PROPOSED EXPANSION OF SPORTS AND RECREATIONAL FACILITIES AT THE COUNTRY CLUB JOHANNESBURG, GAUTENG PROVINCE

ENVIRONMENTAL MANAGEMENT PROGRAMME

July 2022

Prepared for
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PROJECT DETAILS

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Title	:	Basic Assessment Process Environmental Management Programme: Proposed Expansion of Sports and Recreational Facilities at the Country Club Johannesburg, Gauteng Province
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DEFINITIONS AND TERMINOLOGY

The following definitions and terminology may be applicable to this project and may occur in the report below:

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 requirements of a proposed activity. They 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.

Biodiversity: 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, if such investigation or feasibility study does not constitute a listed activity or specified activity.

Commissioning: Commissioning commences once construction is completed and covers all activities.

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 the EIA Regulations. It 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.

Development footprint: The development footprint is approximately up to 1.3ha in extent. This the area where the infrastructure associated with the expansion activities is planned to be constructed. This is the anticipated actual footprint of the expansion activities, and the area which would be disturbed.

Direct impacts: Impacts that are caused directly by the activity and generally occur at the same time and 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. It also provides the baseline against which the impacts of other alternatives should be compared.

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.

Emergency: An undesired/ unplanned event that results in a significant environmental impact and requires the notification of the relevant statutory body, such as a local authority.

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 is made up of:

i. The land, water and atmosphere of the earth;
ii. Micro-organisms, plant and animal life;
iii. Any part or combination of (i) and (ii) and the interrelationships among and between them; and
iv. The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

Environmental Authorisation (EA): means the authorisation issued by a competent authority (Gauteng Department of Agriculture and Rural Development (GDARD)) of a listed activity or specified activity in terms of the National Environmental Management Act (No 107 of 1998) (NEMA) and the EIA Regulations promulgated under the NEMA.

Environmental Assessment Practitioner (EAP): An individual responsible for the planning, management and coordinating of EMPRs plan or any other appropriate environmental instruments introduced by legislation.

Environmental Control Officer (ECO): An individual appointed by the Owner prior to the commencement of any authorised activities, responsible for monitoring, reviewing and verifying compliance by the Contractor with the environmental specifications of the EMPr and conditions of the EA.

Environmental Impact: An action or series of actions that have an effect on the environment.

Environmental Impact Assessment (EIA): Environmental Impact Assessment, as defined in the NEMA EIA Regulations, is a systematic process of identifying, assessing and reporting environmental impacts associated with an activity.

Environmental Management: Ensuring that environmental concerns are included in all stages of development, so that it is sustainable and does not exceed the carrying capacity of the environment.

Environmental Management Programme (EMPr): A plan that organises and co-ordinates mitigation, rehabilitation and monitoring measures, to guide the implementation of a project and its ongoing maintenance after implementation, in accordance with section 24 of NEMA.

Environmental Officer (EO): The Environmental Officer (EO), employed by the Contractor, is responsible for managing the day-to-day on-site implementation of this EMPr; and compilation of regular (usually weekly)

Monitoring Reports. The EO must act as liaison and advisor on all environmental and related issues and ensure that any complaints received from the public are duly recorded and forwarded to the Site Manager and Contractor.

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).

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 in a free state in nature but excludes a species that has been introduced in South Africa as a result of human activity.

Incident: An unplanned occurrence that has caused, or has the potential to cause, environmental damage.

Indirect impacts: Indirect or induced changes that may occur because 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 because of the activity.

Interested and affected party (I&AP): 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 public.

Method Statement: a written submission by the Contractor in response to the environmental specification or a request by the Site Manager, setting out the plant, materials, labour and method the Contractor proposes using to conduct an activity, in such detail that the Site Manager is able to assess whether the Contractor's proposal is in accordance with the Specifications and/or will produce results in accordance with the Specifications.

No-go areas: Areas of environmental sensitivity that should not be impacted on or utilised during the development of a project as identified in any environmental reports.

Pre-construction: The period prior to the commencement of construction, which may include activities which do not require EA (e.g. geotechnical surveys).

Project area: The project area is that identified area where the expansion activities area planned to be located. This area has been selected as a practicable option for the expansion activities, considering technical preference and constraints, and has been assessed within this report and by the respective specialists.

Pollution: A change in the environment caused by substances (radioactive or other waves, noise, odours, dust or heat emitted from any activity, including the storage or treatment or waste or substances).

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 by notice in the *Gazette*.

ABBREVIATIONS

The following abbreviations may be applicable to this project and may occur in the report below:

BAR	Basic Assessment Report
CEMP	Construction Environmental Management Plan
DM	District Municipality
EAP	Environmental Assessment Practitioner
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
GDARD	Gauteng Department of Agriculture and Rural Development
ha	Hectare
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
km	Kilometres
LM	Local Municipality
m	Metres
m^2	Square metres
NEMA	National Environmental Management Act
NEMAA	National Environmental Management Amendment Act
NEMBA	National Environmental Management: Biodiversity Act
NHRA	National Heritage Resources Act
NWA	National Water Act
SAHRA	South African National Heritage Resources Agency
SANS	South Africa National Standards
SDF	Spatial Development Framework
SMME	Small and medium-sized enterprises

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CHAPTER 1: INTRODUCTION

This Environmental Management Programme (EMPr) has been compiled for the proposed expansion of sports and recreational facilities at the Country Club Johannesburg. The project is to be developed on Portion 433 of the Farm Rietfontein IR 2, located in Woodmead, Johannesburg. The project site falls within jurisdiction of the City of Johannesburg Metropolitan Municipality in the Gauteng Province.

This EMPr has been developed on the basis of the findings of the Basic Assessment (BA) undertaken for the project. It must be implemented to protect sensitive on-site and off-site features, through controlling construction and operation activities that could have a detrimental environmental effect; and avoiding or minimising potential impacts. This EMPr is applicable to all employees and contractors working on the project's pre-construction, construction, and operation and maintenance phases, and must be adhered to and updated as relevant throughout the project life cycle. This document fulfils the requirements of the EIA Regulations, 2014, as amended, and forms part of the BA Report for the project.

In terms of the Duty of Care provision in S28(1) of National Environmental Management Act (NEMA) the Country Club Johannesburg 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, halted or minimised. The EMPr must therefore be adhered to and updated as relevant throughout the project life cycle. In terms of the NEMA, it has become the legal duty of a project proponent to consider a project holistically and the cumulative effect of a variety of impacts.

CHAPTER 2: PROJECT DETAILS

The Applicant, Country Club Johannesburg - Woodmead, is proposing the expansion of sports and recreational facilities at the Country Club Johannesburg on Portion 433 of the Farm Rietfontein IR 2 (affected property), located in Woodmead, Johannesburg (refer to **Figure 2.1**). The study area falls within jurisdiction of the of the City of Johannesburg Metropolitan Municipality in the Gauteng Province.

The proposed development at the Country Club Johannesburg will entail the construction of additional tennis courts and new padel courts; upgrading the existing building at the facility to include a gym, changerooms and squash courts; expanding the parking area; and upgrading the restaurant and bar to provide a modern, multi-sport and family facility for members of the Country Club Johannesburg.

A development footprint of up to 1.3ha has been identified within the affected property by the Country Club Johannesburg for the proposed activities. Site-specific studies and assessments have delineated areas of potential sensitivity and identified protected flora and fauna species, as well as alien invasive plants species, within the identified project area area (refer to **Figure 2.2**). No areas/features of high sensitivity have been identified within the project area.

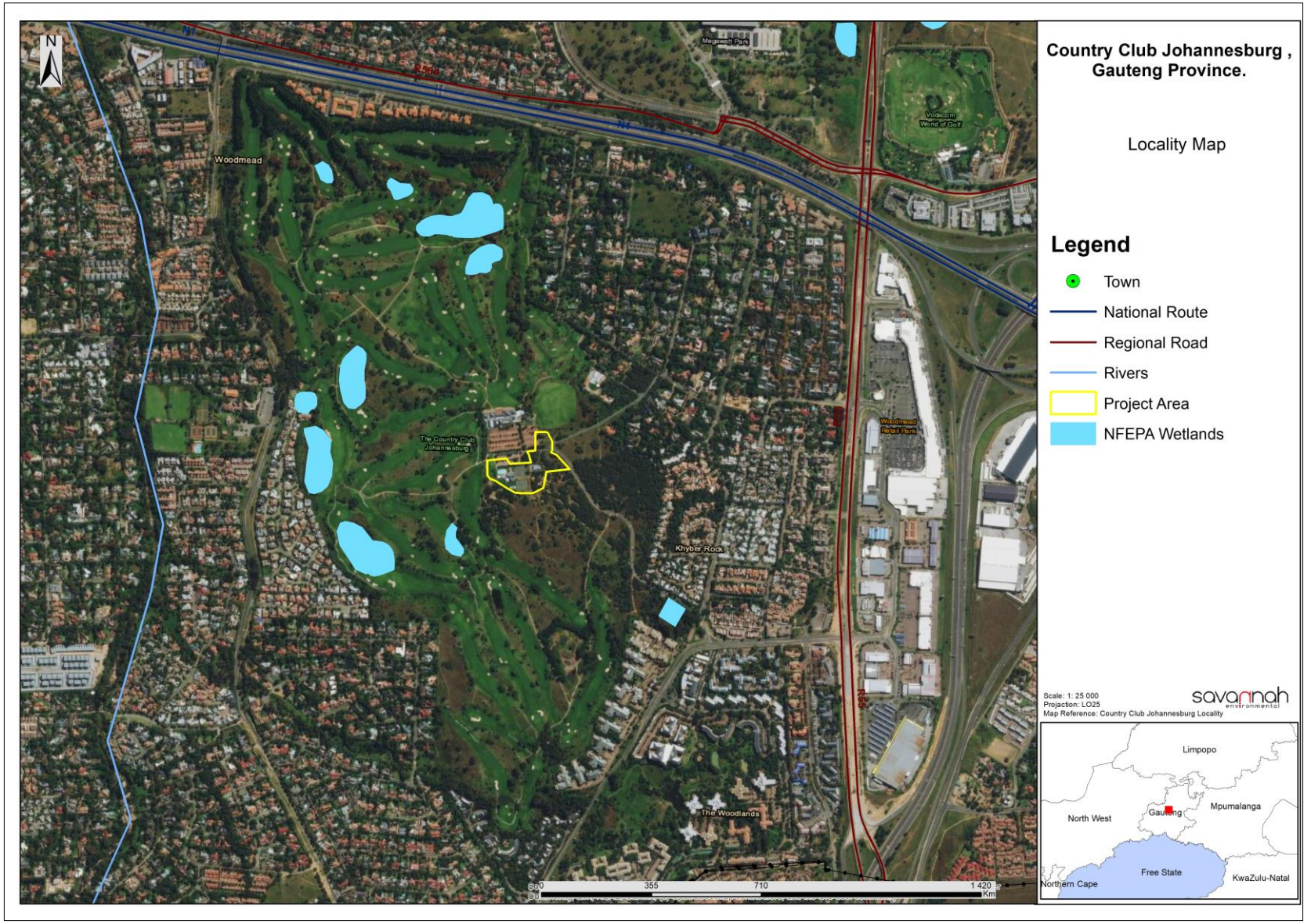


Figure 2.1: Locality map showing the location of the project area at the Country Club Johannesburg

Figure 2.2: Environmental sensitivity map overlain with the proposed project area

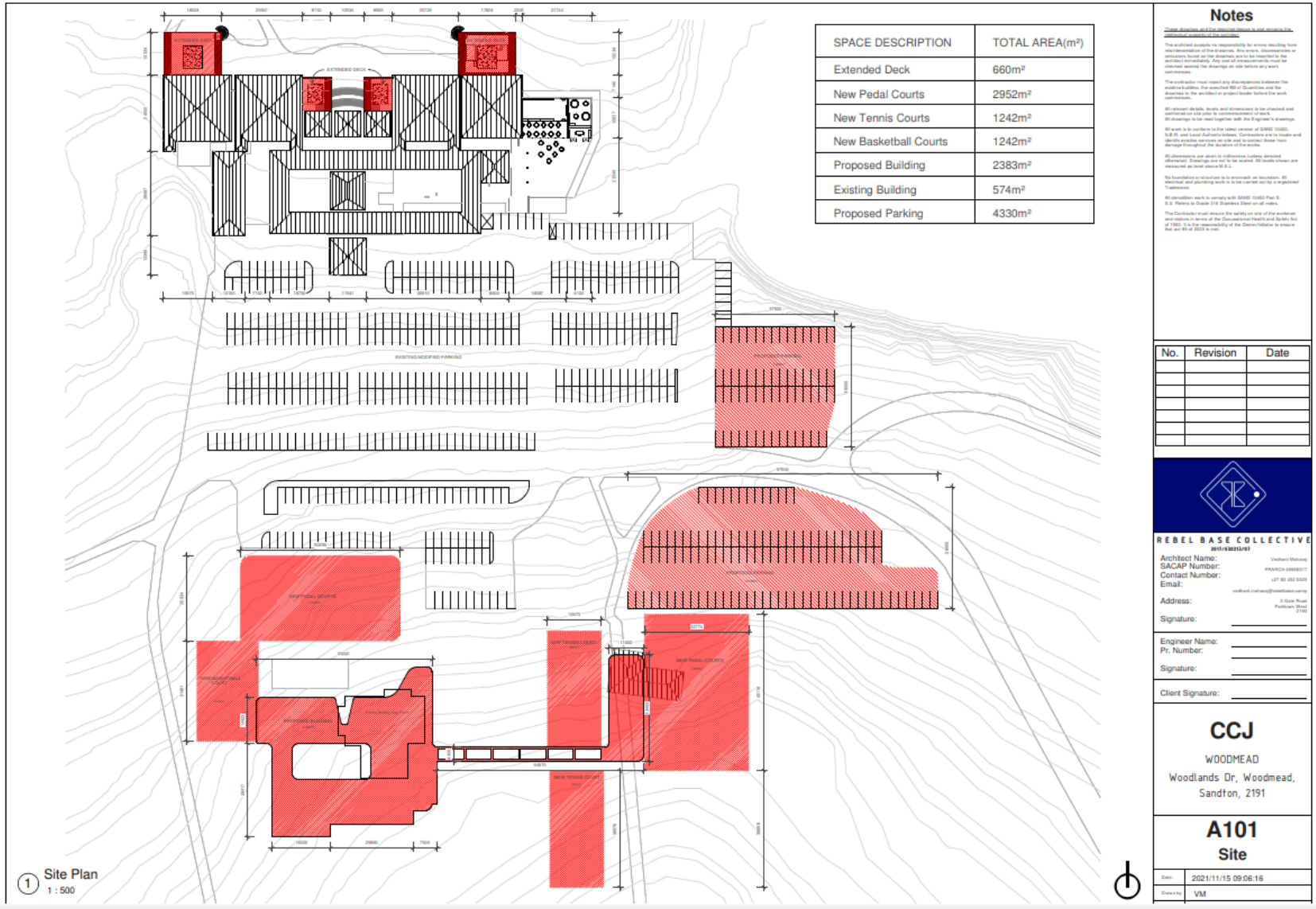


Figure 2.3: Layout showing the location of the proposed expansion activities (in red)

Table 2.1 provides information regarding the project area.

Table 2.1: Detailed description of the project

Infrastructure	Dimensions/ Details
Development footprint	» 1.3ha
Access roads	» The project area is located within the boundary of the Country Club Johannesburg and access to the site will be via Woodlands Drive and Lincoln Street. There are existing tarred roads within the facility that will be utilised to provide direct access to the project area
Proposed infrastructure	» Construction of additional tennis courts and new padel courts. » Upgrading the existing building at the facility to include a gym, changerooms and squash courts; expanding the parking area. » Upgrading the restaurant and bar to provide a modern, multi-sport and family facility for members of the Country Club Johannesburg.

The potential environmental impacts associated with the project identified and assessed through the BA process are summarised below:

2.1. Impacts on Terrestrial Ecology (including flora, fauna, avifauna and freshwater resources)

The project area is situated within the Egoli Granite Grassland of the Mesic Highveld Grassland Bioregion. The conservation status of this vegetation community was listed by Mucina and Rutherford (2006) as Endangered and is listed as Critically Endangered based on the National Biodiversity Assessment (NBA) (2018).

According to the Gauteng Conservation Plan, portions of the project area overlap with an Ecological Support Area (ESA). The closest Critical Biodiversity Area (CBA) is the Sandspruit river greenbelt, located approximately 1 km west of the project area.

The project area was superimposed on the terrestrial ecosystem threat status database, and it falls across a Critically Endangered ecosystem. This means that most of the ecosystem type associated with the project area is considered to be at an extremely high risk of collapse

Three habitat units were delineated across the project area, namely, transformed habitat, critically modified grassland and modified grassland. In terms of Site Ecological Importance, the transformed habitat and critically modified grassland are regarded to have very low and low Site Ecological Importance, respectively. The modified grassland is regarded as having medium Site Ecological Importance.

During the survey of the project area undertaken as part of the Terrestrial Ecology Impact Assessment, it was noted that the southern and eastern sections supported four provincially protected plant species: *Eulophia ovalis* var. *bainesii* (Cream courting harlequin orchid), *Aloe maculata* (Soap aloe), *Protea caffra* subsp. *caffra* (Common sugarbush), and *Cussonia paniculata* subsp. *sinuata* (Mountain cabbagetree). One flora species of conservation concern was recorded, namely, *Hypoxis hemerocallidea* (Star-flower), which was observed within the southwestern portion of the project area. The species is listed as 'Declining' by the national red-list.

Due to the various indigenous tree species present as well as the close proximity to watercourses, numerous avifaunal species were observed foraging within the southern sections. Over 20 bird species were recorded, mostly consisting of locally common garden species such as the Green wood-hoopoe, Southern fiscal, and most commonly the Cape glossy starling and the Dark-capped bulbul. Typical grassland species were also observed, such as Quail and Helmeted guineafowl. No avifaunal species of conservation concern were

observed; however, it is noted that most wild bird species are regarded as protected game according to provincial legislation.

During the survey of the project area undertaken as part of the Terrestrial Ecology Impact Assessment, no mammal activity was recorded. Although signposts and discussions with staff revealed that *Atelerix frontalis* (Hedgehog) have historically been observed in the region. The Hedgehog is listed as 'Near Threatened' (NT) nationally and is considered protected game by both national and provincial legislation. One herpetofaunal species was observed,namely, *Stigmochelys pardalis* (Leopard tortoise), which is provincially protected and also listed under appendix II of CITES – affording the species international protection.

According to the South African Inventory of Inland Aquatic Ecosystems (SAIIAE) database, the project area is near numerous wetlands and the Sandspruit River. Two wetlands and the river are categorised as Critically Endangered (CR) and Not Protected (NP), while the pans are categorised as Least Concern (LC) and Poorly Protected (PP).

Based on the sensitivity of the development footprint, a compliance statement was undertaken and not a full impact assessment in accordance with the relevant specialist protocols published in Government Notice 320 of 20 March 2020 and Government Notice 1150 of 30 October 2022.

Since a Terrestrial Biodiversity Compliance Statement was prepared as per Government Notice 320 dated 20 March 2020, an assessment of the identified potential impacts was not undertaken.

It is the opinion of the specialist that the proposed activities may proceed within the confines of the project area, following accordance with the mitigation measures put forward in the Terrestrial Ecology Impact Assessment. Activities that take place within any 'Medium' sensitivity areas (refer to **Figure B**) should only be of a medium impact and must be followed by appropriate rehabilitation measures. There are no fatal flaws for this project.

2.2. Impacts on Soils and Agricultural Potential

Two soil forms were identified within the 50m regulated area of the project area, namely, Glenrosa and Avalon. Of these soil forms, the Avalon soil form is most sensitive.

The land capability of the Avalon soil has been determined to be class "II" (arable land) and the land capability of the Glenrosa soil has been determined to a be class "VI" (grazing land). The climate capability of the area has been determined to be level 8 given the low Mean Annual Precipitation and the high evaporation rates. The combination between the determined land capabilities and climate capabilities results in a land potential of "L5" and "L7". The "L5" land potential is regarded to have restricted potential. It has regular and/or moderate to severe limitations due to soil, slope, temperatures or rainfall. The "L7" land potential is regarded to have low potential. It has severe limitations due to soil, slope, temperatures, or rainfall and is non-arable.

The project area is regarded as having a "Moderately low to Moderate" land capability and as such, an agricultural compliance statement has been prepared as opposed to a full impact assessment. Since an agricultural compliance statement was prepared as per Government Notice 320 dated 20 March 2020, an assessment of the identified potential impacts was not undertaken.

Considering the nature of the proposed activities and the low sensitivity of the soil resources identified within the 50 m regulated area, it is the specialist's opinion that no concernable loss of land capability is expected

and that no segregation of high production agricultural land will occur. Therefore, it is recommended that the proposed activities proceed as have been planned.

2.3. Impacts on Heritage Resources

A Heritage Impact Assessment was undertaken for the project. In accordance with the Heritage Impact Assessment, there is no significant heritage value to the property and the surrounds of the project area. The land was initially purchased in 1966 and has no heritage structures or signs of heritage landscape. The bulk construction of the proposed construction is planned to be undertaken on already developed land. The surrounding vegetation was planted as part of the complex and makes up a very small area of the total environmentally sensitive landscape.

All development of the property at the Country Club Johannesburg is less than 60 years of age and therefore holds no heritage value.

Given the low sensitivity of the site from an archaeological and cultural heritage perspective, a full assessment of potential impacts on heritage resources was not undertaken by the specialist and no mitigation measures have been proposed for inclusion on the project's EMPr. The Heritage Impact Assessment states that the only mitigation measures required for the development would be environmental.

It is the specialist's opinion that the proposed development proceed with no restrictions as there is no sites of heritage significance within the project area.

2.4. Assessment of Cumulative Impacts

Cumulative impacts refer to the incremental impacts resulting from the implementation of an activity on a common resource which are added to the impacts of other past, present or reasonably foreseeable future activities.

