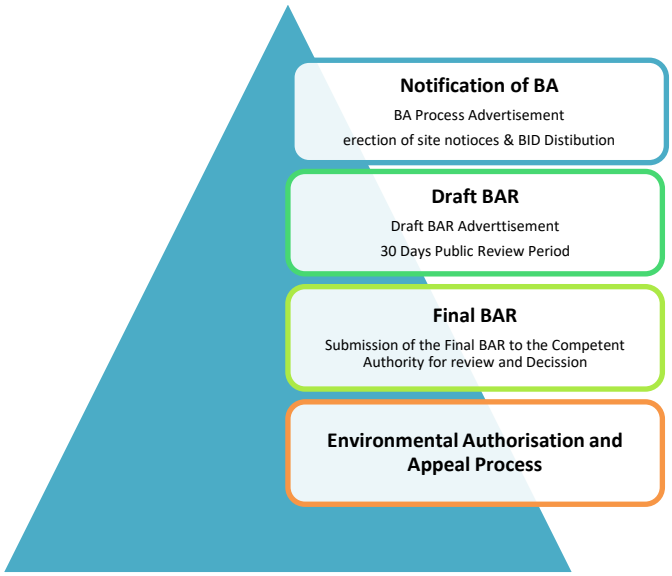


Figure 6-1: Basic Assessment flowchart

6.1 Draft Basic Assessment Report for public review and comment

This Basic Assessment Report for public review has been prepared by Zitholele, to assess the potential significance of environmental impacts associated with the proposed sports facility and associated infrastructure, located at the North-West University, Mahikeng Campus, in North West Province. This process will be undertaken in support of an application for Environmental Authorisation, to the NW DEDEC&T. The 30-day period for review will be from 20 August 2025 to 22 September 2025. The report will be available for public review at the following locations:

- Mahikeng Library, Robinson Street, Golf View, Mahikeng, 2745
- Zitholele's website: www.zitholele.co.za/environmental, under heading "NWU: Mahikeng Campus Sports Facility

The Draft BAR is aimed to provide Interested and Affected Parties (I&APs) with the opportunity to receive information regarding the proposed project, participate in the process, and raise issues of concern. The Draft BAR is aimed at detailing the nature and extent of the proposed development, identifying potential issues associated with the proposed project, and defining the extent of studies required within the BA Process. This is achieved through an evaluation of the

proposed project, involving the project proponent, appointment of specialist consultants, and a consultation process with key stakeholders that included both relevant government authorities and I&APs.

6.2 Tasks during the Basic Assessment Process

The Basic Assessment process for the proposed development has been undertaken in accordance with the EIA Regulations published in GN 40772 in December 2014, in terms of NEMA, as amended. Key tasks undertaken within the EIA phase included:

- Consultation with relevant decision-making and regulating authorities (at National, Provincial and Local levels);
- Undertaking a Public Participation Process throughout the BA process, in accordance with Chapter 6 of EIA regulations 2014 (as amended) to identify any additional issues and concerns associated with the proposed project. Preparation of a Comments and Response Report detailing key issues raised by I&APs as part of the BA Process;
- Undertaking of independent Specialist Studies, in accordance with Appendix 6 of EIA regulations 2014 (as amended);
- Preparation of a Draft BAR in accordance with Appendix 1 of EIA regulations 2014 (as amended); and
- Preparation of a Final BAR in accordance with Appendix 1 of EIA regulations 2014 (as amended).

The above tasks are discussed in detail below.

6.2.1 Authority Consultation

The North West Department: Economic Development, Environment, Conservation and Tourism (NW EDEC&T) is the Competent Authority for this application. A record of all authority consultation undertaken, is included within this BAR. Consultation with the Competent Authorities (i.e. NW EDEC&T) has continued throughout the BA Process. On-going consultation included the following:

- Pre-Application Meeting which was held with the NW EDEC&T on 9 May 2025. Refer to the minutes of the meeting in Appendix G1.
- Notification and Consultation with Organs of State that may have jurisdiction over the project, including:
  i. Provincial departments
  ii. Local Municipality
- The draft BAR will be submitted to the NW EDEC&T for review on 20 August 2025 for comments, simultaneously with public review of the Draft BAR.
- Similarly, the draft BAR will be submitted to the organs of state during the public review of the draft BAR.

A record of the authority consultation (*minutes of the authority meetings*) are included within Appendix F of the draft BAR). An Application for Environmental Authorisation was lodged with the NW DEDEC&T on 20 August 2025 (refer to Appendix G2).

6.2.2 Public Involvement and Consultation

The aim of the Public Participation Process is primarily to ensure the following:

- Information containing all relevant facts, in respect of the proposed project are made available to potential stakeholders and I&APs.
- Participation by potential I&APs is facilitated in such a manner that all potential stakeholders and I&APs will be provided with a reasonable opportunity to comment on the proposed project.
- Comments received from stakeholders and I&APs are recorded, and incorporated into the Final BAR.

In order to accommodate the varying needs of stakeholders and I&APs within the study area, as well as to capture their inputs regarding the project, various opportunities for stakeholders and I&APs to be involved in the BA Process will be provided as follows:

- Telephonic consultation sessions (consultation with various parties from the BA Project Team, including the Project Participation Consultant, lead Environmental Consultant as well as Specialist Consultants).
- Written, faxed or e-mail correspondence.
- The Draft BAR is available for a 30-day public review period from 20 August 2025 to 22 September 2025. The comments received from I&APs will be captured within a Comments and Response Report (CRR), which will be included within the final Basic Assessment Report, for submission to the NW EDEC&T for decision-making.

The following key public participation tasks will be, or have been undertaken in terms of the requirement of Chapter 6 of the EIA Regulations of December 2014, as amended:

- Fixing a notice board at a place conspicuous to the public at the boundary or on the fence of:
    i. the site where the activity to which the application relates is or is to be undertaken; and
    ii. any alternative site mentioned in the application;
- Giving written notice to:
    i. the owner or person in control of that land if the applicant is not the owner or person in control of the land;
    ii. the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
    iii. owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;

iv. the municipal councilor of the ward in which the site or alternative site is situated and any organization of ratepayers that represent the community in the area;
v. the municipality which has jurisdiction in the area;
vi. any organ of state having jurisdiction in respect of any aspect of the activity; and
vii. any other party as required by the competent authority.

- Placing an advertisement in:
  i. one local newspaper; and
- I&APs registry is open and maintained throughout the BA process.
- The Draft BAR will be made available for Public Review.
- Comments received will be collated and addressed accordingly.

In compliance with the requirements of Chapter 6 of the EIA Regulations, 2014, the following summarises the key public participation activities conducted to date:

- *Announcement of the project and invitation to register as I&APs:*
  - An English newspaper and Tswana advertisement was published in the Citizen and Mmegadikgang Newspaper on 20 August 2025 and 22 August 2025, respectively (refer to Appendix H1);
  - Site notices were placed at the entrance gate to the NWU, Mahikeng Public Library, 1st Street and at strategic locations on 20 August 2025 (refer to Appendix H2).; and
  - Notification letters were also distributed. Proof of this distribution is included (refer to Appendix H3).
- *Identification of I&APs and establishment of a database (Appendix H4).*

Identification of I&APs was undertaken by Zitholele through existing contacts and databases, recording responses to site notices and the newspaper advertisement, as well as through the process of networking. The key stakeholder groups identified include authorities, local and district municipalities, public stakeholders, Parastatals and Non-Governmental Organizations.

6.2.3 Protection of Personal Information Act, No.4 of 2013

The Protection of Personal Information Act (POPIA), No 4 of 2013, promote the protection of personal information that is processed by public and private bodies while introducing certain conditions to establish minimum requirements for the processing of personal information. Pertinent sections of the Act became effective on 1 July 2021.

Zitholele drew all I&APs attention to the fact that the PPP team will collect, maintain, and store personal information from Interested and Affected Parties that register an interest in this BA and General Authorisation (GA) process for the purpose of executing this process only. Collected I&AP information managed by Zitholele Consulting is furthermore available to the applicant, NWU, during the course of the BA and GA process.

Zitholele Consulting (Pty) Ltd further acknowledge that this BA and GA process is a public process and all stakeholders were informed that some personal information limited to I&AP name, surname, affiliation, declaration of interest and comments and opinions provided will be included in the BA and GA documentation that will be made available for public review and comment. Full contact details will however only be made available to the NW EDEC&T and the DWS, upon submission of the final BAR and GA technical reports.

6.2.4 Identification and Recording of Issues and Concerns

Issues and comments raised by I&AP's over the duration of the BA process will be incorporated into the Comments and Response Report. The Comments and Response Report will include responses from members of the EAP project team and/or the project proponent.

The CRR will be included in the Final BAR that will be submitted to the NW EDEC&T for consideration and decision-making after the conclusion of the PPP. Correspondences will include any telephonic queries fielded and emails received from stakeholders. The CRR will also include the responses by the EAP to the comments raised by the I&APs. Proof of correspondence between the stakeholders and Zitholele Consulting will be included as an Appendix to the Comments and Responses Report.

6.2.5 Notifying I&APs of the decision

All the stakeholders will be notified via email and SMS of the decision made by the NW EDEC&T on the EA, once it is issued by the NW EDEC&T.

7 IMPACT IDENTIFICATION AND ASSESSMENT

This chapter serves to assess the significance of the positive and negative environmental impacts (direct, indirect, and cumulative) expected to be associated with the proposed Project.

The planning phase of this project will evaluate the following phases:

- Pre-Construction / Construction – will include pre-construction surveys, site preparation, construction site demarcation, vegetation clearance, transportation of material to site; excavations, stockpiling on site, waste management, and undertaking site rehabilitation including implementation of a stormwater management plan.
- Operation – will include operation and maintenance of the stormwater drainage and associated infrastructures.
- Decommissioning –Note that impacts associated with decommissioning are expected to be similar to those associated with construction activities. Therefore, these impacts are not considered separately within this chapter.

7.1 Impact Assessment Rating Methodology

7.1.1 Impact Assessment Methodology

The impacts will be ranked according to the methodology described below. Where possible, mitigation measures will be provided to manage impacts. In order to ensure uniformity, a standard impact assessment methodology will be utilised so that a wide range of impacts can be compared with each other. The impact assessment methodology makes provision for the assessment of impacts against the following criteria, as discussed below.

a. DIRECT, INDIRECT & CUMULATIVE

Descriptor	Definition
Direct Impact	Direct impacts are impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable.
Indirect Impact	Indirect impacts of an activity are indirect or induced changes that may occur as a result of the activity. These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken, or which occur at a different place as a result of the activity.
Cumulative Impact	Cumulative impacts are impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities. Cumulative impacts can occur from the collective impacts of individual minor actions over a period of time and can include both direct and indirect impacts.

b. IMPACT DIRECTION

Descriptor	Definition
Positive	Environment overall will benefit from the impact/risk
Negative	Environment overall will be adversely affected by the impact/risk
Neutral	Environment overall will not be affected

c. SPATIAL EXTENT OF IMPACT

Extent Descriptor	Definition	Rating
Site	Impact footprint remains within the boundary of the site.	1
Local	Impact footprint extends beyond the boundary of the site to the adjacent surrounding areas.	2
Regional	Impact footprint includes the greater surrounds and may include an entire municipal or provincial jurisdiction.	3
National	The scale of the impact is applicable to the Republic of South Africa.	4
Global	The impact has global implications	5

d. DURATION OF IMPACT

Duration descriptor	Definition	Rating
Construction / Decommissioning phase only	The impact endures for only as long as the construction or the decommissioning period of the project activity. This implies that the impact is fully reversible.	1
Short term	The impact continues to manifest for a period of between 3 and 5 years beyond construction or decommissioning. The impact is still reversible.	2
Medium term	The impact continues between 6 and 15 years beyond the construction or decommissioning phase. The impact is still reversible with relevant and applicable mitigation and management actions.	3
Long term	The impact continues for a period in excess of 15 years beyond construction or decommissioning. The impact is only reversible with considerable effort in implementation of rigorous mitigation actions.	4
Permanent	The impact will continue indefinitely and is not reversible.	5

e. POTENTIAL INTENSITY OF IMPACT

Criteria for impact rating of potential intensity of a negative impact.

