ENVIRONMENTAL MANAGEMENT PROGRAMME

FOR

WFA CHRISTIAN BUSINESS SCHOOL - GERARDSVILLE

REF: GAUT 002/19-20/E2415

PREPARED FOR:
WFA Christian Business School
P O Box 722
Midstream Estate
0692

Cell: 082 457 5023
Email: wayne@wfaconsult.co.za

COMPILED BY:
Lokisa Environmental Consulting
P.O. Box 219
Groenkloof
0027

Tel: 012 346 7655
Fax: 012 346 6074

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Enq: F. Makena

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ABBREVIATIONS

CTMM	City of Tshwane Metropolitan Municipality
ECO	Environmental Control Officer
EMPr	Environmental Management Programme
GDARD	Gauteng Department of Agriculture and Rural Development
NEMA	National Environmental Management Act

OHSA	Occupational Health and Safety Act
PPE	Personal Protective Equipment
PHRA-G	Provincial Heritage Resources Agency Gauteng
SAHRA	South African Heritage Resources Agency
SAPS	South African Police Service

INFORMATION SHEET

1 Details of the Environmental Assessment Practitioner (EAP)

Consultant	**Lokisa Environmental Consulting CC**
Contact Person	Faith Makena
Qualifications	Baccalaureus Technologiae Environmental Sciences
Postal Address	P.O. Box 219 Groenkloof 0027
Telephone	012 346 7655
Facsimile	012 346 6074
Email	faith@lokisa.co.za
Expertise	Faith Makena has been involved in environmental consulting since 2012 and has expertise in a wide range of environmental disciplines including Environmental Impact Assessments, Environmental Management Plans/Programmes, Auditing and Monitoring, Public Participation and Facilitation. She obtained her National Diploma in Environmental Sciences from the Tshwane University of Technology during 2012 and worked as an Environmental consultant ever since. She currently also holds a Baccalaureus Technologiae in Environmental Sciences from the Tshwane University of Technology (Please refer to Annexure: A for her Curriculum Vitae)
Professional affiliation/registration:	IAIAsa

ENVIRONMENTAL MANAGEMENT PROGRAMME

2 Introduction

WFA Christian Business School appointed Lokisa Environmental Consulting CC to obtain authorisation from the Gauteng Department of Agriculture and Rural Development (GDARD) for the proposed development of a Boarding School with associated uses on Part of Portion 16 and Portion 66 of the Farm Knopjeslaagte 385 JR.

The Basic Assessment (BA) procedure will apply to this application. The process is done in terms of Government Notice Regulations (GNR) No. 982, 983 and 985 of the EIA Regulations of 2014 (as amended 2017). The EIA Regulations were promulgated in terms of the National Environmental Management Act ('NEMA', Act No. 107 of 1998, as amended).

2.1 Project description

The proposed development entails the establishment of a school that is to accommodate approximately 2000 learners and will consist of learning and boarding facilities. The school will be developed on 18.8344 hectares and is to be serviced with a private treatment works/package plant. Grey water harvesting will be implemented for irrigation purposes.

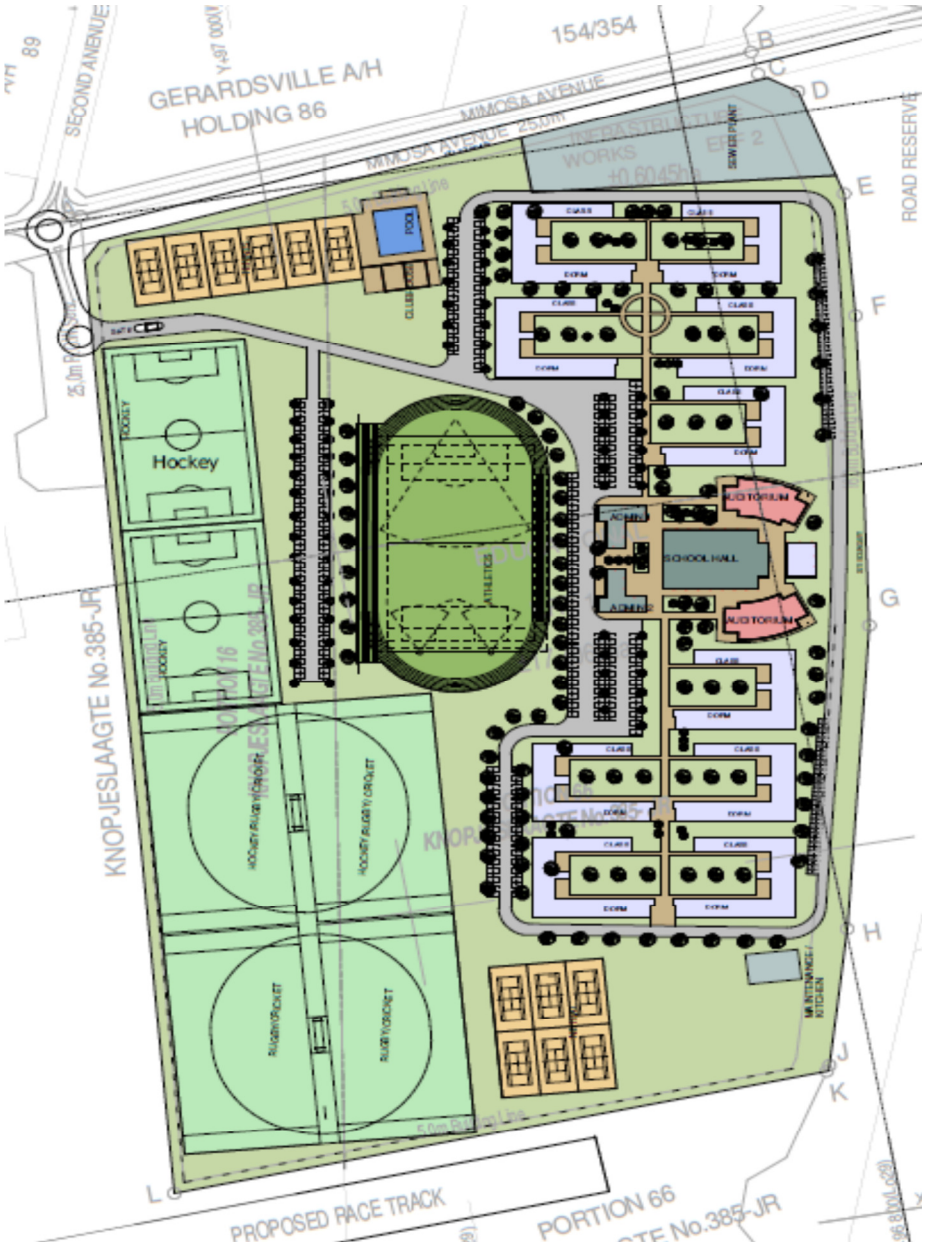

Figure 1: Site Plan

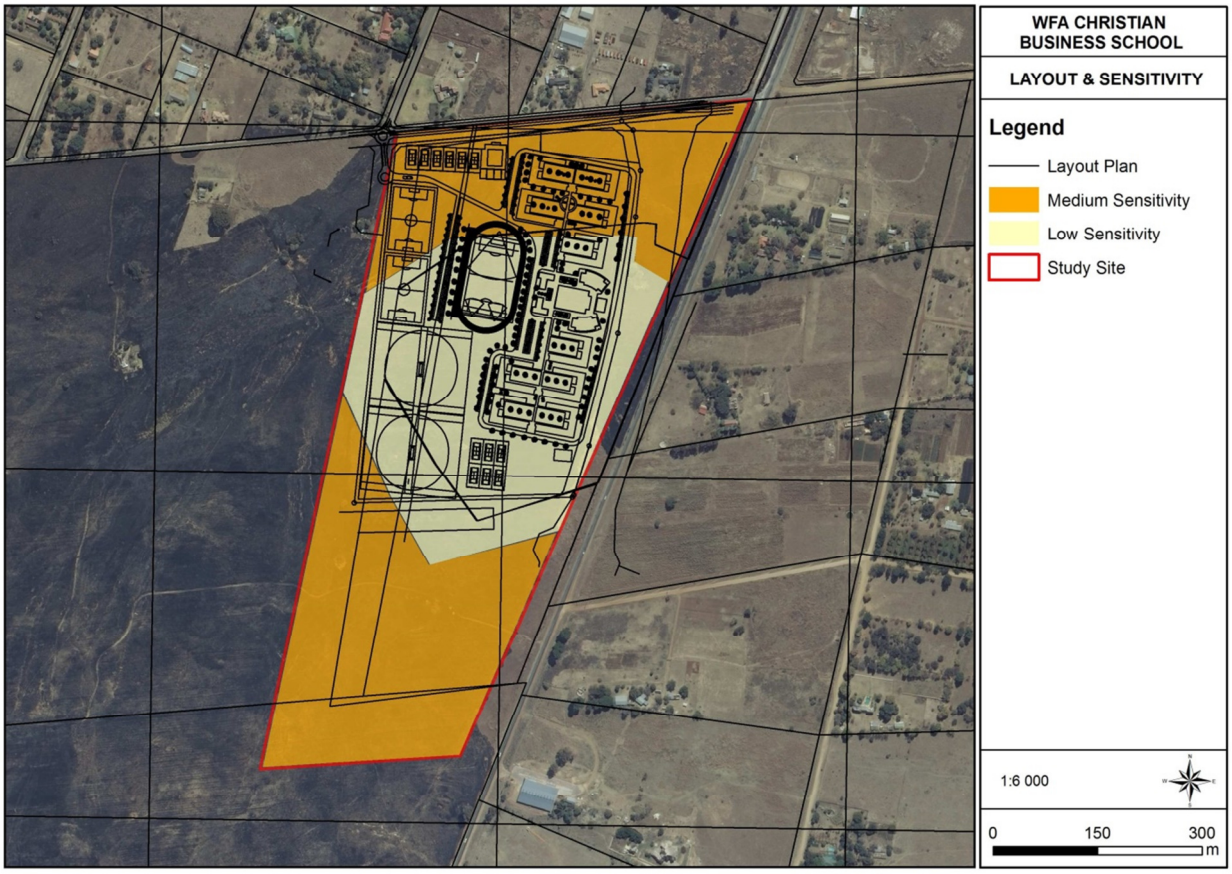

Figure 2: Superimposed site plan

The development will take place on Portion 16 of the Farm Knopjeslaagte 385 JR to be known as part of Portion 16 of the Farm Knopjeslaagte 385 JR and Portion 66 of the farm Knopjeslaagte No. 385-JR to be known as a part of Portion 66 of the farm Knopjeslaagte 385-JR.

The properties are located in Ward 48 of Region 4 of the City of Tshwane Metropolitan Municipality. The application property is located on the south-eastern part of Region, approximately 20 km south west of Pretoria Central. Mimosa Avenue is located to the north of the application property within the jurisdiction of the City of Tshwane Metropolitan Municipality.