Given the low – medium sensitivity of the site from a terrestrial ecology, soils, and heritage perspective, compliance statements were undertaken by the terrestrial ecology and soils specialists, and the heritage assessment did not include an assessment of potential impacts. Also given that the site is located within an area that is highly disturbed, and also given the small footprint of the activity, it is not anticipated that the project will result in any significant cumulative impacts.

2.5. Overall Conclusion (Impact Statement)

The footprint proposed for the development of the sports and recreational facilities proposed by the applicant was assessed by independent specialists as part of the BA process and their findings have informed the results of this BA Report.

The specialist findings have indicated that there are no identified environmental fatal flaws associated with the implementation of the project. Provincially protected plants species were identified within the project area, as well as provincially and nationally protected fauna species. The project area was found to comprise three habitats, namely, transformed habitat, critically modified grassland and modified grassland. The identified habitats are regarded to be on very low, low and medium site ecological importance.

The soils identified within the project area were found to have a moderately low to moderate land capability and Several depressions/pans, an Unchanneled Valley-Bottom wetland, and a Channelled Valley-Bottom

Wetland (Sandspruit river) all occur within 1 km of the project area. According to the Heritage Impact Assessment, there is no significant heritage value to the property and the surrounds of the project area. The land was initially purchased in 1966 and has no heritage structures or signs of heritage landscape.

Through assessment of the project within the project area, it can be concluded that the project is environmentally acceptable (subject to implementation of the recommended mitigation measures).

2.6. Overall Recommendation

Considering the findings of the independent specialist studies; and the sensitivity ratings of the environmental features identified within the project area, it is the reasoned opinion of the EAP that the expansion of the sports and recreational facilities at the Country Club Johannesburg is acceptable within the project area and can reasonably be authorised.

The following infrastructure would be included within an authorisation issued for the project:

- Construction of additional tennis courts.
- Construction of new padel courts.
- Upgrading of the existing building at the facility in order to include a gym, changerooms and squash courts.
- Expansion of the parking area.
- Upgrading of the restaurant and bar.

CHAPTER 3: PURPOSE AND OBJECTIVES OF THE EMPR

An Environmental Management Programme (EMPr) is defined as "*an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented or mitigated, and that the positive benefits of the projects are enhanced*". The objective of the EMPr is to provide consistent information and guidance for implementing the management and monitoring measures established in the permitting process and help achieve environmental policy goals. The purpose of an EMPr is to help ensure continuous improvement of environmental performance, reducing negative impacts and enhancing positive effects during the construction and operation of the sports ad recreational facilities. An effective EMPr is concerned with both the projects immediate outcome and long-term impacts.

The EMPr provides specific environmental guidance for the construction and operation phases of a project; and is intended to manage and mitigate construction and operation activities so that unnecessary or preventable environmental impacts do not result. These impacts range from those incurred during start up (site clearing and site establishment); the construction activities themselves (erosion, noise, dust); site rehabilitation (soil stabilisation, re-vegetation) and operation. The EMPr also defines monitoring requirements to ensure that the specified objectives are met.

This EMPr is applicable to all employees and contractors working on the pre-construction, construction, and operation and maintenance phases of project. The document must be adhered to and updated as relevant throughout the project life cycle.

This EMPr has been compiled in accordance with Appendix 4 of the EIA Regulations, 2014 (as amended). This is a dynamic document and will be further developed in terms of specific requirements listed in any authorisations issued for project; or as it develops. This will ensure that the construction and operation activities are planned and implemented taking sensitive environmental features into account. The EMPr has been developed as a set of environmental specifications (i.e. principles of environmental management), which are appropriately contextualised to provide clear guidance in terms of the on-site implementation of these specifications (i.e. on-site contextualisation is provided through the inclusion of various monitoring and implementation tools).

The EMPr has the following objectives:

- Outline mitigation measures and environmental specifications which are required to be implemented for the project's planning, construction, rehabilitation and operation phases, to minimise the extent of environmental impacts; and manage environmental impacts associated with the project.
- Ensure that the construction and operation phases do not result in undue or reasonably avoidable adverse environmental impacts; and ensure that any potential environmental benefits are enhanced.
- Identify entities who will be responsible for the implementation of the measures; and outline functions and responsibilities.
- Propose mechanisms and frequency for monitoring compliance; and prevent long-term or permanent environmental degradation.
- Facilitate appropriate and proactive responses to unforeseen events or changes in project implementation that were not considered in the BA process.

The mitigation measures identified within the BA process are systematically addressed in the EMPr, ensuring the minimisation of adverse environmental impacts to an acceptable level.

The Country Club Johannesburg must ensure that the project's implementation complies with the requirements of all EAs, permits, and obligations emanating from relevant environmental legislation. This obligation is partly met through development and implementation of this EMPr, and through its integration into the relevant contract documentation provided to parties responsible for construction and/or operation activities on the project area. Since this EMPr is part of the BA process for the project, it is important that it be read in conjunction with the BA Report compiled for this project. This will contextualise the EMPr and enable a thorough understanding of its role and purpose in the integrated environmental management process. Should there be a conflict of interpretation between this EMPr and the EA, the stipulations in the EA shall prevail over that of the EMPr, unless otherwise agreed by the authorities in writing. Similarly, any provisions in legislation overrule any provisions or interpretations within this EMPr.

This EMPr shall be binding on all the parties involved in the planning, construction and operational phases of the project; and shall be enforceable at all levels of contract and operational management within the project. The document must be adhered to and updated as relevant throughout the project lifecycle.

CHAPTER 4: STRUCTURE OF THIS EMPR

The preceding chapters provide background to the EMPr and project, while the chapters which follow consider the following:

- Planning and design activities.
- Construction activities.
- Operation activities.

These chapters set out the procedures necessary for the project owner to minimise environmental impacts and achieve environmental compliance. For each of the phases of project implementation, an overarching environmental **goal** is stated. To meet this goal, a number of **objectives** are listed. The management programme has been structured in table format, to show the links between the goals for each phase and their associated objectives, activities/risk sources, mitigation actions, monitoring requirements and performance indicators. A specific EMPr table has been established for each environmental objective. The information provided within the EMPr table for each objective is illustrated below:

OBJECTIVE: Description of the objective, which is necessary to meet the overall goals; which take into account the findings of the BA specialist studies

Project Component/s	List of project components affecting the objective, i.e.: » Construction of additional tennis courts. » Construction of new padel courts. » Upgrading of the existing building at the facility in order to include a gym, changerooms and squash courts. » Expansion of the parking area. » Upgrading of the restaurant and bar.
Potential Impact	Brief description of potential environmental impact if objective is not met.
Activity/Risk Source	Description of activities which could affect achieving the objective.
Mitigation: Target/Objective	Description of the target and/or desired outcomes of mitigation.

Mitigation: Action/Control	**Responsibility**	**Timeframe**
List specific action(s) required to meet the mitigation target/objective described above.	Who is responsible for the measures	Time periods for implementation of measures

Performance Indicator	Description of key indicator(s) that track progress/indicate the effectiveness of the management programme.
Monitoring	Mechanisms for monitoring compliance; the key monitoring actions required to check whether the objectives are being achieved, taking into consideration responsibility, frequency, methods, and reporting.

The objectives and EMPr tables are required to be reviewed and possibly modified whenever changes, such as the following, occur:

- Planned activities change.
- Modification to or addition to environmental objectives and targets.
- Additional or unforeseen environmental impacts are identified and additional measures are required to be included in the EMPr to prevent deterioration or further deterioration of the environment.
- Relevant legal or other requirements are changed or introduced.
- Significant progress has been made on achieving an objective or target such that it should be re-examined to determine if it is still relevant, should be modified, etc.

4.1 Contents of this Environmental Management Programme (EMPr)

This EMPr has been prepared as part of the BA process being conducted in support of the application for EA for the Country Club Johannesburg. This EMPr has been prepared in accordance with the requirements as contained in Appendix 4 of the 2014 EIA Regulations (GNR 326), and provides recommended management and mitigation measures, with which to minimise impacts and enhance benefits associated with the project.

An overview of the contents of this EMPr, as prescribed by Appendix 4 of the 2014 EIA Regulations (GNR 326), and where the corresponding information can be found within this EMPr is provided in Table 4.1.

Table 4.1: Summary of where the requirements of Appendix 4 of the 2014 NEMA EIA Regulations (GNR 326) are provided in this EMPr.

Requirement	Location in this EMPr
(1) An EMPr must comply with section 24N of the Act and include – (a) Details of – (i) The EAP who prepared the EMPr. (ii) The expertise of that EAP to prepare an EMPr, including a curriculum vitae.	Chapter 4 Appendix D
(b) A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description.	Chapter 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.	Chapter 2 Figure 2.1 to Figure 2.3 Appendix A
(d) A description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including –	
(i) Planning and design.	Chapter 6
(ii) Pre-construction activities.	Chapter 6
(iii) Construction activities.	Chapter 7
(iv) Rehabilitation of the environment after construction and where applicable post closure.	Chapter 7
(v) Where relevant, operation activities.	Chapter 8
(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 – (i) Avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation. (ii) Comply with any prescribed environmental management standards or practices. (iii) Comply with any applicable provisions of the Act regarding closure, where applicable.	Chapters 6 - 8

Requirement	Location in this EMPr
(iv) Comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable.	
(g) The method of monitoring the implementation of the impact management actions contemplated in paragraph (f).	Chapters 6 - 8
(h) The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f).	Chapters 6 - 8
(i) An indication of the persons who will be responsible for the implementation of the impact management actions.	Chapters 6 - 8
(j) The time periods within which the impact management actions contemplated in paragraph (f) must be implemented.	Chapters 6 - 8
(k) The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f).	Chapters 6 - 8
(l) A program for reporting on compliance, taking into account the requirements as prescribed by the Regulations.	Chapter 7
(m) An environmental awareness plan describing the manner in which – (i) The applicant intends to inform his or her employees of any environmental risk which may result from their work. (ii) Risks must be dealt with in order to avoid pollution or the degradation of the environment.	Chapter 7
(n) Any specific information that may be required by the competent authority.	N/A
(2) Where a government notice gazetted by the Minister provides for a generic EMPr, such generic EMPr as indicated in such notice will apply.	N/A

4.2 Project Team

In accordance with Regulation 12 of the 2014 EIA Regulations (GNR 326), the Applicant appointed Savannah Environmental (Pty) Ltd as the independent environmental consultants responsible for managing the application for EA and the supporting BA process. The application for EA and BA process is being managed in accordance with the requirements of NEMA, the 2014 EIA Regulations (GNR 326), and all other relevant applicable legislation.

4.2.1 Details and Expertise of the Environmental Assessment Practitioner (EAP)

Savannah Environmental is a leading provider of integrated environmental and social consulting, advisory and management services, with considerable experience in the fields of environmental assessment and management. The company is wholly woman-owned (51% black woman-owned); and is rated as a Level 2 Broad-based Black Economic Empowerment (B-BBEE) Contributor. Savannah Environmental's team have been actively involved in undertaking environmental studies over the past 16 years, for a wide variety of projects throughout South Africa.

The project team responsible for this BA process include:

» **Marike Janse Van Vuuren,** the principle author of this BA Report, is an Environmental compliance consultant with 8 years of experience as an EO/ECO and Environmental Consultant in the Environmental Construction industry. Marike holds an honours degree in Geography with an undergraduate degree in Geography and Environmental Management and is a registered Candidate Environmental Assessment Practitioner – 2020/1677 (EAPASA). She gained experience in various projects, including road

construction and renewable energy projects. Marike has extensive experience in Environmental Compliance and auditing, report writing, report reviewing for various construction projects.

» **Mmakoena Mmola,** the principle Environmental Assessment Practitioner (EAP) for this project, holds a B.Sc. Honours in Geochemistry from the University of the Witwatersrand and over 4 years of experience in the environmental management field. Her key focus is on undertaking environmental impact assessments, environmental permitting and authorisations, compliance auditing, public participation, and environmental management programmes. She is registered as a Professional Natural Scientist with the South African Council for Natural Scientific Professions (SACNASP), Registration Number: 126748 and an EAP with the Environmental Assessment Practitioners Association of South Africa, Number: 2019/260.

» **Nondumiso Bulunga,** the Public Participation Consultant for this project, is a Social, GIS and Stakeholder Engagement Specialist at Savannah Environmental. Nondumiso has eight (8) years working experience in project management and facilitation in various industries such as environmental services field including but not limited to recycling, industrial, energy, mining, and agriculture. Working for small and large organisations, Nondumiso has gained exposure in research, collection of data, critical analysis, GIS, and environmental solutions. Nondumiso has worked on projects in South Africa and Malawi. Nondumiso is very well versed in the IFC Environmental and Social Performance Standards (including IFC PS 2012) and the associated Equator Principles, which have informed the approach and standard for projects regarding ESIA. Nondumiso is skilled at organising and driving effective project teams at a scale relevant to the project's requirements. She has technical experience and can quickly identify the most pertinent issues of a particular project whilst focussing on driving project success by rigorously implementing project management tools.

Savannah Environmental's team have been actively involved in undertaking environmental studies over the past 15 years, for a wide variety of projects throughout South Africa and therefore have extensive knowledge and experience in EIAs and environmental management, having managed and drafted EMPrs for numerous other projects throughout South Africa.

4.2.2 Details of the Specialist Consultants

A number of independent specialist consultants have been appointed as part of the BA project team, to adequately identify and assess potential impacts associated with the project (refer to **Table 4.1**). The specialist consultants have provided input into the BA Report and this EMPr.

Table 4.1: Specialist consultants which form part of the BA project team.

Specialist Study	Specialist Company	Specialist Name
Agricultural Compliance Statement	The Biodiversity Company	Michael Douglas
Terrestrial Biodiversity Compliance Statement	The Biodiversity Company	Michael Schrenk
Heritage Impact Assessment	Rebel Base Collective	Vedhant Maharaj

CHAPTER 5: ROLES AND RESPONSIBILITIES

OBJECTIVE 1: Establish clear reporting, communication, and responsibilities in relation to the overall implementation of the EMPr during construction

Formal responsibilities are necessary to ensure that key procedures are executed. Specific responsibilities of the Technical Director/Manager, Site Manager, Internal Environmental Officer, Safety and Health Representative, Independent Environmental Control Officer (ECO) and Contractor for the construction phase of this project are as detailed below. Formal responsibilities are necessary to ensure that key procedures are executed.

i) The Developer

As the Proponent, the Country Club Johannesburg, must ensure that the project's implementation complies with the requirements of all EAs and all other permits, and obligations emanating from relevant environmental legislation.

ii) Construction Manager

The Construction Manager will:

- Ensure all specifications and legal constraints specifically with regards to the environment are highlighted to the Contractor(s), so that they are aware of these.
- Ensure that the Contractor(s) are made aware of all stipulations within the EMPr.
- Ensure that the EMPr is correctly implemented throughout the project by means of site inspections and meetings. This will be documented as part of the site meeting minutes through input from the independent ECO.
- Be fully conversant with the BA for the project, the EMPr, the conditions of the Environmental Authorisation, and all relevant environmental legislation.
- Be fully knowledgeable with the contents of all relevant licences and permits.

iii) Site Manager

The Project Manager/Site Manager is responsible for overall management of project and EMPr implementation. The following tasks will fall within his/her responsibilities:

- Be fully conversant with the EIA for the project, the EMPr, the EA's conditions (once issued), and all relevant environmental legislation.
- Be fully knowledgeable with the contents of all relevant licences and permits.
- Be familiar with this EMPr's recommendations and mitigation measures; and implement these measures.
- Ensure all specifications and legal constraints specifically with regards to the environment are highlighted to the Contractor(s) so that they are aware of these.
- Monitor site activities on a daily basis for compliance.
- Ensure that the EMPr is correctly implemented throughout the project through site inspections and meetings. This must be documented as part of the site meeting minutes.
- Conduct internal audits of the construction site against the EMPr.
- Confine the construction site to the demarcated area.

» Rectify transgressions through the implementation of corrective action.

iv) Environmental Control Officer

A suitably qualified Environmental Control Officer (ECO) [1] must be appointed by the Country Club Johannesburg prior to the commencement of any authorised activities and will be responsible for monitoring, reviewing and verifying compliance by the Contractor with the environmental specifications of the EMPr and the conditions of the EA. Accordingly, the ECO will:

» Be fully knowledgeable of:
  * The contents of the BA Report.
  * The contents of the conditions of the EA (once issued).
  * The contents of the EMPr.
  * All the licences and permits issued for the project.
  * The contents of all relevant environmental legislation.
» Ensure that:
  * The contents of the EMPr are communicated to the Contractors' site staff and that the Site Manager and Contractors are constantly made aware of the contents through ongoing discussion.
  * Compliance with the EMPr, EA and the legislation is monitored through regular and comprehensive inspection of the site and surrounding areas.
  * The Site Manager has input into the review and acceptance of construction methods and method statements or site-specific plans.
  * If the EMPr, EA and/or the legislation conditions, regulations or specifications are not followed then appropriate measures are undertaken to address any non-compliances (for example an ECO may cease construction or an activity to prevent a non-compliance from continuing).
  * Any non-compliance or remedial measures that need to be applied are reported.
» Keep records of all activities on site, problems identified, transgressions noted and a task schedule of tasks undertaken by the ECO.
» Independently report to the GDARD in terms of compliance with the specifications of the EMPr and EA's conditions (once issued).
» Keep records of all reports submitted to GDARD.

The ECO must be present on site for the site preparation and initial clearing activities, to: facilitate environmental induction with construction staff and supervise any flora relocation and faunal rescue activities that may need to take place during the site clearing (i.e. during site establishment, and excavation of foundations). Thereafter, monthly compliance audits can be undertaken, provided that adequate compliance with the EA, environmental permits and EMPr is achieved. The ECO shall remain employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the site handed over for operation.

The Country Club Johannesburg must also instruct a designated Environmental Officer (EO)/Environmental Co-Ordinator to deal with any environmental issues at the project area as they arise.

[1] The ECO should have a relevant degree or technical diploma in environmental management and at least 2 years of experience in the field

v) Contractors

The Lead Contractor is responsible for the following:

- Ensure compliance with the EA, environmental permits and the EMPr at all times during construction.
- The EMPr and its Implementation.
- Ensure that all appointed contractors and sub-contractors are aware of the EMPr and their respective responsibilities.
- Provide all necessary supervision during the project's execution.
- Inform and educate all employees about the environmental risks associated with the various activities to be undertaken; and highlight those activities which must be avoided during the construction process, to minimise significant impacts to the environment.
- Maintain an environmental register, which keeps a record of all incidents which occur on the site during construction, including:
  - Public involvement / complaints.
  - Health and safety incidents.
  - Hazardous materials stored on the project area.
  - Non-compliance incidents.
  - Ensure that no actions are taken which will harm or may indirectly cause harm to the environment, and take steps to prevent pollution on the project area.
- Conduct audits, to ensure compliance to the EMPr.
- Ensure there is communication with the Project Manager, the ECO, and relevant discipline engineers on environmental matters.
- Should the Contractor require clarity on any aspect of the EMPr, the Contractor must contact the Environmental Consultant/Officer for advice.

Contractors and Service Providers must be aware of the responsibilities in terms of the relevant environmental legislation and the contents of this EMPr. The contractor is responsible for informing employees and sub-contractors of their environmental obligations in terms of the environmental specifications; and ensuring that employees are adequately experienced and properly trained to execute the works in a manner that will minimise environmental impacts. The contractor's obligations in this regard include the following:

- Employees must have a basic understanding of the key environmental features of the construction site and the surrounding environment.
- A copy of the EMPr must be easily accessible to all on-site staff members.
- Employees must be familiar with the requirements of this EMPr and the environmental specifications as they apply to the construction of the sports and recreational facilities.
- Prior to commencing any site works, all employees and sub-contractors must have attended an environmental awareness training course, which must provide staff with an appreciation of the project's environmental requirements, and how they are to be implemented.
- Staff will be informed of environmental issues as deemed necessary by the ECO.

All contractors (including sub-contractors and staff) and service providers are ultimately responsible for ensuring that:

- There is adherence to the environmental management specifications.
- Method Statements are submitted to the Site Manager (and ECO) for approval before any work is undertaken.

- Any instructions issued by the Site Manager on the advice of the ECO are adhered to.
- A report is tabled at each site meeting, which will document all incidents that have occurred during the period before the site meeting.
- A register is kept in the site office, which lists all transgressions issued by the ECO.
- A register of all public complaints is maintained.
- All employees, including those of sub-contractors, receive training before construction commences, so that they can constructively contribute towards the successful implementation of the EMPr (i.e. ensure their staff are appropriately trained as to the environmental obligations).

Any lack of adherence to the above will be considered as non-compliance to the EMPr's specifications.

vi) Contractor's Safety, Health and Environment Representative/Environmental Officer

The Contractor's Safety, Health and Environment (SHE) Representative/Environmental Officer (EO), employed by the Contractor, is responsible for managing the day-to-day on-site implementation of this EMPr, and for the compilation of regular (usually weekly) Monitoring Reports. In addition, the SHE/EO must act as liaison and advisor on all environmental and related issues and ensure that any complaints received from the public are duly recorded and forwarded to the Site Manager and Contractor.

The Contractor's SHE/EO should:

- Be well versed in environmental matters.
- Understand the relevant environmental legislation and processes.
- Understand the hierarchy of Environmental Compliance Reporting, and the implications of Non-Compliance.
- Know the background of the project and understand the implementation programme.
- Be able to resolve conflicts and make recommendations on site in terms of the requirements of this Specification.
- Keep accurate and detailed records of all EMPr-related activities on site.

OBJECTIVE 2: Establish clear reporting, communication, and responsibilities during operation in relation to overall implementation of the EMPr during operation

Formal responsibilities are necessary to ensure that key procedures are executed during operation. Several professionals will form part of the operation team. For the purposes of the EMPr, the generic roles that need to be defined are those of the:

- Operations Manager.
- Environmental Co-Ordinator.