Potential Intensity Descriptor	Definition of negative impact	Rating
Low	Negative change with no associated consequences.	1
Moderate-Low	Nuisance impact	2
Moderate	Substantial alteration and/or reduction in environmental quality/loss of habitat/loss of heritage/loss of welfare amenity	4
Moderate-High	Severe alteration to faunal or floral populations/loss of livelihoods/individual economic loss.	8
High	Extreme alteration to human health linked to mortality/loss of a species/endemic habitat.	16

Criteria for the impact rating of potential intensity of a positive impact.

Potential Intensity Descriptor	Definition of positive impact	Rating
Low	Positive change with no other consequences.	1
Moderate-Low	Economic development	2
Moderate	Improved environmental quality/improved individual livelihoods.	4
Moderate-High	Net improvement in human welfare	8

f. PROBABILITY / LIKELYHOOD OF IMPACT

Likelihood Descriptor	Definition	Rating
Improbable	The possibility of the impact occurring is negligible and only under exceptional circumstances.	0.1
Very Unlikely	The possibility of the impact occurring is low with a less than 30% chance of occurring.	0.2
Unlikely	The impact has a 30% to 50% chance of occurring.	0.5
Likely	The impact has a 51% to 90% chance of occurring.	0.75
Definite	The impact has a >90% chance of occurring regardless of preventative measures.	1

g. SIGNIFICANCE RATING SCALE

Score	Implications for Decision-making	Rating
< 3	The risk/impact may result in minor alterations of the environment and can be easily avoided by implementing appropriate mitigation measures and will not have an influence on decision-making. Project can be authorised with low risk of environmental degradation	Low
3 - 9	The risk/impact will result in moderate alteration of the environment and can be reduced or avoided by implementing the appropriate mitigation measures and will only have an influence on the decision-making if not mitigated. Project can be authorised but with conditions and routine inspections. Mitigation measures must be implemented.	Moderate

Score	Implications for Decision-making	Rating
10 - 20	The risk/impact will result in major alteration to the environment even with the implementation on the appropriate mitigation measures and will have an influence on decision-making. Project can be authorised but with strict conditions and high levels of compliance and enforcement. Monitoring and mitigation are essential.	High
21 - 26	The risk/impact will result in very major alteration to the environment even with the implementation on the appropriate mitigation measures and will have an influence on decision-making. The project cannot be authorised unless major changes to the engineering design are carried out to reduce the significance rating.	Fatally Flawed

Reversibility of the Impacts: The extent to which the impacts/risks are reversible assuming that the project has reached the end of its life cycle (decommissioning phase):

Descriptor	Definition
High reversibility	Impact is highly reversible at end of project life.
Moderate reversibility	Moderate reversibility of impacts.
Low reversibility	Low reversibility of impacts.
Impacts are non-reversible	The impact is permanent, i.e., this is the least favourable assessment for the environment.

Irreplaceability of Receiving Environment/Resource Loss caused by impacts/risks: The degree to which the impact causes irreplaceable loss of resources assuming that the project has reached the end of its life cycle (decommissioning phase):

Descriptor	Definition
High irreplaceability	The project will destroy unique resources that cannot be replaced, i.e. this is the least favourable assessment for the environment
Moderate irreplaceability	Moderate irreplaceability of resources
Low irreplaceability	Low irreplaceability of resources.

Descriptor	Definition
Resources are replaceable	The affected resource is easy to replace/rehabilitate, i.e. this is the most favourable assessment for the environment.

Confidence: The degree of confidence in predictions based on available information and specialist knowledge

Descriptor	Definition
Low	EAP / Specialist has low confidence in assessment due to significant limitations such as unavailability of data or information
Medium	EAP / Specialist has medium confidence in assessment due to some limitations such as unavailability of data or information
High	EAP / Specialist has high confidence in assessment.

The project site earmarked for the proposed sports facility and associated infrastructure, will be located within the existing university campus and will be located next to the existing soccer and rugby fields.

7.2 Design, Planning and Pre-Construction Phase

7.2.1 Vegetation and habitats

No impacts on vegetation and habitats have been identified during the Pre-Construction Phase of the proposed development.

7.2.2 Archaeological and Cultural Heritage Resources

No impacts on heritage resources have been identified during the Pre-Construction Phase of the proposed development.

7.2.3 Palaeontological Resources

No impacts on palaeontological resources have been identified during the Pre-Construction Phase of the proposed development.

7.2.4 Surface water and wetlands

No impacts on surface water and wetlands have been identified during the Pre-Construction Phase of the proposed development.

7.2.5 Groundwater

No impacts on groundwater have been identified during the Pre-Construction Phase of the proposed development.

7.2.6 Visual

No impacts on the aesthetic environment have been identified during the Pre-Construction Phase of the proposed development.

7.2.7 Socio-economic

No impacts on the socio-economic environment have been identified during the Pre-Construction Phase of the proposed development.

7.3 Construction Phase

7.3.1 Impact on destruction, further loss and fragmentation of the habitats, ecosystems and vegetation community, including Species of Conservation Concern (SCCs) and protected species

Impacts identified

Direct loss of part of Klerksdorp Thornveld vegetation may occur, due to vegetation clearance to make way for construction of the proposed development. Secondary impacts may occur, such as dust entrainment due to construction activities, and influx of Alien Invasive Plant (AIP) species. Other secondary impacts includes, habitat fragmentation, loss of ecosystem services, emigration of fauna species, increased potential for soil erosion, increased potential for establishment of invasive alien vegetation and pollution of water resources from fertilizer run-off.

Impact Assessment

The impact on destruction, further loss and fragmentation of the habitats, ecosystems and vegetation community, including Species of Conservation Concern (SCCs) and protected species is rated as ‘high’ prior to the mitigation and is ‘moderate’ post-mitigation. See Impact Assessment Table 7-1.

Table 7-1: Impact on destruction, further loss and fragmentation of the habitats, ecosystems and vegetation community, including Species of Conservation Concern (SCCs) and protected species

Impact Description		Impact type	Extent (E)	Duration (D)	Potential Intensity (P)	Likelihood (L)	Impact Rating & Significance (IR&S)
Impact	Direct Impact:	**Significance without Mitigation**					
Impact Direction:	Negative	Existing Impact	1	4	8	0.5	7 - MOD
Aspect:	Direct loss of part of Klerksdorp Thornveld due to construction activities, improper solid waste disposal.	Project Impact	2	5	4	1	11 - HIGH
Potential Impact:		**Significance with Mitigation**					
Destruction, further loss and fragmentation of the habitats, ecosystems and vegetation community, including Species of Conservation Concern (SCCs) and protected species.		Residual Impact	1	5	4	0.5	5 - MOD
		Reversibility	Moderate reversibility				
		Irreplaceability	Moderate irreplaceability				
		Cumulative Impact					
		Cumulative Impact	1	5	4	1	10 - HIGH
		Confidence	High				

Proposed Mitigation Measures (Impact Management Actions)

The following environmental awareness training must take place:

- All personnel and contractors are to undergo Environmental Awareness Training. A signed register of attendance must be kept for proof.
- Discussions are required on sensitive environmental receptors within the PAOI to inform contractors and site staff of the presence of protected species, their identification, conservation status and importance, biology, habitat requirements and management requirements in line with the Environmental Authorisation and within the EMPr.
- Contractors and employees must all undergo the induction and must be made aware of any sensitive areas to be avoided.
- Speed limits must be put in place to reduce erosion. Soil surfaces must be wetted as necessary to reduce the dust generated by the project activities. Speed bumps and signs must be erected to enforce slow speeds.
- Only existing access routes and walking paths may be made use of.
- Areas that are denuded during construction and not used during operation need to be re-vegetated with indigenous vegetation to prevent erosion during flood events etc.

The following mitigation measures must be implemented to ensure minimal impacts on the vegetation and habitats:

- Given the uncertainty associated with accurately identifying the Aloe species present along with the fragmented state of the landscape surrounding the PAOI, it is recommended that a permit be applied for through the relevant provincial authorities authorising their removal and relocation. It is suggested that a walkdown be conducted prior to commencement of the development to locate and – where possible – relocate all Aloes present within the PAOI.
- A site walkdown should be conducted prior to the commencement of the development too demarcate the protected *Vachellia erioloba* trees.

The following mitigation measures must be implemented regarding the Protected Plant species:

- Any individually protected plant species present within the PAOI impeding on the progress of development needs a relocation or destruction permit prior to being moved or destroyed.
- High visibility flags need to be place near protected plant species to prevent any damage associated with construction.
- If left undisturbed, the sensitivity and ecological importance of these protected species should be made a part of the environmental awareness program.

The following waste management measures must be implemented:

- All waste must be collected and stored effectively and responsibly according to a site-specific waste management plan. Dangerous waste such as metal wires and glass must only be stored in fully sealed and secure containers, before being moved off site as soon as possible. In this regard, the regulations as set forth by NWU should be adhered to.
- Litter, spills, fuels, chemical and human waste in and around the PAOI must be minimised and controlled according to the waste management plan as set forth by NWU.
- The use of fertilizers should be carefully monitored and controlled to prevent any runoff into surrounding habitats. In this regard, it is recommended that environmentally friendly fertilizers be used.
- Cement mixing may not be performed on the ground. It is recommended that only closed side drum or pan type concrete mixers be utilised. Any spills must be immediately contained and isolated from the natural environment, before being removed from site.
- Toilets at the recommended Health and Safety standards must be provided. Alternatively, ablution facilities in buildings adjacent to the PAOI should be utilised.
- The Contractor should supply sealable and properly marked domestic waste collection bins and all solid waste collected shall be disposed of at a licensed disposal facility.
- Where a registered disposal facility is not available close to the PAOI, the Contractor shall provide a method statement with regards to waste management. Under no circumstances may domestic waste be burned on site or buried on open pits.

Laydown and construction preparation activities (such as cement mixing, temporary toilets, etc.) must be limited to already modified areas and should take up the smallest footprint possible. Designation of these areas need to be provided for by NWU.

All laydown and construction activities should take place in already transformed habitats. At the time of conducting the field survey, construction was taking place near the PAOI. The laydown areas currently being used by the contractors should be used (where possible) by the developers assigned to this project.

Areas of indigenous vegetation, even secondary/disturbed communities outside of the direct project footprint, should not be fragmented or disturbed further. In this regard, it would be preferable to store all equipment in already transformed areas around the PAOI.

All vehicles and personnel must make use of existing roads and walking paths as far as possible, especially construction/operational vehicles.

The clearing of vegetation must be minimised where possible. All activities must be restricted to within the developmental footprint.

Materials may not be stored for extended periods of time and must be removed from the PAOI once the construction phase has been concluded. No permanent construction phase structures should be permitted. No storage of vehicles or equipment is allowed outside of the designated laydown areas. Laydown areas need to be restricted to already modified areas.

A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site.

Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use.

No servicing of equipment on site unless necessary.