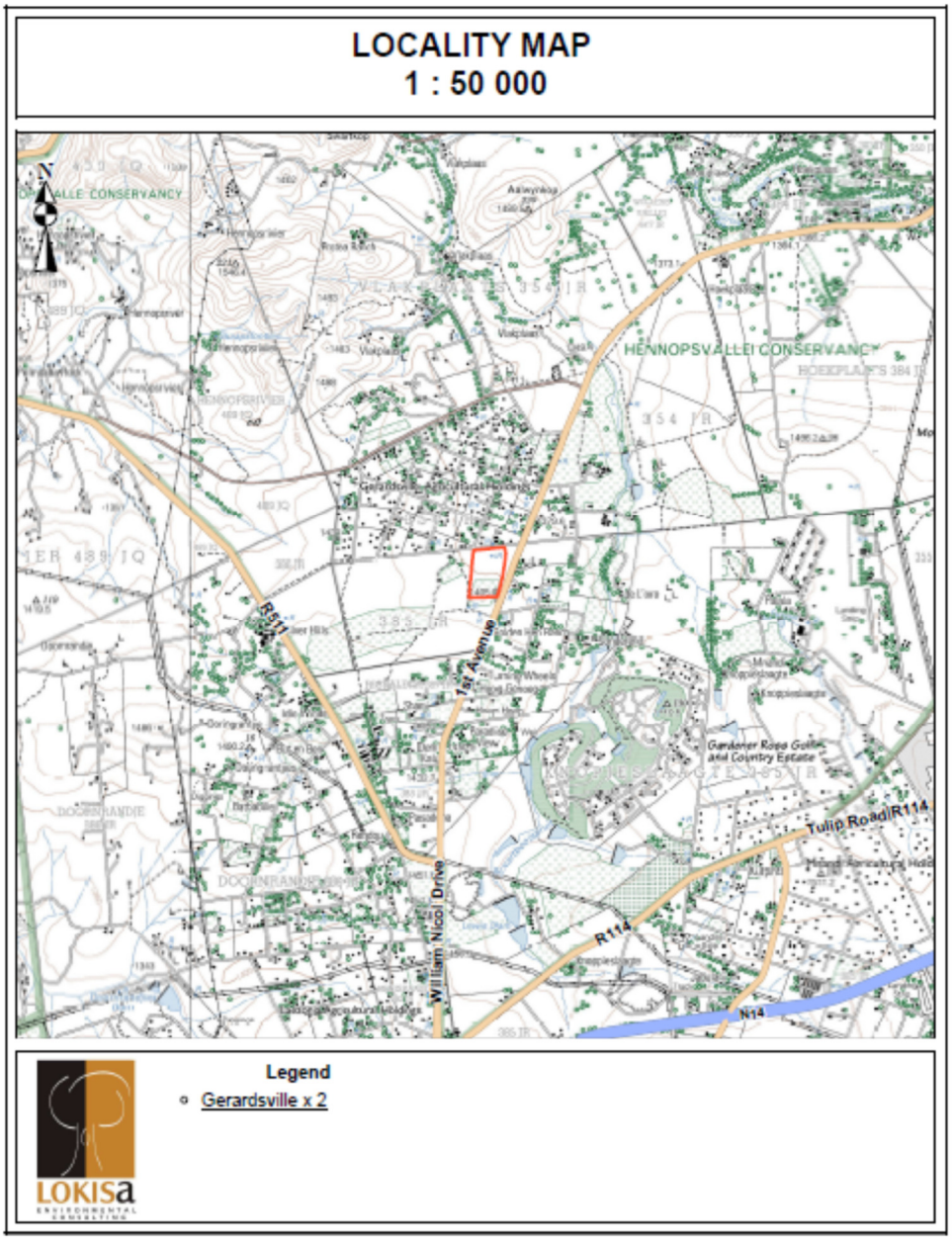

Figure 3: 1:50 000 Locality Map

Figure 4: Locality of the site (Google Earth)

The extent of the site

The shaded area is the extent of the development footprint.

Services to the proposed development entail the following:

Water

The development falls within the Mnandi Reservoir zone will in future fall under Knopjeslaagte reservoir zone. Being part of the Vaal River basin there is sufficient water source for the development.

A minimum 160mm Ø connection to the existing network will be proposed Mimosa Avenue and Tweede Avenue to the north of the development.

The development is serviceable and network upgrades will be undertaken once finally negotiated with the city of Tshwane. The developer is committed to ensure a sufficient grey water system is installed to provide sufficient water for irrigation of sport grounds and open areas. A separate network will be provided for this purpose.

Sewer

There is no existing infrastructure in the vicinity and this was also confirmed by GLS. The nearest is Copperleaf Golf Estate serviced with a Private treatment works.

Proposed sewer treatment

Seeing there is no existing network nearby, it is proposed that the development is serviced with a private treatment plant.

There are various examples of such solutions recently approved in the absence of a municipal service. It is understood that a discussion was held with City of Tshwane where it was consented that the CoT will evaluate private plants more favourable if no network exists and provision of such infrastructure is planned for the near future.

Part of the service provider's contract will include a ten year maintenance program from the installer. In addition maintenance guarantees will be provided as may be required from CoT.

All treated flow will be stored on site in lined dams that will be used for irrigation purposes. It is anticipated that just the hostels will generate a total of 180kl/day, whereas the sports field and open areas require 82.5 kl day. Excess flow will be deposited into the storm water system.

The Bio Sewage System Waste Water Treatment Plant alternative was investigated and preferred for this proposal

Storm Water

A Storm water Master plan was compiled for the development and its surrounding areas. The existing infrastructure has sufficient capacity to support the development however it is proposed that an open channel from Node R1-7 from the K46 draining east towards the low point be constructed.

There is no floodline affecting the development.

Roads

A traffic impact study has been compiled based on discussions with City of Tshwane Transportation division. Road upgrades were proposed at the problematic junctions to mitigate the effect of the anticipated traffic to be generated by the proposed development. The Applicant will adhere to these recommendations.

2.2 Sensitivity Mapping

The sensitivity of the site is described as the following according to the Biodiversity Assessment conducted by Flori Scientific Services.

2.3 Vegetation of the study area

The study site is situated within the original extent of the veldtype of Carletonville Dolomite Grassland. According to maps it appears that the southern extreme of the study site is within Egoli Granite Grassland. However, during field investigations it appears that the site is more representative of Dolomite than Granite grassland (although there are some common features and species of both present).

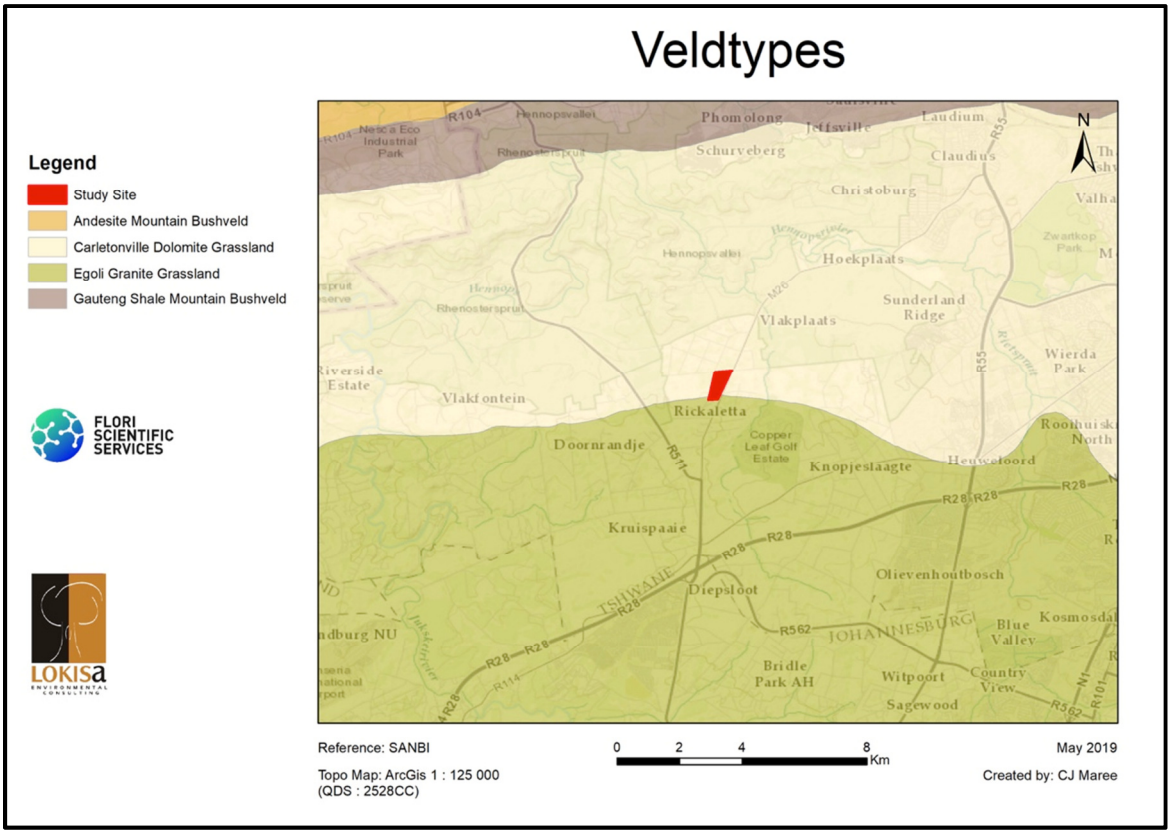

Figure 5: Veld types

The vegetation of the study area was historically Carletonville Dolomite Grassland with elements of Egoli Grassland. However, historically much of the study area was cultivated, ploughed farmlands. It would appear from site investigations that the levels of cultivation were moderate and not for intense, high commercial production. Presently the site is not actively cultivated by the grasses are regularly cut, probably for use as cattle fodder. The effect is that there is a loss of natural grassland features. There are some examples of typical Carletonville Dolomite Grassland on the fringes, however there are no areas of pristine grassland on site and the area can be at best be described as moderately degraded grassland with patches of severely degraded to transformed grassland.

2.3.1 Priority Floral Species

No Red Data Listded (RDL) floral floral species (endangered, threatened or vulnerable) were observed during field investigations. Two orange data listed floral were observed during field investigations. Namely, *Boophane disticha and Hypoxis hemerocallidea.* Both have a status of declining.

There are no sensitive habitats or distinctive habitats present that would potentially be suitable for many of the RDL and ODL species of the Gauteng Province.

2.3.2 Conservation status

The conservation status of Carletonville Dolomite Grassland is Least Threatened (LT). Egoli Granite Grassland, on the other hand, is a threatened veldtype, with a threat status of endangered (EN).

2.3.3 Protected tree species

No protected tree species were observed in the study area during field investigations.

2.3.4 Fauna

No wild fauna was observed on site during field investigations with the exception of a few common bird species. No active burrows or holes were observed either and no animal tracks.

2.3.5 Mammals

No mammals were observed during field investigations. However, due to the openness of the site, with low to medium levels of surrounding urbanisation it is likely that some common rodent species will be present. It is fairly unlikely that any priority or RDL mammal species are permanently present on the site. Please refer to the table below for the Red Data Sensitivity Index Score (RDSIS).