It is acknowledged that the specific titles for these functions may vary once the project is implemented. The purpose of this section of the EMPr is to give a generic outline of what these roles typically entail. It is expected that this will be further defined during project implementation.

i) Operations Manager

The Operations Manager will:

- Ensure that adequate resources (human, financial, technology) are made available and appropriately managed for the successful implementation of the operational EMPr.
- Conduct annual basis reviews of the EMPr to evaluate its effectiveness.
- Take appropriate action as a result of findings and recommendations in management reviews and audits.
- Provide forums to communicate matters regarding environmental management.

ii) Environmental Co-Ordinator

The Environmental Co-Ordinator will:

- Develop and Implement an Environmental Management System (EMS) for the project.
- Manage and report on the overall environmental performance.
- Maintain a register of all known environmental impacts and manage the monitoring thereof.
- Conduct internal environmental audits and co-ordinate external environmental audits.
- Liaise with statutory bodies (such as GDARD and conservation authorities) on environmental performance and other issues.
- Conduct environmental training and awareness for the employees.
- Compile environmental policies and procedures.
- Liaise with interested and affected parties (I&APs) on environmental issues of common concern.
- Track and control the lodging of any complaints regarding environmental matters.

The Environmental Co-Ordinator must provide fourteen (14) days written notification to the GDARD that the project's operation phase will commence.

CHAPTER 6: PLANNING AND DESIGN MANAGEMENT PROGRAMME

Overall Goal: undertake the pre-construction activities (planning and design phase) in a way that ensures that:

- The layout responds to the identified environmental constraints and opportunities.
- The pre-construction activities are undertaken in accordance with all relevant legislative requirements.
- Adequate regard has been taken of any community concerns and these are appropriately addressed through design and planning (where appropriate).
- The construction activities are undertaken without significant disruption to other activities in the area.

To meet this goal, the following objectives have been identified, together with necessary actions and monitoring requirements.

6.1 Objectives

OBJECTIVE 1: Ensure the layout responds to identified environmental constraints and opportunities

Subject to approval by GDARD, the proposed layout within the project area detailed in **Figure 2.3** must be implemented. Cognisance of sensitive areas defined in **Figure 2.2** and within the BA Report must be taken.

Project Component/s	» Construction of additional tennis courts. » Construction of new padel courts. » Upgrading of the existing building at the facility in order to include a gym, changerooms and squash courts. » Expansion of the parking area. » Upgrading of the restaurant and bar.
Potential Impact	» Layout fails to respond optimally to the environmental considerations.
Activities/Risk Sources	» Positioning of all project components.
Mitigation: Target/Objective	» To ensure that the design of the layout responds to the identified environmental constraints and opportunities.

Mitigation: Action/Control	Responsibility	Timeframe
Any planned activities should be realigned to prioritise development within very low/low sensitivity areas. Any activities or development within medium sensitivity areas must take precautions against disturbing faunal species.	Project developer Design engineer	Design and planning
A qualified environmental control officer must be on site when clearing begins. The area must be walked though prior to construction to ensure that no faunal species remain in the habitat and get killed. 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.	Project developer	Pre-construction/construction

Mitigation: Action/Control	Responsibility	Timeframe
Outside lighting should be designed and limited to minimize impacts on fauna. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (yellow) lights should be used wherever possible.	Project developer Design engineer	Design and planning

Performance Indicator	» The layout meets the objectives and does not degrade the environment. » Layout responds to the mitigation measures and recommendations in the BA Report.
Monitoring	» Ensure that the layout implemented meets the objectives and mitigation measures in the BA Report through review of the layout by the Project Manager and ECO prior to construction commencing.

OBJECTIVE 2: Ensure relevant permits and site-specific plans are in place to manage environmental impacts

Project Component/s	» Construction of additional tennis courts. » Construction of new padel courts. » Upgrading of the existing building at the facility in order to include a gym, changerooms and squash courts. » Expansion of the parking area. » Upgrading of the restaurant and bar.
Potential Impact	» Impact on identified sensitive areas.
Activities/Risk Sources	» Positioning of all project components. » Positioning of temporary sites.
Mitigation: Target/Objective	» To ensure that the relevant permits are obtained and that site-specific plants are put in place prior to construction

Mitigation: Action/Control	Responsibility	Timeframe
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.	EO Contractor	Pre-construction
The compilation and implementation of an alien vegetation management plan is very important, especially because of the invasive species identified on site which, if left unchecked, will continue to grow and spread prolifically leading to further and more significant deterioration to the health of the natural environment within the property area. The plan must especially pertain to any recently cleared and changed areas.	Environmental Officer & Contractor	Life of operation
A pest control plan must be put in place and implemented; it is imperative that poisons not be used.	Environmental Officer & Health and Safety Officer	Life of operation
The relevant permits must be obtained prior to the damaging or destruction of any of the protected plant species	Developer	Pre-construction
Develop a detailed method statement for the implementation of the alien invasive management plan and open space management plan for the site (refer to **Appendix B**).	Developer	Pre-construction

Mitigation: Action/Control	Responsibility	Timeframe
Develop a detailed method statement for the implementation of the plant rescue and protection plan for the site (refer to **Appendix C**.	Developer	Pre-construction

Performance Indicator	» Permits are obtained and relevant conditions complied with. » Relevant management plans and Method Statements prepared and implemented.
Monitoring	» Review of the design by the Project Manager and the ECO prior to construction commencing. » Monitor ongoing compliance with the EMPr and method statements.

OBJECTIVE 3: Ensure appropriate planning is undertaken by contractors and ensure compliance of required mitigation measures and recommendations by contractors

Project Component/s	» Construction of additional tennis courts. » Construction of new padel courts. » Upgrading of the existing building at the facility in order to include a gym, changerooms and squash courts. » Expansion of the parking area. » Upgrading of the restaurant and bar.
Potential Impact	» Impact on identified sensitive areas.
Activities/Risk Sources	» Positioning of all project components. » Pre-construction activities. » Positioning of temporary sites.
Mitigation: Target/Objective	» To ensure that the design of the expansion of the sports and recreational facilities responds to the identified environmental constraints and opportunities. » To ensure that pre-construction activities are undertaken in an environmentally friendly manner.

Mitigation: Action/Control	Responsibility	Timeframe
All personnel are to undergo Environmental Awareness Training. A signed register of attendance must be kept for proof. Discussions are required on all sensitive environmental receptors within the project area to inform contractors and site staff of the presence of protected flora and fauna, 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 especially be made aware of the potential faunal SCC present and the sensitive flora.	Health and Safety Officer	Construction
All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits and to respect all forms of wildlife. Speed limits must be enforced to ensure that road killings and erosion is limited. Additional Speed bumps should be built to force slow speeds.	Health and Safety Officer	Construction

Mitigation: Action/Control	Responsibility	Timeframe
All staff should receive an Environmental Awareness programme which also covers the surrounding area. This programme must be used to inform of the importance of these areas and their conservation.	Health and Safety Officer	Construction
Schedule construction activities during the least sensitive periods, to avoid migration, nesting, and breeding seasons as far as possible.	Project Developer and Project Manager	Pre-construction

Performance Indicator	» Conditions of the EMPr form part of all contracts.
Monitoring	» Monitor ongoing compliance with the EMPr and method statements.

OBJECTIVE 4: Ensure effective communication mechanisms

It is important to maintain ongoing communication with the public during the project's construction and operation phases. Any issues and concerns raised must be addressed as far as possible in as short a timeframe as possible.

Project component/s	» Construction of additional tennis courts. » Construction of new padel courts. » Upgrading of the existing building at the facility in order to include a gym, changerooms and squash courts. » Expansion of the parking area. » Upgrading of the restaurant and bar.
Potential Impact	» Impacts on affected and surrounding public and land uses.
Activity/risk source	» Activities associated with construction. » Activities associated with operation.
Mitigation: Target/Objective	» Effective communication with affected and surrounding communities. » Addressing of any issues and concerns raised as far as possible in as short a timeframe as possible.

Mitigation: Action/control	Responsibility	Timeframe
Develop and implement a complaints register for the duration of the construction phase.	Project developer Contractor	Pre-construction
Develop an incident reporting system to record non-conformances to the EMPr.	Contractor	Pre-construction Duration of construction

Performance Indicator	» Effective communication procedures in place for all phases as required.
Monitoring	» A Public Complaints register must be maintained, by the Contractor, to record all complaints and queries relating to the project and the action taken to resolve the issue. » An incident reporting system used to record on-conformances to the EMPr.

CHAPTER 7: MANAGEMENT PROGRAMME: CONSTRUCTION

Overall Goal: Undertake the construction phase in a way that:

- Ensures that construction activities are appropriately managed in respect of environmental aspects and impacts.
- Enables construction activities to be undertaken without significant disruption to other land uses and activities in the area, in particular concerning noise impacts; traffic and road use; and effects on local communities.
- Minimises the impact on the indigenous natural vegetation and habitats of ecological value.
- Minimises impacts on fauna in the study area.
- Minimises the impact on heritage sites, should they be uncovered.
- Ensures rehabilitation of disturbed areas following the execution of the works, such that residual environmental impacts are remediated or curtailed.

An environmental baseline must be established during the undertaking of construction activities, where possible.

7.1 Objectives

In order to meet the overall goal for construction, the following objectives, actions, and monitoring requirements have been identified.

OBJECTIVE 1: Protection of flora and fauna

Project Component/s	» Construction of additional tennis courts. » Construction of new padel courts. » Upgrading of the existing building at the facility in order to include a gym, changerooms and squash courts. » Expansion of the parking area. » Upgrading of the restaurant and bar.
Potential Impact	» Impacts on vegetation, habitats and fauna and protected plant species. » Impacts on soil.
Activity/Risk Source	» Vegetation clearing. » Site preparation and earthworks. » = » Construction of infrastructure. »
Mitigation: Target/Objective	» To minimise impacts on flora and fauna. » To minimise impacts on soils.

Mitigation: Action/Control	Responsibility	Timeframe
It should be made an offence for any staff to take/bring any plant species into/out of any portion of the project area. No plant species, whether indigenous or exotic, should be brought into/taken from the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants.	Environmental Officer & Contractor	Construction
High visibility flags must be placed near any protected or threatened plants (SCC) in order to avoid any damage or destruction of the species until the relevant permit is obtained for destruction or translocation (if destruction or relocation is necessary). All red-data plants that will be affected by the development should be relocated. Any individual protected plant that was observed needs a relocation or destruction permit for any individual that may be removed or destroyed as a result of the activities. Preferably, the plants should be relocated to an area that will not be impacted on by future activities.	Environmental Officer & Contractor	Construction
Areas of dense and healthy indigenous vegetation, even secondary communities outside of the direct project footprint, should not be fragmented or disturbed further.	Environmental Officer & Contractor	Construction
All activities must be restricted to within the very low to medium sensitivity areas. It is recommended that areas to be developed/disturbed be specifically demarcated so that during the construction/activity phase, only the demarcated areas be impacted upon.	Environmental Officer & Contractor	Construction
All vehicles and personnel must make use of the existing roads and walking paths, especially construction vehicles.	Contractor	Construction
All laydown, chemical toilets etc. should be restricted to very low/low sensitivity areas. Any materials may not be stored for extended periods of time and must be removed from the project area once the construction/closure phase has been concluded.	Environmental Officer & Contractor	Construction
No servicing of equipment is to take place on site unless necessary.	Environmental Officer & Contractor	Construction
Leaking equipment and vehicles must be repaired immediately or be removed from the project area to facilitate repair.	Environmental Officer & Contractor	Construction
Rocks removed during the construction phase may not be dumped but can be used in areas where erosion control needs to be performed. Alternatively, they may be piled to create useful habitat features for herpetofauna.	Environmental Officer & Contractor	Construction
No trapping, killing, or poisoning of any wildlife is to be allowed. Signs stating that the trapping, killing, or poisoning of any wildlife is not allowed must be put up at the site.	Environmental Officer & Contractor	Construction
Any holes/deep excavations must be dug in a progressive manner in order to allow burrowing animals time to move off and to prevent trapping. Should the holes remain open overnight they must be covered temporarily to ensure no fauna species fall in.	Contractor	Construction
Should any SCC fauna be observed within the project area before or during construction, all activities must cease	Environmental Officer & Contractor	Construction

Mitigation: Action/Control	Responsibility	Timeframe
immediately until the animal moves off. A relevant specialist must be consulted in order to facilitate the capture or removal of any animals that do not move off on their own.		
The duration of the construction should be minimized to as short a term as possible, to reduce the period of disturbance on fauna.	Project manager, Environmental Officer & Contractor	Construction
Noise must be kept to a minimum during the evenings/ at night to minimize all possible disturbances to amphibian species and nocturnal mammals.	Contractor	Construction
Any significant heat generated from any source must be monitored to ensure that it does not negatively affect the local fauna.	Environmental Officer & Contractor	Construction

Performance Indicator	» No disturbance outside of designated work areas. » Vegetation and habitat loss restricted to infrastructure footprint. » No poaching etc. of fauna by construction personnel during construction. » Removal to safety of fauna encountered during construction. » Low mortality of fauna due to construction machinery and activities.
Monitoring	» Contractor's EO to provide supervision and oversight of vegetation clearing activities. » Supervision of all clearing and earthworks. » An incident reporting system will be used to record non-conformances to the EMPr.

OBJECTIVE 2: Appropriate management of the construction site and construction workers

Project Component/s	» Construction of additional tennis courts. » Construction of new padel courts. » Upgrading of the existing building at the facility in order to include a gym, changerooms and squash courts. » Expansion of the parking area. » Upgrading of the restaurant and bar.
Potential Impact	» Damage to indigenous natural vegetation and sensitive areas. »
Activities/Risk Sources	» Vegetation clearing and levelling of equipment storage area/s. » Access to and from the equipment storage area/s. » Contractors not aware of the EMPr's requirements, leading to unnecessary impacts on the surrounding environment.
Mitigation: Target/Objective	» Limit equipment storage within demarcated designated areas. » Ensure appropriate management of actions by on-site personnel, to minimise impacts to the surrounding environment.

Mitigation: Action/Control	Responsibility	Timeframe
To minimise impacts on the surrounding environment, contractors must be required to adopt a certain Code of Conduct and commit to restricting construction activities to areas within the	Contractors	Construction

Mitigation: Action/Control	Responsibility	Timeframe
project area. Contractors and their sub-contractors must be familiar with the conditions of the EA, the BA Report, this EMPr, and the requirements of all relevant environmental legislation.		
Contractors must ensure that all workers are informed at the outset of the construction phase of the conditions contained on the Code of Conduct.	Contractor and sub-contractor/s	Pre-construction
Introduce an incident reporting system to be tabled at weekly/monthly project meetings.	Contractor and sub-contractor/s	Pre-construction
All construction vehicles must adhere to clearly defined and demarcated roads.	Contractor	Construction
Ensure all construction equipment and vehicles are properly maintained at all times.	Contractor	Construction
Ensure that construction workers are clearly identifiable. All workers should carry identification cards and wear identifiable clothing.	Contractor	Construction
Regular toolbox talks must be undertaken, to ensure appropriate levels of environmental awareness.	Contractor	Construction
Contact details of emergency services should be prominently displayed on site.	Contractor	Construction
No fires must be allowed on-site.	Contractor	Construction
Contractor must provide adequate firefighting equipment on site and provide firefighting training to selected construction staff.	Contractor	Construction
Personnel trained in first aid should be on site to deal with smaller incidents that require medical attention.	Contractor	Construction
Eating of meals must take place in a designated area.	Contractor and sub-contractor/s	Duration of contract
Ensure proper health and safety plans in place during the construction period, to ensure safety on and around site during construction, including fencing of the project area and site access restriction.	Contractor and sub-contractor/s	Pre-construction

Performance Indicator	» 'No-go' and sensitive areas are avoided by construction activities. » » Excess vegetation clearing and levelling is not undertaken. » No complaints regarding contractor behaviour or habits. » Code of Conduct drafted before commencement of the construction phase. » Compliance with OHS Act.
Monitoring	» Regular audits of the construction camps and areas of construction on site by the EO. » An incident reporting system must be used to record non-conformances to the EMPr. » Observation and supervision of Contractor practices throughout the construction phase by the EO. » Complaints are investigated and, if appropriate, acted upon. » Comprehensive record of accidents and incidence and related investigations, findings and corrective action in accordance with the OHS Act.

OBJECTIVE 3: Maximise benefits to the social environment associated with the construction phase

Employment opportunities will be created during the construction phase, specifically for semi-skilled and unskilled workers. Employment of locals and the involvement of local SMMEs would enhance the social benefits associated with the project, even if the opportunities are only temporary. The procurement of local goods could furthermore result in positive economic spin-offs.

Project Component/s	» The expansion of the sports and recreational facilities
Potential Impact	» The opportunities and benefits associated with the creation of local employment and business should be maximised.
Activities/Risk Sources	» Contractors who make use of their own labour for unskilled tasks, thereby reducing the employment and business opportunities for locals. » Sourcing of individuals with skills similar to the local labour pool outside the municipal area. » Unavailability of locals with the required skills, resulting in locals not being employed and labour being sourced from outside the municipal area.
Enhancement: Target/Objective	» The Contractor should aim to employ as many low-skilled and semi-skilled workers from the local area as possible. This should also be made a requirement for all contractors. » Employment of a maximum number of the low-skilled and/or semi-skilled workers from the local area, where possible. » Appropriate skills training and capacity building.

Mitigation: Action/Control	**Responsibility**	**Timeframe**
Where feasible, effort must be made to employ locally, to create maximum benefit for the communities. Ensure that the majority of the low-skilled workforce is recruited locally.	Contractor	Construction
Commence with skill development programmes within the first month of construction.	Contractor	Construction
The recruitment selection process must seek to promote gender equality and the employment of women wherever possible.	Contractor	Construction
Facilitate the transfer of knowledge between experienced employees and the staff.	Contractor	Construction
Identify opportunities for local businesses and ensure that the services from local businesses are prioritised.	Contractor	Construction

Performance Indicator	» Maximum number of semi and unskilled labour locally sourced where possible. » Local suppliers and SMMEs contracted where possible. » Skills transfer facilitated where required.
Monitoring	» Contractors and appointed ECO must monitor indicators listed above, to ensure that they have been met for the construction phase.

OBJECTIVE 4: Management of dust and emissions

During the construction phase, limited gaseous or particulate emissions are anticipated from exhaust emissions caused by construction vehicles and equipment on-site or vehicle entrained dust from vehicle movement on the main and internal access roads.

Project component/s	The expansion of the sports and recreational facilities
Potential Impact	» Dust impacts can occur from cleared areas and vehicle movement along gravel roads. » Release of minor amounts of air pollutants (for example NO_2, CO and SO_2) from vehicles and construction equipment.
Activity/risk source	» Clearing of vegetation and topsoil. » Excavation, grading, scraping. » Transport of materials, equipment, and components. » Vehicle movement on gravel roads. » Re-entrainment of deposited dust by vehicle movements. » Wind erosion from topsoil and spoil stockpiles and unsealed roads and surfaces. » Fuel burning vehicle and construction engines. » Construction vehicle movement and their activities on the site.
Mitigation: Target/Objective	» To ensure emissions from all vehicles are minimised, where possible, for the duration of the construction phase. » To avoid and or minimise the potential dust impacts associated with heavy vehicles, and also minimise damage to roads. » Suppression of dust, pollution control and minimise dust generation.

Mitigation: Action/control	Responsibility	Timeframe
Dust-reducing mitigation measures must be put in place and must be strictly adhered to, particularly for all dirt roads and any earth dumps. This includes the wetting of exposed soft soil surfaces and not conducting activities on windy days which will increase the likelihood of dust being generated. Only environmentally friendly suppressants may be used to avoid the pollution of water sources. Speed limits must be put in place to reduce erosion, and additional speed bumps should also be constructed.	Contractor	Construction
Ensure that vehicles used to transport sand and building materials are fitted with tarpaulins or covers.	Contractor	Duration of contract
Speed of construction vehicles must be restricted to 40km/hr on all roads within the site.	Contractor	Duration of contract
Disturbed areas must be re-vegetated as soon as practicable, in line with the progression of construction activities.	Contractor	Completion of construction
Vehicles and equipment must be maintained in a roadworthy condition at all times.	Contractor	Duration of contract

Performance Indicator	» Visual presence of dust. » Dust does not cause health (inhaling, eye irritation) and safety risks (low visibility). » Dust suppression measures implemented for all heavy vehicles that require such measures during the construction phase. » Drivers made aware of the potential safety issues and enforcement of strict speed limits when they are employed. » All heavy vehicles equipped with speed monitors before they are used in the construction phase, in accordance with South African vehicle legislation. » Roadworthy certificates in place for all heavy vehicles at outset of construction phase and updated on a monthly basis.
Monitoring	» The appointed EO must monitor indicators listed above, to ensure that they have been met for the construction phase.

	» Immediate reporting by personnel of any potential or actual issues with nuisance dust or emissions to the Site Manager. » An incident register and non-conformance must be used to record incidents and non-conformances to the EMPr. » A complaints register must be used to record grievances by the public.