All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers.

Appropriately contain any generator diesel storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them from leaking and entering the environment.

Construction activities and vehicles could cause spillages of lubricants, fuels and waste material negatively affecting the functioning of the ecosystem.

All vehicles and equipment must be maintained, and all re-fuelling and servicing of equipment is to take place in demarcated areas outside of the PAOI.

It must be made an offence for any staff member to remove any indigenous plant species from the PAOI or bring any alien species in. This is to prevent the spread of exotic or alien species or the illegal collection of plants.

A fire management plan needs to be aligned with the existing NWU fire management plan.

All construction waste must be removed from site at the closure of the construction phase.

7.3.2 Impact of spread of alien invasive plant species

Impacts identified

Alien invasive plant species may spread through vegetation removal, run-off from fertilizer and soil disturbance. Construction vehicles may also potentially spread seeds of AIP species.

Secondary impacts may occur such as habitat loss for native flora and fauna, alteration of fauna assemblages due to habitat modification and increased alien infestation due to skewed nutrient availability.

Impact Assessment

The impact on fauna is rated as ‘moderate’ prior to the mitigation and is ‘low’ post-mitigation. See Impact Assessment Table 7-2.

Table 7-2: Impact of spread of alien invasive plant species during construction

Impact Description		Impact type	E	D	P	L	IR&S
Impact	Direct Impact:	**Significance without Mitigation**					
Impact Direction:	Negative	Existing Impact	1	1	1	0.1	0 - LOW
Aspect:	Vegetation removal, soil disturbance, spread of alien invasive plant species seeds and fertilizer run-off	Project Impact	2	4	4	0.75	8 - MOD
Potential Impact:		**Significance with Mitigation**					
Introduction of Alien Invasive (AI) species, especially plants.		Residual Impact	1	2	1	0.5	2 - LOW
		Reversibility	Moderate reversibility				
		Irreplaceability	Moderate irreplaceability				
		Cumulative Impact					
		Cumulative Impact	1	1	1	0.1	0 - LOW
		Confidence	High				

Proposed Mitigation Measures (Impact Management Actions)

An AIP Management Plan must be aligned with the NWU AIP Management plan (if applicable). This should regularly be updated to reflect the annual change in AIP composition (those species that are categorised as NEMBA 1b).

The footprint area of the construction should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas.

7.3.3 Impact on displacement of faunal community

Impacts identified

The faunal community may be displaced due to the clearing of vegetation and/or the mass dumping of rubble, disturbance from construction activities, roadkill associated with vehicular collisions, pollution of water resources due to dust, chemical spills, etc. They may also be displaced due to the intentional killing for of fauna for food.

Other secondary impacts may occur, such as the loss of habitat and degradation of surrounding habitats, loss of ecosystem services, increase in rodent populations and associated disease risk and the deterioration of ecological functionality.

Impact Assessment

The impact on displacement of fauna during construction is rated as ‘high’ prior to the mitigation and is ‘moderate’ post-mitigation. See Impact Assessment Table 7-3.

Table 7-3: Impact on displacement of fauna during construction

Impact Description		Impact type	E	D	P	L	IR&S
Impact	Direct Impact:	**Significance without Mitigation**					
Impact Direction:	Negative	Existing Impact	1	1	1	0.1	0 - LOW
Aspect:	Clearing of vegetation and/or the mass dumping of rubble. Roadkill associated with vehicular collisions. Pollution of water resources due to dust, chemical spills, etc. Intentional killing for of fauna for food.	Project Impact	2	5	4	1	11 - HIGH
Potential Impact:		**Significance with Mitigation**					
Displacement of faunal community due to habitat loss, direct mortalities, and disturbance (road collisions, noise, dust, vibration and poaching).		Residual Impact	1	5	4	0.5	5 - MOD
		Reversibility	Moderate reversibility				
		Irreplaceability	Low irreplaceability				

Impact Description	Impact type	E	D	P	L	IR&S
	Cumulative Impact					
	Cumulative Impact	1	5	4	1	10 - HIGH
	Confidence	High				

Proposed Mitigation Measures (Impact Management Actions)

A qualified environmental control officer must be on site when activities begin. A site walk through must be performed by a suitably qualified ecologist prior to any activities taking place. In situations where species are observed and must be removed, the proponent may only do so after the required permission/permits have been obtained in accordance with national and provincial legislation. In the abovementioned situation the development and implementation of a search, rescue and recovery program is suggested for the protection of these species. Should animals not move out of the area on their own, relevant specialists must be contacted to advise on how the species can be relocated.

Clearing and disturbance activities must be conducted in a progressive linear manner to provide an easy escape route for all small mammals and herpetofauna. This is particularly important in this instance given that most of the areas around the PAOI are already modified/transformed thus limiting the availability of suitable habitat for fauna species.

The areas to be disturbed must be specifically and responsibly demarcated to prevent the movement of staff or any individual into the surrounding environments, signs must be put up to enforce this.

The duration of the activities should be minimised to as short a term as possible, to reduce the period of disturbance on fauna.

Noise must be kept to an absolute minimum during the morning and evenings to minimise all possible disturbances to reptile species and species that exhibit nocturnal behavioural patterns.

No trapping, killing, or poisoning of any wildlife is to be allowed and signs must be put up to enforce this. Monitoring must take place in this regard.

All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. Speed limits must be enforced to ensure that road killings are limited.

Schedule activities and operations during least sensitive periods, to avoid migration, nesting, and breeding seasons. In this case, activities should take place during the day.

Any holes/deep excavations must be dug in a progressive manner and shouldn’t be left open overnight. Should any holes remain open overnight they must be properly covered temporarily to

ensure that no small fauna species fall in. Holes must be subsequently inspected for fauna prior to backfilling.

Open areas must be cordoned off appropriately pre-construction to allow animals to move or be moved into these areas before breaking ground. Prior to vegetation clearing, areas to be cleared should be walked on foot by 1-2 individuals to create a disturbance for fauna to move off. Sites should be disturbed only prior to the area having to be cleared, not more than 1 day in advance.

7.3.4 Impact on destruction of heritage and archaeological resources

Impacts identified

The project will encompass a range of activities during the construction phase, including ground clearance, establishment of construction camp areas and small-scale infrastructure development associated with the project.

It is possible that cultural material will be exposed during construction and may be recoverable, keeping in mind delays can be costly during construction, and as such must be minimised. Development surrounding infrastructure and construction of facilities results in significant disturbance, however foundation holes do offer a window into the past and it thus may be possible to rescue some of the data and materials. It is also possible that substantial alterations will be implemented during this phase of the project, and these must be catered for. Temporary infrastructure developments, such as construction camps and laydown areas, are often changed or added to the project as required. In general, these are low impact developments as they are superficial, resulting in little alteration of the land surface, but still need to be catered for.

Soil clearance for infrastructure as well as the proposed reclamation activities, could uncover the following:

- Historical structures and foundations
- Unmarked burial grounds and graves

Impact Assessment

The impact on destruction of heritage and archaeological resources during construction is rated as ‘moderate’ prior to the mitigation and is ‘low’ post-mitigation. See Impact Assessment Table 7-4.

Table 7-4: Impact on destruction of heritage and archaeological resources during construction

Impact Description		Impact type	E	D	P	L	IR&S
Impact	Direct Impact:	**Significance without Mitigation**					
Impact Direction:	Negative	Existing Impact	1	5	1	0.1	1 - LOW
Aspect:	Construction activities	Project Impact	1	5	2	0.5	4 - MOD
Potential Impact:		**Significance with Mitigation**					

Impact Description	Impact type	E	D	P	L	IR&S
Damage/ destruction to unknown archaeological heritage	Residual Impact	1	5	1	0.1	1 - LOW
	Reversibility	Impacts are non-reversible				
	Irreplaceability	High irreplaceability				
	Cumulative Impact					
	Cumulative Impact	1	1	1	0.1	0 - LOW
	Confidence	High				

Proposed Mitigation Measures (Impact Management Actions)

During the construction phase, it is important to recognize any significant material being unearthed, making the correct judgment on which actions should be taken. It is recommended that the following chance find procedure should be implemented.

Chance finds procedure

- A heritage practitioner/archaeologist should be appointed to develop a heritage induction program and conduct training for the ECO as well as team leaders in the identification of heritage resources and artefacts during the implementation of the EMPr.
- An appropriately qualified heritage practitioner/archaeologist must be identified to be called upon in the event that any possible heritage resources or artefacts are identified.
- Should an archaeological site or cultural material be discovered during construction (or operation), the area should be demarcated, and construction activities halted.
- The qualified heritage practitioner/archaeologist will then need to come out to the site and evaluate the extent and importance of the heritage resources and make the necessary recommendations for mitigating the find and the impact on the heritage resource.
- The contractor therefore should have some sort of contingency plan so that operations could move elsewhere temporarily while the materials and data are recovered.
- Construction can commence as soon as the site has been cleared and signed off by the heritage practitioner/archaeologist.

7.3.5 Impact of destruction of palaeontological resources

Impacts identified

No fossiliferous outcrops were detected during the site investigation. Based on the site investigation as well as desktop research, it is concluded that fossil heritage of scientific and conservational interest in this specific development footprint is rare.

Soil clearance for infrastructure as well as the proposed reclamation activities, could uncover fossil resources.

Impacts assessed

The significance ratings of the impacts of destruction of palaeontological resources before mitigation is rated as 'moderate'. With the implementation of mitigation and management measures as proposed by the palaeontologist, the impact significance is 'low'.

Refer to the impact assessment table below.

Table 7-5: Impact of altered hydrology of surface water resources during construction

Impact Description		Impact type	E	D	P	L	IR&S
Impact	Indirect Impact:	**Significance without Mitigation**					
Impact Direction:	Negative	Existing Impact	1	5	4	0.5	5 - MOD
Aspect:	Construction activities	Project Impact	1	5	4	0.5	5 - MOD
Potential Impact:		**Significance with Mitigation**					
Loss of fossil heritage		Residual Impact	1	5	4	0.2	2 - LOW
		Reversibility	Low reversibility				
		Irreplaceability	High irreplaceability				
		Cumulative Impact					
		Cumulative Impact	3	5	1	0.1	1 - LOW
		Confidence	High				

Proposed Mitigation Measures (Impact Management Actions)

During the construction phase, it is important to recognize any significant fossil material being unearthed, making the correct judgment on which actions should be taken. It is recommended that the following chance find procedure should be implemented.

Chance finds procedure

- If a chance find is made the person responsible for the find must immediately stop working and all work that could impact that finding must cease in the immediate vicinity of the find.
- The person who made the find must immediately report the find to his/her direct supervisor which in turn must report the find to his/her manager and the ESO or site manager. The ESO or site manager must report the find to the relevant Heritage Agency (South African Heritage Research Agency, SAHRA). (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za). The information to the Heritage Agency must include photographs of the find, from various angles, as well as the GPS co-ordinates.
- A preliminary report must be submitted to the Heritage Agency within 24 hours of the find and must include the following: 1) date of the find; 2) a description of the discovery and a 3) description of the fossil and its context (depth and position of the fossil), GPS co-ordinates.

- Photographs (the more the better) of the discovery must be of high quality, in focus, accompanied by a scale. It is also important to have photographs of the vertical section (side) where the fossil was found.
- Upon receipt of the preliminary report, the Heritage Agency will inform the ESO (or site manager) whether a rescue excavation or rescue collection by a palaeontologist is necessary.
- The site must be secured to protect it from any further damage. No attempt should be made to remove material from their environment. The exposed finds must be stabilized and covered by a plastic sheet or sand bags. The Heritage agency will also be able to advise on the most suitable method of protection of the find.
- If the fossil cannot be stabilized the fossil may be collected with extreme care by the ESO. Fossils finds must be stored in tissue paper and in an appropriate box while due care must be taken to remove all fossil material from the rescue site.
- Once the Heritage Agency has issued the written authorization, the developer may continue with the development on the affected area.