Table 1: RDIS for Mammals for the study area

RED DATA SENSITIVITY INDEX SCORE (RDSIS)	
Average Total Species Score	40,3%
Average Threatened Taxa Score	0%
Average of the combined Total Species and Threatened Taxa Scores	20,2%
% of Species with a Probability of Occurrence of >60%	20%
RDSIS for the Study Site	**10,1%**
RDSIS Category for Study Site	**LOW**

Table 2: RDSIS Rating & Description (Mammals)

RDSIS Rating	Description
0-20	Low
21-40	Low/Medium
41-60	Medium
61-80	Medium/High

81-100	High

2.3.6 Avifauna

A few common bird species were observed during field investigations such as laughing dove (*Streptopelia sensegalensis*), cape turtle dove and feral pigeon (*Columba livia*). Due to the medium openness of grassland and farm areas and the relative closeness of the Swartbooispruit and Magaliesberg Mountains, there is the likelihood that certain priority birds, especially raptors, might occasionally traverse the study area. However, due to the closeness of major urban areas, the lack of ideal habitats and the frequent movement of people and vehicles through the area, it is unlikely that any of these priority birds will successfully nest and breed on the study site. The above statement is also applicable to the African Grass Owl that is presumed to be on site.

According to the Endangered Wildlife Trust (EWT) there are recent presence and signs of the Grass owls in the greater region of the site. Please refer to the Google Earth image below where site A, B and C are areas where there have been activities of owls.

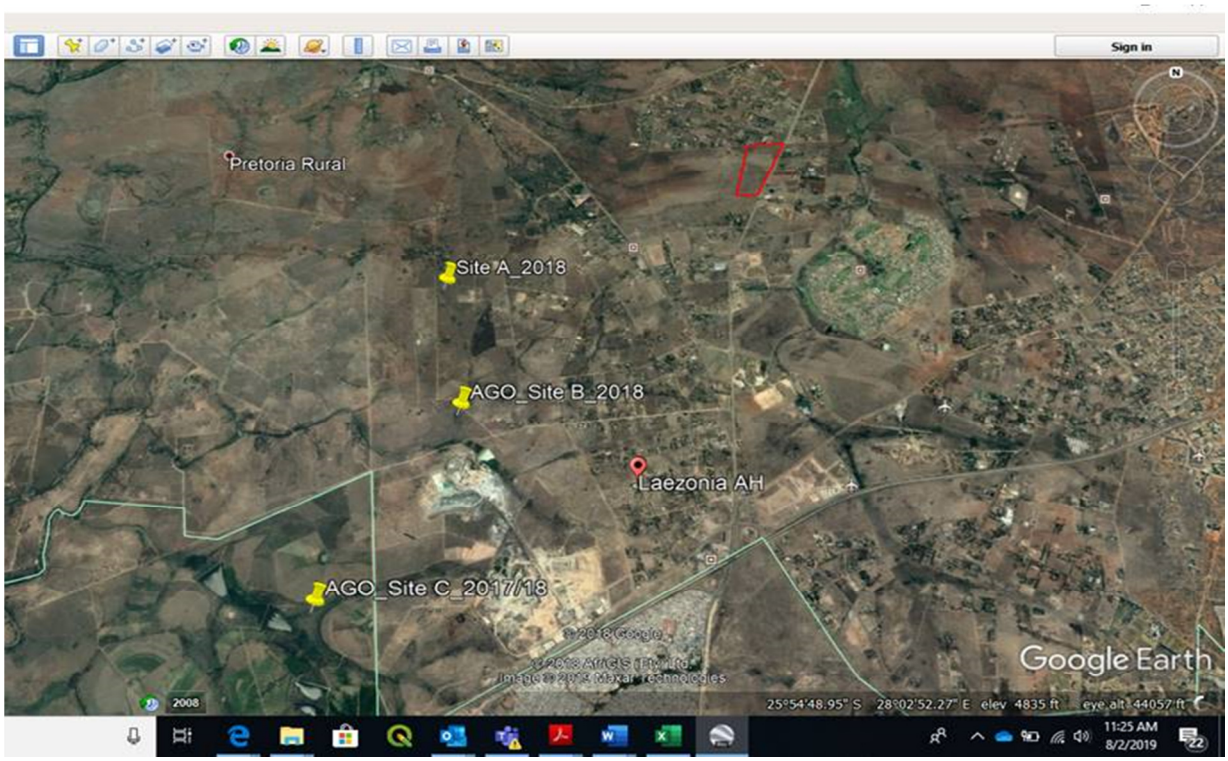

Figure 6: Grass owls in the greater region

According to the Ecological Specialist the proposed development will result in the loss of open space however it is unlikely that this will have a significant impact on the owls in the greater region.

The Red Data Sensitivity Index Score for birds is provided in the table below:

Table 3: RDSIS for avifauna in the study area

RED DATA SENSITIVITY INDEX SCORE (RDSIS)	
Average Total Species Score	32,5%
Average Threatened Taxa Score	0%
Average of the combined Total Species and Threatened Taxa Scores	16,3%
% of Species with a Probability of Occurrence of >60%	0%
RDSIS for the Study Site	**8,2%**
RDSIS Category for Study Site	**LOW**

2.3.7 Reptiles

No reptiles were observed during field investigations. Lizards tend to prefer rocky habitats and there are no rocky outcrops (koppies), rocky ridges or areas of large rock sheets within the study area. The likelihood is rare that any priority lizard species will be present in the study area. Snakes tend to be more mobile and adaptable to various and altered environments. It is possible that some common snake species will be found on site from time to time. These include common brown house (*Lamprophis capensis*), red-lipped herald (*Crotaphopeltis hotamboeia*) and rinkhals (*Hemachatus haemachatus*). However, it is highly unlikely that any priority snake species are present on the site or the immediate adjacent areas. There is one RDL snake species for the Gauteng Province. The striped harlequin snake is naturally rare and seldom seen. The species inhabits deserted termite mounds and is found mostly in moist savanna and grassland. There was also no ideal habitat present on site for the possible presence of Rock Python (*Python natalensis*).

2.3.8 Invertebrates

During field investigations specific attention was given to priority species such as Mygalomorphae arachnids (Trapdoor and Baboon spiders) and red data butterflies. Fortunately, the nature and scope of the project is such that it will have little negative impact on these species. No priority species were observed. According to the Gauteng: State of the Environment Report (2011), spiders and scorpions are no longer included in the list of conservation priorities for the Province due to the lack and paucity of data on spiders and the wide distribution of scorpions. Conservation efforts are now more focused on specific species, as opposed to faunal groups.

2.3.9 Faunal species of conservation concern

During field investigations no faunal species of conservation concern were encountered. The general habitats present in the study area are not ideal for most priority species, in particular mammals and birds.

2.4 Aquatic ecology

The aquatic ecology focuses on the open waterbodies within the study area. These watercourses include wetlands, rivers, streams, pans, lakes and manmade dams. In reality a pan is actually a type of wetland

and must be approached as such. The focus is to delineate watercourses and limit any impact the project might have on these watercourses.

2.4.1 Watercourses in the study area

There are no watercourses in the study area, including rivers, streams, distinctive drainage lines, wetlands or a freshwater pan (which is a type of wetland). The closest major watercourse is the Hennops River and the Swartbooispruit (stream) (see figure below). The Swartbooispruit is situated between 1 km and 1,2km due east of the study site. The stream flows north and is a tributary of the larger Hennops River. There are a few small wetland areas situated mainly along the course of the Swartbooispruit, but there are none within the study area, or any within a 500 m radius of the outer boundaries of the study area.

Figure 7: Main watercourses in the area

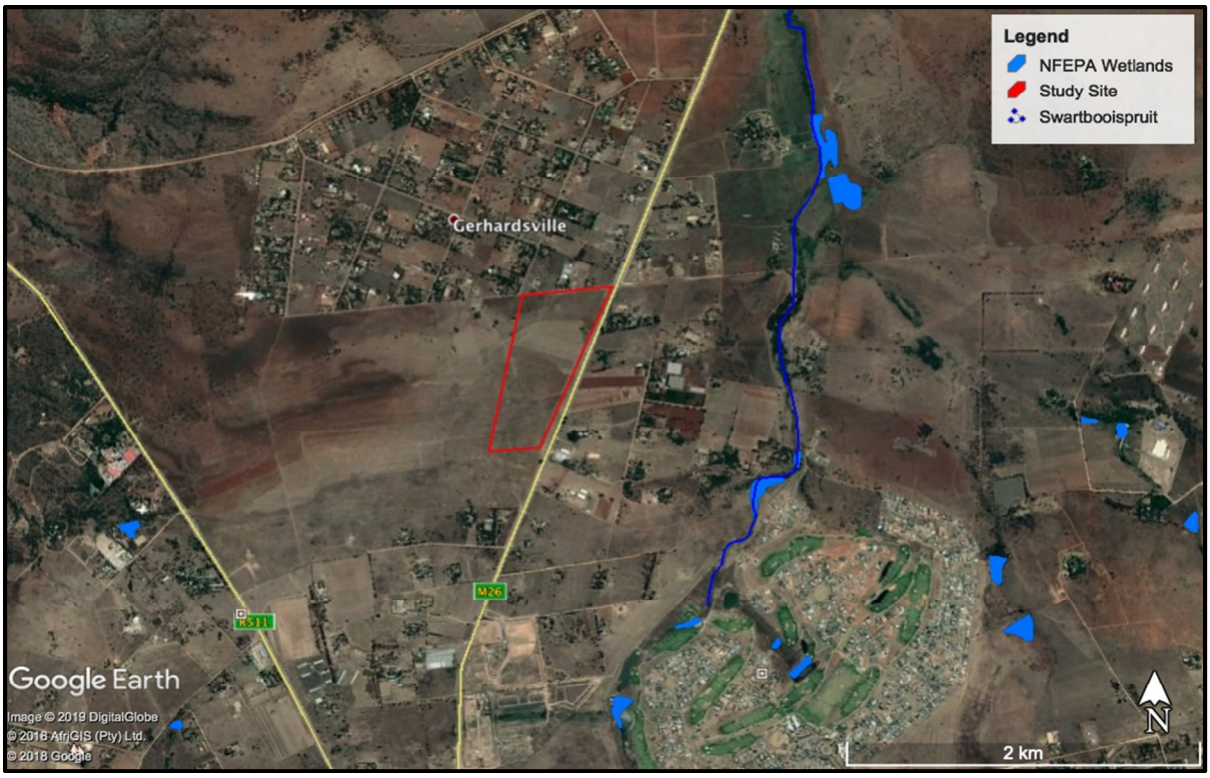

Figure 8: NFEPA wetlands in the area

2.4.2 Delineated watercourses

There are no watercourses in the study area and therefore none could be delineated, or classified.

2.5 Ecological Sensitivity Analysis

The ecological sensitivity of the study area is determined by combining the sensitivity analyses of both the floral and faunal components. Please refer to the table below for the ecological sensitivity of the site.

Table 4: Ecological sensitivity analysis

Ecological community	Floristic sensitivity	Faunal sensitivity	Ecological sensitivity	Development Go-ahead
Degraded Grassland	Medium	Medium \ Low	Medium	Go-But

2.5.1 Priority areas

Priority areas include formal and informal protected areas (nature reserves); important bird areas (IBAs); RAMSAR sites; National fresh water ecosystem priority areas (NFEPA) and National protected areas expansion strategy (NPAES) areas. The study site is situated within the outer edges of the Magaliesberg IBA, but within no other priority areas.