OBJECTIVE 5: Conservation of the soil resource within the site and in the adjacent areas

Project component/s	» The expansion of the sports and recreational facilities
Potential Impact	» Erosion and soil loss. » =
Activities/risk sources	» Rainfall and wind erosion of disturbed areas. » Excavation, stockpiling and compaction of soil. » Mobile construction equipment movement on site. »
Mitigation: Target/Objective	» To minimise erosion of soil from site during construction. » To minimise damage to vegetation by erosion or deposition. » To retain all topsoil with a stable soil surface

Mitigation: Action/control	Responsibility	Timeframe
Topsoil must be removed and stored separately from subsoil. It must be reapplied where appropriate as soon as possible, to encourage and facilitate rapid regeneration of the natural vegetation on cleared areas.	Contractor	Construction
Stockpile topsoil for re-use in rehabilitation phase. Maintain stockpile shape and protect from erosion.	Contractor	Construction
Storing topsoil: » Viability of stored topsoil depends on moisture, temperature, oxygen, nutrients and time stored. » Rapid decomposition of organic material in warm, moist topsoil rapidly decreases microbial activity necessary for nutrient cycling; and reduces the amount of beneficial micro-organisms in the soil. » Stockpile location must ideally be in a disturbed but weed-free area. » Storage of all topsoil that is disturbed must be of a maximum height of 2m and the maximum length of time before re-use is 18 months. » Topsoil handling must be reduced to stripping, piling (once), and re-application. Between the stockpiling and reapplication, stored topsoil must not undergo any further handling except control of erosion and (alien) invasive vegetation. » Where topsoil can be reapplied within six months to one year after excavation, it will be useful to store the topsoil as close as possible to the area of excavation and re-application, e.g. next to cabling trenches.	Contractor	Construction

Mitigation: Action/control	Responsibility	Timeframe
» Do not mix overburden with topsoil stockpiles, as this will dilute the proportion of fertile soil (with less fertile subsoil or rock material). » Employ wind nets made from Hessian or similarly fibrous and biodegradable material, where required, to stabilise newly placed topsoil stockpiles and to reduce wind erosion. » In cases where topsoil has to be stored longer than 6 months or during the rainy season, soils must be kept as dry as possible and protected from erosion and degradation by: ∗ Preventing ponding on or between heaps of topsoil. ∗ Covering topsoil berms. ∗ Preventing all forms of contamination or pollution. ∗ Preventing any form of compaction. ∗ Monitoring the establishment of all invasive vegetation and removing such if it appears. ∗ Keeping slopes of topsoil at a maximal 2:1 ratio. ∗ Monitoring and mitigating erosion where it appears. » Where topsoil needs to be stored in excess of one year, it is recommended to either cover the topsoil or allow an indigenous grass cover to grow on it – if this does not happen spontaneously, seeding must be considered.		
Level any remaining soil removed from excavation pits that remained on the surface, instead of allowing small stockpiles of soil to remain on the surface.	Contractor	Construction
Reapplying topsoil: » Spoil materials and subsoil must be backfilled first, then covered with topsoil. » Immediate replacement of topsoil after the undertaking of construction activities within an area. » Generally, topsoil must be re-applied to a depth slightly greater than the topsoil horizon of a pre-selected undisturbed reference site. » The minimum depth of topsoil needed for revegetation to be successful is approximately 20 cm. » If the amount of topsoil available is limited, a strategy must be devised to optimise revegetation efforts with the topsoil available. » Reapplied topsoil must be landscaped in a way that creates a variable microtopography of small ridges and valleys that run parallel to existing contours of the landscape. The valleys become catch-basins for seeds and act as run-on zones for rainfall, increasing moisture levels where the seeds are likely to be more concentrated. This greatly improves the success rate of revegetation efforts. » To stabilise reapplied topsoil and minimise raindrop impact and erosion: ∗ Use organic material from cleared and shredded woody vegetation, where possible. ∗ Alternatively, suitable geotextiles or organic erosion mats can be used as necessary.	Contractor	Construction

Mitigation: Action/control	Responsibility	Timeframe
» Continued monitoring will be necessary to detect any sign of erosion early enough to allow timeous mitigation.		
Re-applied topsoil must be revegetated as soon as possible.	Contractor	Construction

Performance Indicator	» Minimal level of soil erosion around site. » Minimal level of soil degradation. » No activity outside demarcated areas. » Acceptable state of excavations. » No activity in restricted areas. » Acceptable state of excavations, as determined by EO and ECO. » No indications of visible topsoil loss.
Monitoring and Reporting	» Continual inspections of the site by the EO. » Reporting of ineffective sediment control systems and rectification as soon as possible. » If soil loss is suspected, acceleration of soil conservation and rehabilitation measures must be implemented.

OBJECTIVE 6: Appropriate handling and management of waste

The construction of the project will involve the generation of various wastes. To manage the wastes effectively, guidelines for the assessment, classification, and management of wastes, along with industry principles for minimising construction wastes, must be implemented.

Project Component/s	» » The expansion of the sports and recreational facilities
Potential Impact	» Inefficient use of resources resulting in excessive waste generation. » Litter or contamination of the site or water through poor waste management practices.
Activity/Risk Source	» Packaging. » Other construction wastes. » Hydrocarbon use and storage. » Spoil material from excavation, earthworks and site preparation.
Mitigation: Target/Objective	» To comply with waste management legislation. » To minimise production of waste. » To ensure appropriate waste storage and disposal. » To avoid environmental harm from waste disposal.

Mitigation: Action/Control	Responsibility	Timeframe
Construction method and materials should be carefully considered in view of waste reduction, re-use, and recycling opportunities.	Contractor	Duration of contract
Ensure that no litter, refuse, wastes, rubbish, rubble, debris and builders wastes generated on the premises is placed, dumped or deposited on adjacent/surrounding properties, and that the waste is disposed of at a an appropriately registered waste disposal facility.	Contractor	Duration of contract

Mitigation: Action/Control	Responsibility	Timeframe
Under no circumstances may domestic waste be burned on site. Waste may never be stored in an open pit where it is susceptible to the elements such as wind and rain.	Environmental Officer, Contractor & Health and Safety Officer	Life of operation
Specific areas must be designated on-site for the temporary management of various waste streams, i.e. general refuse; construction waste (wood and metal scrap); and contaminated waste, as required. The location of such areas must seek to minimise the potential for impact on the surrounding environment, including prevention of contaminated runoff, seepage, and vermin control.	Contractor	Duration of contract
Where practically possible, construction and general wastes on-site must be reused or recycled. Bins and skips must be available on-site for collection, separation, and storage of waste streams (such as wood, metals, general refuse etc.).	Contractor	Duration of contract
Hydrocarbon waste must be contained and stored in sealed containers within an appropriately bunded area and clearly labelled. This must be regularly removed and disposed of at an appropriately licensed landfill site.	Contractor	Duration of contract
Waste must be stored in accordance with the relevant legislative requirements.	Contractor	Construction
All liquid wastes should be contained in appropriately sealed vessels/ponds within the project's footprint; and be disposed of at a designated waste management facility after use.	Contractor	Duration of contract
Ensure compliance with all national, regional and local legislation with regard to the storage, handling and disposal of hydrocarbons, chemicals, solvents and any other harmful and hazardous substances and materials. The onus is on the Contractor to identify and interpret the applicable legislation. Hazardous waste to be disposed of at a registered landfill site.	Contractor	During and post construction
Documentation (waste manifest) must be maintained detailing the quantity, nature, and fate of any regulated waste. Waste disposal records must be available for review at any time.	Contractor	Duration of contract
Any waste generated during construction must be stored in designated containers and removed from the site by the construction teams.	Contractor	Construction
Waste management must be a priority and all waste must be collected and stored adequately.	Contractor	Construction
It is recommended that all waste be removed from site on a weekly basis, to prevent rodents and pests entering the site.	Contractor	Construction
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. Under no circumstances may domestic waste be burned on site.	Contractor	Construction
Refuse bins must be emptied and secured. Temporary storage of domestic waste must be in covered waste skips. Maximum domestic waste storage period must be 10 days.	Contractor	Construction

Performance Indicator	» No complaints received regarding waste on site or indiscriminate dumping.

	» Internal site audits ensuring that waste segregation, recycling and reuse is occurring appropriately. » Provision of all appropriate waste manifests for all waste streams.
Monitoring	» Observation and supervision of waste management practices throughout the construction phase. » Waste collection will be monitored on a regular basis. » Waste documentation completed. » Proof of disposal of sewage at an appropriate wastewater treatment works. » An incident reporting system will be used to record non-conformances to the EMPr.

OBJECTIVE 7: Appropriate handling and storage of chemicals and/or hazardous substances

The construction phase may involve the storage and handling of a variety of chemicals including adhesives, abrasives, oils and lubricants, paints and solvents.

Project Component/s	» Access road and internal roads » Underground cabling » Temporary laydown area » Associated buildings
Potential Impact	» Release of contaminated water from contact with spilled chemicals. » Generation of contaminated wastes from used chemical containers. » Soil pollution.
Activity/Risk Source	» Vehicles associated with site preparation and earthworks. » Hydrocarbon spills by vehicles and machinery during levelling; vegetation clearance; transport of workers, materials and equipment; and fuel storage tanks. » Accidental spills of hazardous chemicals. » Pollution from concrete mixing.
Mitigation: Target/Objective	» To ensure that the storage and handling of chemicals and hydrocarbons on-site does not cause pollution to the environment or harm to persons. » To ensure that the storage and maintenance of machinery on-site does not cause pollution of the environment or harm to persons. » Prevent and contain hydrocarbon leaks. » Undertake proper waste management. » Store hazardous chemicals safely in a bunded area.

Mitigation: Action/Control	Responsibility	Timeframe
Any liquids stored on site, including fuels and lubricants, should be stored in accordance with applicable legislation.	Contractor	Construction
Spill kits must be made available on-site for the clean-up of spills and leaks of contaminants.	Contractor	Construction
Establish an appropriate Hazardous Stores, which is in accordance with the Hazardous Substance Amendment Act, No. 53 of 1992. This should include but not be limited to: » Designated area; » All applicable safety signage; » Firefighting equipment;	Contractor	Construction

Mitigation: Action/Control	Responsibility	Timeframe
» Enclosed by an impermeable bund; » Protected from the elements; » Lockable; » Ventilated; and » Has adequate capacity to contain 110% of the largest container contents.		
In the event of a major spill or leak of contaminants, the relevant administering authority must be immediately notified as per the notification of emergencies/incidents.	Contractor	Construction
Spilled concrete must be cleaned up as soon as possible and disposed of at a suitably licensed waste disposal site.	Contractor	Construction
Check vehicles and machinery daily for oil, fuel and hydraulic fluid leaks and undertake regular high standard maintenance on vehicles.	Contractor	Construction
Accidental spillage of potentially contaminating liquids and solids must be cleaned up immediately, in line with procedures by trained staff with the appropriate equipment.	Contractor	Construction
Any contaminated/polluted soil removed from the site must be disposed of at a licensed hazardous waste disposal facility.	Contractor	Construction
Routine servicing and maintenance of vehicles must not take place on-site (except for emergencies). If repairs of vehicles must take place, an appropriate drip tray must be used to contain any fuel or oils.	Contractor	Construction
The storage of flammable and combustible liquids, such as oils, must be in designated areas which are appropriately bunded, and stored in compliance with Material Safety Data Sheets (MSDS) files.	Contractor	Construction
Transport of all hazardous substances must be in accordance with the relevant legislation and regulations	Contractor	Construction
Precautions must be in place to limit the possibility of oil and other toxic liquids from entering the soil or clean stormwater system.	Contractor	Construction
Have appropriate action plans on site, and training for contactors and employees in the event of spills, leaks and other potential impacts to the aquatic systems. All waste generated on-site during construction must be adequately managed.	Contractor	Construction
Drip trays must be used during al fuel/chemical dispensing.	Contractor	Construction
Drip trays to be placed beneath standing machinery/plant.	Contractor	Construction
In the case of petrochemical spillages, the spill should be collected immediately and stored in a designated area, until it can be disposed of in accordance with the Hazardous Chemical Substances Regulations, 1995 (Regulation 15).	Contractor	Construction

Performance Indicator	» No chemical spills outside of designated storage areas. » No water or soil contamination by spills. » No complaints received regarding waste on site or indiscriminate dumping. » Safe storage of hazardous chemicals. » Proper waste management.

Monitoring	» Observation and supervision of chemical storage and handling practices and vehicle maintenance throughout construction phase. » An incident reporting system will be used to record non-conformances to the EMPr. » On-going visual assessment to detect polluted areas and the application of clean-up and preventative procedures. » Monitor hydrocarbon spills from vehicles and machinery during construction continuously and record volume and nature of spill, location and clean-up actions. » Monitor maintenance of drains and intercept drains weekly. » Analyse soil samples for pollution in areas of known spills or where a breach of containment is evident when it occurs. » Records of accidental spills and clean-up procedures and the results thereof must be audited on an annual basis by the ECO. » Records of all incidents that caused chemical pollution must be kept and a summary of the results must be reported to management annually.

OBJECTIVE 8: Ensure appropriate rehabilitation of disturbed areas such that residual environmental impacts are remediated or curtailed

Areas requiring rehabilitation will include all areas disturbed during the construction phase and that are not required for regular operation. Rehabilitation should be undertaken in an area as soon as possible after the completion of construction activities within that area.

Project Component/s	» Construction of additional tennis courts. » Construction of new padel courts. » Upgrading of the existing building at the facility in order to include a gym, changerooms and squash courts. » Expansion of the parking area. » Upgrading of the restaurant and bar.
Potential Impact	» Environmental integrity of the site undermined, resulting in reduced visual aesthetics, erosion and increased runoff, and the requirement for ongoing management intervention.
Activity/Risk Source	» Temporary construction areas. » Other disturbed areas/footprints. » Site preparation and earthworks. » Temporary laydown area.
Mitigation: Target/Objective	» Ensure and encourage site rehabilitation of disturbed areas. » Ensure that the site is appropriately rehabilitated following the execution of the works, such that residual environmental impacts (including erosion) are remediated or curtailed.

Mitigation: Action/Control	Responsibility	Timeframe
Any indigenous woody material that is removed during construction can be shredded and used in conjunction with the topsoil to augment soil moisture and prevent erosion. Large wooded stumps or branches may be used to enhance the local habitat features and encourage herpetofauna.	Contractor	Post-construction
Areas that are denuded during construction need to be revegetated with indigenous vegetation, to prevent erosion	Contractor	Post-construction

Mitigation: Action/Control	Responsibility	Timeframe
during flood and wind events. This will also reduce the likelihood of encroachment by alien invasive plant species.		
All disturbed areas are to be rehabilitated and appropriately landscaped. Rehabilitation of the disturbed areas existing in the project area must be made a priority. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are endemic to the project area vegetation type. Progressive rehabilitation of cleared areas will enable topsoil to be returned more rapidly, thus ensuring more recruitment from the existing seedbank.	Contractor	Post-construction
All temporary facilities, equipment, and waste materials must be removed from site as soon as construction is completed.	Contractor	Post-construction
No planting or importing any listed invasive alien plant species (all Category 1a, 1b and 2 invasive species) to the site for landscaping, rehabilitation or any other purpose must be undertaken.	Contractor	Post-construction
Topsoil from all excavations and construction activities must be salvaged and reapplied during reclamation. Soils must be replaced in the correct sequence / profile.	Contractor	Post-construction

Performance Indicator	» All portions of the site, including construction equipment camp and working areas, cleared of equipment and temporary facilities. » Topsoil replaced on all areas and stabilised where practicable or required after construction and temporally utilised areas. » Disturbed areas rehabilitated and acceptable plant cover achieved on rehabilitated sites. » Completed site free of erosion and alien invasive plants.
Monitoring	» Rehabilitated areas should be monitored (responsibility of EO) on a weekly basis throughout the construction phase and on a monthly basis thereafter and to the point where the area has rehabilitated to a satisfactory level. » On-going inspection of rehabilitated, to determine effectiveness of rehabilitation measures implemented during the operational lifespan of the sports and recreational facilities. » On-going alien plant monitoring and removal should be undertaken on an annual basis.

7.2 Detailing Method Statements

OBJECTIVE 9: Ensure all construction activities are undertaken with the appropriate level of environmental awareness to minimise environmental risk

The environmental specifications are required to be underpinned by a series of Method Statements, within which the Contractors and Service Providers are required to outline how any identified environmental risks will practically be mitigated and managed for the duration of the contract; and how specifications within this EMPr will be met. That is, the Contractor will be required to describe how specified requirements will be achieved through the submission of written Method Statements to the Site Manager and ECO.

A Method Statement is defined as "a written submission by the Contractor in response to the environmental specification or a request by the Site Manager, setting out the plant, materials, labour and method the

Contractor proposes using to conduct an activity, in such detail that the Site Manager is able to assess whether the Contractor's proposal is in accordance with the Specifications and/or will produce results in accordance with the Specifications". The Method Statement must cover applicable details with regard to:

- Responsible person/s.
- Construction procedures.
- Materials and equipment to be used.
- Getting the equipment to and from site.
- How the equipment/material will be moved while on-site.
- How and where material will be stored.
- The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur.
- Timing and location of activities.
- Compliance/non-compliance with the Specifications.
- Any other information deemed necessary by the Site Manager.

Method Statements must be compiled for all activities which affect any aspect of the environment and should be applied consistently to all activities. Specific areas to be addressed in the method statement: pre, during and post construction include:

- Site establishment (which explains all activities from induction training to offloading; construction sequence for site establishment; and the different amenities and to be established etc., including a site camp plan indicating all of these).
- Preparation of the site (i.e. clearing vegetation; compacting soils; and removing existing infrastructure and waste).
- Soil management/stockpiling and erosion control.
- Excavations and backfilling procedure.
- Stipulate norms and standards for water supply and usage (i.e.: comply strictly to licence and legislation requirements and restrictions).
- Solid Waste Management:
  - Description of the waste storage facilities (on site and accumulative).
  - Placement of waste stored (on site and accumulative).
  - Management and collection of waste process.
  - Recycle, re-use and removal process and procedure.

- Dust and noise pollution:
  - Describe the necessary measures to ensure that noise from construction activities is maintained within lawfully acceptable levels.
  - Procedure to control dust at all times on the site, access roads and spoil sites (dust control shall be sufficient so as not to have significant impacts in terms of the biophysical and social environments). These impacts include visual pollution; decreased safety due to reduced visibility,; and negative effects on human health and the ecology due to dust particle accumulation.
- Hazardous substance storage (ensure compliance with all national, regional and local legislation with regard to the storage of oils, fuels, lubricants, solvents, wood treatments, bitumen, cement, pesticides and any other harmful and hazardous substances and materials. South African National Standards apply).
  - Lists of all potentially hazardous substances to be used.
  - Appropriate handling, storage and disposal procedures.

- Prevention protocol of accidental contamination of soil at storage and handling areas.
- All storage areas, (i.e. for harmful substances appropriately bunded with a suitable collection point for accidental spills must be implemented and drip trays underneath dispensing mechanisms including leaking engines/machinery).

» Fire prevention and management measures on site.
» Fauna and flora protection process on and off site (i.e. removal to reintroduction or replanting, if necessary).
- Rehabilitation, re-vegetation process and bush clearing.

» Incident and accident reporting protocol.
» General administration.
» Designate access road and the protocols while roads are in use.
» Requirements on gate control protocols.

The Contractor may not commence the activity covered by the Method Statement until it has been approved by the Site Manager (with input from the ECO), except in the case of emergency activities and then only with the consent of the Site Manager. Approval of the Method Statement will not absolve the Contractor from its obligations or responsibilities in terms of their contract. Failure to submit a Method Statement may result in suspension of the activity concerned until such time as a method statement has been submitted and approved.

7.3 Awareness and Competence: Construction Phase

OBJECTIVE 10: To ensure all construction personnel have the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and on-going minimisation of environmental harm

To achieve effective environmental management, it is important that all personnel involved in the project are aware of the responsibilities in terms of the relevant environmental legislation and the contents of this EMPr. The ECO is responsible for monitoring compliance during construction and until rehabilitation is complete. The Contractor is responsible for informing employees and sub-contractors of their environmental obligations in terms of the environmental specifications; and ensuring that employees are adequately experienced and properly trained to execute the works in a manner that will minimise environmental impacts.

The Contractors obligations in this regard include the following:
» All Employees must have a basic understanding of the key environmental features of the construction site and the surrounding environment. This includes the discussion/explanation of site environmental matters during toolbox talks.
» The content and requirements of Method Statements are to be clearly explained to all plant operators and general workers. All staff acting in a supervisory capacity are to have copies of the relevant Method Statements and be aware of the contents thereof.
» Ensuring that a copy of the EMPr is readily available on-site; and that all senior site staff are aware of its location and have access to its. Senior site staff will be familiar with the requirements of the EMPr and the environmental specifications as they apply to the construction of the sports and recreational facilities.
» Ensuring that, prior to commencing any site works, all employees and sub-contractors have attended an Environmental Awareness Training session. The training session must provide the site staff with an appreciation of the project's environmental requirements, and how they are to be implemented.
- Records must be kept of those that have completed the relevant training.

- Training should be done either in a written or verbal format but must be appropriate for the receiving audience.
- Refresher sessions must be held, to ensure the contractor staff are aware of their environmental obligations as practically possible.

» All sub-contractors must have a copy of the EMPr and sign a declaration/ acknowledgement that they are aware and familiar with the EMPr's contents and requirements; and that they will conduct work in such a manner as to ensure compliance with the requirements of the EMPr.
» Contractors and main sub-contractors should have a basic training in the identification of archaeological sites/objects, and protected flora and fauna that may be encountered on the site.
» Awareness of any other environmental matters, which are deemed to be necessary by the ECO.
» Ensuring that employee information posters, outlining the environmental "do's" and "don'ts" (as per the environmental awareness training course) are erected at prominent locations throughout the site.

Therefore, prior to the commencement of construction activities on site and before any person commences with work on site thereafter, adequate environmental awareness and responsibility are to be appropriately presented to all staff present onsite, clearly describing their obligations towards environmental controls and methodologies in terms of this EMPr. This training and awareness will be achieved in the following ways:

7.3.1 Environmental Awareness and Induction Training

The EO, in consultation with the Contractor, shall ensure that all construction workers receive an induction presentation, as well as on-going environmental education and awareness, on the importance and implications of the EMPr and the environmental requirements it prescribes. The presentation shall be conducted, as far as is possible, in the employees' language of choice. The Contractor should provide a translator from their staff for the purpose of translating, should this be necessary.

As a minimum, induction training should include:

» Explanation of the importance of complying with the EMPr;
» Explanation of the importance of complying with the EA;
» Discussion of the potential environmental impacts of construction activities;
» Awareness regarding sensitivities on the site, including sensitive plant species (including the use of visual aids and on-site identification);
» The benefits of improved personal performance;
» Employees' roles and responsibilities, including emergency preparedness (this should be combined with this induction, but presented by the contractor's Health and Safety Representative);
» Explanation of the mitigation measures that must be implemented when carrying out their activities; and
» Explanation of the specifics of this EMPr and its specification (no-go areas, etc.).

Environmental Awareness Training must take the form of an on-site talk and demonstration by the EO/ECO before the commencement of site establishment and construction on site. The education/awareness programme should be aimed at all levels of management and construction workers within the contractor team. A record of attendance of this training must be maintained by the EO/ECO on site. Proof of awareness training should be kept on record. Environmental induction training must be presented to all persons who are to work on the site – be it for short or long durations; Contractor's or Engineer's staff; administrative or site staff; sub-contractors or visitors to site.