7.3.6 Impact of altered hydrology of surface water resources

Impacts identified

There may be altered hydrology of the drainage lines on site, due to vegetation clearing for site preparation which will increase hardened surfaces and stormwater channelling. Soil compaction may occur due to vehicle traffic, anthropogenic disturbances and stockpiling of soil material.

Impacts assessed

The significance ratings of the impacts of altered hydrology of surface water resources before mitigation is rated as ‘low’. With the implementation of mitigation and management measures as proposed by the aquatic ecologist, the impact significance is ‘low’.

Refer to the impact assessment table below.

Table 7-6: Impact of altered hydrology of surface water resources during construction

Impact Description		Impact type	E	D	P	L	IR&S
Impact	Direct Impact:	**Significance without Mitigation**					
Impact Direction:	Negative	Existing Impact	1	1	1	0.1	0 - LOW
Aspect:	Clearing of vegetation. Site preparation. Soil compaction. Vehicle traffic. Anthropogenic disturbances. Stockpiling.	Project Impact	1	1	2	0.5	2 - LOW
Potential Impact:		**Significance with Mitigation**					
Altered hydrology due to hardened surfaces and stormwater channelling		Residual Impact	1	1	1	0.1	0 - LOW
		Reversibility	Moderate reversibility				
		Irreplaceability	Low irreplaceability				
		Cumulative Impact					

Impact Description	Impact type	E	D	P	L	IR&S
	Cumulative Impact	1	1	1	0.1	0 - LOW
	Confidence	High				

Proposed Mitigation Measures (Impact Management Actions)

Due to the presence of the drainage features, the following general mitigation measures apply:

- The drainage area outside of the specific project site area must be avoided where possible;
- A stormwater management plan must be drawn up and implemented and aim to divert runoff of an acceptable quality (clean water) away from the site in a manner that does not induce erosion and sedimentation;
- Laydown yards, camps and storage areas must be beyond the stormwater area;
- All chemicals and toxicants to be used for the construction must be stored outside the watercourse and in a bunded area;
- All machinery and equipment should be inspected regularly for faults and possible leaks, these should be serviced off-site or in a designated area;
- Adequate sanitary facilities and ablutions on the servitude must be provided for all personnel within the project area. These facilities must be maintained to promote their use;
- No dumping of construction material on-site may take place;
- Appropriately rehabilitate the project area by ripping, landscaping and re-vegetating with locally indigenous species;
- An alien invasive plant management plan needs to be compiled and implemented post construction to control current invaded areas and prevent the growth of AIPs on cleared areas; and
- Refrain from harsh and harmful chemicals that could pollute downstream watercourses during vegetation control and maintenance.

7.3.7 Impact of pollution of surface water resources

Impacts identified

Pollution of water resources may occur through littering and inappropriate management of domestic and industrial waste. Soil compaction may occur due to vehicle traffic, anthropogenic disturbances and stockpiling of soil material may also lead to pollution of the watercourses.

Impacts assessed

The significance ratings of the impacts of pollution of surface water resources before mitigation is rated as 'low'. With the implementation of mitigation and management measures as proposed by the aquatic ecologist, the impact significance is 'low'.

Refer to the impact assessment table below.

Table 7-7: Impact of pollution of surface water resources during construction

Impact Description		Impact type	E	D	P	L	IR&S
Impact	Indirect Impact:	**Significance without Mitigation**					
Impact Direction:	Negative	Existing Impact	1	1	1	0.1	0 - LOW
Aspect:	Clearing of vegetation. Site preparation. Soil compaction. Vehicle traffic. Anthropogenic disturbances. Stockpiling.	Project Impact	1	1	2	0.5	2 - LOW
Potential Impact:		**Significance with Mitigation**					
Pollution of water resources through littering and inappropriate management of domestic and industrial waste		Residual Impact	1	1	1	0.1	0 - LOW
		Reversibility	Moderate reversibility				
		Irreplaceability	Low irreplaceability				
		Cumulative Impact					
		Cumulative Impact	1	1	1	0.1	0 - LOW
		Confidence	High				

Proposed Mitigation Measures (Impact Management Actions)

All chemicals and toxicants to be used for the construction must be stored outside the watercourse and in a bunded area.

All machinery and equipment should be inspected regularly for faults and possible leaks, these should be serviced off-site or in a designated area.

Adequate sanitary facilities and ablutions on the servitude must be provided for all personnel within the project area. These facilities must be maintained to promote their use.

No dumping of construction material on-site may take place.

7.3.8 Impact on loss of land capability

Impacts identified

Construction activities for the proposed sports facility and associated infrastructure and the establishment of construction camps and laydown areas may impact negatively on the loss of land capability. The proposed project coincides with areas with very low to high sensitivities. The proposed project will however result in possible land fragmentation of the available natural soils currently under cropping practices.

Loss of land capability may also occur as a result of potential leaks or spillage (i.e. hydrocarbons), mixing of soil, soil dust precipitation on bare surface or gravel access roads, dust precipitation; and removal of vegetation for the proposed sports facility and associated infrastructure.

Other secondary impacts are anticipated such as, eerosion, soil degradation, compaction, increase in salinity, land contamination and loss of soil via aeolian processes.

Impacts assessed

The significance ratings of the loss of land capability before mitigation is rated as 'low'. With the implementation of mitigation and management measures as proposed by the soils/agricultural specialist, the impact significance is 'low'.

Refer to the impact assessment table below.

Table 7-8: Impact of loss of land capability during construction

		Impact type	E	D	P	L	IR&S
Impact	Direct Impact:	**Significance without Mitigation**					
Impact Direction:	Negative	Existing Impact	1	1	1	0.1	0 - LOW
Aspect:	Construction activities	Project Impact	1	1	2	0.5	2 - LOW
Potential Impact:		**Significance with Mitigation**					
Loss of land capability		Residual Impact	1	1	1	0.1	0 - LOW
		Reversibility	Moderate reversibility				
		Irreplaceability	Low irreplaceability				
		Cumulative Impact					
		Cumulative Impact	1	1	1	0.1	0 - LOW
		Confidence	High				

Proposed Mitigation Measures (Impact Management Actions)

The following measures must be implemented:

- Avoid all active crop fields identified within the proposed project area;

- Vegetation clearance must be restricted to areas authorised for development;
- Land clearing and preparation may only be undertaken immediately prior to construction activities and within authorised areas;
- Minimise project footprint as far as possible. Manage location of topsoil stripping stockpiling, demarcation of topsoil stockpiles and prevention of stockpile erosion and contamination. This can protect the topsoil stockpiles to keep it viable for rehabilitation purposes;
- Make use of existing roads or upgrades tracks before new roads are constructed. The number and width of internal access routes must be kept to a minimum. Usually, areas with sandy soils are avoided as far as possible for heavy vehicles, since these are the dominate soils, dust suppressions methods should be implemented to reduce wind erosion during this phase;
- Implementation of embedded controls such as geotextiles, gabion baskets can effective control soil erosion on-site;
- Limit soil disturbance;
- Make sure all excess consumables are removed from site and deposited at an appropriate waste facility;
- A stormwater management plan must be implemented for the development. Using drainage control measures and culverts to manage surface runoff. The plan must provide input into the road network and management measures;
- Losses of fuel and lubricants from vehicles to be contained during construction and the powerline maintenance processes, use of biodegradable fluids where possible, avoid waste disposal on undesigned areas which are not contained;
- Rehabilitation of the area must be initiated from the onset of the project. Soil stripped from infrastructure placement can be used for rehabilitation efforts; and
- An alien invasive plant species and control programme must be implemented from the onset of the project.

7.3.9 Impacts of erosion and sedimentation

Impacts identified

Soil erosion, sedimentation or overland flows can occur due to increased traffic on the surface during the construction phase which can also result in compaction and surface sealing. Overland flow and potential erosion of terrestrial and watercourse or channels soils can occur which can lead to loss of fertile topsoil. Soil erosion can also contribute to water pollution and siltation of rivers. Surface sealing will also promote head cutting instreams and loss of fertile topsoil.

Impacts assessed

The significance ratings of the impacts of erosion and sedimentation before mitigation is rated as 'low'. With the implementation of mitigation and management measures as proposed by the hydropedologist, the impact significance is 'low'.

Refer to the impact assessment table below.

Table 7-9: Impact of erosion and sedimentation during construction

Impact Description		Impact type	E	D	P	L	IR&S
Impact	Direct Impact:	**Significance without Mitigation**					
Impact Direction:	Negative	Existing Impact	1	1	1	0.1	0 - LOW
Aspect:	Clearing of vegetation. Site preparation. Soil compaction. Vehicle traffic. Anthropogenic disturbances. Stockpiling.	Project Impact	1	1	2	0.5	2 - LOW
Potential Impact:		**Significance with Mitigation**					
Increased erosion and sedimentation due to reduced filtration and water absorption		Residual Impact	1	1	1	0.1	0 - LOW
		Reversibility	Moderate reversibility				
		Irreplaceability	Low irreplaceability				
		Cumulative Impact					
		Cumulative Impact	1	1	1	0.1	0 - LOW
		Confidence	High				

Proposed Mitigation Measures (Impact Management Actions)

Subsurface drainage on associated infrastructure like the buildings or sports facilities should be included in the water management plan for stormwater which can minimise overland flow from paved surfaces. This can also allow the water from the associated infrastructure like the buildings, parking lots or offices to percolate and re-infiltrate. Water pipes for domestic or sports facility use leakages need to be fixed and ensure measures are in place to prevent future leakages. Measures like contacting the responsible authorities immediately for sewage or faecal sludge associated with sanitation systems and having response guidelines. Good quality water should be applied downstream with acceptable organic or inorganic elements following recommended practices, for clean water discharge of the project area to ensure recharges within the catchment.

7.3.10 Decrease in subsurface lateral flow and return flow in the environment

Impacts identified

Paved areas (*increased hardened surfaces*) will intercept lateral flow paths and remove connectivity between recharge zones and lateral flow zones. Alteration of this flow path will likely

change the water regimes negatively, even though the impact should be acceptable. These effects are manageable as the post mitigation has been scored low.

Impact Assessment

The significance ratings of the decrease in subsurface lateral flow and return flow in the environment before mitigation is rated as 'low'. With the implementation of mitigation and management measures as proposed by the hydropedologist, the impact significance is 'low'.

Table 7-10: Impact of decrease in subsurface lateral flow and return flow in the environment during construction

Impact Description		Impact type	E	D	P	L	IR&S
Impact	Direct Impact:	**Significance without Mitigation**					
Impact Direction:	Negative	Existing Impact	1	1	1	0.1	0 - LOW
Aspect:	Increase in hardened surfaces	Project Impact	1	1	2	0.5	2 - LOW
Potential Impact:		**Significance with Mitigation**					
Decrease in subsurface lateral flow and return flow in the environment		Residual Impact	1	1	1	0.1	0 - LOW
		Reversibility	Moderate reversibility				
		Irreplaceability	Low irreplaceability				
		Cumulative Impact					
		Cumulative Impact	1	1	1	0.1	0 - LOW
		Confidence	High				

Proposed Mitigation Measures (Impact Management Actions)

The following measures can promote infiltration and percolation flows:

- Minimise soil compaction and keep the soil covered with residue and vegetative cover; and
- Adhering to the recommended footprint buffers and watercourse or channel buffers should be sufficient to reduce the deductible water losses in the catchment. Also prevent any discharge of untreated potential slurry or sludge and wastewater into the catchment as responsive saturated soils (mostly associated with water channels) have a high tendency to promote contaminant (i.e., Bacteria and inorganic elements) migrations towards water resources.