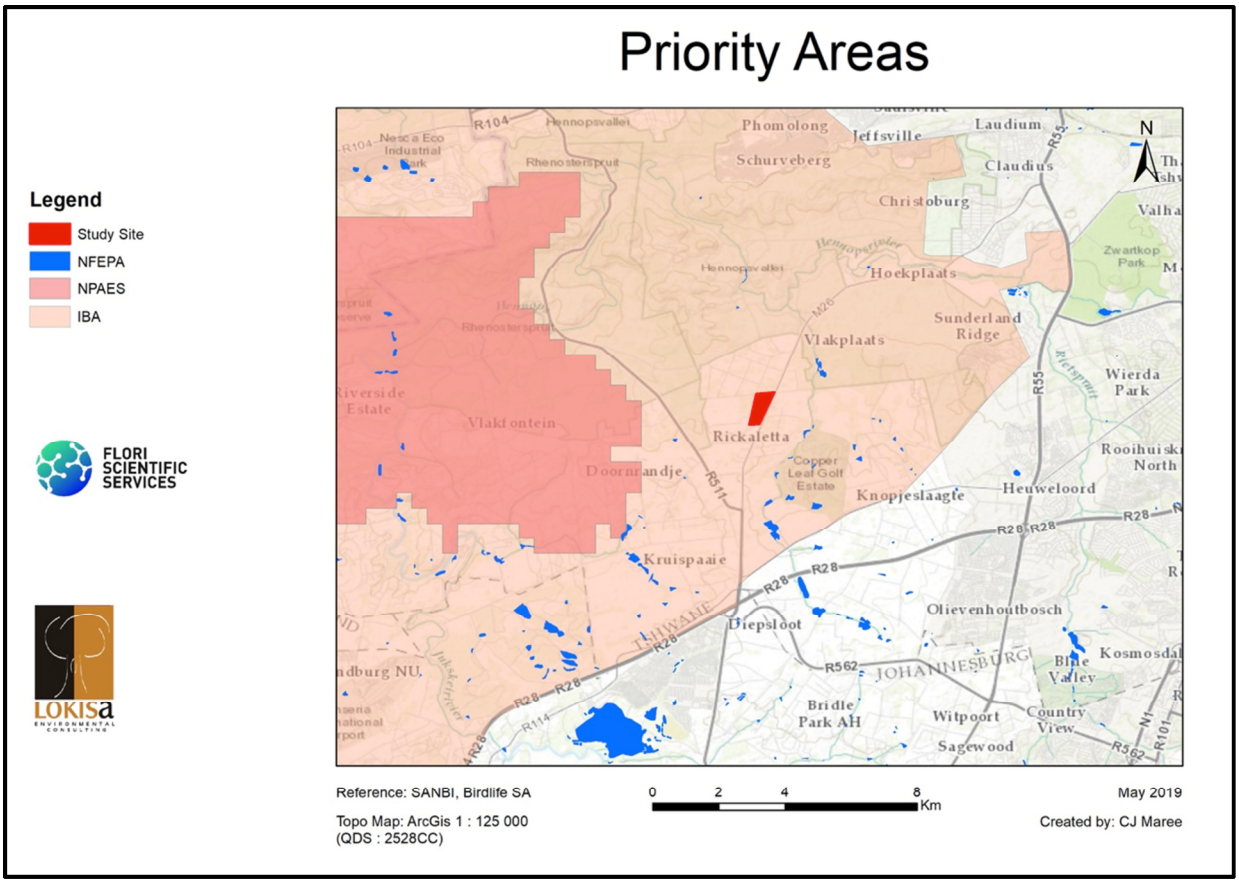

Figure 9: Priority areas

GDARD's Conservation Plan (C-Plan v.3.3) shows that the study site is situated within an Ecological Support Area (ESA) and a Critical Biodiversity Area (CBA). The CBA is Important and Irreplaceable. The area in which the study site is situated is however not pristine grassland or open natural habitat, but is mostly degraded grassland, cultivated farmlands and old farmlands.

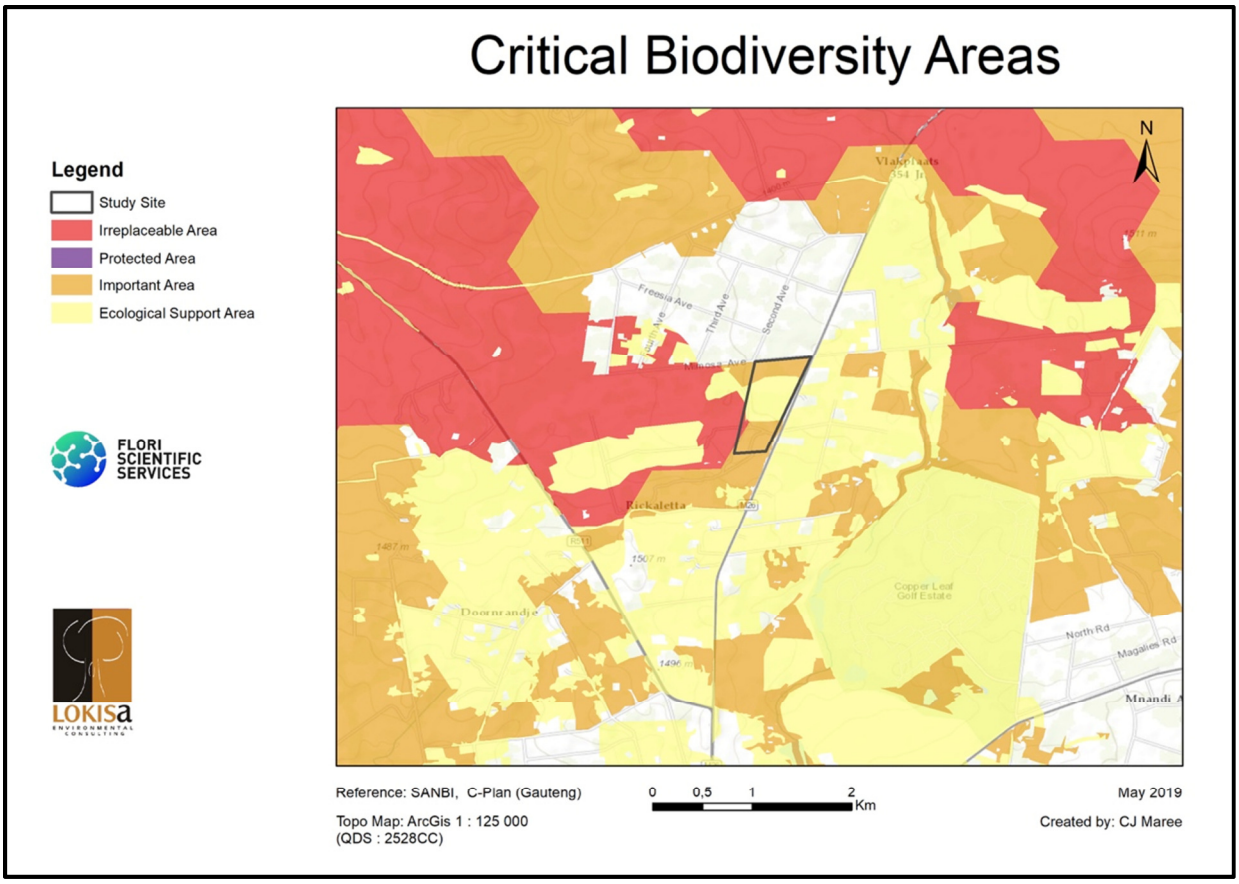

Figure 10: CBAs & ESAs

2.6 Sensitive areas identified during field investigations

No high sensitive areas or 'No-Go' zones were identified during field investigations.

Most of the study area was previously cultivated land. A small ditch (not quite a farm dam) appears to have been dug to impound surface stormwater run-off. This area is not sensitive or natural and currently has to highest level of weed infestation, including syringa trees. This area may be levelled in required. A mound or small low rise is present in the northern section of the site. This is not a ridge or rocky ridge (koppie) although there are some surface rocks present. It appears to be a mix of natural contours and dumped soil (probably during the levelling of farmlands as well as to assist in the channeling of surface stormwater

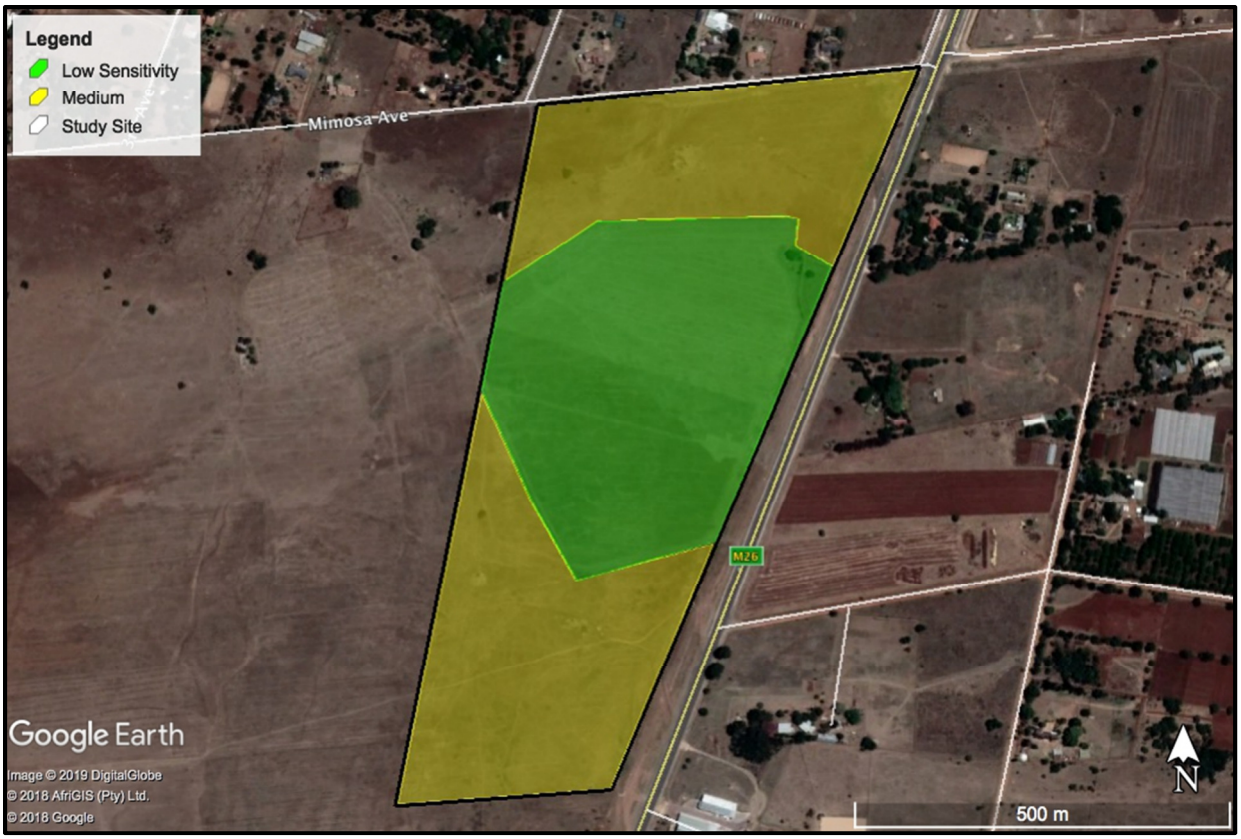

Figure 11: Sensitivity map

This Environmental Management Programme (EMPr) serves the purpose to ensure that the facility is operated in an environmentally responsible manner and that potential impacts identified and associated with this activity are adequately mitigated during the construction and operational phases of the project.