This induction training should be undertaken by the Contractor's EO and should include the function of the EMPr and Contract Specifications; and the importance and reasons for compliance to these. The induction training must highlight overall do's and don'ts on site and clarify the repercussions of not complying with these. The non-conformance reporting system must be explained during the induction as well. Opportunity for questions and clarifications must form part of this training. A record of attendance of this training must be maintained by the EO/ECO on site.

7.3.2 Toolbox Talks

Toolbox talks should be held on a scheduled and regular basis (at least twice a month) where foremen; environmental and safety representatives of different components of the works; and sub-consultants hold talks relating to environmental practices and safety awareness on site. They should also include discussions on possible common incidents occurring on site and ones recommended by the onsite EO; and the prevention of reoccurrence thereof. Records of attendance and the awareness talk subject must be kept on file.

7.4 Monitoring Programme: Construction Phase

OBJECTIVE 11: To monitor the performance of the control strategies employed against environmental objectives and standards

A monitoring programme must be in place, to ensure conformance with the EMPr; and monitor any environmental issues and impacts which have not been accounted for in the EMPr that could result in significant environmental impacts for which corrective action is required. The period and frequency of monitoring will be stipulated by the EA (once issued). Where this is not clearly dictated, Country Club Johannesburg will determine and stipulate the period and frequency of monitoring required in consultation with relevant stakeholders and authorities. The Technical Director/ Project Manager will ensure that the monitoring is conducted and reported.

The aim of the monitoring and auditing process would be to monitor the implementation of the specified environmental specifications, in order to:

- Monitor and audit compliance with the prescriptive and procedural terms of the environmental specifications.
- Ensure adequate and appropriate interventions to address non-compliance.
- Ensure adequate and appropriate interventions to address environmental degradation.
- Provide a mechanism for the lodging and resolution of public complaints.
- Ensure appropriate and adequate record keeping related to environmental compliance.
- Determine the effectiveness of the environmental specifications and recommend the requisite changes and updates based on audit outcomes, to enhance the efficacy of environmental management on site.
- Aid in communication and feedback to authorities and stakeholders.

All documentation e.g. audit/monitoring/compliance reports and notifications must be submitted to GDARD in terms of the EA.

Records relating to monitoring and auditing must be kept on site and made available for inspection to any relevant and competent authority in respect of this project.

7.4.1. Non-Conformance Reports

All supervisory staff including Foremen, Engineers, and the ECO must be provided the means to be able to submit non-conformance reports to the Site Manager. Non-conformance reports will describe, in detail, the cause, nature and effects of any environmental non-conformance by the Contractor.

The non-conformance report will be updated on completion of the corrective measures indicated on the finding sheet. The report must indicate that the remediation measures have been implemented timeously and that the non-conformance can be closed-out to the satisfaction of the Site Manager and ECO.

7.4.2. Monitoring Reports

A monitoring report will be compiled by the ECO on a monthly basis and must be submitted to GDARD for its records. This report should include details of the activities undertaken in the reporting period; any non-conformances or incidents recorded; corrective action required; and details of those non-conformances or incidents which have been closed out. The Contractor must ensure that all waste manifests are provided to the ECO on a monthly basis, to inform and update GDARD regarding waste related activities.

7.4.3. Audit Reports

The holder of the EA must, for the period during which EA and EMPr remain valid, ensure that project compliance with the EA conditions and EMPr are audited, and that the audit reports are submitted to the GDARD.

An environmental internal audit must be conducted and submitted every 3 months and an external audit must be conducted once a month. The annual audit report must be submitted to GDARD until the completion of the construction and rehabilitation. This report must be compiled in accordance with Appendix 7 of the EIA Regulations, 2014, as amended, and indicate the date of the audit, name of the auditor and outcome of the audit in terms of compliance with the EA conditions and the requirements of the EMPr.

7.4.4. Final Audit Report

A final environmental audit report must be compiled by an independent auditor upon completion of the construction and rehabilitation activities; and submitted to GDARD within 30 days of completion of rehabilitation activities. It must indicate the date of the audit, name of the auditor and outcome of the audit in terms of compliance with the EA conditions and the requirements of the EMPr.

CHAPTER 8: OPERATION MANAGEMENT PROGRAMME

Overall Goal: To ensure that the operation of the sports and recreational facilities does not have unforeseen environmental impacts; and that all impacts are monitored and the necessary corrective action taken in all cases. To address this goal, it is necessary to operate the facilities in a way that:

» Ensures that operation activities are properly managed in respect of environmental aspects and impacts.
» Enables the operation activities to be undertaken without significant disruption to other land uses in the area.
» Minimise impacts on fauna using the site.

8.1. Objectives

To meet this goal, the following objectives have been identified, together with necessary actions and monitoring requirements.

OBJECTIVE 1: Protection of flora and fauna

Project component/s	» Operation of the additional tennis courts. » Operation of the new padel courts. » Operation of the building associated with the sports and recreational facilities. » Operational of new parking area. » Operation of the restaurant and bar.
Potential Impact	» Disturbance to or loss of vegetation and/or habitat and protected plant species. » Alien plant invasion. » Impacts on fauna.
Activity/Risk Source	» Movement of employees and members of the Country Club Johannesburg/visitors- within site.
Mitigation: Target/Objective	» Maintain minimised footprints of disturbance of vegetation/ habitats on-site. » Minimise impacts to protected plant species and fauna. » Minimise encroachment by alien plant species. »

Mitigation: Action/Control	Responsibility	Timeframe
No trapping, killing, or poisoning of any wildlife is to be allowed. Signs stating that the trapping, killing, or poisoning of any wildlife is not allowed must be put up at the site.	Estate Environmental Representative	Operation
Noise must be kept to a minimum during the evenings/ at night to minimize all possible disturbances to amphibian species and nocturnal mammals.	Estate Environmental Representative	Operation
The compilation and implementation of an alien vegetation management plan is very important, especially because of the invasive species identified on site which, if left unchecked, will continue to grow and spread prolifically leading to further and more significant deterioration to the health of the natural	Estate Environmental Representative	Operation

Mitigation: Action/Control	Responsibility	Timeframe
environment within the property area. The plan must especially pertain to any recently cleared and changed areas.		
A pest control plan must be put in place and implemented; it is imperative that poisons not be used.	Estate Environmental Representative	Operation
All staff should receive an Environmental Awareness programme which also covers the surrounding area. This programme must be used to inform of the importance of these areas and their conservation.	Estate Environmental Representative	Operation

Performance Indicator	» No further disturbance to vegetation or terrestrial faunal habitats. » Low abundance of alien plants within affected areas.
Monitoring	» Observation of vegetation onsite by environmental manager. » Regular inspections to monitor weed infestation. » Annual monitoring with records of alien species presence and clearing actions.

OBJECTIVE 2: Maximise local employment, skills development and business opportunities associated with the construction phase

Project Component/s	» Operation of the sports and recreational facilities.
Potential Impact	» The opportunities and benefits associated with the creation of local employment and business should be maximised.
Activities/Risk Sources	» Limited use of local labour, thereby reducing the employment and business opportunities for locals. » Sourcing of individuals with skills similar to the local labour pool outside the municipal area. » Unavailability of locals with the required skills resulting in locals not being employed and labour being sourced from outside the municipal area.
Enhancement: Target/Objective	» The Developer should aim to employ as many low-skilled and semi-skilled workers from the local area as possible. This should also be made a requirement for all contractors. » Employment of a maximum number of the low-skilled and/or semi-skilled workers from the local area where possible. » Appropriate skills training and capacity building.

Mitigation: Action/Control	Responsibility	Timeframe
Where feasible, effort must be made to employ locally, to create maximum benefit for the communities.	Developer	Operation
To maximise the positive impact, it is suggested that the Developer provide training courses for employees, where feasible, to ensure that employees gain as much as possible from the work experience.	Developer	Operation
Facilitate the transfer of knowledge between experienced employees and the staff.	Developer	Operation

Mitigation: Action/Control	Responsibility	Timeframe
Effort should be made to use locally sourced inputs where feasible, to maximize the benefit to the local economy.	Developer	Operation

Performance Indicator	» Job opportunities, especially of low to semi-skilled positions, are primarily awarded to members of local communities as appropriate. » Locals and previously disadvantaged individuals (including women) are considered during the hiring process. » Labour, entrepreneurs, businesses, and SMMEs from the local sector are awarded jobs, where possible, based on requirements in the tender documentation. » The involvement of local labour is promoted. » Reports are not made from members of the local communities regarding unrealistic employment opportunities or that only outsiders were employed. » Skills training and capacity building initiatives are developed and implemented.
Monitoring	» Developer must keep a record of local recruitments and information on local labour to be shared with the external auditor for reporting purposes.

OBJECTIVE 3: Appropriate handling and management of waste

Project Component/s	» Operation of the sports and recreational facilities.
Potential Impact	» Inefficient use of resources resulting in excessive waste generation. » Litter or contamination of the site through poor waste management practices.
Activity/Risk Source	» Incorrect waste management.
Mitigation: Target/Objective	» Comply with waste management legislation. » Minimise production of waste. » Ensure appropriate waste disposal. » Avoid environmental harm from waste disposal.

Mitigation: Action/Control	Responsibility	Timeframe
All food waste and litter at the site should be placed in bins with lids and removed from the site on a regular basis.	Developer	Operation
Waste handling, collection, and disposal operations must be managed and controlled by a waste management contractor.	Developer	Operation
General waste must be recycled where possible or disposed of at an appropriately licensed landfill.	Developer	Operation
Hazardous waste (including hydrocarbons) and general waste must be stored and disposed of separately.	Developer	Operation
Separation and recycling of different waste materials should be supported.	Developer	Operation
Disposal of waste must be in accordance with relevant legislative requirements, including the use of licensed contractors.	Developer	Operation
No waste may be burned or buried on site.	Developer	Operation

Performance Indicator	» No complaints received regarding waste on site or indiscriminate dumping.

	» Internal site audits identifying that waste segregation recycling and reuse is occurring appropriately. » Provision of all appropriate waste manifests. » No contamination of soil.
Monitoring	» Waste collection must be monitored on a regular basis. » Waste documentation must be completed and available for inspection. » An incidents/complaints register must be maintained, in which any complaints from the community must be logged. » Complaints must be investigated and, if appropriate, acted upon. » All appropriate waste disposal certificates and records to be kept.

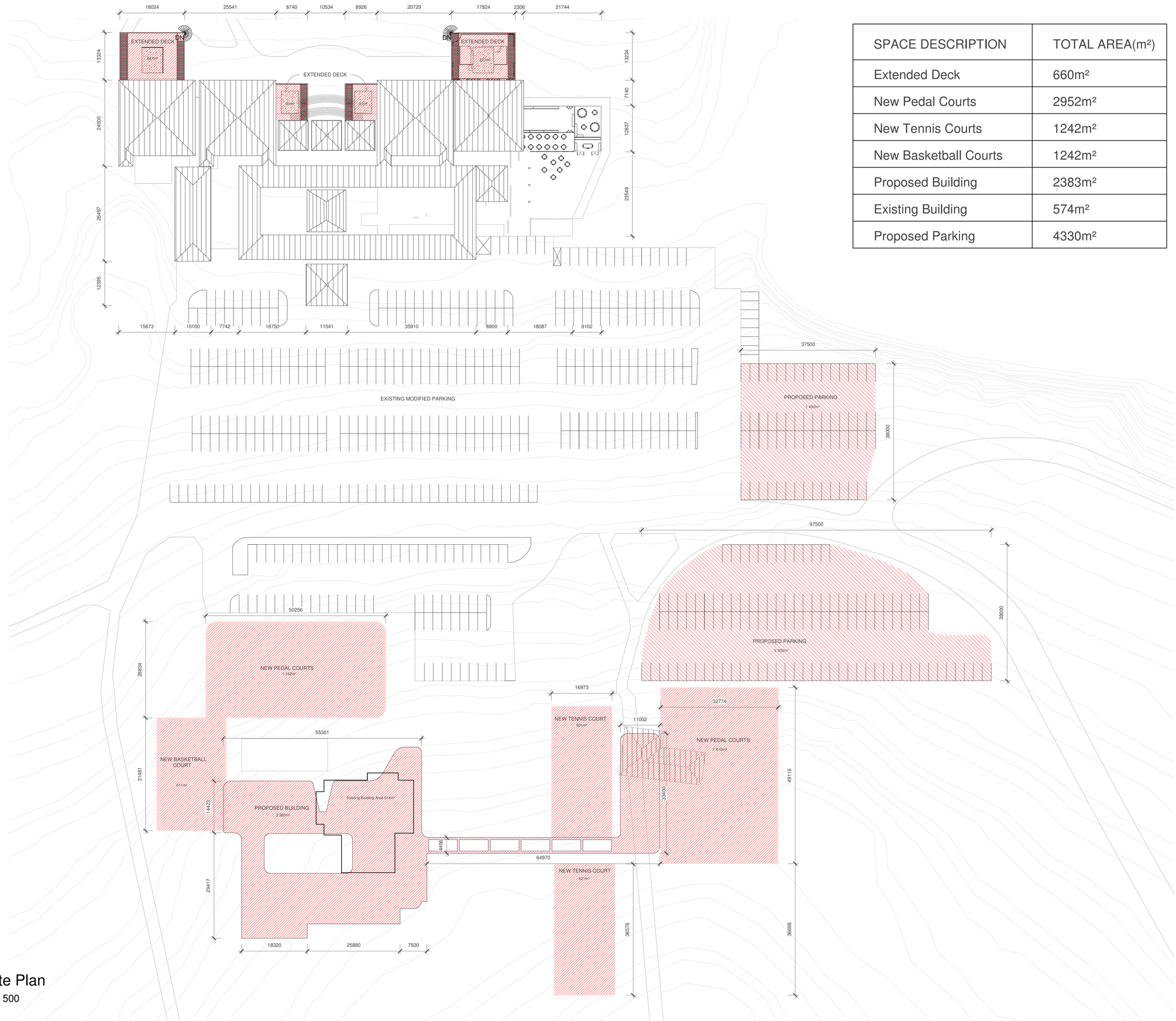
8.2. Monitoring Programme: Operation Phase of the Country Club Johannesburg

OBJECTIVE 4: To monitor the performance of the control strategies employed against environmental objectives and standards

A monitoring programme must be in place to ensure conformance with the EMPr; and monitor any environmental issues and impacts which have not been accounted for in the EMPr that could result in significant environmental impacts for which corrective action is required. An internal environmental audit must be conducted once a year for at least 3 years and an external audit must be conducted once a year for at least 3 years (or as specified in the EA), to confirm compliance with the requirements of all environmental permits (including the EA, once issued) for the project, this EMPr, and all relevant legislation. The results of the audit reports must be made available to GDARD and the relevant authorities on request and be part of monitoring and audit reports. An annual audit report must be compiled and submitted to GDARD. The aim of the auditing process would be to routinely monitor the implementation of the specified environmental specifications, in order to:

» Monitor compliance with the prescriptive and procedural terms of the environmental specifications.
» Ensure adequate and appropriate interventions to address non-compliance.
» Ensure adequate and appropriate interventions to address environmental degradation.
» Provide a mechanism for the lodging and resolution of public complaints.
» Ensure appropriate and adequate record keeping related to environmental compliance.
» Determine the effectiveness of the environmental specifications and recommend the requisite changes and updates based on audit outcomes, to enhance the efficacy of environmental management on site.
» Aid in the communication and feedback to authorities and stakeholders.

APPENDIX A:
FACILITY LAYOUT AND SENSITIVITY MAPS



1 Site Plan
1 : 500

SPACE DESCRIPTION	TOTAL AREA(m²)
Extended Deck	660m²
New Pedal Courts	2952m²
New Tennis Courts	1242m²
New Basketball Courts	1242m²
Proposed Building	2383m²
Existing Building	574m²
Proposed Parking	4330m²

Notes

These drawings and the depicted design is and remains the intellectual property of the architect

The architect accepts no responsibility for errors resulting from misinterpretation of the drawings. Any errors, discrepancies or omissions found on the drawings are to be reported to the architect immediately. Any and all measurements must be checked against the drawings on site before any work commences.

The contractor must report any discrepancies between the existing building, the specified Bill of Quantities and the drawings to the architect or project leader before the work commences.

All relevant details, levels and dimensions to be checked and confirmed on site prior to commencement of work.
All drawings to be read together with the Engineer's drawings.

All work is to conform to the latest version of SANS 10400, N.B.R. and Local Authority bylaws. Contractors are to locate and identify existing services on site and to protect these from damage throughout the duration of the works.

All dimensions are given in millimetres (unless denoted otherwise). Drawings are not to be scaled. All levels shown are measured as level above M.S.L.

No foundation or structure is to encroach on boundary. All electrical and plumbing work is to be carried out by a registered Tradesman.

All demolition work to comply with SANS 10400 Part E.
S.S. Refers to Grade 316 Stainless Steel on all notes.

The Contractor must ensure the safety on site of the workmen and visitors in terms of the Occupational Health and Safety Act of 1993. It is the responsibility of the Owner/Initiator to ensure that act 85 of 2003 is met.

No.	Revision	Date

REBEL BASE COLLECTIVE
2017/030213/07

Architect Name: Vedhant Maharaj
SACAP Number: PRARCH 45968517
Contact Number: +27 83 432 5823
Email: vedhant.maharaj@rebelbase.camp
Address: 3 Gale Road Parktown West 2193
Signature:

Engineer Name:
Pr. Number:
Signature:

Client Signature:

CCJ

WOODMEAD

Woodlands Dr, Woodmead, Sandton, 2191

A101

Site

Date:	2021/11/15 09:06:16
Drawn by:	VM
Project:	R14-RAJ_01

Country Club Johannesburg , Gauteng Province.

Environmental Sensitivity Map

Legend

Project Area

Environmental Sensitivities

- CCJ Hypoxis and Orchid Locations
- Ecological Support Area
- Land Capability (Medium Sensitivity)
- Aloe and Protea Locations
- Critically Modified Grassland (Low Sensitivity)
- Modified Grassland (Medium Sensitivity)
- Tansformed Grassland (Very Low Sensitivity)
- NFEPA Wetlands

N

The Country Club Johannesburg

0 105 210 420 Km

Scale: 1: 25 000
Projection: LO25
Map Reference: Country Club Johannesburg

savannah environmental

APPENDIX B:
ALIEN PLANT AND OPEN SPACE MANAGEMENT PLAN

ALIEN PLANT AND OPEN SPACE MANAGEMENT PLAN

1. PURPOSE

Invasive alien plant species pose the second largest threat to biodiversity after direct habitat destruction. The purpose of this Alien Plant and Open Space Management Plan is to provide a framework for the management of alien and invasive plant species during the construction and operation of the proposed sports and recreational facilities. The broad objectives of the plan include the following:

- Ensure alien plants do not become dominant in parts of the site, or the whole site, through the control and management of alien and invasive species presence, dispersal and encroachment.
- Develop and implement a monitoring and eradication programme for alien and invasive plant species.
- Promote the natural re-establishment and planting of indigenous species in order to retard erosion and alien plant invasion.

This plan should be updated throughout the lifecycle of the project, as required in order to ensure that appropriate measures are in place to manage and control the establishment of alien and invasive plant species and to ensure compliance with relevant legislation. This plan should be implemented with a specific focus on sensitive areas.

2. LEGISLATIVE CONTEXT

Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)

In terms of the amendments to the regulations under the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) (CARA), all declared alien plant species must be effectively controlled. Landowners are legally responsible for the control of invasive alien plants on their properties. In terms of this Act, alien invasive plant species are ascribed to one of the following categories:

- Category 1: Prohibited and must be controlled.
- Category 2 (commercially used plants): May be grown in demarcated areas provided that there is a permit and that steps are taken to prevent their spread.
- Category 3 (ornamentally used plants): May no longer be planted. Existing plants may be retained as long as all reasonable steps are taken to prevent the spreading thereof, except within the flood line of watercourses and wetlands.

National Environmental Management: Biodiversity Act, 2004 (Act No.10 of 2004)

The National Environmental Management: Biodiversity Act, 2004 (Act No.10 of 2004) (NEM:BA) regulates all invasive organisms in South Africa, including a wide range of fauna and flora. Regulations have been published in Government Notices GNR 506, 507, 508 and 509 of 2013 under NEM:BA. According to this Act and the regulations, any species designated under Section 70 cannot be propagated, grown, bought, or sold without a permit. Below is an explanation of the three categories:

- **Category 1a:** Invasive species requiring compulsory control. 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 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.

The following guide is a useful starting point for the identification of alien plant species: Bromilow, C. 2010. Problem Plants and Alien Weeds of South Africa. Briza, Pretoria.

It is important to note that alien plant species that are regulated in terms of the CARA as weeds and invader plants are exempted from NEM:BA. This implies that the provisions of the CARA in respect of listed weed and invader plants supersede those of NEM: BA.

3. ALIEN PLANT MANAGEMENT PRINCIPLES

3.1. Prevention and early eradication

A prevention strategy should be considered and established, including regular surveys and monitoring for invasive alien plants, effective rehabilitation of disturbed areas and prevention of unnecessary disturbance of natural areas.

Monitoring plans should be developed which are designed to identify Invasive Alien Plant Species already on site, as well as those that are introduced to the site by the construction activities. Keeping up to date on which weeds are an immediate threat to the site is important, but efforts should be planned to update this information on a regular basis. When additional Invasive Alien Plant Species are recorded on site, an immediate response of locating the site for future monitoring and either hand-pulling the weeds or an application of a suitable herbicide (where permissible only) should be planned. It is, however, better to monitor regularly and act swiftly than to allow invasive alien plants to become established on site.

3.2. Containment and control

If any alien invasive plants are found to become established on-site, action plans for their control should be developed, depending on the size of the infestations, budgets, manpower considerations and time. Separate plans of control actions should be developed for each location and/or each species. Appropriately registered chemicals and other possible control agents should be considered in the action plans for each site/species. The use of chemicals is not recommended for any wetland areas. Herbicides should be applied directly to the plant and not to the soil. The key is to ensure that no invasions get out of control. Effective containment and control will ensure that the least amount of energy and resources are required to maintain this status over the long term. This will also be an indicator that natural systems are impacted to the smallest degree possible.