7.3.11 Alteration of visual character of the site

Impacts identified

The nature of the development (sports facilities and associated infrastructure) will not alter the character, nor sense of place of the study area, as the proposed facilities will be located within the existing university campus and will be located next to the existing soccer and rugby fields.

The sports facility will be at ground level and will not be visible to receptors located near the proposed study area.

Furthermore, visual impacts will occur during the construction period which will be of a short-term duration. With the implementation of mitigation measures to minimise the impacts on a limited number of sensitive receptors, occurring in proximity to the site for majority of the study area, the visual character of the site will not be compromised by views by these receptors.

During the construction phase, clearance of the site, construction material on site and the site camp may temporarily alter the visual character of the site. Construction waste and rubble may accumulate on the site. If these wastes are not adequately managed, unsafe, unhealthy and unsightly conditions could develop. Establishment of the construction camp on site (s) may lead to visual intrusion.

Impact Assessment

The significance ratings of alteration of visual character of the site during the construction phase rated as 'low'. With the implementation of mitigation and management measures, the impact significance is 'low'.

Table 7-11: Alteration of visual character during construction

Impact Description		Impact type	E	D	P	L	IR&S
Impact	Indirect Impact:	**Significance without Mitigation**					
Impact Direction:	Negative	Existing Impact	1	1	1	0.5	2 - LOW
Aspect:	Construction activities and placement of construction equipment on site	Project Impact	1	1	1	0.5	2 - LOW
Potential Impact:		**Significance with Mitigation**					
Alteration of visual character of the site		Residual Impact	1	1	1	0.1	0 - LOW
		Reversibility	High reversibility				
		Irreplaceability	Resources are replaceable				
		Cumulative Impact					
		Cumulative Impact	1	1	1	0.1	0 - LOW
		Confidence	High				

Proposed Mitigation Measures (Impact Management Actions)

- Ensure that no litter, refuse, wastes, rubbish, rubble, debris and builders wastes generated at the site are placed, dumped or deposited on adjacent/surrounding properties including road verges, roads or public places and open spaces during or after the construction period of the proposed development but disposed of at an approved dumping site as approved by the Mafikeng Local Municipality.

- The construction camp must be contained to prevent any visual intrusion and be kept in a clean and orderly state at all times.
- All areas impacted by construction must be rehabilitated. Endemic vegetation must be used to create habitats that attract the natural fauna and flora.
- Ensure that outdoor advertising and signage adheres to SAMOAC (South African Manual for Outdoor Advertising Control).
- The construction camp and stockpile areas should routinely be checked for litter.

7.3.12 Socio-economic

Impacts identified

Construction activities will be a short duration temporary employment opportunity will be created, via construction related activities such as the clearance of vegetation and construction of associated infrastructure for the sports facility.

Due to the high percentage of unemployment in the area, sufficient unskilled labour is available for the project and the community in which the labour resides in close proximity to the development site. The project must be used from the start to train people and transfer skills as far as possible. The tender specifications for any construction work on the project must include a compulsory utilisation of a certain percentage of local labour and the compulsory training of local labour.

Impact Assessment

In light of the above, the project will positively impact on the surrounding community and local economy due to possible skills development and income generation. This impact is predicted to have a low positive significance. Refer to Table 7-12.

Table 7-12: Temporary job creation on site during construction

Impact Description		Impact type	E	D	P	L	IR&S
Impact	Direct Impact:	**Significance without Mitigation**					
Impact Direction:	Positive	Existing Impact	1	1	1	0.1	0 - LOW
Aspect:	Construction activities	Project Impact	1	1	1	0.1	0 - LOW
Potential Impact:		**Significance with Mitigation**					
Temporary job creation		Residual Impact	1	1	1	0.5	2 - LOW
		Reversibility	High irreplaceability				
		Irreplaceability	Resources are replaceable				
		Cumulative Impact					
		Cumulative Impact	1	1	1	0.1	0 - LOW
		Confidence	Medium				

Proposed Mitigation Measures (Impact Management Actions)

The following mitigation measures must be implemented to enhance the positive impact:

As far as possible, employ local residents during construction, where applicable. This will ensure a reduced dependency on temporary employment in addition to enhancing the living standards of local people.

Use manual labour where possible and practical.

Ensure recruitment measures are aimed particularly at construction workers classified as designated employees in terms of the Employment Equity Act (black people, as defined in the Act, women, and disabled people). A local employment procedure and recruitment process should be developed in consultation with local authorities and representatives. NWU should ensure that a transparent process of employment is followed to limit opportunities for conflict situations.

Ensure that the Labour Relations Amendment Act, 2002 (Act No. 12 of 2002) as well as the necessary policies and procedures are taken into consideration to ensure the correct procurement procedures.

7.4 Operational Phase

7.4.1 Impact of fragmentation and degradation of ecosystems

Impacts identified

The impacts of daily activities associated with the operational phase of the project are anticipated to lead to the further deterioration of habitats due to the continuing presence of dust and other

edge effect impacts. Dust inhibits the ability of plants to photosynthesize and thus leads to the degradation of surrounding natural areas. Additionally, moving vehicles do not only cause sensory disturbances to fauna, affecting their life cycles and movement, but will also lead to displacement and direct faunal mortalities due to collisions. In this instance, the operational phase of the development is considered permanent.

Impact Assessment

The impact of fragmentation and degradation of ecosystems was rated as 'high' prior to the mitigation and is 'moderate' post-mitigation. See Impact Assessment Table 7-13.

Table 7-13: Impacts on fragmentation and degradation of ecosystems during the operational phase

Impact Description		Impact type	Extent (E)	Duration (D)	Potential Intensity (P)	Likelihood (L)	Impact Rating & Significance (IR&S)
Impact	Direct Impact:	**Significance without Mitigation**					
Impact Direction:	Negative	Existing Impact	1	2	1	0.1	0 - LOW
Aspect:	Continued presence of dust and other edge effect impacts.	Project Impact	2	5	8	0.75	11 - HIGH
Potential Impact:		**Significance with Mitigation**					
Continued fragmentation and degradation of ecosystems. Displacement and direct faunal mortalities due to collisions.		Residual Impact	1	5	2	0.5	4 - MOD
		Reversibility	Moderate reversibility				
		Irreplaceability	Low irreplaceability				
		Cumulative Impact					
		Cumulative Impact	1	5	4	1	10 - HIGH
		Confidence	High				

Proposed Mitigation Measures (Impact Management Actions)

The clearing of vegetation during the operational phase must be minimised where possible. All activities must be restricted to within the developmental footprint.

A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site.

Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use.

No servicing of equipment on site unless necessary.

All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers.

Appropriately contain any generator diesel storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them from leaking and entering the environment.

Construction activities and vehicles could cause spillages of lubricants, fuels and waste material negatively affecting the functioning of the ecosystem.

All vehicles and equipment must be maintained, and all re-fuelling and servicing of equipment is to take place in demarcated areas outside of the PAOI.

It must be made an offence for any staff member to remove any indigenous plant species from the PAOI or bring any alien species in. This is to prevent the spread of exotic or alien species or the illegal collection of plants.

A fire management plan needs to be aligned with the existing NWU fire management plan.

The areas to be disturbed must be specifically and responsibly demarcated to prevent the movement of staff or any individual into the surrounding environments, signs must be put up to enforce this.

Noise must be kept to an absolute minimum during the morning and evenings to minimise all possible disturbances to reptile species and species that exhibit nocturnal behavioural patterns.

No trapping, killing, or poisoning of any wildlife is to be allowed and signs must be put up to enforce this. Monitoring must take place in this regard.

All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. Speed limits must be enforced to ensure that road killings are limited.

Schedule activities and operations during least sensitive periods, to avoid migration, nesting, and breeding seasons. In this case, activities should take place during the day.

The following waste management measures must be implemented:

- All waste must be collected and stored effectively and responsibly according to a site-specific waste management plan. Dangerous waste such as metal wires and glass must only be stored in fully sealed and secure containers, before being moved off site as soon as possible. In this regard, the regulations as set forth by NWU should be adhered to.
- Litter, spills, fuels, chemical and human waste in and around the PAOI must be minimised and controlled according to the waste management plan as set forth by NWU.
- The use of fertilizers should be carefully monitored and controlled to prevent any runoff into surrounding habitats. In this regard, it is recommended that environmentally friendly fertilizers be used.

- Toilets at the recommended Health and Safety standards must be provided. Alternatively, ablution facilities in buildings adjacent to the PAOI should be utilised.
- The Contractor should supply sealable and properly marked domestic waste collection bins and all solid waste collected shall be disposed of at a licensed disposal facility.
- Where a registered disposal facility is not available close to the PAOI, the Contractor shall provide a method statement with regards to waste management. Under no circumstances may domestic waste be burned on site or buried on open pits.

7.4.2 Impact of spread of alien invasive plant species

Impacts identified

The impacts of daily activities associated with the operational phase of the project are anticipated to facilitate the further spread of AIP species.

Impact Assessment

The impact of spread of alien invasive plant species was rated as 'moderate' prior to the mitigation and is 'low' post-mitigation. See Impact Assessment Table 7-14.

Table 7-14: Impacts on spread of alien invasive plant species during the operational phase

Impact Description		Impact type	E	D	P	L	IR&S
Impact	Direct Impact:	**Significance without Mitigation**					
Impact Direction:	Negative	Existing Impact	1	1	1	0.1	0 - LOW
Aspect:	Daily activities associated with the operational phase of the project are anticipated to facilitate the further spread of AIP species.	Project Impact	2	4	4	0.75	8 - MOD
Potential Impact:		**Significance with Mitigation**					
Spread of alien invasive species and reduction of habitat integrity.		Residual Impact	1	2	1	0.5	2 - LOW
		Reversibility	Moderate reversibility				
		Irreplaceability	Low irreplaceability				
		Cumulative Impact					
		Cumulative Impact	1	1	1	0.1	0 - LOW
		Confidence	High				

Proposed Mitigation Measures (Impact Management Actions)

An AIP Management Plan must be aligned with the NWU AIP Management plan (if applicable). This should regularly be updated to reflect the annual change in AIP composition (those species that are categorised as NEMBA 1b).

The footprint area of the construction should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas.

7.4.3 Loss of natural hydrological patterns

Impacts identified

There could be a loss of natural hydrological patterns due to hardened surfaces, stormwater channelling and altered topography. In the absence of stormwater management, there could be increased erosion and sedimentation.

Impact Assessment

The impact of loss of natural hydrological patterns was rated as 'low' prior to the mitigation and is 'low' post-mitigation. See Impact Assessment Table 7-15.