3 Objective of the EMPr

As per As per Section (1) of Appendix 4 of Regulation 982 an EMPr must comply with Section 24N of the Act and include –

Table 5: Requirements according to Appendix 4 of GNR 982

Requirements according to Appendix 4 of GNR 982	Section in report
a) Details of the EAP who prepared the EMPr and the expertise of that EAP to prepare the EMPr, including curriculum vitae.	Section 1 Annexure A
b) A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description.	Section 2
c) A map at an appropriate scale which superimposes the proposed activity, its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers.	Section 2
d) A description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed	Section 4 Section 12

	and mitigated as identified through the environmental impact assessment process for all phases of the development including – • Planning and design; • Pre-construction activities; • Construction activities; • Rehabilitation of the environment after construction and where applicable post closure; • Where relevant, operation activities.	
f)	A description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must where applicable, include actions to – • Avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; • Comply with any prescribed environmental management standards or practices; • Comply with any applicable provisions of the Act regarding closure where applicable; • Comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;	Section 5 Section 12
g)	The method of monitoring the implementation of the impact management actions as mentioned in the above paragraph (f);	Section 7
h)	The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 7 Section 12
i)	An indication of the persons who will be responsible for the implementation of the impact management actions;	Section 6 Section 12
j)	The time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 12
k)	The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 6
l)	A program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Section 7
m)	An environmental awareness plan describing the manner in which - • The applicant intends to inform his or her employees of any environmental risk which may result from their work; and • Risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Section 8
n)	Any specific information that may be required by the competent authority.	Section 9 & 10

4 A description of the Impact Management Outcomes

The purpose of the EMPr is to act as an instrument to be used by the Applicant to ensure sound environmental practices are incorporated during the construction and operational phase of the development.

The EMPr is a detailed programme for the implementation of the mitigation measures to minimise negative environmental impacts during the life-cycle of a project. The EMPr contributes to the preparation of the contract documentation by developing clauses to which the contractor must adhere for the protection of the environment. The EMPr specifies how the construction of the project is to be carried out and includes the actions required for the Post-Construction Phase to ensure that all the environmental impacts are managed for the duration of the project's life-cycle.

The EMPr is to be implemented in a co-operative spirit with all parties (project proponent, contractor, affected parties) involved in the setting of environmental objectives and practices.

The table below provides a summary of the identified impacts and their pre-mitigation and post-mitigation impact significance rating scores as per the environmental impact assessment process for the following phases of the proposed development –

- Construction phase; and
- Operational phase.

Table 6: Identified impacts and their pre-mitigation and post-mitigation impact significance rating scores

Potential Impacts	Significance rating of impacts	Significance rating of impacts after mitigation
CONSTRUCTION PHASE		
Dust /Air pollution The generation of dust associated with construction activities & earthworks	**Medium**	**Low**
Visual Intrusion and Light Pollution –Lights from the contractor's camp and construction site could be visually intrusive.	**Medium**	**Low**
Soil erosion, loss of topsoil, deterioration of soil quality and soil pollution	**Medium**	**Low**
Disturbance of surface geology for development foundations	**Medium**	**Low**
Degradation, destruction of habitats/ ecosystem and loss of natural vegetation	**Medium**	**Low**
Impact on Flora and Fauna	**Medium**	**Low**
Storm water flow and drainage	**Medium**	**Low**
Noise/ vibration	**Medium**	**Low**
Safety and Security – Site property and construction personnel	**Low**	**Very Low**
Job opportunities	**High(Positive)**	**High (Positive)**
Hygiene	**Low**	**Very Low**
Destruction of cultural / heritage sites	**Insignificant**	**Insignificant**
Traffic – Construction vehicles	**Medium**	**Low**
Waste	**Medium**	**Low**
Pressure on existing infrastructure and services	**High**	**Medium**
OPERATIONAL PHASE		
Alien invasion	**Medium**	**Low**
Noise	**Medium**	**Low**
Safety & Security	**Medium**	**Low**
Visual impact	**Medium**	**Low**
Sense of place	**Medium**	**Low**
Provision of needed educational facilities	**Very High (positive)**	**Very High (positive)**
Soil pollution (Spillage from sewerage treatment plant)	**High**	**Medium**
Geotechnical constraints	**High**	**Medium**
Storm water flow and drainage- Developments cause the modification of drainage patterns. Storm water may be	**Medium**	**Low**

concentrated at certain points, increasing the velocity of flow in one area and reducing flow in another.		
Job opportunities	**High (Positive)**	**High (Positive)**
Traffic – Vehicles from the school development	**Medium**	**Low**
Waste	**Medium**	**Low**
Pressure on existing infrastructure and services	**Medium**	**Low**
Infrastructure for the provision of needed services **Bio-Sewage Private Treatment Plant (Less intense maintenance and financial cost)**	**Medium**	**Low**

5 A description of the proposed impact management actions

The specifications outlined in the EMPr are applicable to all activities undertaken by all persons involved in the execution of the works, including sub-contractors, the workforce and suppliers for the duration of activities for the proposed project.

In order to attain the impact management outcomes as outlined in Section 4 the EMPr is to address issues in the following manner:

The objective of the EMPr is to address the following issues:

1. Environmental Management considerations are implemented from the start;
2. Precautions against damage are taken timely, and
3. Impacts of the development on the environment are minimised.

6 Implementation of the EMPr

6.1 The Applicant

6.1.1. The overall responsibility for ensuring compliance lies with the Applicant.

6.1.2. The Applicant shall comply with the conditions set in the Environmental Authorisation by the GDARD.

6.1.3. The Applicant shall ensure that the Contractor and all staff members, sub-contractors and suppliers understand and adhere to the EMPr.

6.1.4. The Applicant shall ensure that all sub-contractors and suppliers are contractually bound to adhere to the EMPr and Environmental Code of Conduct.

6.2 Environmental Control Officer

6.2.1. The Applicant shall appoint a suitably qualified Environmental Control Officer (ECO) to supervise the implementation of the EMPr.

6.2.2. The Contractor must be notified of this appointment and furnished with the contact details of the ECO.

6.2.3. The ECO shall be responsible for:

- Day to day implementation of the EMPr and coordination of all environmental matters on site.
- Ensuring that all staff members are adequately trained and aware of the EMPr and its Environmental Code of Conduct.
- Fortnightly environmental inspections (according to the criteria specified in the EMPr).
- Liaison with the project manager, client and public.

6.3 Contractor

6.3.1. The Contractor, including all sub-contractors, shall comply with the specifications in the EMPr.

6.3.2. A representative of each sub-contractor will receive a copy of the EMPr.

6.3.3. A representative of each sub-contractor will be required to sign the Environmental Code of Conduct to give assurance that they understand the EMPr and that they undertake to comply with conditions therein.

7 Monitoring and Environmental Reporting Procedures

The ECO will conduct fortnightly environmental inspections as part of the monitoring process to ensure the day to day implementation of the EMPr and coordination of all environmental matters on site. A monthly ECO Report must be provided to the Applicant, Contractor, GDARD and other relevant role-players.

Monitoring during ECO site visits will consist of meetings, observations and photographic evidence collection.

An Environmental Incidents Register and an Environmental Complaints Register will be in place and will be maintained. Upon occurrence of non-compliance or a complaint of an environmental nature the incident will be recorded in the relevant register.

The registers must be made available to the ECO upon every fortnightly site visit. EMPr related issues would be discussed at all construction site meetings. A copy of the relevant sections of the minutes of these site meetings must be made available to the ECO.

The table below provides a summary of the frequency of monitoring the implementation of the EMPr.

Table 7: The frequency of monitoring the implementation of EMPr

Daily	• Pollution

	• Ensure no species of fauna and flora is being utilised by the construction workers or destroyed. • Socio-Economic (ensure that socio-economic impacts are adequately mitigated) • On-site sanitary facilities • Excavations • Disposal of Material • Construction activities • Rehabilitation • Rainfall and temperature
Weekly	• Ensure environmental training of construction workers is up to date • Progress in terms of construction programme • Removal of rubble • Community relations
Two-weekly	• Site visit to be undertaken by the ECO • ECO checklist to be completed during site visit • Dated photographs should be taken from fixed high importance spots (marked on a map) and included in the ECO checklists and ECO Report for comparison • Control of Environmental Incidents Register and an Environmental Complaints Register
Monthly	• Report on the state of the environment during construction

8 Environmental Awareness Plan

The ECO will be responsible for putting in place an Environmental Awareness Training Programme for all staff members. Before commencing with any work, all staff members shall be briefed about the Environmental Code of Conduct. The training programme has to be approved by the ECO. After being briefed about the contents of the Environmental Code of Conduct, staff members shall sign an Environmental Training register as proof of their training.

The training must include, but are not limited to:

- Identification of protected species, both fauna and flora, especially the *Boophane disticha* and *Hypoxis hemerocallidea.*
- Identification of potential heritage resources
- Identification and avoidance of demarcated no-go areas
- Site access and security
- Safety measures

9 Environmental Control Measures

The EMPr outlines measures to be implemented in order to minimise any potential environmental degradation associated with the construction activities. It should serve as a guide for the Contractor and the construction workforce on their roles and responsibilities concerning environmental management on

the construction site and provide a framework for environmental monitoring throughout the construction period.

Measures to control potential environmental impacts during the construction phase are specified. Except where otherwise stated, all these control measures will apply throughout the construction period and, as part of the project contract, the Contractor shall adhere to these measures at all times.

10 Contract

The Contractor/s shall be handed a copy of all relevant documentation regarding the project and shall, before any work is conducted, meet with the ECO in order that the contractor shall familiarise himself with the environmental issues concerning the site.

A commitment from the Contractor is required on the following issues:

- To take into consideration the landowners in the surrounding area;
- To take into consideration all sensitive areas situated close to the site;
- Always behave professionally on and off site;
- To ensure quality of work done, technical and environmental;
- To resolve problems and claims arising from damage immediately to ensure a smooth flow of operations (take relevant steps to ensure no further damage or disturbance and resolve environmental problems adequately with the use of risk management and emergency response procedures);
- To use this EMPr for the benefit of all involved;
- To preserve the natural environment by limiting destructive actions on site;
- To have an eco-friendly approach; and
- Not to litter.

An agreement is to be signed by the contractor that:

- He knows and understands the content of the EMPr; and
- He is able and shall comply with all legislation pertaining to the nature of the work to be done and all things incidental thereto.

11 Statutory, Legal and other requirements

The following sources of South African Law have been identified and will form the basis of the EMPr:

- Constitution of the Republic of South Africa, Act No. 108 of 1996
- National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA)
- NEMA EIA Regulations, 2014 (Government Notice Regulations Nos. 982, 983, 984, 985)

- National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
- National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
- National Environment Management: Air Quality Act, 2004 (Act No. 39 of 2004)
- National Water Act, 1998 (Act No. 36 of 1998)
- National Road Traffic Act, (Act No. 93 of 1996)
- Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
- Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)
- National Heritage Resources Act 1999 (Act No. 25 of 1999) (NHRA)
- Gauteng Agriculture Potential Atlas
- GDARD Requirements for Biodiversity Assessments (Version 3)
- Red Data Plant Policy
- Gauteng Conservation Plan (C-Plan Version 3.3)
- Gauteng Environmental Management Framework
- City of Tshwane by-laws

12 Environmental Management Programme

The following tables form the core of this EMPr for the construction and operational phases of this project. These tables should be used as a checklist on site, especially during the construction phase.