3.3. General Clearing and Guiding Principles

Alien species control programmes are long-term management projects and should consist of a clearing plan which includes follow up actions for rehabilitation of the cleared area. The lighter infested areas should be cleared first to prevent the build-up of seed banks. Pre-existing dense mature stands ideally should be left for last, as they probably will not increase in density or pose a greater threat than they are currently. Collective management and planning with neighbours may be required in the case of large woody invaders as seeds of alien species are easily dispersed across boundaries by wind or watercourses. All clearing actions should be monitored and documented to keep records of which areas are due for follow-up clearing.

i. Clearing Methods

Different species require different clearing methods such as manual, chemical, or biological methods or a combination of both. Care should however be taken that the clearing methods used do not encourage further invasion and that they are appropriate to the specific species of concern. As such, regardless of the methods used, disturbance to the soil should be kept to a minimum.

Fire should not be used for alien species control or vegetation management at the site. The best-practice clearing method for each species identified should be used.

» **Mechanical control**
This entails damaging or removing the plant by physical action. Different techniques could be used, e.g., uprooting, felling, slashing, mowing, ringbarking or bark stripping. This control option is only really feasible in sparse infestations or on a small scale, and for controlling species that do not coppice after cutting. Species that tend to coppice, need to have the cut stumps or coppice growth treated with herbicides following the mechanical treatment. Mechanical control is labour intensive and therefore expensive and could cause severe soil disturbance and erosion.

» **Chemical Control**
Although it is usually preferable to use manual clearing methods where possible, such methods may create an additional disturbance which stimulates alien plant invasion and may also be ineffective for many woody species that re-sprout. Where herbicides are to be used, the impact of the operation on the natural environment should be minimised by observing the following:

- Area contamination must be minimised by careful, accurate application with a minimum amount of herbicide to achieve good control.
- All care must be taken to prevent contamination of any water bodies. This includes due care in storage, application, cleaning equipment and disposal of containers, products, and spray mixtures.
- Equipment should be washed where there is no danger of contaminating water sources and washings carefully disposed of at a suitable site.
- To avoid damage to indigenous or other desirable vegetation, products should be selected that will have the least effect on non-target vegetation.
- Coarse droplet nozzles should be fitted to avoid drift onto neighbouring vegetation.
- The appropriate health and safety procedures should also be followed regarding the storage, handling, and disposal of herbicides.
- The use of chemicals is not recommended for wetland areas.

For all herbicide applications, the following Regulations and guidelines should be followed:

- Working for Water: Policy on the Use of Herbicides for the Control of Alien Vegetation.
- Pesticide Management Policy for South Africa published in terms of the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947) (ARSRA)– GNR 1120 of 2010.
- South African Bureau of Standards (SABS), South African National Standard (SANS) 10206 (2010).

According to Government Notice No. 13424 dated 26 July 1992, it is an offence to "*acquire, dispose, sell or use an agricultural or stock remedy for a purpose or in a manner other than that specified on the label on a container thereof or on such a container*".

Contractors using herbicides need to have a valid Pest Control Operators License (limited weeds controller) according to the Fertilizer, Farm Feeds, ARSRA. This is regulated by the Department of Agriculture, Forestry and Fisheries (DAFF).

» **Biological control**

Biological weed control consists of the use of natural enemies to reduce the vigour or reproductive potential of an invasive alien plant. Biological control agents include insects, mites, and micro-organisms such as fungi or bacteria. They usually attack specific parts of the plant, either the reproductive organs directly (flower buds, flowers, or fruit) or the seeds after they have dropped. The stress caused by the biological control agent may kill a plant outright or it might impact the plant's reproductive capacity. In certain instances, the reproductive capacity is reduced to zero and the population is effectively sterilised. All of these outcomes will help to reduce the spread of the species.

To obtain biocontrol agents, provincial representatives of the Working for Water Programme or the Directorate: Land Use and Soil Management (LUSM), DAFF can be contacted.

3.4. General management practices

The following general management practices should be encouraged or strived for:

- Establish an ongoing monitoring programme for the construction phase to detect and quantify any alien species that may become established.
- Alien vegetation regrowth on areas disturbed by construction must be immediately controlled.
- Care must be taken to avoid the introduction of alien invasive plant species to the site. Particular attention must be paid to imported material such as building sand or dirty earth-moving equipment. Stockpiles should be checked regularly and any weeds emerging from material stockpiles should be removed.
- Cleared areas that hav
- e become invaded by alien species can be sprayed with appropriate herbicides provided that these herbicides break down on contact with the soil. Residual herbicides should not be used.
- The effectiveness of vegetation control varies seasonally, and this is also likely to impact alien species. Control early in the wet season will allow species to re-grow, and follow-up control is likely to be required. It is tempting to leave control until late in the wet season to avoid follow-up control. However, this may allow alien species to set seed before control, and hence will not contribute towards reducing alien species abundance. Therefore, vegetation control should be aimed at the middle of the wet season, with a follow-up event towards the end of the wet season. There are no

exact dates that can be specified here as each season is unique and management must therefore respond according to the state and progression of the vegetation.

- » Alien plant management is an iterative process, and it may require repeated control efforts to significantly reduce the abundance of a species. This is often due to the presence of large and persistent seed banks. However, repeated control usually results in rapid decline once seed banks become depleted.
- » Some alien species are best individually pulled by hand. Regular vegetation control to reduce plant biomass within the site should be conducted. This should be timed so as to coincide with the critical growth phases of the most important alien species on site. This will significantly reduce the cost of alien plant management as this should contribute towards the control of the dominant alien species and additional targeted control will be required only for a limited number of species.
- » No alien species should be cultivated on-site. If vegetation is required for aesthetic purposes, then non-invasive, water-wise locally occurring species should be used.
- » During operation, surveys for alien species should be conducted regularly. It is recommended that this be undertaken every 6 months for the first two years after construction and annually thereafter. All alien plants identified should be cleared using appropriate means.

3.5. Monitoring

In order to assess the impact of clearing activities, rehabilitation efforts, follow-ups and monitoring must be undertaken. This section provides a description of a possible monitoring programme that will provide an assessment of the magnitude of alien plant invasion on site, as well as an assessment of the efficacy of the management programme.

In general, the following principles apply for monitoring:

- » Photographic records must be kept of areas to be cleared prior to work starting and at regular intervals during initial clearing activities. Similarly, photographic records should be kept of the area from immediately before and after follow-up clearing activities. Rehabilitation processes must also be recorded.
- » Simple records must be kept of daily operations, e.g., area/location cleared, labour units and, if ever used, the amount of herbicide used.
- » It is important that, if monitoring results in detection of invasive alien plants, that this leads to immediate action.

The following monitoring should be implemented to ensure management of alien invasive plant species.

Construction Phase

Monitoring Action	Indicator	Timeframe
Document alien species present at the site	List of alien plant species	Pre-construction Monthly during Summer and Autumn (Middle November to end of March) 3 Monthly during Winter and Spring
Document alien plant distribution	Alien plant distribution map within priority areas	3 Monthly
Document & record alien plant control measures implemented	Record of clearing activities	3 Monthly

Operation Phase

Monitoring Action	Indicator	Timeframe
Document alien plant species distribution and abundance over time at the site	Alien plant distribution map	Biannually
Document alien plant control measures implemented & success rate achieved	Records of control measures and their success rate. A decline in alien distribution and cover over time at the site	Biannually
Document rehabilitation measures implemented, and success achieved in problem areas	Decline in vulnerable bare areas over time	Biannually

APPENDIX C:
PLANT RESCUE AND PROTECTION PLAN

PLANT RESCUE AND PROTECTION PLAN

1. PURPOSE

The purpose of the Plant Rescue and Protection Plan is to implement avoidance and mitigation measures, in addition to the mitigations included in the Environmental Management Programme (EMPr) to reduce the impact of the proposed expansion of sports and recreational facilities at the Country Club Johannesburg, Gauteng Province on listed and protected plant species and their habitats during construction and operation. This subplan is required in order to ensure compliance with national and provincial legislation for vegetation clearing and any required destruction or translocation of provincially and nationally protected species within the footprint of the development.

The Plan first provides some legislative background on the regulations relevant to listed and protected species, under the Nature and Environmental Conservation Ordinance (Act 19 of 1974) and trees protected under the National List of Protected Tree Species. This is followed by an identification of protected species present within the development footprint and actions that should be implemented to minimise impact on these species and comply with legislative requirements.

2. IDENTIFICATION OF SPECIES OF CONSERVATION CONCERN

Plant species are protected at the national level as well as the provincial level and different permits may be required for different species depending on their protection level. At the national level, protected trees are listed by DFFE under the National List of Protected Trees, which is updated on a regular basis. Any clearing of nationally protected trees requires a permit from DAFF. At the provincial level, all species red-listed under the Red List of South African plants (http://redlist.sanbi.org/) as well as species listed under the Nature and Environmental Conservation Ordinance (Act 19 of 1974) are protected and require provincial permits. The Nature and Environmental Conservation Ordinance (Act 19 of 1974) lists a variety of species as protected.

3. IDENTIFICATION OF LISTED SPECIES

In this section, the listed species observed to occur within the broader area are identified and listed below.

Based on the SANBI POSA records for the site and surrounding area, over 1200 plant species have the potential to occur in the project area and its surroundings. Of these plant species, 7 species are listed as being SCC and 58 are listed as provincially protected plants which are listed below. Provincially protected plants are legally protected by the Transvaal Nature Conservation Ordinance No. 12 of 1983, and Red-Listed plants (SCC) are those that are threatened to some degree with extinction and must be protected to ensure their survival in the wild. Species of concern that are potentially present include *Brachystelma luteum* (VU), *Eriospermum bracteatum* (VU), *Apodolirion macowanii* (VU), *Ornithogalum britteniae* (VU) and *Agathosma bicornuta* (EN). These listed species are all known from outside of the project site and there are currently no known populations from within the project site.

Table 1: List of plant species of conservation concern that are known to occur in and around the site and their potential to be present within the site based on their recorded distribution and habitat requirements.

Family	Genus	Species	Subsp.	Status	Comment
Apocynaceae	*Stenostelma*	*umbelluliferum*		NT	It is indigenous and endemic and is therefore likely to occur on the project site.
Asteraceae	*Cineraria*	*austrotransvaalensis*		NT	It is indigenous and endemic and is therefore likely to occur on the project site.
Crassulaceae	*Adromischu*	*umbraticola*	*umbraticola*	NT	It is indigenous and endemic and is therefore likely to occur on the project site.
Fabaceae	*Pearsonia*	*bracteata*		NT	It is indigenous and endemic and is therefore likely to occur on the project site.
Fabaceae	*Argyrolobium*	*longifolium*		VU	It is indigenous and endemic and is therefore likely to occur on the project site.
Orchidaceae	*Holothrix*	*randii*		NT	It is indigenous to the area.
Proteaceae	*Leucospermum*	*saxosum*		EN	It is indigenous to the area.

During the survey of the project area undertaken as part of the Terrestrial Ecology Impact Assessment, it was noted that the southern and eastern sections supported four provincially protected plant species: *Eulophia ovalis* var. *bainesii* (Cream courting harlequin orchid), *Aloe maculata* (Soap aloe), *Protea caffra* subsp. *caffra* (Common sugarbush), and *Cussonia paniculata* subsp. *sinuata* (Mountain cabbagetree). One flora species of conservation concern was recorded, namely, *Hypoxis hemerocallidea* (Star-flower), which was observed within the southwestern portion of the project area. The species is listed as 'Declining' by the national red-list.

4. MITIGATION & AVOIDANCE OPTIONS

The primary mitigation and avoidance measure that must be implemented at the pre-construction phase is the Pre-construction Walk-Through of the development footprint. This defines which and how many individuals of listed and protected species are found within the development footprint. This information is required for GDARD permits which must be obtained before construction can commence.

Where listed plant species fall within the development footprint and avoidance is not possible, then it may be possible to translocate the affected individuals outside of the development footprint. Recommendations in this regard would be made following the walk-through of the facility development footprint before construction, where all listed and protected species within the development footprint will be identified and relocated within the Country Club Johannesburg's premises.

5. RESCUE AND PROTECTION PLAN

5.1. Pre-construction

» Identification of all listed species which may occur within the site, based on the SANBI POSA database as well as the specialist BA studies for the site and any other relevant literature.
» Before construction commences at the site, the following actions should be taken:
  - A walk-through of the final development footprint by a suitably qualified botanist/ecologist to locate and identify all listed and protected species which fall within the development footprint. This should happen during the flowering season at the site.

- A walk-through report following the walk-through which identifies areas where minor deviations to roads and other infrastructure can be made to avoid sensitive areas and important populations of listed species. The report should also contain a full list of localities where listed species occur within the development footprint and the number of affected individuals in each instance, so that this information can be used to comply with the permit conditions required by the relevant legislation. Those species suitable for search as rescue should be identified in the walk-through report.
- A permit to clear the site and relocate species of concern outside the Country Club Johannesburg's premises will be required from the GDARD before construction commences.
- Once the permits have been issued, there should be a search and rescue operation of all listed species that cannot be avoided, which have been identified in the walk-through report as being suitable for search and rescue within the development footprint. Affected individuals should be translocated to a similar habitat outside of the development footprint and marked for monitoring purposes.

5.2. Construction

» Vegetation clearing should take place in a phased manner, so that large cleared areas are not left standing with no activity for long periods of time and pose a wind and water erosion risk. This will require coordination between the contractor and EO, to ensure that the EO is able to monitor activities appropriately.
» All cleared material must be handled according to the Revegetation and Rehabilitation Plan and used to encourage the recovery of disturbed areas.
» EO to monitor vegetation clearing at the site. Any deviations from the plans that may be required should first be checked for listed species by the EO and any listed species present which are able to survive translocation should be translocated to a safe site.
» All areas to be cleared should be demarcated with construction tape, survey markers or similar. All construction vehicles should work only within the designated area.
» Plants suitable for translocation or for use in rehabilitation of already cleared areas should be identified and relocated before general clearing takes place.
» Any listed species observed within the development footprint that were missed during the pre-construction plant sweeps must be translocated to a safe site before clearing commences.
» Many listed species are also sought after for traditional medicine or by collectors and so the EO and ECO must ensure that all staff attend environmental induction training in which the legal and conservation aspects of harvesting plants from the wild are discussed.

5.3. Operation

» The collecting of plants of their parts must be strictly forbidden and signs stating so must be placed at the project area.

6. MONITORING AND REPORTING REQUIREMENTS

The following reporting and monitoring requirements are recommended as part of the plant rescue and protection plan:

» Pre-construction walk-through report detailing the location and distribution of all listed and protected species. The report must include recommendations of route adjustments where necessary, as well as

provide a full account of how many individuals of each listed species will be impacted by the development. Details of plants suitable for search and rescue must also be included.

» Permit applications to GDARD. This requires the walk-through report as well as the identification and quantification of all listed and protected species within the development footprint. The permit is required before any search and rescue or vegetation clearance can take place. All documentation associated with this process needs to be retained and the final clearing permit must be kept at the site.
» Active daily monitoring of clearing during construction by the EO to ensure that listed species and sensitive habitats are avoided. All incidents must be recorded along with the remedial measures implemented.
» Post-construction monitoring of plants translocated during search and rescue to evaluate the success of the intervention. Monitoring for a year post-transplant should be sufficient to gauge success.

APPENDIX D:
CURRICULCUM VITAE OF THE PROJECT TEAM

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CURRICULUM VITAE OF MARIKE JANSE VAN VUUREN

Profession : Environmental Compliance Consultant

Specialisation: Environmental Compliance, report writing, report reviewing for various construction and renewable energy projects

Work Experience: 8 years' experience as an Environmental Officer and Environmental Consultant

VOCATIONAL EXPERIENCE

I have an honours degree in Geography with an undergraduate degree in Geography and Environmental Management and currently have 7 years' experience in Environmental Management in the Construction Environment as an Environmental Consultant and Environmental Officer. I am also a registered candidate Environmental Assessment Practitioner (EAP) - 2020/1677 (EAPASA).

I am currently employed as an Environmental Compliance Consultant for Savannah Environmental. As an Environmental Compliance Consultant, I have gained extensive experience in auditing as the ECO and lead auditor for various construction, power station and renewable energy projects.

Since 2016 I was previously employed by EP3 Environmental (Pty) Ltd as an Environmental Officer and was promoted to an Environmental Consultant from January 2019 until August 2019. As an Environmental Consultant I mostly carried out ECO roles and responsibilities, auditing various sites (from residential to green building projects), conducting Air and Water Monitoring and compiling monthly environmental compliance reports in terms of the Water Use Licence (WUL), Environmental Management Plan (EMP) and Environmental Authorisation (EA). As an ECO I also had to guide the projects with cost effective solutions and initiatives that will ensure environmental legal compliance.

Since 2016 until January 2019 I was an Environmental Officer, appointed by EP3 Environmental (Pty Ltd) who worked directly for Liciastar (main Contractor) at Kathu Solar Park near Kathu in the Northern Cape. It was a 100MW Concentrated Solar Power (CSP) project with a parabolic through system, equipped with a molten salt storage system that allows 4.5 hours of thermal energy storage. The project can provide 179 000 local homes with electricity for the next 20 years. The estimated project value being R12 billion. It is estimated that this project will save six million tons of CO2 over the next 20 years. I was the sole Environmental Officer managing the Kathu Solar Park from start to finish. During my time there, I managed 1800 site employees from different countries and cultures, implementing environmental compliance on the project according to the ISO 14001 system. I designed and implemented the entire site's waste management strategy with the aim to reduce our carbon footprint and therefore obtained extensive knowledge about various types of general and hazardous waste (i.e. HTF - heat transfer fluid, acids, diesel, petrol, cement, different types of oil and lubricants etc.), ensuring that we recycled 93% of all of the waste that was generated on site. An achievement I am very proud of and have been praised extensively by several esteemed industry players. In addition, I was also responsible for the implementation of cost effective storm water management initiatives, the conducting of water quality monitoring, the rehabilitation of previously disturbed areas, managing a housekeeping team of at least 10 site employees, continuous incident reporting and close-out, compiled monthly reports for the client, managed all sub-contractors on site and ensured overall environmental legal compliance by means of monthly audits. Special care was

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also taken to safely relocate various animals such as snakes, scorpions, birds, rock monitors etc. and I also received training to be a certified snake handler.

In 2013 I was appointed by Basil Read as an Environmental Officer until 2016 (3.5 years). I managed two projects for 6-7months simultaneously until December 2013. Both projects are road construction projects: Rehabilitation of National Road R23 Section 2 between Standerton and Greylingstad (Km 56,0) (52,0 km) with an estimated project value of R 796 695 511.00. Rehabilitation of National Road R23 Section 1 between Platrand (km 52,0) and Standerton (km 82,0) (26.3,0) with an estimated project value of R 414 767 797.40. From January 2014 I was only managing the project from Standerton to Greylingstad. For my ECO audits I have received an average EMP compliance score of 93%. I've obtained great knowledge about waste management, rehabilitation of borrow pits/quarries, Risks – aspects and impacts, storm water and siltation management, EMP legal compliance, the reporting, recording and investigation of environmental incidents, providing environmental awareness and inductions to all employees and implementing recycling initiatives. I was also responsible for the successful removal and relocation of a large quantity of protected plant species e.g. African Potato and Crinum Macowanii and had to obtain the necessary permits in this regard.

I received the award for Best First Year and Best Second Year student in Geography as well as Best Third Year student in Public Management at the University of the Free State. In addition, I was awarded a Golden Key International Honour Society membership for achieving academic marks which placed me amongst the top 15% students at the University.

SKILLS BASE AND CORE COMPETENCIES

- Environmental Compliance
- Water quality monitoring and reporting
- Dust monitoring and report writing
- Environmental Management systems (ISO 14001)
- Environmental compliance legal auditing and report writing
- Environmental Management
- Implementation of Environmental Management Plans
- Waste management and recycling
- EMPr part 1 amendments
- EA part 1 amendments
- Report submissions to the DEA

My role and responsibilities as an Environmental Compliance Consultant is to undertake tasks related to the development of environmental Management systems, compliance monitoring and audits, and new business development. Report review in terms of project-specific Environmental Authorisations and project-specific Environmental Management plans, compliance verification against other Environmental legislation such as the National Water Act; or the National Environmental Management: Waste Act. Research of related environmental policy documentation, efficient and quality report writing and reviewing, liaison with relevant environmental authorities, site visits, revision of Environmental Management Programmes (EMPrs) as well as assistance to Environmental Assessment Practitioners (EAPs) in terms of reporting and permit applications.

EDUCATION AND PROFESSIONAL STATUS

Degrees:

- Postgraduate Degree: B.A. Geography Honours at the University of the Free State
- Undergraduate Degree: B.A. Geography and Environmental Management at the University of the Free State

Short Courses:

- Diploma – Canine Behaviour and Training Instructor (August 2020) – Registration number: 2020070
- Attended a Raptor Identification course, hosted by Ulrich Oberprieler (2012)
- Snake handling course (2017)

Professional Society Affiliations:

- Registered Candidate Environmental Assessment Practitioner - 2020/1677 (EAPASA).