Table 7-15: Impacts of loss of natural hydrological patterns during the operational phase

Impact Description		Impact type	E	D	P	L	IR&S
Impact	Direct Impact:	**Significance without Mitigation**					
Impact Direction:	Negative	Existing Impact	1	1	1	0.1	0 - LOW
Aspect:	Use of chemicals. Increased anthropogenic activity. Soil compaction. Stormwater management.	Project Impact	1	1	2	0.5	2 - LOW
Potential Impact:		**Significance with Mitigation**					
Loss of natural hydrological patterns due to hardened surfaces, stormwater channelling and altered topography.		Residual Impact	1	1	1	0.1	0 - LOW
		Reversibility	Moderate reversibility				
		Irreplaceability	Low irreplaceability				
		Cumulative Impact					
		Cumulative Impact	1	1	1	0.1	0 - LOW
		Confidence	High				

Proposed Mitigation Measures (Impact Management Actions)

- A stormwater management plan must be drawn up and implemented and aim to divert runoff of an acceptable quality (clean water) away from the site in a manner that does not induce erosion and sedimentation;
- All chemicals and toxicants to be used for the operational phase must be stored outside the watercourse and in a bunded area;
- All machinery and equipment should be inspected regularly for faults and possible leaks, these should be serviced off-site or in a designated area;

- Adequate sanitary facilities and ablutions on the servitude must be provided for all personnel within the project area. These facilities must be maintained to promote their use;
- No dumping on-site may take place;
- An alien invasive plant management plan needs to be compiled and implemented post construction to control current invaded areas and prevent the growth of AIPs on cleared areas; and
- Refrain from harsh and harmful chemicals that could pollute downstream watercourses during vegetation control and maintenance.

7.4.4 Increased pollution to downstream water resources

Impacts identified

The use of chemicals, herbicides, fertilisers, increased anthropogenic activity, soil compaction, improper stormwater management, pollution, littering, and increased disturbance through inappropriate management of domestic waste may lead to contamination of the downstream water resources.

Impact Assessment

The impact of pollution to downstream water resources was rated as 'low' prior to the mitigation and is 'low' post-mitigation. See Impact Assessment Table 7-16.

Table 7-16: Impacts of pollution to downstream water resources during the operational phase

Impact Description		Impact type	E	D	P	L	IR&S
Impact	Direct Impact:	**Significance without Mitigation**					
Impact Direction:	Negative	Existing Impact	1	1	1	0.1	0 - LOW
Aspect:	Use of chemicals. Increased anthropogenic activity. Soil compaction. Stormwater management. Pollution, littering, and increased disturbance through inappropriate management of domestic waste.	Project Impact	1	1	2	0.5	2 - LOW
Potential Impact:		**Significance with Mitigation**					
Potential contamination of downstream watercourses from chemicals/herbicides/ fertilizers.		Residual Impact	1	1	1	0.1	0 - LOW
		Reversibility	Moderate reversibility				
		Irreplaceability	Low irreplaceability				
		Cumulative Impact					
		Cumulative Impact	1	1	1	0.1	0 - LOW
		Confidence	High				

Proposed Mitigation Measures (Impact Management Actions)

All waste must be collected and stored effectively and responsibly according to a site- specific waste management plan. Dangerous waste such as metal wires and glass must only be stored in fully sealed and secure containers, before being moved off site as soon as possible. In this regard, the regulations as set forth by NWU should be adhered to.

The use of fertilizers should be carefully monitored and controlled to prevent any runoff into surrounding habitats. In this regard, it is recommended that environmentally friendly fertilizers be used.

Toilets at the recommended Health and Safety standards must be provided. Alternatively, ablution facilities in buildings adjacent to the PAOI should be utilised.

A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site.

Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use.

No servicing of equipment on site unless necessary.

All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers.

Appropriately contain any generator diesel storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them from leaking and entering the leaking and entering the environment.

7.4.5 Loss of land capability

Impacts identified

Loss of land capability may also occur as a result of potential leaks or spillage (i.e. hydrocarbons) from maintenance equipment and vehicles, mixing of soil, soil dust precipitation on bare surface and dust precipitation.

Impact Assessment

The impact of loss of land capability was rated as ‘low’ prior to the mitigation and is ‘low’ post-mitigation. See Impact Assessment Table 7-17.

Table 7-17: Impacts of loss of land capability during the operational phase

Impact Description		Impact type	E	D	P	L	IR&S
Impact	Direct Impact:	**Significance without Mitigation**					
Impact Direction:	Negative	Existing Impact	1	1	1	0.1	0 - LOW
Aspect:	Operational phase activities	Project Impact	1	1	2	0.5	2 - LOW
Potential Impact:		**Significance with Mitigation**					
Loss of land capability		Residual Impact	1	1	1	0.1	0 - LOW
		Reversibility	Moderate reversibility				
		Irreplaceability	Low irreplaceability				
		Cumulative Impact					
		Cumulative Impact	1	1	1	0.1	0 - LOW
		Confidence	High				

Proposed Mitigation Measures (Impact Management Actions)

- Implement dust suppression on stockpiles like the gravel roads.
- Implement erosion control methods like mulching, geotextile sheets, reduce soil compaction, chemical spills which can affect soil fertility.
- Ensure successful rehabilitation of areas disturbed during construction and these areas are stabilized to avoid impacts to adjacent areas

7.4.6 Archaeological and Cultural Heritage Resources

No impacts are expected during the operation phase. As such, no impact assessment was undertaken.

7.4.7 Palaeontological Resources

No impacts are expected during the operation phase. As such, no impact assessment was undertaken.

7.4.8 Socio-economic

No impacts are expected during the operation phase. As such, no impact assessment was undertaken.

7.4.9 Visual

Impacts identified

During the operational phase, there will be students on site to participate in the sporting codes. Waste may accumulate on the site if there is no proper waste disposal bins on site. If these wastes

are not adequately managed, unsafe, unhealthy and unsightly conditions could develop. Vehicles and equipment will be moving on site for maintenance activities. Flood lights will be illuminated at night during night matches and training.

Impact Assessment

The significance ratings of alteration of aesthetic value of the site during the operational phase rated as 'low'. With the implementation of mitigation and management measures, the impact significance is 'low'.

Table 7-18: Alteration of visual character during construction

Impact Description		Impact type	E	D	P	L	IR&S
Impact	Indirect Impact:	**Significance without Mitigation**					
Impact Direction:	Negative	Existing Impact	1	1	1	0.5	2 - LOW
Aspect:	Operational phase activities	Project Impact	1	1	1	0.5	2 - LOW
Potential Impact:		**Significance with Mitigation**					
Alteration of aesthetic value of the site		Residual Impact	1	1	1	0.1	0 - LOW
		Reversibility	High reversibility				
		Irreplaceability	Resources are replaceable				
		Cumulative Impact					
		Cumulative Impact	1	1	1	0.1	0 - LOW
		Confidence	High				

Proposed Mitigation Measures (Impact Management Actions)

- The site must at all times be neat and tidy.
- Waste bins must be strategically located on site. All litter must be collected and removed (daily) and disposed of appropriately.
- Equipment and vehicles must be stored or parked in designated areas.
- Light sources should be directed inwards and downwards to prevent obtrusive lighting and light pollution.

7.5 Decommissioning Phase

The phase will include closure and ceasing of the sports facility and associated infrastructure activities. Some of the infrastructure will be removed from the site for decommissioning, this will be done with an ECO on the site. Increased traffic will occur on-site, though the effects are expected to be minimal and manageable and mitigation measures will already be implemented. These effects are manageable as the post mitigation has been scored low.

Rehabilitation of the project area will be undertaken, which includes the ripping of the compacted soil surfaces and establishment of vegetation. To mitigate this impact, soil compaction rehabilitation, erosion control, re-vegetation and alien vegetation management plan on disturbed areas must be implemented.

To ensure successful rehabilitation of areas disturbed during decommissioning, these areas must be stabilized to avoid impacts to adjacent areas. There must be re-vegetation with indigenous vegetation, and adhered to a spillage or residual waste contamination rehabilitation plan. The rehabilitated must be monitored once a year, to inspect for soil compaction, fertility, and erosion.

To ensure successful rehabilitation of contaminated soil, pollutants must be removed by implementing methods, such as bioremediation and phytoremediation. A residual waste contamination rehabilitation plan must be implemented. The rehabilitated area must be assessed once a year for possible contaminants.

7.6 Assessment of 'Do Nothing' Alternative or 'No-Go' Alternative

The do-nothing' alternative (i.e. no-go alternative) is the option of not establishing a sports facility and its associated infrastructure on the site. Should this alternative be selected, the status quo of the environment will remain.

This option assumes that a conservative approach would ensure that the environment is not impacted upon any more than is currently the case. It is important to state that this assessment is informed by the current condition of the area. Should the proposed development not be implemented, the study area will not be affected by any construction-related or operational phase impacts. Therefore, the present state of the biophysical, social and economic environment will remain, unaffected.

Should the North West Department: Economic Development, Environment, Conservation and Tourism (NW EDEC&T) decline the application, there would be no cricket and hockey fields to support interest by the students and these sporting codes would not be developed.

Therefore, the no-go alternative is not considered to be feasible.

8 ASSESSMENT OF POTENTIAL CUMULATIVE IMPACTS

One of the key information requirements as set out in Appendix 1 of the NEMA EIA regulations, 2014, as amended is the assessment of potentially significant cumulative impacts and risks that may be associated with a proposed development.

The definition of “cumulative impact” in terms of the NEMA EIA Regulations, 2014, as amended state that cumulative impact: “in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities”. A key aspect of considering cumulative impacts is therefore the consideration of project impacts together with impacts that may arise from similar developments within a reasonable proximity to the proposed development that is being assessed.

8.1 Impact on habitat loss and ecological processes

Impacts identified

Cumulative impacts are assessed in context of the extent of the proposed PAOI; other developments in the area; and general habitat loss and transformation resulting from other activities in the area. Mitigation is important for reducing impacts, particularly within intact Klerksdorp Thornveld habitat.

The impacts of projects are often assessed by comparing the post-project situation to a pre-existing baseline. Where projects can be considered in isolation this provides a good method of assessing a project’s impact. However, in areas where baselines have already been affected, or where future development will continue to add to the impacts in an area or region, it is appropriate to consider the cumulative effects of development. This is like the concept of shifting baselines, which describes how the environmental baseline at a point in time may represent a significant change from the original state of the system. This section describes the potential impacts of the project that are cumulative for fauna and flora. Localised cumulative impacts include the cumulative effects from operations that are close enough to potentially cause additive effects on the environment or sensitive receivers, dust deposition, noise and vibration, disruption of corridors or habitat, groundwater drawdown, groundwater and surface water quality, and transport.

Impact assessment

As indicated in Table 8-1: the cumulative impact of habitat loss and ecological processes is 'moderate' without mitigation and 'low' with the implementation of mitigation measures.

Table 8-1: Cumulative impact of habitat loss and ecological processes

Impact Description		Impact type	E	D	P	L	IR&S
Impact	Direct Impact:	**Significance without Mitigation**					
Impact Direction:	Negative	Existing Impact	1	5	1	0.2	1 - LOW
Aspect:	Cumulative impact:	Project Impact	1	5	2	1	8 - MOD
Potential Impact:		**Significance with Mitigation**					
Habitat loss and ecological processes.		Residual Impact	1	5	1	0.2	1 - LOW
		Reversibility	Low reversibility				
		Irreplaceability	High irreplaceability				
		Cumulative Impact					
		Cumulative Impact	1	5	1	0.2	1 - LOW
		Confidence	High				

Proposed Mitigation Measures (Impact Management Actions)

The following mitigation measures must be implemented to ensure minimal impacts on habitat loss and ecological processes:

- Given the uncertainty associated with accurately identifying the Aloe species present along with the fragmented state of the landscape surrounding the PAOI, it is recommended that a permit be applied for through the relevant provincial authorities authorising their removal and relocation. It is suggested that a walkdown be conducted prior to commencement of the development to locate and – where possible – relocate all Aloes present within the PAOI.
- A site walkdown should be conducted prior to the commencement of the development too demarcate the protected *Vachellia erioloba* trees.