Table 8: Planning, Design and Pre-construction Phase (9 Months)

IMPACT	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
DESIGN Negative impacts on environment during construction	• Ensure proper initiation of project	• Compile tender documentation and Specifications • All the aspects listed under Construction and Closure • Ensure acceptable management of environmental issues during construction. • Ensure that relevant environmental management specifications as per the EMPr are incorporated in the Tender and Contract documentation. • Appoint an ECO who must monitor the contractor's compliance with the EMPr. • Develop appropriate rehabilitation plan in consultation with ECO and specialists. • Where possible, large existing trees (although few) should be kept and worked into the final layout design. However the existing alien trees such as syringe should be removed. • In all aspects of planning, consideration should be given to applying principles of sustainable development such as water and energy efficiencies as well as waste minimisation and green building techniques.	• Engineering Design Consultant • Applicant	• N/A
FUNCTIONAL DESIGN OF INFRASTRUCTURE	• Ensure functional design of infrastructure	• Adherence to cogent, well-conceived and ecologically sensitive designs and construction methods, and the mitigation measures provided as well as general good construction practice, is essential.	• Engineering Design Consultant • Applicant	• N/A
ENVIRONMENTAL EDUCATION AND TRAINING	• Ensure proper and sufficient environmental training and education for all construction personnel	• The ECO will be responsible for putting in place an Environmental Awareness Training Programme for all staff members. • Before commencing with any work, all staff members shall be briefed about the Environmental Code of Conduct. • The training programme has to be approved by the ECO. • After being briefed about the contents of the Environmental Code of Conduct, staff members shall	• ECO • Contractor	• Ongoing

IMPACT	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
		sign an Environmental Training register as proof of their training.		
FAUNA AND FLORA Site clearing and the removal of vegetation	• Selective removal of vegetation during site clearing	• The boundaries of the development footprint areas are to remain as small as possible, be clearly defined and it should be ensured that all activities remain within defined footprint areas. • It must be ensured that storm water is managed on site in a suitable manner. • Disturbance to birds, animals and reptiles and their habitats should be prevented at all times. • According to the Ecological Specialist report, the priority floral species on site namely, *Boophane disticha, Hypoxis hemerocallidea* can easily be lifted from site and relocated to a similar environment. All rescue and relocation plans should be overseen by a suitably qualified specialist where necessary.	• ECO • Ecologist • Contractor	• Ongoing
EXISTING SERVICES AND INFRASTRUCTURE	• Ensure protection of existing services and infrastructure	• An amicable solution should be agreed upon between the Applicant and Eskom, regarding their affected services. • **No construction may commence before the following conditions have been adhered to. All requirements as laid down by the Occupational Health and Safety Act No 85/1993 also have to be complied with:** • The applicant or his contractor must notify Hennops Technical Service Centre at 12 725 2104/392, contact person Dumisani 082 336 8147 at least seven days prior to the commencement of any work whatsoever, under or in close proximity to Eskom services. • Under no circumstances will any relocation work proceed prior to the submission of a formal application to Eskom Customer Services at least three months prior to the commencement of any work, and acceptance of the relocation costs by the applicant. • Any cost and claims due to interruptions or interference to Eskom services causing power supply loss or loss of income, due to this application, will be borne by the applicant. • Eskom must have ingress to egress from its services at all	• Applicant and Electrical Engineering Consultant.	•

IMPACT	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
		times. • No mechanical equipment, including mechanical excavators may be used under or in close proximity to Eskom services without prior approval of Eskom authorized representatives. • The consent is further subject to the Landowner's permission for the proposed works as per this application. A copy of the permission must be filed with Eskom seven days before any work is carried out in the servitude area. • Eskom shall not be liable for the death of or injury to any person or for the loss of or damage to any property caused in whatsoever manner by the applicant, his employees, agents or contractors. The applicant indemnifies Eskom against all claims including claims for consequential damages by third parties which includes but is not limited to claims as a result of damage to, or interruption of or interference with Eskom services or equipment. The applicant's attention is drawn to section 27(3) of the Electricity Act 1987. **Clauses to be included in <u>Conditions of Establishment</u> for Township applications where Eskom is the supplier of electricity:** • A 3x6m space will be reserved as Private Open Space for Eskom mini substation; • No large rooted trees shall be planted on the pavement the to endanger any electrical cables; • No large rooted trees shall be planted on the pavement to endanger any electrical cables; • No tree shall be planted closer that three meters to any overhead power line on pavements; • The supplier of electricity will have the right to remove/trim any trees or brush on pavements that endanger any power line.		

Table 9: Construction Phase (24 Months (estimated)

IMPACT	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
AIR QUALITY AND DUST The generation of dust associated with construction activities & earthworks	• Limitation of dust during the construction phase	• Dust generation should be kept to a minimum. • Dust must be suppressed at construction areas during dry periods by the regular application of water or a biodegradable soil stabilisation agent due to close proximity to urban areas. • Speed limits must be implemented in all areas, including public roads and private property to limit the levels of dust pollution. • It is recommended that the clearing of vegetation from the site should be selective and done just before construction so as to minimise erosion and dust. • Excavating, handling or transporting erodible materials in high wind or when dust plumes are visible shall be avoided. • All materials transported to site must be transported in such a manner that they do not fly or fall off the vehicle. This may necessitate covering or wetting friable materials. • No burning of refuse or vegetation is permitted.	• ECO • Contractor	• Daily by Contractor • Twice a month by ECO • Monthly report
VISUAL IMPACT Visual Intrusion and Light Pollution – Lights from the contractor's camp and construction site could be visually intrusive.	• Minimise light pollution	• Site development to be limited to footprint area. • The construction camp must be located as far from residential properties as possible. • Light pollution should be minimised. • Lighting on site is to be sufficient for safety and security purposes, but shall not be intrusive to neighbouring residents, disturb wildlife, or interfere with road traffic. • Should overtime/night work be authorised, the Contractor shall be responsible to ensure that lighting does not cause undue disturbance to neighbouring residents. • Low flux and frequency lighting should be utilised. • The site area is to be physically screened off with a shade cloth fence (preferably dark green or grey as it will	• ECO • Contractor	• Daily by Contractor • Twice a month by ECO • Monthly report

IMPACT	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
		blend in well with the surrounding environment).		
GEOLOGY AND SOILS Soil erosion, loss of topsoil, deterioration of soil quality Soil Pollution Disturbance of surface geology for development foundations	• Prevent/limit soil erosion, loss of topsoil, deterioration of soil quality and soil pollution • Limit disturbance of surface geology for development foundations	• **Adherence to the Geotechnical report and the requirements from the Council for Geoscience**. • The percussion boreholes should be protected during construction. If the construction includes excavations it is vital that the boreholes be sealed at the final level of excavation since it could act as points of water ingress resulting in instability. • Appropriate erosion and storm water management structures must be installed around the construction site. • Once earthworks are complete, disturbed area are to be stabilised with an appropriate approved method. • Disturbed surfaces to be rehabilitated and no open trenches to be left. No mounds of soils created during construction to be left. • Bare areas to be rehabilitated with locally indigenous grass species. • All excavations and foundations must be inspected regularly. • All construction vehicles, plant, machinery and equipment must be properly maintained to prevent leaks. • Ensure correct positioning of construction camps, equipment yards, refuelling depots, concrete batching plant etc. to avoid areas susceptible to soil and water pollution. • Ensure appropriate handling of hazardous substances • Remediate polluted soil. • Plant and vehicles are to be repaired immediately upon developing leaks. Drip trays shall be supplied for all repair work undertaken on machinery on site or campsite area. • Drip trays are to be utilised during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants.	• ECO • Contractor • Engineering Consultant.	• Daily by Contractor • Twice a month by ECO • Monthly report

IMPACT	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
		• Drip trays are to be inspected daily for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow. • Fuels and chemicals must be stored in adequate storage facilities that are secure, enclosed and bunded.		
FLORA AND FAUNA Degradation, destruction of habitats/ ecosystem and loss of natural vegetation Impacts on faunal and floral species of conservation concern - ***Boophane disticha and Hypoxis hemerocallidea*** Increase in Invasive species	• Protection of existing indigenous flora and fauna against degradation, destruction of habitats/ ecosystem • Prevention of impacts on existing fauna and flora • Eradication of invasive species	• Should the *Boophone disticha* and *Hypoxis hemerocallidea* orange data species and aloe plants be found on site, they can be easily lifted and transplanted to a similar environment. These plants have shallow roots and a garden fork can be used to lift them. • Any unusual plants encountered during the construction phase should be photographed and sent to the ECO and / or botanist for identification and status. If in the unlikely event the plant is a RDL species the specialist should advise action accordingly. • No trees should be cut down unnecessarily. • Upon completion of construction activities, it must be ensured that no bare areas remain and that indigenous grassland species are reintroduced. • Edge effects of activities need to be actively managed to minimise further impacts to the receiving environment, with specific consideration to erosion control, including alien and invasive species management. • Informal fires by construction personnel within the study area should be prohibited. • No dumping of waste should take place. If any spills occur, they should be immediately cleaned up. • In the event of a breakdown, maintenance of vehicles must take place with care and the recollection of spillage should be practiced preventing the ingress of hydrocarbons into the topsoil. • Alien vegetation must be removed from the study area during both the construction and operational phases of the development, with specific mention of Category 1b species in line with the NEMBA Alien and Invasive	• ECO • Contractor • Ecological specialist	• Daily by Contractor • Twice a month by ECO • Monthly report

IMPACT	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
		Species Regulations (2014).This includes alien trees such as syringe. • Indigenous trees should be planted in open public spaces.		
STORM WATER MANAGEMENT Stormwater flow and drainage	• Manage storm water flow and drainage	• The proposed development's storm water to be adequately managed to the satisfaction of the Local Authority and as per the Storm Water Master Plan conducted.	• ECO • Contractor • Project Manager/ • Engineering Consultant • Applicant	• Daily by Contractor • Twice a month by ECO • After heavy rains • Monthly report
DEVELOPMENT FOOTPRINT, CONSTRUCTION CAMP AND RELATED ACTIVITIES Location of construction site office and related buildings Access control Ablution facilities	• Location of construction site office and related buildings must not be detrimental to the environment • Proper access control must be implemented • Adequate provision and control of ablution facilities	• An environmental awareness training programme for all staff members must be put in place by the Contractor. Before commencing with any work, all staff members shall be appropriately briefed about the EMPr and relevant occupational health and safety issues. • All construction material, equipment and any foreign objects brought into the area by contractors and staff to be removed immediately after completion of construction. • The boundaries of footprint areas, including contractor laydown areas, are to be clearly defined and it should be ensured that all activities remain within defined footprint areas. Edge effects will need to be extremely carefully controlled. • Only existing roads to be used by vehicles during construction. Roads to be rehabilitated after construction by contractors. • Appropriate sanitary facilities must be provided for the life of the construction phase and all waste removed to an appropriate waste facility. • All hazardous chemicals as well as stockpiles should be stored on bunded surfaces and have facilities constructed to control runoff from these areas. • No fires should be permitted in or near the construction area. • Ensuring that an adequate number of waste and "spill"	• ECO • Contractor • Project Manager	• Daily by Contractor • Twice a month by ECO • Monthly report