Other Relevant Skills:

- Canine Behaviour and Training Instructor
- Certified snake handler and relocator

EMPLOYMENT

Date	Company	Roles and Responsibilities
22 June 2020 - Current:	Savannah Environmental (Pty) Ltd	Environmental Compliance Consultant Tasks include: Undertaking tasks related to the development of environmental Management systems,

Date	Company	Roles and Responsibilities
		compliance monitoring and audits, and new business development. Report review in terms of project-specific Environmental Authorisations and project-specific Environmental Management plans, compliance verification against other Environmental legislation such as the National Water Act; or the National Environmental Management: Waste Act. Research of related environmental policy documentation, efficient and quality report writing and reviewing, liaison with relevant environmental authorities, site visits, revision of Environmental Management Programmes (EMPrs) as well as assistance to Environmental Assessment Practitioners (EAPs) in terms of reporting and permit applications.
January 2019 – 6 August 2019	EP3 Environmental Pty (Ltd)	*Environmental Consultant* Tasks included: Conducting monthly site inspections, monthly ECO reports detailing the level of compliance achieved in terms of the project EMPr and EA/WUL reports, conducting monthly water quality monitoring and dust monitoring on various projects and compiling Water Quality and Air Quality monitoring reports on a monthly basis, documenting shortfalls and providing recommendations in all reports in order to ensure improved environmental compliance.
1 October 2016 – 1 January 2019	EP3 Environmental Pty (Ltd)	*Environmental Officer* Tasks included: Waste management, incident reporting, sub-contractor auditing, rehabilitation of areas that was affected by construction, implementation of the Environmental Management Plan, carbon footprint monitoring and reporting, initiated recycling initiatives, reviewing of method statements, writing of procedures and compiling monthly reports for the client, catching and relocation of animals encountered during construction operations on site to a designated off-set area, ensuring overall environmental legal compliance during the construction phase of the project, alien invasive management and daily site inspections.
2 May 2013 – 23 September 2016	Basil Read Limited	*Environmental Officer* Tasks included: Waste management, rehabilitation of borrow pits/quarries, Risks – aspects and impacts, storm water and siltation management, EMP legal compliance, the reporting, recording and investigation of environmental incidents,

Date	Company	Roles and Responsibilities
		providing environmental awareness and inductions to all employees and implementing recycling initiatives. The removal and relocation of protected plant species e.g. African Potato and Crinum Macowanii and the obtainment of the necessary permits in this regard.

PROJECT EXPERIENCE

Marike is an Environmental Compliance Consultant with 8 years' experience as an Environmental Officer and Environmental Consultant in the Environmental Construction industry. Marike holds an honours degree in Geography with an undergraduate degree in Geography and Environmental Management and is a registered Candidate Environmental Assessment Practitioner – 2020/1677 (EAPASA). Marike has extensive experience in Environmental Compliance and auditing and report writing for various construction and renewable energy projects.

Project experience includes

RENEWABLE POWER GENERATION PROJECTS: CONCENTRATED SOLAR FACILITIES (CSP)

Environmental Impact Assessments and Environmental Management Programmes

Project Name & Location	*Client Name*	*Role*
Xina Solar One Thermal Plant, Northern Cape	*Abengoa Solar*	*EMPr amendment and submission*
Kaxu Solar One Thermal Plant, Northern Cape	*Abengoa Solar*	*EMPr amendment and submission*

Environmental Compliance, Auditing and ECO

Project Name & Location	*Client Name*	*Role*
Kathu Solar Park near Kathu, Northern Cape	*Kathu Solar Park/Engie*	*Environmental Officer for the construction of the project and Environmental Control Officer for the construction close-out audit*
Khi Solar One, Upington, Northern Cape	*Khi Solar One (RF)(Pty)(Ltd)*	*Environmental Control Officer*
Karoshoek, near Upington, Northern Cape	*Karoshoek Solar One (RF) (Pty) Ltd*	*ECO auditing and report writing in terms of the IWUL.*

RENEWABLE POWER GENERATION PROJECTS: SOLAR ENERGY FACILITIES

Environmental Compliance, Auditing and ECO

Sishen PV Solar Facility – Near Kathu, Northern Cape	*Windfall 59 Properties (Pty) Ltd*	*Environmental Control Officer*

Aggeneys PV solar plant in the Northern Cape province	*Ramizone (RF) Proprietary Limited*	*ECO for the ad hoc auditing and reporting for the monitoring and close-out of rehabilitation.*
Konkoonsies II PV solar plant in the Northern Cape Province	*Ramizone (RF) Proprietary Limited*	*ECO for the ad hoc auditing and reporting for the monitoring and close-out of rehabilitation.*
Zeerust PV solar plant in the North West province	*Istoguard Proprietary Limited*	*Temporary Environmental Officer for the project to ensure compliance to all legal requirements.*
De Wildt PV solar plant in the North West province	*Ingweguard Proprietary Limited*	*Temporary Environmental Officer for the project to ensure compliance to all legal requirements.*
Adams Solar 19MW PV Solar Power generation plant near Hotazel, Northern Cape Province	*Sola Group*	*ECO for the auditing and reporting of construction activities.*

RENEWABLE POWER GENERATION PROJECTS: WIND ENERGY FACILITIES

Environmental Impact Assessments and Environmental Management Programmes

Project Name & Location	***Client Name***	***Role***
Dorper Wind Energy Facility on a site near Molteno, Eastern Cape	*Dorper Wind Farm (RF) (Pty) Ltd*	*EMPr amendment*

INFRASTRUCTURE DEVELOPMENT PROJECTS (BRIDGES, PIPELINES, ROADS, WATER RESOURCES, STORAGE, ETC)

Environmental Compliance, Auditing and ECO

Project Name & Location	***Client Name***	***Role***
Rehabilitation of National Road R23 Section 2 between Standerton and Greylingstad (Km 56,0) (52,0 km)	*SANRAL*	*Environmental Officer*
Rehabilitation of National Road R23 Section 1 between Platrand (km 52,0) and Standerton (km 82,0) (26.3,0)	*SANRAL*	*Environmental Officer*
Walter Sisulu National Botanical Garden Stream Crossing Upgrade, Johannesburg, Gauteng	*SANBI*	*Environmental Control Officer*
South African Radio Astronomy Observatory (SARAO)	*SARAO*	*Environmental Control Officer for the expansion of the MeerKAT telescope*

CONVENTIONAL POWER GENERATION PROJECTS (COAL)

Environmental Compliance, Auditing and ECO

Project Name & Location	***Client Name***	***Role***
Tutuka Power Station annual legal audit, near Standerton, Mpumalanga	*ESKOM*	*Environmental Compliance Lead auditor*

GRID INFRASTRUCTURE PROJECTS

Environmental Impact Assessments and Environmental Management Programmes

Project Name & Location	***Client Name***	***Role***
Excelsior OHL EA part 1 amendment	*BioTherm Energy (Pty) Ltd*	*Application for an EA part 1 amendment*

Environmental Compliance, Auditing and ECO

Project Name & Location	***Client Name***	***Role***
Sorata, Witsieshoek, near Harrismith, Free State	*ESKOM Holdings SOC Limited*	*Environmental Control Officer*

GAS PROJECTS

Environmental Compliance, Auditing and ECO

Project Name & Location	***Client Name***	***Role***
Wadeville Gas pipeline project, Wadeville, Gauteng Province	*Phambili Gas (Pty) Ltd*	*Environmental Control Officer for the auditing and reporting of construction activities.*
Nigel Gas pipeline project, Nigel, Gauteng Province	*Phambili Gas (Pty) Ltd*	*Environmental Control Officer for the auditing and reporting of construction activities.*

MINING SECTOR PROJECTS

Environmental Compliance, Auditing and ECO

Project Name & Location	***Client Name***	***Role***
Tronox Namakwa Sands, Western Cape	*Tronox Namakwa Sands*	*Lead Auditor (EMPr, WML, IWUL's)*
Kusasalethu Harmony Gold near Carletonville, Gauteng	*Harmony Gold*	*Lead Auditor (WUL)*

HOUSING AND URBAN PROJECTS

Environmental Compliance, Auditing and ECO

Project Name & Location	***Client Name***	***Role***
Fleurhof Integrated Housing development, Johannesburg, Gauteng	*Calgro M3 Developments (Pty) Ltd*	*Environmental Consultant*
La Vie Nouvelle Retirement and Wellness Village, Johannesburg, Gauteng	*Calgro M3 Developments (Pty) Ltd*	*Environmental Consultant*
Jabulani CBD Mixed use development, Soweto, Gauteng	*Calgro M3 Developments (Pty) Ltd*	*Environmental Consultant*
Westend Office Park – Green Star Office Park Building development, Pretoria	*Abland Property Developers (Pty) Ltd*	*Environmental Consultant*
Ekurhuleni Water Care Company (ERWAT), Gauteng Province	*ERWAT*	*Environmental Compliance Consultant – drafting audit reports*
Department of Agriculture Land Reform and Rural Development (DALRRD), Head Office Complex, Berea Park, Pretoria in the Gauteng Province	*WBHO*	*Environmental Control Officer*

INDUSTRIAL PROJECTS

Training

Project Name & Location	***Client Name***	***Role***
GfE MIR Minerals and Alloys in Vulcania, Gauteng	*GfE MIR Alloys and Minerals*	*Provided Environmental training*
Ekurhuleni Water Care Company (ERWAT), Gauteng Province	*Ekurhuleni Water Care Company (ERWAT)*	*Audit report writing*

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CURRICULUM VITAE OF MMAKOENA MMOLA

Profession : Senior Environmental Assessment Practitioner

Specialisation: Environmental Permitting, Environmental Assessments, and Compliance

Work Experience: 5 years

VOCATIONAL EXPERIENCE

Mmakoena is an Environmental Consultant with 5 years of experience in the environmental field. She holds a B.Sc. (Hons) in Geochemistry from the University of the Witwatersrand and is currently completing her B.Sc. (Hons) in Environmental Management with the University of South Africa. She is registered as a Professional Natural Scientist with the South African Council for Natural Scientific Professions (SACNASP), Registration Number: 126748 and an Environmental Assessment Practitioner with the Environmental Assessment Practitioners Association of South Africa, Number 2019/260.

Mmakoena's experience includes Environmental Impact Assessment (EIA) permitting for a variety of projects, ranging from infrastructure (transport services and localised infrastructure), mining, waste management services, and renewable energy. These include Environmental Authorisations (Basic Assessments and Scoping and Environmental Impact Assessments), Water Use Authorisations, compliance auditing and mining permitting. She therefore has a wide ranging experience with various legislation including the National Environmental Management Act (NEMA), National Heritage Resources Act (NHRA), National Environmental Management Waste Management Act (NEM:WA), National Environmental Management Biodiversity Act (NEM:BA), the Mineral and Petroleum Resources Development Act (MPRDA) and the National Water Act (NWA), having applied them for numerous small, medium and large-scale projects across various industries. Mmakoena also has experience beyond the permitting sphere through screening assessments for potential developers, including pre-feasibility desktop screening and regulatory and permitting approval screening.

SKILLS BASE AND CORE COMPETENCIES

- Environmental management, environmental impacts assessments, environmental permitting and compliance monitoring
- Project management
- Public participation and stakeholder engagement
- Field work skills
- Adaptability and ability to handle pressure
- Organisational skills
- MS Office Package (Word, PowerPoint and Excel)
- Google Earth
- ArcGIS (basic)

EDUCATION AND PROFESSIONAL STATUS

Degrees:

- Bachelor of Science (Hons) Environmental Management, in progress, University of South Africa
- Bachelor of Science (Hons) Geochemistry, 2016, University of the Witwatersrand
- Bachelor of Science Geology, 2015, University of the Witwatersrand

Short Courses and Workshops Attended:

- Environmental Law Update Webinar, 2021, Inlexso
- Environmental Management and Regulations, 2018, Kuvimbika
- Research Methodology and Report Writing, 2017, Imsimbi Training

Professional Society Affiliations:

- Professional Natural Scientist, Environmental Science, South African Council for Natural and Scientific Professions – Registration Number: 126748
- Environmental Assessment Practitioner with the Environmental Assessment Practitioners Association of South Africa - Number 2019/260.

EMPLOYMENT

Date	Company	Roles and Responsibilities
2022 - Current	Savannah Environmental (Pty) Ltd	*Senior Environmental Assessment Practitioner* Tasks include: • *Undertake environmental screening assessments, environmental permitting and environmental authorisation applications.* • *Undertake water use authorisation applications on the e-WULAA system.* • *Complete Part 1 and Part 2 EA amendment applications and prepare motivation reports in support of applications for Part 2 EA amendments.* • *Undertake environmental compliance audits and provide ECO services.* • *Efficient and quality report writing to execute and manage the delivery of environmental impact assessment (EIA) reports and Environmental Management Programmes in line with the requirements of the National Environmental Management Act and EIA Regulations.* • *Liaison with relevant environmental authorities.* • *Execution of the public participation process.* • *Professional client liaison.* • *Project management.* • *Manage third parties or sub-consultants to which functions have been outsourced.* • *Preparation of proposals and budgets.* • *Mentoring and advising junior environmental consultants and evaluating their work.*

Date	Company	Roles and Responsibilities
2021 - Current:	Savannah Environmental (Pty) Ltd	*Environmental Assessment Practitioner* Tasks include: • *Undertake environmental screening assessments, environmental permitting and environmental authorisation applications.* • *Undertake water use authorisation applications on the e-WULAA system.* • *Complete Part 1 and Part 2 EA amendment applications and prepare motivation reports in support of applications for Part 2 EA amendments.* • *Undertake environmental compliance audits and provide ECO services.* • *Efficient and quality report writing to execute and manage the delivery of environmental impact assessment (EIA) reports and Environmental Management Programmes in line with the requirements of the National Environmental Management Act and EIA Regulations.* • *Liaison with relevant environmental authorities.* • *Execution of the public participation process.* • *Professional client liaison.* • *Project management.* • *Manage third parties or sub-consultants to which functions have been outsourced.* • *Preparation of proposals and budgets.*
2019 - 2020	Golder Associates Africa (Pty) Ltd	*Junior Environmental Consultant* Tasks included: • *Providing assistance on local environmental and social impact assessments.* • *Completing water use license applications.* • *Undertaking environmental compliance and water use license audits.* • *Providing ECO Services.* • *Conducting annual integrated water and waste management plan updates.* • *Preparing environmental screening reports.* • *Preparing project proposal documents and budgets.* • *Assisting in the compilation of terrestrial ecology and wetland impact assessment reports and mine closure plans.* • *Undertaking field work.* • *Liaising with clients and regulatory authorities.* • *Providing administrative support to project managers.*
2017 - 2019	Shango Solutions	*Junior Consultant* Tasks included: • *Completing environmental authorisation, prospecting and mining permit applications.* • *Completing Section 102 amendment applications.*

Date	Company	Roles and Responsibilities
		• *Conducting performance assessments and financial provisioning assessments in accordance with the Mineral and Petroleum Resources Development Act (MPRDA).* • *Compiling basic assessment reports and synthesizing work from other environmental specialists for inclusion in the basic assessment reports.* • *Identifying potential environmental impacts and preparing environmental management programmes detailing suitable mitigation measures.* • *Identification of key stakeholders, landowners, neighbours, organs of state and other applicable interested and affected parties for specific projects and compilation of Interested and Affected Party (I&AP) databases.* • *Drafting public participation documentation according to regulatory requirements: Background Information Documents; site notices and adverts; letters to stakeholders and/or Interested and Affected Parties; and comments and responses reports.* • *Arranging and facilitating public meetings.* • *Conducting consultations with community leaders, tribal chiefs, affected landowners, etc.* • *Providing administrative support to project managers.*

PROJECT EXPERIENCE

RENEWABLE POWER GENERATION PROJECTS: SOLAR ENERGY FACILITIES AND WIND ENERGY FACILITIES

Environmental Impact Assessments and Environmental Management Programmes

Project Name & Location	***Client Name***	***Role***
400MW (4x 100MW) Mutsho Solar PV, Limpopo Province	*CRI Eagle*	*EAP*
Angora Wind Energy Facility, Northern Cape Province	*Great Karoo Renewable Energy (Pty) Ltd*	*EAP*
Merino Wind Energy Facility, Northern Cape Province	*Great Karoo Renewable Energy (Pty) Ltd*	*EAP*
Vrede and Rondavel Solar PV Facilities, Free State Province	*Mainstream Renewable Energy Developments (Pty) Ltd*	*Assistant EAP*
40MW Buffelspoort Solar PV Energy Facility, North-West Province	*Buffelspoort Solar Project*	*EAP*
100MW Northam Solar PV Energy Facility, Limpopo Province	*Zondereinde Solar Proprietary Limited*	*EAP*
Ummbila Emoyeni Renewable Farm, Mpumalanga Province	*Emoyeni Renewable Energy Farm (Pty) Ltd*	*EAP*

Basic Assessments

Project Name & Location	***Client Name***	***Role***
Northam Solar Photovoltaic (PV) Facility, Limpopo Province	*Northam Platinum Limited*	*EAP*
Hamlett Wind Energy Facility, Eastern Cape Province (project in progress)	*Hamlett (Pty) Ltd*	*EAP*
19.99MW Becrux Solar PV Facility, Mpumalanga Province	*The SOLA Group*	*EAP*
10MW Becrux Two Solar PV Facility, Free State Province	*The SOLA Group*	*EAP*
Aberdeen Wind Farm cluster - 4x 170MW Wind	*Atlantic Energy Partners (Pty) Ltd*	*EAP*

Screening Studies

Project Name & Location	***Client Name***	***Role***
Environmental Screening for the Proposed Secunda and Sasolburg Solar PV Facilities, Free State Province and Mpumalanga Province	*The SOLA Group*	*EAP*
Pre-feasibility Desktop Screening and Fatal Flaw Scan for wind project near Saldanha, Western Cape	*SaldaWind (Pty) Ltd*	*EAP*

Environmental Permitting, S53, Water Use Licence (WUL), Waste Management Licence (WML) & Other Applications

Project Name & Location	***Client Name***	***Role***
Biodiversity Permitting and General Authorisation Applications for the Harmony Tshepong, Nyala and Eland Solar PV Facilities, Free State Province	*Nyala Photovoltaic (Pty) Ltd* *Tshepong Photovoltaic (Pty) Ltd* *Eland Photovoltaic (Pty) Ltd*	*EAP*
General Authorisation Application for the Northam Solar PV Facility, Limpopo Province	*Northam Platinum Limited*	*EAP*

Environmental Authorisation Amendment Applications

Project Name & Location	***Client Name***	***Role***
Part I Amendment: Proposed 75MW Sannaspos PV Plant (Phase 1) and its associated infrastructure, Free State Province	*ENGIE BU Africa*	*EAP*
Part I Amendment: Construction of the 140MW Korana Wind Energy Facility, Northern Cape Province	*Mainstream Renewable Energy Developments (Pty) Ltd*	*EAP*
Part I Amendment: Construction of the 75MW Korana Solar Energy Facility, Northern Cape Province	*Mainstream Renewable Energy Developments (Pty) Ltd*	*EAP*
Part I Amendment: Construction of the 140MW Khai-Ma Wind Energy Facility, Northern Cape Province	*Mainstream Renewable Energy Developments (Pty) Ltd*	*EAP*

GRID INFRASTRUCTURE PROJECTS

Basic Assessments

Project Name & Location	***Client Name***	***Role***

Electrical Grid Infrastructure for the Kolkies and Sadawa PV clusters, Western Cape Province	*Mainstream Renewable Energy Developments (Pty) Ltd*	*EAP*
Electrical Grid Infrastructure for the Vrede and Rondavel Solar PV Facilities, Free State Province	*Mainstream Renewable Energy Developments (Pty) Ltd*	*EAP*
Sadawa Collector Substation, Western Cape Province	*Mainstream Renewable Energy Developments (Pty) Ltd*	*EAP*
Main Transmission Substation (MTS) associated with the Choje Wind Farm cluster, Eastern Cape Province (project in progress)	*Wind Relic (Pty) Ltd*	*EAP*
Great Karoo Electrical Grid Infrastructure, Northern Cape Province	*Great Karoo Renewable Energy (Pty) Ltd*	*EAP*
Electrical Grid Infrastructure for the Ummbila Emoyeni Renewable Farm, Mpumalanga Province	*Emoyeni Renewable Energy Farm (Pty) Ltd*	*EAP*
Electrical Grid Infrastructure for the Aberdeen Wind Farm Cluster	*Atlantic Energy Partners (Pty) Ltd*	*EAP*

Environmental Authorisation Amendment Applications

Project Name & Location	***Client Name***	***Role***
Part I Amendment: Construction of a 132kV power lines associated with the Poortjies Wind Energy Facility, Northern Cape Province	*Mainstream Renewable Energy Developments (Pty) Ltd*	*EAP*
Part I Amendment: Construction of a 132kV power lines associated with the Khai-Ma Wind Energy Facility, Northern Cape Province	*Mainstream Renewable Energy Developments (Pty) Ltd*	*EAP*
Part II Amendment: Korana solar power line Part 2 EA amendment, Northern Cape Province	*Mainstream Renewable Energy Developments (Pty) Ltd*	*EAP*

GAS EXPLORATION PROJECTS

Environmental Impact Assessments and Environmental Management Programmes

Project Name & Location	***Client Name***	***Role***
Kroonstad Gas Exploration Right and Environmental Authorisation, Free State Province	*Western Allen Ridge Gold Mines (Pty) Ltd*	*Assistant EAP and Public Participation Consultant*

MINING PROJECTS

Environmental Impact Assessments and Environmental Management Programmes

Project Name & Location	***Client Name***	***Role***
Pure Source Mine Mining Right Application, Free State Province	*Monte Cristo Commercial Park (Pty) Ltd*	*Assistant EAP and Public Participation Consultant*

Basic Assessments

Project Name & Location	***Client Name***	***Role***
Basic Assessment for the Western Margin Gap West Prospecting Right, Free State Province	*White Rivers Exploration (Pty) Ltd*	*Assistant EAP*

Basic Assessment for the Ventersburg Consolidated Prospecting Right, Free State Province	*White Rivers Exploration (Pty) Ltd*	*Assistant EAP*
Basic Assessment for the Nkunzana Prospecting Right, KwaZulu-Natal Province	*WRE Base Metals (Pty) Ltd*	*Junior EAP*
Basic Assessment for the Kroonstad North Prospecting Right, Free State Province	*White Rivers Exploration (Pty) Ltd*	*Junior EAP*
Basic Assessment for the Vredefort West Extension Prospecting Right, Free State Province	*White Rivers Exploration (Pty) Ltd*	*Junior EAP*
Basic Assessment for the Beisa North Prospecting Right, Free State Province	*Sunshine Mineral Reserves (Pty) Ltd*	*EAP*
Basic Assessment for the Palmietfontein Mining Permit, North-West Province	*Palm Chrome (Py) Ltd*	*Assistant EAP*

Specialist Studies

Project Name & Location	***Client Name***	***Role***
New Largo Mine Closure and Rehabilitation Plan, Mpumalanga Province	*Seriti Coal*	*Junior Environmental Consultant*
Smarty Minerals Integrated Environmental Authorisation: Wetland Impact Assessment Report, Limpopo Province	*Smarty Minerals Investment (Pty) Ltd*	*Junior Environmental Consultant*
Glencore Water Treatment Plant Pipeline: Wetland Monitoring, Mpumalanga Province	*Glencore*	*Junior Environmental Consultant*

Environmental Compliance, Auditing and ECO

Project Name & Location	***Client Name***	***Role***
Glencore Merafe Wonderkop Smelter, Regulation 34 Audit, North West Province	*Glencore*	*Auditor*
Tshipi Borwa Mine Water Use Licence Audit, Northern Cape Province	*Tshipi Borwa Mine*	*Auditor*
Samancor Middelburg Ferrochrome: Construction of ore dryer, Mpumalanga Province	*Samancor Middelburg Ferrochrome*	*ECO*
Various Annual Financial Provision and Environmental Compliance Audits for prospecting sites as per the MPRDA, Free State and KwaZulu-Natal Province	*White River's Exploration (Pty) Ltd*	*Auditor*
Impala Platinum Limited – Springs annual external Water Use Licence Audit, Gauteng Province	*Impala Platinum Limited*	*Auditor*

INFRASTRUCTURE DEVELOPMENT PROJECTS (BRIDGES, PIPELINES, ROADS, WATER RESOURCES, STORAGE, ETC)

Specialist Studies

Project Name & Location	***Client Name***	***Role***
Closure cost model estimate and closure cost report for the Proposed Surface Pipeline and Associated Infrastructure, Gauteng Province	*AngloGold Ashanti*	*Junior Environmental Consultant*
Wetland Impact Assessment report for Proposed Surface Pipeline and Associated Infrastructure, Gauteng Province	*AngloGold Ashanti*	*Junior Environmental Consultant*

Environmental Compliance, Auditing and ECO

Project Name & Location	***Client Name***	***Role***
MWCAP-2A Environmental Management Audit, Limpopo Province	*Nexia SAB&T*	*Auditor*

AGRICULTURE PROJECTS

Environmental Permitting, S53, Water Use Licence (WUL), Waste Management Licence (WML) & Other Applications

Project Name & Location	***Client Name***	***Role***
Dew Crisp Water Use Licence Application, Gauteng Province	*Dew Crisp (Pty) Ltd*	*Junior Environmental Consultant (providing assistance)*

OTHER

Environmental Impact Assessments and Environmental Management Programmes

Project Name & Location	***Client Name***	***Role***
Anglo African Metals Zero Waste Recovery Solution, Mpumalanga Province	*Anglo African Metals (Pty) Ltd*	*EAP*
Eskom Majuba Landfill, Mpumalanga Province (project in progress)	*Eskom*	*EAP*
Expansion of Recreational and Sports Facilities at the Country Club Johannesburg	*Country Club Johannesburg*	*EAP*

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Johannesburg, South Africa

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CURRICULUM VITAE OF NONDUMISO BULUNGA

Comprehensive CV

Profession : Lead - Social, GIS and Stakeholder Engagement

Specialisation: Social, GIS and Stakeholder Engagement in the environmental field

Work Experience: 8 years in the Environmental field.