  The following mitigation measures must be implemented regarding the Protected Plant species:
- Any individually protected plant species present within the PAOI impeding on the progress of development needs a relocation or destruction permit prior to being moved or destroyed.
- High visibility flags need to be place near protected plant species to prevent any damage associated with construction.
- If left undisturbed, the sensitivity and ecological importance of these protected species should be made a part of the environmental awareness program.

  The following waste management measures must be implemented:
- All waste must be collected and stored effectively and responsibly according to a site-specific waste management plan. Dangerous waste such as metal wires and glass must

only be stored in fully sealed and secure containers, before being moved off site as soon as possible. In this regard, the regulations as set forth by NWU should be adhered to.

- Litter, spills, fuels, chemical and human waste in and around the PAOI must be minimised and controlled according to the waste management plan as set forth by NWU.
- The use of fertilizers should be carefully monitored and controlled to prevent any runoff into surrounding habitats. In this regard, it is recommended that environmentally friendly fertilizers be used.
- Cement mixing may not be performed on the ground. It is recommended that only closed side drum or pan type concrete mixers be utilised. Any spills must be immediately contained and isolated from the natural environment, before being removed from site.
- Toilets at the recommended Health and Safety standards must be provided. Alternatively, ablution facilities in buildings adjacent to the PAOI should be utilised.
- The Contractor should supply sealable and properly marked domestic waste collection bins and all solid waste collected shall be disposed of at a licensed disposal facility.
- Where a registered disposal facility is not available close to the PAOI, the Contractor shall provide a method statement with regards to waste management. Under no circumstances may domestic waste be burned on site or buried on open pits.
- Laydown and construction preparation activities (such as cement mixing, temporary toilets, etc.) must be limited to already modified areas and should take up the smallest footprint possible. Designation of these areas need to be provided for by NWU.
- All laydown and construction activities should take place in already transformed habitats.
- Areas of indigenous vegetation, even secondary/disturbed communities outside of the direct project footprint, should not be fragmented or disturbed further. In this regard, it would be preferable to store all equipment in already transformed areas around the PAOI.
- All vehicles and personnel must make use of existing roads and walking paths as far as possible, especially construction/operational vehicles.
- The clearing of vegetation must be minimised where possible. All activities must be restricted to within the developmental footprint.
- Materials may not be stored for extended periods of time and must be removed from the PAOI once the construction phase has been concluded. No permanent construction phase structures should be permitted. No storage of vehicles or equipment is allowed outside of the designated laydown areas. Laydown areas need to be restricted to already modified areas.
- A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site.
- Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use.
- No servicing of equipment on site unless necessary.
- All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers.

- Appropriately contain any generator diesel storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them from leaking and entering the environment.
- Construction activities and vehicles could cause spillages of lubricants, fuels and waste material negatively affecting the functioning of the ecosystem.
- All vehicles and equipment must be maintained, and all re-fuelling and servicing of equipment is to take place in demarcated areas outside of the PAOI.
- It must be made an offence for any staff member to remove any indigenous plant species from the PAOI or bring any alien species in. This is to prevent the spread of exotic or alien species or the illegal collection of plants.
- A fire management plan needs to be aligned with the existing NWU fire management plan.
- All construction waste must be removed from site at the closure of the construction phase.

9 SUMMARY OF KEY ENVIRONMENTAL FINDINGS

In accordance with the EIA Regulations (GN No. 982), this section provides a summary of the key findings of the Basic Assessment (BA) Process, including Specialist Study findings. This section also provides a reasoned opinion as to whether the activity should or should not be authorised and conditions that should be made in respect of that authorisation, as necessary.

This chapter provides a summary of the impacts identified and significance ratings, summary of key findings and recommendations from specialists and a motivation for the proposed sports facility and associated infrastructure.

9.1 Summary of key findings and recommendations

This section summarises the key findings and recommendations from the respective specialist assessments that has materially contributed to the conclusions and overall recommendations made by the EAP for this application.

9.1.1 Surrounding Land use and Infrastructure

The project site earmarked for the proposed sports facility and associated infrastructure, will be located within the existing university campus and will be located next to the existing soccer and rugby fields.

Therefore the proposed establishment of a sports facility at the site, will be a compatible land use activity within the surrounding area. The proposed sports facility and associated infrastructure will not change the aesthetic value, character, nor sense of the place of the site.

9.1.2 Terrestrial Biodiversity

The PAOI occurs in a fragmented landscape surrounded predominantly by anthropogenically transformed habitats attributed to predominantly infrastructure development. Consequently, the natural Klerksdorp Thornveld habitat present within the PAOI is the last remaining patch of ecologically functional habitat present within the landscape. As such, the management outcomes as suggested by the Terrestrial Ecologist needs to be implemented and adhered to, to properly mitigate the adverse environmental impacts that will result from the proposed project activities.

Several individuals of the nationally protected tree [*Vachellia erioloba*] were detected. Appropriate licencing for the removal of this species needs to be obtained prior to the commencement of construction. In this instance, it is recommended that a follow-up walkdown be conducted during which time all individuals of this species can be demarcated. In addition to *Vachellia erioloba*, numerous Aloes were observed within the PAOI. Owing to seasonal constraints, however, accurate identification of the Aloe species present was not possible. Given the fragmented state of the landscape, it is strongly recommended that relocation permits be applied for through the relevant provincial authorities permitting the removal and relocation of these Aloe species from the PAOI.

Completion of the terrestrial biodiversity assessment led to a dispute of the Low terrestrial biodiversity classification theme sensitivity as allocated by the National Environmental Screening Tool. Instead, given that most of the PAOI is comprised of intact Klerksdorp Thornveld habitat, the PAOI is assigned a terrestrial biodiversity theme sensitivity of Medium. Antithetically, Modified habitats and Drainage Lines are assigned an overall terrestrial biodiversity theme sensitivity of Low.

9.1.3 Surface water and wetlands

No natural wetlands or river systems are located within the PAOI. However, several natural drainage features, classified as non-perennial minor drainage lines were identified throughout the project area. Additionally, one artificial drainage channel was identified within the project area as a result of berms causing runoff along them.

The assigned freshwater sensitivity for the delineated freshwater resources, namely the non-perennial drainage lines are rated as “Low”.

The risk assessment was completed in accordance with the requirements of GN 4167 by the DWS in terms of Section 21(c) & (i) water uses. The overall risk status was determined to be low risk.

9.1.4 Hydropedology

The project has an overall medium residual impact, and this is acceptable. The following aspects must be considered for the development to reduce overland flows and surface return flows:

- Prevent flood damage or concentration of run-off;
- Divert stormwater and surface run-off from buildings, roads and parking areas into an attenuation pond;
- Preserve the natural and beneficial functions of the natural drainage system downstream;
- Preserve and enhance stormwater quality;
- Attenuate the difference between pre and post-development flows; and
- Prevent disposal of untreated wastewater or effluent into the catchment system or surrounding areas.

Such measures for these systems will ensure that adequate water deducted from the catchment as run- off will be re-applied into the system which can minimise losses from the total deductible regimes as most of the hillslopes have recharge soils. Application of good quality water will promote lateral flows associated with these hydropedological groups. Improved water quality in the area is important to minimise pollutes migrations. Effluent leakages and slurry migrations should be immediately fixed or minimised, and the affected areas mitigated to protect human health and the environment. From a hydropedological perspective, the proposed monitoring will be sufficient for water flows and groundwater recharge receptors.

9.1.5 Soils/Agricultural Potential

Seven (7) soil forms were identified within the proposed project area namely, Prieska, Carolina, Bethesda, Glenrosa, Mispah, Coega and Grabouw soil forms. The proposed project area is dominated by the non-arable soils of the land potential 6, 7 and 8 with restrictive to very low agricultural potential. A marginal area of the proposed project area is characterised with moderate to high sensitivities due to the confirmed active crop fields and available irrigation systems.

The land capability sensitivity (DAFF, 2017) indicated that the proposed project area falls within the “Low to Moderate” sensitivity. The confirmed baseline findings concurred with the DAFF (2017) to an extent, reclassifying active crop fields as highly sensitive and the moderately potential soils as moderate.

The proposed project coincides with areas with very low to high sensitivities. The proposed project will however result in possible land fragmentation of the available natural soils currently under cropping practices.

It is the specialist’s opinion that the proposed project and the associated infrastructure will have an overall low residual impact on the agricultural production ability of the land. The proposed project and associate infrastructure may be favourably considered for development, provided active crop fields in the north eastern portion of the site are avoided, and mitigation measures are implemented. *N.B. The preferred site layout plan avoids placement of the any land uses in the high sensitive agricultural area on the north eastern portion of the site.*

9.1.6 Heritage Resources

No heritage resources of conservation worthy status are currently threatened in the direct development footprint, however, not detracting in any way from the comprehensiveness of the fieldwork undertaken, it is necessary to realise that the heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the area. Various factors account for this, including the subterranean nature of some archaeological sites and existing vegetation cover. It should be noted most of the study area was accessible for the fieldwork survey, but the vegetation is thick bush, and visibility of sites such as Stone Age or Iron Age are difficult to locate. The identification of the non-conservation worthy (NCW) findspot Nwu01emphasises the need for a CFP.

During the construction phase, it is important to recognize any significant material being unearthed, making the correct judgment on which actions should be taken. It is recommended that the CFP be implemented.

9.1.7 Palaeontological Resources

The proposed NWU Mahikeng development is underlain by superficial deposits, as well as Tertiary to Quaternary calcrete or surface limestones. The PalaeoMap of the South African

Heritage Resources Information System (SAHRIS) indicates that the Palaeontological Sensitivity of the Superficial deposits is Moderate, while that of the calcretes is High (Almond and Pether, 2009; Almond et al., 2013). In the Geotechnical report of the North West Province, Groenewald et al (2014) described these superficial sediments as “aeolian sand, alluvium, colluvium, spring tufa (calcareous) and sinter (siliceous), lake deposits, peats, pedocretes or duricrusts (calcrete, ferricrete), soils and gravel (diamondiferous in places)”. The suggested location is classified as having a High Palaeontology Theme Sensitivity in the DFFE National Environmental (Department of Forestry, Fisheries and the Environment) Web-Based Screening Report. This is in agreement with the High Sensitivity allocated to the development area by the SAHRIS Palaeosensitivity Map.

No fossiliferous outcrops were detected during the site investigation. Based on the site investigation as well as desktop research, it is concluded that fossil heritage of scientific and conservational interest in this specific development footprint is rare. This is in contrast with the High Sensitivity allocated to the development area by the SAHRIS Palaeosensitivity Map and DFFE Screening Tool.

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.

9.1.8 Visual Environment

The nature of the development (sports facilities and associated infrastructure) will not alter the character, nor sense of place of the study area, as the proposed facilities will be on flat terrain and located within the existing university campus and will be located next to the existing soccer and rugby fields. Refer to the Site Photoplate in Photoplate 1. The sports facility will be at ground level and will not be visible to receptors located near the proposed study area. There are no sensitive receptors surrounding the site earmarked for development, such as residential areas and therefore, direct views of the activities proposed on site is not significant.

The visual impacts will occur during the construction period which will be of a short-term duration. With the implementation of mitigation measures to minimise the impacts on a limited number of sensitive receptors, occurring in proximity to the site for majority of the study area, the visual character of the site will not be compromised by views by these receptors.

During the operational phase, mitigation measures must be implemented to ensure that the site is litter-free and that the lighting on site at night is directed inwards and downwards to prevent obtrusive lighting and light pollution. Vehicles and equipment must be parked in the designated areas on site.