IMPACT	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
		bins are provided will also prevent litter and ensure the proper disposal of waste and spills. • Construction related traffic to and from site to be minimised. • Access to construction site to be controlled. • The Contractor shall make available safe drinking water fit for human consumption at the construction camp and all other working areas. • Washing and toilet facilities shall be provided on site and in the construction camp. • Toilet paper must be provided and must be available at all times. • Only certified portable toilets to be used. These portable toilets to be administered and serviced by a certified, registered company only.		
NOISE Noise as a result of construction activities	• Reduce noise from construction activities impacting on neighbours.	• Noise levels shall be kept within acceptable limits, and the construction crew must abide by National Noise Laws and local by-laws regarding noise. • No sound amplification equipment such as sirens, loud hailers or hooters are to be used on site except in emergencies and no amplified music is permitted on site. • Construction / management activities involving use of the service vehicle, machinery, hammering etc, must be limited to the hours between 7:00am and 5:30pm weekdays; 7:00am and 1:30pm on Saturdays; no noisy activities may take place on Sundays or Public Holidays. • Activities that may disrupt neighbours (e.g. delivery trucks, excessively noisy activities etc.) must be preceded by notice being given to the affected neighbours at least 24 hours in advance. • Equipment that is fitted with noise reduction facilities (e.g. side flaps, silencers etc.) must be used as per operating instructions and maintained properly during site operations. **<u>Implementation of the Noise Study Recommendation</u>** • A final location of the school and lay-out to be provided	• ECO • Contractor	• Daily by Contractor • Twice a month by ECO • Monthly report

<table>
<tr><th>IMPACT</th><th>OUTCOME/ OBJECTIVE</th><th>MITIGATION MEASURES/ACTIONS</th><th>RESPONSIBILITY</th><th>MONITORING FREQUENCY</th></tr>
<tr><td></td><td></td><td>in order to assess the potential noise intrusion levels and the noise mitigatory measures at the school building;
• Construction activities may only take place during the day time;
• The emergency generator (if required) to be encapsulated and installed in such a manner that the noise from the generator and/or exhaust will not exceed the prevailing ambient noise levels as measured at any of the boundaries of the residential development.
• A 2.0m high wall to be along the boundary next to the K46 road.
• A 30m wide servitude to be provided on the eastern side of the development where there will be habitable areas;
• Solid core wooden doors to be fitted at the residential properties facing the K46
• Beam-fill to be done where the roof and the walls join;
• Windows frames to be fitted which can seal off tight when closed;
• Neoprene closed cell seals to be fitted on the mating surfaces of the windows/doors and the frames (the habitable rooms) if the threshold values in Table 1 of SANS 10103 of 2008 is not possible.

<u>Recommended noise levels</u>
<table>
<tr><th>Type of occupation</th><th>Design equivalent continuous rating level ($L_{Req,T}$)$_s$ for ambient noise dBA</th><th>Maximum equivalent continuous rating level ($L_{Req,T}$)$_s$ for ambient noise dBA</th></tr>
<tr><td>Classrooms</td><td>35.0</td><td>40.0</td></tr>
<tr><td>Secondary “open space” teaching areas</td><td>45.0</td><td>50.0</td></tr>
<tr><td>Conference rooms up to 250 seats</td><td>30.0</td><td>35.0</td></tr>
<tr><td>Corridors and lobbies</td><td>45.0</td><td>50.0</td></tr>
<tr><td>Laboratories – teaching</td><td>35.0</td><td>40.0</td></tr>
<tr><td>Laboratories – working</td><td>40.0</td><td>50.0</td></tr>
</table>
</td><td></td><td></td></tr>
</table>

IMPACT	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
		<table><tr><td>Lecture, teaching, and research offices</td><td>35.0</td><td>40.0</td></tr><tr><td>Assembly halls up to 250 seats</td><td>30.0</td><td>35.0</td></tr><tr><td>Music Practice rooms</td><td>35.0</td><td>45.0</td></tr><tr><td>Office areas</td><td>40.0</td><td>45.0</td></tr><tr><td>Administrative offices</td><td>35.0</td><td>45.0</td></tr><tr><td>Tutorial rooms</td><td>30.0</td><td>35.0</td></tr></table>		
PRIVACY OF ADJACENT LAND OWNERS	• Avoid nuisance to adjacent land owners	• The construction camp must be located as far from residential properties as possible. • No access to neighbouring holdings should be allowed. • Construction crew to respect adjacent landowners.	• ECO • Contractor	• Daily by Contractor • Twice a month by ECO • Monthly report
SAFETY AND SECURITY Impacts on social well-being of general public, site property, construction personnel, surrounding properties, landowners and tenants	• Ensure social well-being of general public, site property, construction personnel, surrounding properties, landowners and tenants	• Signs should be erected on all entrance gates to the site camp indicating that no temporary jobs are available, thereby limiting opportunistic labourers and crime. • The site and crew are to be managed in strict accordance with the Occupational Health and Safety Act (Act No. 85 of 1993) and the National Building Regulations • All structures that are vulnerable to high winds must be secured (including toilets). • Potentially hazardous areas such as trenches are to be cordoned off and clearly marked at all times. • The Contractor is to ensure traffic safety at all times, and shall implement road safety precautions for this purpose when works are undertaken on or near public roads. • Necessary Personal Protective Equipment (PPE) and safety gear appropriate to the task being undertaken is to be provided to all site personnel (e.g. hard hats, safety boots, masks etc.). • All vehicles and equipment used on site must be operated by appropriately trained and / or licensed individuals in compliance with all safety measures as laid out in the Occupational Health and Safety Act (Act No. 85 of 1993) (OHSA). • An environmental awareness training programme for all	• ECO • Contractor • Applicant	• Daily by Contractor • Twice a month by ECO • Monthly report

IMPACT	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
		staff members shall be put in place by the Contractor. Before commencing with any work, all staff members shall be appropriately briefed about the EMP and relevant occupational health and safety issues. • All construction workers shall be issued with ID badges and clearly identifiable uniforms. • Access to fuel and other equipment stores is to be strictly controlled. • Emergency procedures must be produced and communicated to all the employees on site. This will ensure that accidents are responded to appropriately and the impacts thereof are minimised. This will also ensure that potential liabilities and damage to life and the environment are avoided. • Adequate emergency facilities must be provided for the treatment of any emergency on the site. • The nearest emergency service provider must be identified during all phases of the project as well as its capacity and the magnitude of accidents it will be able to handle. Emergency contact numbers are to be displayed conspicuously at prominent locations around the construction site and the construction crew camps at all times. • The Contractor must have a basic spill control kit available at each construction crew camp and around the construction site. The spill control kits must include absorptive material that can handle all forms of hydrocarbon as well as floating blankets / pillows that can be placed on water courses. • The Engineer indicated that the project team will hoard the site with a diamond mesh fence, with razor wire netting if permanent walling/fencing is not built on the onset.		
ECONOMIC OPPORTUNITIES Employment opportunities for local	• Make provision for local employment where possible.	• Make use of local labour • Provide clear and realistic information regarding employment opportunities and other benefits for local communities in order to prevent unrealistic expectations.	• Contractor	• Ongoing by Contractor

IMPACT	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
community		• Provide skills training for construction workers.		
HYGIENE	• Avoid unhealthy working conditions on project site	• The Contractor shall make available safe drinking water fit for human consumption at the site offices and all other working areas. • Washing and toilet facilities shall be provided on site and in the Contractors camp. • Adequate numbers of chemical toilets must be maintained in the Contractors camp to service the staff using this area. At least 1 toilet must be available per 20 workers using the camp. Toilet paper must be provided. • The chemical toilets servicing the camp must be maintained in a good state, and any spills or overflows must be attended to immediately. • The chemical toilets must be emptied on a regular basis.	• Contractor	• Ongoing by Contractor
PRESSURE ON EXISTING INFRASTRUCTURE AND SERVICES	• Minimise pressure on existing infrastructure and services	• Integrity of existing services to be ensured. • Adherence to Eskom's conditions: • No excavations may be executed closer than six metres from overhead lines and 1.5 metres from underground cables, unless Eskom authorized representatives is on site. • No blasting may be undertaken under or in close proximity of Eskom services unless minimum charges with adequate matting is used, and then only under the strict supervision of Eskom authorized representatives who require at least three days prior notification. • Should the applicant or his contractor damage any of Eskom services during the commencement of any work whatsoever, call Eskom 24 hour fault number 011 800 4441 and it must be dialed immediately to report the incident. • The contractor in charge of the construction or maintenance work on site must at all times be in possession of the letter of approval of the service concerned, as well as all plans that are required and that are referred to in the correspondence, so that during an inspection the contractor can present the documentation to Eskom official(s) when requested to do so. If no	• ECO • Contractor • Eskom representatives	• Daily by Contractor • Twice a month by ECO • Monthly report

IMPACT	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
		approval can be presented then the Eskom official(s) can order the contractor to cease all works until such approval can be presented. • Statutory ground/structure to clearances is to be maintained at all times. If Eskom has to incur any costs to comply with statutory requirements because of the development activities or the presence of equipment or plant in the servitude area, Eskom will be refunded such proven costs on demand. • Should any construction of any services e.g. roads close to Eskom services be necessary in future, the application will have to made to Eskom. • The individual Title Deeds of those Erven affected by Notarial Deed Servitude in favour of Eskom must be made subject to the Notarial Deed of Servitude.		
SOLID WASTE MANAGEMENT Refuse and waste produced during the construction phase Dumping of building material, rubble and any material used during construction or rehabilitation. Stockpiled material	• Ensure wastes are appropriately stored, handled and safely disposed of at a licensed waste facility • Ensure separation at source and recycling • Control of dumping of building material, rubble and any material used during construction or rehabilitation • Manage	• Adequate number of waste disposal receptacles will be positioned at strategic locations within the development. • Waste will be collected and removed off-site to a registered waste site. • Excess soil and bedrock should be disposed of at an appropriate facility. • Excess concrete must be disposed of correctly and at an appropriate facility. A certificate of disposal must be obtained for any waste that is disposed of. • It must be ensured that construction related waste or spillage and effluent do not affect the immediate and surrounding habitat boundaries. • Domestic waste generated on site should be separated at source and recycled. • Recycling of building material. • Stripping and storage of topsoil for rehabilitation. • No dumping of building material and rubble shall take place other than where it is required to be used as fill. • All stockpiled material shall be controlled and shall be removed on the completion of construction. • Trucks removing excavated material should use existing roads.	• ECO • Contractor	• Daily by Contractor • Twice a month by ECO • Monthly report

IMPACT	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
	stockpiled material	• Spoil should be disposed of at a licensed Landfill site. • Waste disposal certificates must be obtained for any waste that is disposed of. • No burning of waste.		
CONCRETE AND CEMENT PREPARATION AND HANDLING The use and preparation of concrete on site has the potential to impact negatively on the environment	• Concrete spills must be contained on site and mitigated.	• No mixed concrete may be deposited outside of the designated construction footprint; • Mixing trays and impermeable sumps should be provided, onto which any mixed concrete can be deposited whilst it awaits placing. • Concrete spilled outside of the demarcated area must be promptly removed and taken to a suitably licensed waste disposal site. • Waste disposal certificates must be obtained for any waste that is disposed of.	• ECO • Contractor	• Daily by Contractor • Twice a month by ECO • Monthly report
POLLUTION Soil, surface- and groundwater pollution	• Minimise soil, surface- and groundwater pollution	• All hazardous materials such as but not limited to paint, turpentine and thinners must be stored appropriately to prevent these contaminants from entering the environment. • Provide containment areas for potential pollutants at construction camps. • Fuels and chemicals must be stored in adequate storage facilities that are secure, enclosed, bunded and lined. • Any residue from spillages shall be removed from site by appropriate contractors. Handling, storage and disposal of excess or containers of potentially hazardous materials shall be in accordance with the requirements of the adjudicating authority or any other relevant department. • All vehicles must be regularly inspected for leaks. Re-fuelling must take place on a sealed surface area to prevent ingress of hydrocarbons into the topsoil. • In the event of a vehicle breakdown, maintenance of vehicles must take place with care and the recollection of spillage should be practiced near the surface area to prevent ingress of hydrocarbons into topsoil and subsequent habitat loss.	• ECO • Contractor	• Daily by Contractor • Twice a month by ECO • Monthly report

IMPACT	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
		• All spills should they occur, should be immediately cleaned up and treated accordingly. • Drip trays are to be utilised during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants • Drip trays are to be inspected daily for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow. • The Contractor must have a basic spill control kit available at the construction camp site and around the construction site.		
TRAFFIC Disturbance caused by construction traffic	• Prevent construction vehicles from disturbing the general public and environment	• The Contractor is to ensure traffic safety at all times, and shall implement road safety precautions for this purpose when work is undertaken on or near public roads. • Construction vehicles to use public roads outside peak hours. • No construction vehicles exceeding defined speed limits. • Appropriate traffic safety signage will be provided to warn the public of construction traffic and flagmen should be on duty where traffic merges with normal road traffic.	• ECO • Contractor	• Daily by Contractor • Twice a month by ECO • Monthly report
GRAVES, ARCHAEOLOGICAL AND OTHER HERITAGE SITES Destruction of cultural/heritage sites	• Protection of cultural and heritage sites • Protection of graves	• According to the Heritage Impact Assessment no sites or finds of any heritage value or significance were identified within the study area. No standing structures older than 60 years occur in the study area. No archaeological sites or material was recorded during the survey. • In terms of Section 36 of the National Heritage Resources Act 25 of 199 no burial sites were recorded. However, if any graves are located in future they should ideally be preserved in-situ or alternatively relocated according to existing legislation. • Having said the above the Heritage Impact Study recommended that the chance find procedure should part of this EMPR: **<u>Chance find procedure (HIA Report)</u>** The possibility of the occurrence of subsurface finds	• ECO • Contractor • PHRA-G • SAHRA • SAPS	• Daily by Contractor • Twice a month by ECO • Monthly report

IMPACT	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
		cannot be excluded. Therefore, if during construction any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped and a qualified archaeologist must be contacted for an assessment of the find A short summary of chance find procedures is discussed below. This procedure applies to the developer's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. The aim of this procedure is to establish monitoring and reporting procedures to ensure compliance with this policy and its associated procedures. Construction crews must be properly inducted to ensure they are fully aware of the procedures regarding chance finds as discussed below. • If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager. • It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area. • The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA. **<u>Chance find procedure (Palaeontology Report)</u>** **Monitoring Programme for Palaeontology – to commence once the excavations for roads, infrastructure and buildings begin.**		

IMPACT	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
		• The following procedure is only required if fossils are seen on the surface and when excavations commence. • When excavations begin the rocks and must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (stromatolites) should be put aside in a suitably protected place. This way the construction activities will not be interrupted. • Photographs of similar fossils must be provided to the developer to assist in recognizing the stromatolites. This information will be built into the EMP's training and awareness plan and procedures. • Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment. • If there is any possible fossil material found by the developer/environmental officer then the qualified palaeontologist sub-contracted for this project, should visit the site to inspect the selected material and check the dumps where feasible. • Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. Reports must be submitted to SAHRA as required by the relevant permits. • If no good fossil material is recovered then the site inspections by the palaeontologist will not be necessary. • If no fossils are found and the excavations have finished then no further monitoring is required.		
CLOSURE AND REHABILITATION Reduction in the potential of land if construction and	• Ensure that the rehabilitation of the construction area take place and the impact of these activities are	• A site specific rehabilitation plan is required. • All excess materials brought onto site for construction purposes to be removed after construction. • All Disturbed dug up areas to be reshaped and re-contoured to original contours and to blend in with surrounding topography.	• ECO • Contractor	• Daily by Contractor • Twice a month by ECO • Monthly report

IMPACT	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
construction camp sites are not rehabilitated	limited.	• All alien vegetation in the footprint areas as well as immediate vicinity of the proposed development should be removed. • Re-seeding of bare areas with local indigenous grasses to be part of rehabilitation plan. No exotic species to be used for rehabilitation. • A weed control programme should be implemented to monitor and remove any invasive weeds during and after the construction phase.		

Table 10: Operational Phase (Long Term)

IMPACT	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
FLORA AND FAUNA Alien infestation Loss of Biodiversity	• Protection of existing indigenous flora and fauna • Eradication / Prevention of alien infestation	• Alien vegetation must be removed from the study area during both the construction and operational phases of the development, with specific mention of Category 1b species in line with the NEMBA Alien and Invasive Species Regulations (2014).	• Applicant	• Ongoing
GEOLOGY	• Adherence to the requirements of the Council for Geoscience to for the protection of the site given the geological state of the site.	• Adherence to the requirements from the Geotechnical report.	• Applicant	• Ongoing
SOIL POLLUTION Spillages form sewerage treatment plant.	• Prevent the spillage of sewage from the treatment plant.	• Adherence to the maintenance plan.	• Applicant	• Ongoing
STORM WATER MANAGEMENT Stormwater flow and drainage	• Manage storm water flow and drainage	• The proposed development's storm water to be adequately managed. • Storm water management system to be regularly maintained. • It is important to ensure vegetation cover as widely as possible.	• Applicant	• Ongoing
NOISE Steps to be taken to minimise the noise impact of the sound of generators	• Ensure acceptable noise levels • Avoid an increase in the ambient noise levels of the area	• Noise impact from the use of generators for the sewage treatment plant can be mitigated by introducing a noise reduction container, so called silent generator with improvements to the exhaust system should the use of a generator be necessary.	• Applicant	• Ongoing
VISUAL IMPACT	• Ensure a positive impact to the visual quality of the area.	• Keep the school as neat and visually as possible by properly maintaining landscaped areas including sport facilities, painted buildings etc. • The school should be regularly	• Applicant	• Ongoing

IMPACT	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
		maintained and this includes the control of invasive weeds, maintenance of public open spaces and the maintenance of trees.		
SENSE OF PLACE	• Avoid a negative impact on the sense of place	• Manage the school in a manner that does not negatively impact the sense of place.	• Applicant	• Ongoing
JOB OPPORTUNITIES	• Avoid a large influx of uncontrolled numbers of people seeking employment opportunities. This might also pose a security risk.	• Implement local labour. • Provide clear and realistic information regarding employment opportunities and other benefits for local communities in order to prevent unrealistic expectations.	• Applicant	• Ongoing
SAFETY AND SECURITY	• Prevent a threat to the safety and security of the development	• The project team will hoard the site with a diamond mesh fence, with razor wire and 40% shade netting if permanent walling/fencing is not yet built at the onset	• Applicant	• Ongoing
TRAFFIC	• Manage increased traffic	• Compliance to Traffic and Municipal By-Laws. • Adherence to the Traffic Impact Study requirements for the upgrades proposed.	• Applicant	• Ongoing
WASTE	• Ensure proper waste management	• Sorting of waste • Waste yard to be kept clean and neat • Regular cleaning of waste yard so that it does not became a nuisance and terms of odour and vermin	• Applicant	• Ongoing
PRESSURE ON EXISTING INFRASTRUCTURE AND SERVICES	• Minimise pressure on existing infrastructure and services – **Eskom** existing services.	• Integrity of existing services in the area to be ensured. • Adherence to conditions provided by Eskom.	• Applicant	• Ongoing

13 Site documentation, monitoring and reporting

13.1 What needs to be monitored

- Site clearance
- Species of conservation concern
- On-site sanitary facilities
- Excavation
- Community relations
- Removal of rubble
- Disposal of Material
- Construction activities
- Protection of buildings and structures
- Construction of structures
- Progress in terms of construction programme
- Rehabilitation
- Re-vegetation

13.2 How, what procedures

- Site inspections by the ECO
- Site inspections by the Contractor
- Reporting to by the Project Manager

13.3 Recording of Information/Data

The standard site documentation shall be used to keep records on site. All documents shall be kept on site and be made available for monitoring purposes. The documentation shall be signed by all parties to ensure that such documents are legal.

The following documentation shall be kept on site:

- Environmental Authorisation
- Copy of the Environmental Management Programme
- Environmental Complaints register
- Environmental Incidents register
- Environmental Training register

13.4 Reporting

Who should be reported to?

- Applicant
- GDARD
- CTMM
- SAHRA
- PHRA-G

14 Post Construction Audit

A post construction environmental audit is to be conducted by the ECO in order to ensure that all conditions of the EMPr have been adhered to.

15 Amendments to the EMPr

The EMPr is to be submitted to the GDARD for approval prior to implementation. Any changes to the EMPr are to be indicated in the form of addendums.

ANNEXURE A

CURRICULUM VITAE OF EAP

ANNEXURE B

ENVIRONMENTAL CODE OF CONDUCT

The applicant is committed to ensuring that the construction of the development is done according to the highest environmental standards so that the ecological footprint of the development is minimised where possible.

The applicant requires that all construction personnel involved in the construction process accept their responsibilities towards the EMPr and the environment. This includes all permanent, contract or temporary workers as well as any other person involved with the project or visiting the site. Ignorance, negligence, recklessness or a general lack of commitment will not be tolerated.

If you do not understand the rules you must seek assistance to ensure compliance. The following people can assist you in ensuring compliance with the EMPr.

Your Supervisor: ……..

Environmental Control Officer: ……

Project Manager: ……

ANNEXURE C

ENVIRONMENTAL COMPLAINTS REGISTER

Environmental Complaints Register					
Name of Complainant	**Contact Details**	**Nature of Complaint**	**Responsible Person**	**Date Action Taken**	**Details of Action Taken**

ANNEXURE D

ENVIRONENTAL INCIDENTS REGISTER

Environmental Incidents Register					
Date	**Incident**	**Action Required**	**Responsible Person**	**Action Implemented**	**Date Action Implemented**

ANNEXURE E

ENVIRONMENTAL TRAINING REGISTER

Environmental Training Register					
Company	**Employee**	**Employee signature**	**Supervisor**	**Supervisor Signature**	**Date**