9.1.9 Socio-economic environment

The site is located adjacent to the existing soccer and rugby fields within the NWU and the proposed sports facility and associated infrastructure are therefore compatible land uses within this context.

A limited number of jobs will be provided during the construction phase which will be of a short-term duration that will have a positive impact on the local community residing the local municipal area.

Key stakeholders were identified and notified of the proposed development and will be notified of the availability of the Draft Basic Assessment Report for public review and comment. The comments from the I&APs will be responded to by the EAP. The Comments and Responses Report will be provided in the forthcoming Final Basic Assessment Report.

9.2 Summary of impacts and significance ratings

A concise summary of the impacts that has been identified for the proposed sports facility and associated infrastructure, as well as the residual impact significance ratings after the implementation of the proposed mitigation measures (impact management actions) are provided in Table 9-1.

Table 9-1: Summary of impacts and residual impact significance ratings for the proposed development

Phase	Environmental Component / Impact	Impact identified	Residual Impact
Construction	Terrestrial Biodiversity (flora and fauna)	Impact on destruction, further loss and fragmentation of the habitats, ecosystems and vegetation community, including Species of Conservation Concern (SCCs) and protected species	MODERATE (-)
Construction	Terrestrial Biodiversity (flora and fauna)	Increased spread of alien invasive plant species	LOW (-)
Construction	Terrestrial Biodiversity (fauna)	Displacement of faunal community	MODERATE (-)
Construction	Heritage resources	Destruction of heritage and archaeological resources	LOW (-)
Construction	Palaeontological resources	Destruction of palaeontological resources	LOW (-)

Phase	Environmental Component / Impact	Impact identified	Residual Impact
Construction	Surface water resources	Altered hydrology of surface water resources	LOW (-)
Construction	Surface water resources	Increased pollution of surface water resources	LOW (-)
Construction	Soils/Agricultural resources	Loss of land capability	LOW (-)
Construction	Surface water resources	Erosion and sedimentation	LOW (-)
Construction	Surface water resources	Decrease in subsurface lateral flow and return flow in the environment	LOW (-)
Construction	Visual	Alteration of visual character of the site	LOW (-)
Construction	Socio-economic	Temporary job creation	LOW (+)
Operational	Terrestrial Biodiversity (flora and fauna)	Impact of fragmentation and degradation of ecosystems	MODERATE (-)
Operational	Terrestrial Biodiversity (flora and fauna)	Increased spread of alien invasive plant species	LOW (-)
Operational	Surface water resources	Loss of natural hydrological patterns	LOW (-)
Operational	Surface water resources	Increased pollution of surface water resources	LOW (-)
Operational	Soils/Agricultural resources	Loss of land capability	LOW (-)
Operational	Heritage resources	No impacts identified	-
Operational	Palaeontological resources	No impacts identified	-

Phase	Environmental Component / Impact	Impact identified	Residual Impact
Operational	Socio-economic	No impacts identified	-
Operational	Visual	Alteration of aesthetic value of the site	LOW (-)
Decommissioning	Soil resources	Potential loss or degradation of soil resources	Low (-)

10 CONCLUSION AND RECOMMENDATIONS

10.1 Impact Statement

NWU is proposing to establish a sports facility and associated infrastructure at their Mahikeng Campus, on vacant land adjacent to their existing rugby and soccer fields.

Environmental sensitivities were identified through the DFFE online screening tool, as well as a desktop screening independently undertaken by the EAP and a site visit. Several specialist studies were identified as a result of the screening undertaken for the proposed sports facility and associated infrastructure, and the following studies were commissioned to support the Application for Environmental Authorisation:

- Terrestrial Biodiversity Impact Assessment (*including Animal and Plant Species Assessment*)
- Heritage Impact Assessment
- Palaeontological Impact Assessment
- Aquatic Biodiversity Compliance Statement
- Soils and Agricultural Compliance Statement
- Hydropedological Assessment

A summary of the specialist assessments was compiled in Chapter 5, 7, 8 and 9 of this BAR. It was concluded that no fatal flaws were identified that hinder the proposed sports facility and associated infrastructure from proceeding.

The following impacts were given ‘moderate negative’ significance ratings after the implementation of mitigation measures during the construction phase:

- Impact on destruction, further loss and fragmentation of the habitats, ecosystems and vegetation community, including SCC and Protected plant species
- Impact of displacement of faunal species

The following impacts were given ‘low negative’ significance ratings after the implementation of mitigation measures during the construction phase:

- Impacts of spread of alien invasive plant species
- Impact of destruction of heritage and archaeological resources
- Impact of destruction of palaeontological resources
- Impact of altered hydrology of surface water resources
- Impact of pollution of surface water resources
- Impact of loss of land capability
- Impact of erosion and sedimentation
- Decrease in subsurface lateral flow and return flow in the environment
- Impact of alteration of visual character

The following impacts were given ‘low positive’ significance ratings after the implementation of mitigation measures during the construction phase:

- Temporary job creation

The following impacts were given ‘low negative’ significance ratings after the implementation of mitigation measures during the operational phase:

- Impact of fragmentation and degradation of ecosystems
- Impact of spread of alien invasive plant species
- Impact of loss of natural hydrological patterns
- Impact of increased pollution to downstream water resources
- Impact of loss of land capability

The following impacts were given ‘moderate negative’ significance ratings after the implementation of mitigation measures during the operational phase:

- Impact of fragmentation and degradation of ecosystems

The following impacts were given ‘low negative’ significance ratings after the implementation of mitigation measures during the decommissioning phase:

- Potential loss or degradation of soil resources through inappropriate closure.

The findings of the impact assessment are considered to be within acceptable limits of change. On balance of social, economic, cultural and biophysical impacts, the impacts of the proposed development are considered acceptable if the mitigation measures discussed in this report and the EMPr (Appendix I) are strictly implemented.

10.2 EAP’s reasoned opinion

It is the opinion of the EAP that the project should proceed, as impacts on the receiving environment can be minimised through the careful adherence to the suggested mitigation measures.

The following mitigation measures as recommended by the Terrestrial Ecologist, must be implemented by the Applicant prior to clearance of the site for the proposed development (mitigation measures are included in Appendix I: EMPr):

- A walkthrough must be conducted prior to the commencement of construction, to ensure that all individuals of the Nationally Protected Tree species, *Vachellia erioloba* and Provincially Protected plant species, *Aloe* sp, are accounted for and demarcated. The

necessary permits must be applied for, through the relevant national and provincial authorities authorizing the removal and relocation of these individuals.
- Where possible, all Aloes present within the PAOI, must be transplanted and relocated.
- High visibility flags need to be place near protected plant species to prevent any damage associated with construction.
- If left undisturbed, the sensitivity and ecological importance of these protected species should be made a part of the environmental awareness program.

The following mitigation measures as recommended by the Soils/Agricultural Specialist, must be implemented by the Applicant prior to clearance of the site for the proposed development (mitigation measures are included in Appendix I: EMPr):

- The Site Layout Plan must avoid the north eastern portion of the site, where active crop fields are located;

- A stormwater management plan must be implemented for the development. Using drainage control measures and culverts to manage surface runoff. The plan must provide input into the road network and management measures;

- Losses of fuel and lubricants from vehicles to be contained during construction and the maintenance processes, use of biodegradable fluids where possible, avoid waste disposal on undesigned areas which are not contained;

- A General Authorisation (GA) must be obtained from the DWS for establishment of the proposed sports facility and associated infrastructure;

- Rehabilitation of the area must be initiated from the onset of the project. Soil stripped from infrastructure placement can be used for rehabilitation efforts; and

- An alien invasive plant species and control programme must be implemented from the onset of the project.

The following mitigation measures as recommended by the Hydropedologist, must be implemented by the Applicant prior to clearance of the site for the proposed development (mitigation measures are included in Appendix I: EMPr):

- Subsurface drainage on associated infrastructure such as the buildings or sports facilities must be included in the water management plan for stormwater, which can minimise overland flow from paved surfaces. This can also allow the water from the associated infrastructure like the buildings, parking lots or offices to percolate and re-infiltrate.

- Water pipes for domestic or sports facility use must be regularly inspected, and ensure measures are in place to prevent future leakages.

- Good quality water must be applied downstream with acceptable organic or inorganic elements following recommended practices for clean water discharge of the project area, to ensure recharges within the catchment.

Should archaeological resources become unearthed during construction, the Chance Finds Protocol CFP) must be implemented.

If fossil remains are discovered during any phase of construction, either on the surface or exposed by excavations, the CFP must be implemented by the Site Manager.

The findings of the specialist studies undertaken together with the broader environmental assessment conclude that there are no fatal flaws that should prevent the project from proceeding. However, the following key impacts (Table 9-1) have been identified which will require the application of site and activity specific mitigation measures. These mitigation measures are included within the Environmental Management Programme (EMPr) to ensure that they receive the necessary attention.

Having assessed all the potential environmental impacts associated with the proposed sports facility and associated infrastructure, it is the opinion of the EAP that the project may be issued with a positive Environmental Authorisation from the NW DEDEC&T, based on the following reasons:

- A project-specific draft EMPr has been compiled according to (*but not limited to*) the impacts and mitigation measures included in this assessment. The impacts associated with the terrestrial biodiversity, aquatic biodiversity, soils/agriculture, hydropedology, heritage and palaeontology can be reduced to acceptable levels, provided that the mitigation and monitoring measures impacts are implemented.
- The prescribed mitigation measures as mentioned above, is prudent in the decision to authorise this project.
- The proposed sports facility and associated infrastructure will have minimal impacts on the receiving biophysical and socio-cultural and socio-economic environment. There are no fatal flaws that hinder the proposed development from proceeding.

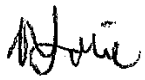
10.3 Proposed recommendations for inclusion in EA

To ensure that the identified negative impacts are minimised, and the positive impacts are enhanced, the following clauses are recommended as conditions of the Environmental Authorisation:

- The EMPr is a legally binding document and the mitigation measures stipulated within the document and Basic Assessment Report must be implemented;
- An independent Environmental Control Officer (ECO) must be appointed to manage the implementation of the EMPr during the construction phase. Environmental Audit Reports must be compiled and made available for inspection;
- A permit from the National and Provincial Authorities are required prior to the removal and relocation of the Nationally Protected Tree species, *Vachellia erioloba* and Provincially Protected plant species, *Aloe* sp;

- The proposed relocation site for the Protected plant species is indicated on Figure 5-33 and occurs within the existing NWU: Mahikeng Campus, on the Remainder of Erf 1090 Mmabatho Unit 5, North West Province in an area that is currently undeveloped;
- A proper Stormwater Management Plan must be in place and implemented for the construction and operational phases of the proposed development;
- Rehabilitation of the study area must be initiated from the onset of the project till post construction;
- An alien invasive plant species and control programme must be implemented from the onset of the project and ongoing through the operational phase.
- All parties involved in the construction, operation and ongoing maintenance of the proposed sports facility and associated infrastructure (including Contractors, Engineers, and the Developer) are, in terms of NEMA's "Duty of Care" and "Remediation of Damage" principals (Section 28), required to prevent any pollution or degradation of the environment, be responsible for preventing impacts occurring, continuing, or recurring and for the costs of repair of the environment.

ZITHOLELE CONSULTING (PTY) LTD



Ms. Natasha Lalie
Project Manager

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Appendix G1: Minutes of Pre-Application Meeting with NW DEDEC&T

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Appendix H1: Newspaper Advertisements

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Appendix I: Environmental Management Programme (EMPr)