VOCATIONAL EXPERIENCE

Nondumiso Bulunga is a Social, GIS and Stakeholder Engagement Specialist at Savannah Environmental. Nondumiso has eight (8) years working experience in project management and facilitation in various industries such as environmental services field including but not limited to recycling, industrial, energy, mining and agriculture.

Working for small and large organisations, Nondumiso has gained exposure in research, collection of data, critical analysis, GIS, and environmental solutions. Nondumiso has worked on projects in South Africa and Malawi.

Nondumiso is very well versed in the IFC Environmental and Social Performance Standards (including IFC PS 2012) and the associated Equator Principles, which have informed the approach and standard for projects regarding ESIA. Nondumiso is skilled at organising and driving effective project teams at a scale relevant to the project's requirements. She has technical experience and can quickly identify the most pertinent issues of a particular project whilst focussing on driving project success by rigorously implementing project management tools.

Nondumiso has experience ranging over several aspects of social research, including the planning and execution of social surveys, participatory rural appraisal, sustainable livelihoods assessments, data management and statistical analysis, capturing and management of spatial data, stakeholder identification and community facilitation. She has worked in local and regional projects taking part in socioeconomic impact assessment, livelihood restoration plans and resettlement plans.

SKILLS BASE AND CORE COMPETENCIES

- Consultation
- Stakeholder Engagement
- Facilitation
- Social Impact Assessments
- Communication
- Project Management
- Project Coordination
- Research
- Training and Development
- Geographical Information Systems, Remote Sensing
- Stakeholder Engagement Plans
- Stakeholder Analysis and Mapping
- IFC Performance Standards
- Comments and Response Reports
- Grievance Mechanism
- Awarness Campaign

EDUCATION AND PROFESSIONAL STATUS

Degrees:

- 2018 : MSC GEOGRAPHICAL INFORMATION SYSTEM and REMOTE SENSING
- 2015 : BAHONS in GEOGRAPHY
- 2013 : BA in GEOGRAPHY AND SOCIOLOGY

Short Courses:

- 2015 One day information session on Modern Technologies and Pathways for the Energetic Use of Biomass
- 2015 One day Public lecture on Climate Change
- 2017 Accredited facilitation certification
- 2017 One day course on Office Management Training
- 2018 Resettlement as part of Impact Assessment

EMPLOYMENT

Duration	Position	Company	Roles and Responsibilities
May 2021 – current ●Permanent	Lead Consultant: Social, Stakeholder Engagement and GIS	Savannah Environmental (Pty) Ltd	Build, lead and manage a Stakeholder Consultation and Engagement team. Advance the Social Impact Assessment reporting service offering. Manage an in-house GIS team and upskill to improve and develop new deliverables for the EIA and Compliance teams. New business development, including development and driving the development of new products and/or services as part of the Savannah Environmental service offering. Manage and mentor staff and critically review and edit reporting/deliverables. Provide strategic input to business and project deliverables.

Duration	Position	Company	Roles and Responsibilities
October 2020 – February 2021 ●Contract	Data Analyst	Community Insights Groups (International)	Desk review of project documentation to inform data collection tools Contribute to the development of monitoring indicators Develop new databases of indicators and consolidate with existing databases from the client Develop household and focus group questionnaires Develop interview/ focus group guidelines Develop fieldwork plan Set up survey software Train local enumerators in the use of the survey software (over ZOOM) Provide remote support to the field team on the survey software Undertake phone KIIs Develop information campaign materials and visual aids for focus groups, KIIs Data organization and quality assurance during the field work (remote) Organize, clean and handover raw data to the client Desktop data analysis – qualitative and quantitative Produce and populate pivot and frequency distribution tables Produce narrative and graphic description of the data for the client report GIS Data Management and Handling Map creation and analysis
November 2019 – March 2021 ●Contract	Policy Coordinator Consultant	International Finance Corporation (International)	Support to the Agri-processing resource efficiency program Coordinate public and private stakeholders to propose specific policy Regulatory and procedural measures to promote improved water efficiency Convening a public-private dialogue process to reach consensus Manage partnerships with local authorities Due Diligence and risk assessment
April 2020 – October 2020 ●Contract	Project Manager	Pax Advisory (Pty) Ltd (South African)	Plan and implement projects Define project scope Help define goals Define deliverables Define tasks and required resources Create schedule Project timeline Manage budget Allocate project resources Track deliverables Support and direct team Lead quality assurance Monitor and report on project progress Present to stakeholders reports on progress as well as problems and solutions Implement and manage change Project data management

Duration	Position	Company	Roles and Responsibilities
March 2017- November 2019 ●Permanent	Environmental Stakeholder Consultant	Digby Wells Environmental (Pty) Ltd (South African)	Addressing issues and needs of communities' Public participation process and communicate Liaise with stakeholders Scientific report writing for social and stakeholder engagement inclusion Assistance is provided in maintaining and updating Interested and Affected database Print / photocopy and the deliver documents to various stakeholders Distribute information (placing posters, posting, mailing, emailing, sending SMS messages, etc.) Assist with the project administration on large and small projects Data collection and inclusion into scientific reports Assist with information material and report compilation material
February 2015 – February 2017 ●Permanent	Environmental Officer	EcoPartners (Pty) Ltd (South African)	Public participation for environmental legal authorisation applications Compiling legal registers and monthly legal update letter Supply all services required for I and APs Write and edit reports Research various environmental aspects. Environmental awareness training Creation of maps for all environmental applications Collection of spatial information Build and Maintain data and information libraries Data collection and analysis Environmental legal authorisation applications
February 2014- September 2014 ●Permanent	Graduate Researcher	Linkd Environmental Services (Pty) Ltd (South African)	Research for projects given as tenders Collecting data from the different forms of information Collecting data for the purpose of controlling it and reporting on it in order to formulate status quo Create reports based on the data, give recommendations for better quality data to be collected Participate in workshop strategy sessions. Help implement policies formulated in strategy sessions and approved by steerco.
October 2014 – December 2014 ●Contract	Researcher and Report Writer	South African Cities Network (Pty) Ltd (South African)	Research Project co-ordination and management Knowledge management Reporting and administrative support GIS support and map analysis Report writing and research gaps

PROJECT EXPERIENCE

Project Name & Location	Client Name	Role
EIA for the Buffelspoort Solar Project, North West Province	Total Eren/Chariot Transitional Power	Social Impact Assessor and Public Participation Consultant
Environmental, Social & Governance (ESG) assessment	Richards Bay Coal Terminal (Pty) Ltd	Social Assessor
To Conduct Study of Sanitation Systems at Two Health Facilities, Swaziland	Ministry of Health, Swaziland	Environmental, Social and Health Specialist

Project Name & Location	**Client Name**	**Role**
Social Impact Assessment - Doornhoek PV Cluster including 132kV line to the Hermes MTS	Atlantic Energy Partners (Pty) Ltd	Social Impact Assessor
Stakeholder engagement for the Socio-economic Impact Assessment for the closure of 3 Eskom power stations	Urban Econ on behalf of Eskom	Project Manager
Exxaro 22-month Resettlement Monitoring Proposal for Phumulani Agri-Village, Mpumalanga	CSG Water & Environmental Consultants on behalf of Exxaro	Report Writer Reviewer, Quality Assurance & Project Support
Environmental Impact Assessment for Agricultural and Pivot Development on various farm portions, Free State Province	Venter Boerdery (Pty) Ltd	Project Manager
Scoping and environmental Impact Report for 175 MW PV, North West	Sibanye Stillwater	Report Writer Reviewer, Quality Assurance & Project Support
EIA Process for Siyanda PV Facilities & BESS	SoLink	Social Impact Assessor and Public Participation Consultant
BA for Hopefield Watercourse Crossing	Umoya Energy (Pty) Ltd	Reviewer & Quality Assurance
BAR for the 10MW Sigma PV Project, Free State	SOLA Group	Social Impact Assessor
SIAs for 2x EIAs for PV & BESS at Siyanda Bakgatla Mine, Limpopo	SoLink	Social Impact Assessor
SIA for 2x 100MW PV south of Hartebeesfontein, North West - in Klerksdorp REDZ	Cape EPrac	Social Impact Assessor
Socio-economic impact assessments (Scoping/EIA) for Pofadder Wind farm cluster, Northern Cape	Atlantic Energy Partners (Pty) Ltd	Social Impact Assessor
Socio-economic impact assessments (Scoping/EIA) for Pofadder Wind farm cluster, Northern Cape	Engie Solar	Reviewer & Quality Assurance
BA for additional area for Grootspruit Solar PV facility, Free State Province	Engie Solar	Reviewer & Quality Assurance
EIA for additional area for Graspan Solar PV facility, Northern Cape Province	Engie Solar	Reviewer & Quality Assurance
EIA for additional area for Sannaspos Solar PV facility, Free State Province	Engie Solar	Reviewer & Quality Assurance
EIA for 225MW San Solar PV on a site north west of Kathu, Northern Cape Province	San Solar Energy (Pty) Ltd	Social Impact Assessor
SIA for a Battery Energy Storage System (BESS) within the authorised footprint of Hotazel Solar - amendment application	Cape EPrac	Social Impact Assessor
BA processes for 3x Kheis PV facilities	AGV Projects	Social Impact Assessor
Screening of sites for the placement of PV facilities near Northam, Limpopo Province	SoLink	GIS Specialist
BAR for the 10MW Sigma PV Project, Free State	SOLA Group	Social Impact Assessor
Land sensitivity analysis on the identified land for the Merafong Solar Farm Cluster Project	Gauteng Infrastructure Financing Agency	Social and GIS Specialist
EIA/WML for Majuba waste disposal facility	Eskom – Majuba Power Station	Reviewer & Quality Assurance
P2 amendment for Poortjies Wind Energy Facility	Mainstream Renewable Power	Reviewer & Quality Assurance
EIAs for 2x 100MW PV on a site west of Lichtenburg, North West	Atlantic Energy Partners (Pty) Ltd	Reviewer & Quality Assurance
EIA processes for the Great Karoo Renewable Energy Cluster	Great Karoo Renewable Energy	Reviewer & Quality Assurance
Proposed Grid Connection Infrastructure for the Woodhouse 1 and Woodhouse 2 Solar Energy Facilities	Genesis Eco-Energy Developments (Pty) Ltd	Report Writer Reviewer, Quality Assurance & Project Support
Environmental Impact Assessment And Public Participation Process For The Proposed Development Of The Nama Solar East Facility And Nama Solar West Solar Facility With Associated	Nama Solar East (Pty) Ltd and Nama Solar West (Pty) Ltd.	Reviewer, Quality Assurance & Project Support

Project Name & Location	**Client Name**	**Role**
Infrastructure, Northern Cape		
Proposed Development of a New Waste Disposal Site at the Eskom Majuba Power Station near Amersfoort, Dr Pixley Ka Seme Local Municipality, Mpumalanga Province	Eskom Holdings Ltd	Report Writer, Quality Assurance & GIS Support
The Construction of the 100MW Nku Solar Photovoltaic Facility (PV1), on portion 96 of the Farm Rondavel 85 and Farm Annex Rondavel, near Richmond, Northern Cape Province	Great Karoo Renewable Energy (Pty) Ltd	Reviewer, Quality Assurance & Project Support
Environment, Social & Governance (ESG) Assessment and Development of ESG Policy	Richards Bay Coal Terminal Proprietary Limited	Report Writer and Assessment Practitioner
Environmental Impact Assessment Process for 2X 100MW Solar PV Facilities	Atlantic Energy Partners (Pty) Ltd	Report Writer - Social Impact Assessment Quality Assurance/Reviewer
Moeding Solar PV Facility and Tiger Kloof Solar Facility with nearby settlements	Kabi (Pty) Ltd	Geographical Information Systems Specialist (GIS) & Reviewer/Quality Assurance
Solar PV Screening, Kathu Northern Cape Province	AGV Projects (Pty) Ltd	Report Writer, Researcher & Quality Assurance & GIS Support
Solar PV Screening/and or Wind Projects, Vredendal Western Cape Province	ABO Wind (Pty) Ltd	Report Writer, Researcher & Quality Assurance & GIS Support
Komsberg West Wind Energy Northern and Western Cape Provinces Revised Environmental Management Programme and Final Layout	Gunstfontein Wind Farm (Pty) Ltd,	Reviewer, Quality Assurance & Project Support
Grid Connection Infrastructure for the Namas Wind Farm	Genesis Namas Wind (Pty) Ltd	Reviewer, Quality Assurance & Project Support
Grid Connection Infrastructure for the Zonnequa Wind Farm	Gensis Zonnequa Wind (Pty) Ltd	Reviewer, Quality Assurance & Project Support
Proposed 10mw Northam Solar Pv Facility Near Thabazimbi, Limpopo Province	Northam Platinum Limited	Reviewer, Quality Assurance & Project Support
Amendment of the Environmental Authorisation for the Proposed Construction of The Gunstfontein Switching Station, 132kv Overhead Power Line And Ancillary Infrastructure For The Proposed Gunstfontein Wind Farm	Gunstfontein Wind Farm (Pty) Ltd	Geographical Information Systems Specialist (GIS) & Reviewer/Quality Assurance
Grid Connection Infrastructure, including 132kv Overhead Powerline, Switching Station And Ancillaries, For The Great Karoo Wind Farm, Northern Cape	Great Karoo Wind Farm (Pty) Ltd	Geographical Information Systems Specialist (GIS)
Perdekraal West Wind Energy Facility and Associated Infrastructure, Located in the Witzenburg Local Municipality Within The Western Cape Province	Perdekraal West Wind Farm (Pty) Ltd	Reviewer, Quality Assurance & Project Support
Pienaarspoort Wind Energy Facility 1, Western Cape Province	Pienaarspoort Wind Energy Facility 1 (Pty)	Reviewer, Quality Assurance & Project Support
Environmental Impact Assessment And Public Participation Process Bergriver Wind Farm, Western Cape Province	FE Berg River (Pty) Ltd	Stakeholder Engagement and Reviewer, Quality Assurance
Construction and operation of the 100MW Rondavel PV facility, BESS and associated infrastructure near Kroonstad, Free State Province	South Africa Mainstream Renewable Power Developments (Pty) Ltd	Reviewer, Quality Assurance & Project Support
Kolkies and Sadawa PV and EGI Suite of projects, Western Cape	South Africa Mainstream Renewable Power Developments (Pty) Ltd	Reviewer, Quality Assurance & Project Support
Cluster Of Renewable Energy Facilities And Redz 3 Power Corridor 400 Main Transmission Substation Between Somerset East And Makhanda, Eastern Cape Province	Wind Relic (Pty) Ltd	Reviewer, Quality Assurance & Project Support

Project Name & Location	**Client Name**	**Role**
Wind Garden Wind Farm And Fronteer Wind Farm Near Makhanda, Eastern Cape Province	Wind Garden (Pty) Ltd & Fronteer (Pty) Ltd	Reviewer, Quality Assurance & Project Support
Environmental Authorisation required for Prospecting Right Application on various Portions of the Farm Schaapkopje 194 HT, 5km North of Vryheid Town in the AbaQulusi Local Municipality, KwaZulu Natal	Tuutuuka Resources Proprietary Limited	Report Writer and Project Administrator, Stakeholder Engagement & GIS Support
Social Impact Assessment for the Proposed Infrastructure Amendments Environmental Authorisation and Water Use License	Seriti Power (Pty) Ltd	Report Writer- Stakeholder Engagement & GIS Support
Social Impact Assessment for the Proposed Middelburg Mining Services (MMS) Boschmanskrans Section Implementation of Wetland Mitigation and Offset Strategy	Seriti Power (Pty) Ltd	Report Writer- Stakeholder Engagement & GIS Support
Environmental Authorisation And Integrated Water Use Licence Application For The Proposed Liquid Mist Trading Beneficiation Plant Expansion Project	Liquid Mist (Pty) Ltd	Report Writer and GIS Support
Basic Assessment Process In Support Of The Proposed The Construction Of Doornpoort Pumping Main And Pumpstation, Emalahleni Local Municipality In The Mpumalanga Province	Lefatshe Infrastructure Services (Pty) Ltd	Report Writer and Project Administrator & GIS Support
Water Use Licence Renewal Application for the Inyanda Coal Wash Plant, on the Portions 2, 20 And 21 Of Farm Kalbasfontein 284 JS & Portion 4 of Farm Mooifontein 285 JS Near Witbank in the eMalahleni Local Municipality, Mpumalanga	Inyanda Mining Holdings	Report Writer and Project Administrator
Social Impact Assessment for the Proposed Ikwezi Vanadium Mining Project	Ikwezi Vanadium (Pty) Ltd	Report Writer – Social Impact & Project Administrator
Environmental Authorisation (EIA) for the proposed Giyani Renewable Energy Solar Photovoltaic Power	Giyani Renewable Energy	Report Writer- Stakeholder Engagement & GIS Support
Environmental Authorisation required for Prospecting Right Application on farm Mooihoek and various farm portions of farm Pivaanspoort	Pivaanspoort (Pty) Ltd	Report Writer
Draft Basic Assessment Report For The Proposed Upgrade Of Weltevreden Wetland Interventions	Seriti Power (Pty) Ltd	Report Writer
Social and Labour Plan for the Straffontein Colliery	Mnambithi Mining (Pty) Ltd	Report Writer – Social Impact and Social Labour Plans & GIS Support
Social and Labour Plan for the existing operational expansion Leeuwfontein Colliery Mining Right Amendment Applications	Zomhlaba Resources (Pty) Ltd	Report Writer – Social Impact and Social Labour Plans & GIS Support
Social and Labour Plan for the existing operational expansion Lakeside Colliery Mining Right Amendment Applications	Zomhlaba Resources (Pty) Ltd	Report Writer – Social Impact and Social Labour Plans & GIS Support
Social Impact Assessment for the Proposed Aangewys Coal Mine Mining Right Application	National Treasure Minerals (Pty) Ltd	Report Writer – Social Impact and Social Labour Plans & GIS Support
Environmental Impact Assessment And Water Use Licence Application In Support Of The Proposed Grootlaagte Open Cast Mining, Mpumalanga – Arnot Opco (Pty) Ltd	Arnot OpCo	Report Writer- Stakeholder Engagement & GIS Support
Malawi Solar Projects, Livelihood restoration and social performance monitoring and planning	JCM Power	Data Analyst
750 AMPED Campaign	Health Wellness SETA	Project Manager
Integrity Due Diligence Reports	Various (South African Poultry Industry, Centre of Industrial Scientific Research; SA Milk Producers	Policy Coordinator/ Report Writer
Policy Component for agri-processing projects	eThekwini Municipality	Policy Coordinator/ Report Writer

Project Name & Location	**Client Name**	**Role**
Alignment of EIA's and WUL's	South 32	Social Specialist/Report Writer
Environmental Authorisation for Klipspruit Colliery	South 32	Social Specialist/Report Writer
Expansion and Development of Sun City Resorts	Sun International	Social Specialist/Report Writer
Environmental Authorisation for a Regulatory Environmental Process	Blyvoor Gold	Social Specialist/Report Writer
Mooikraal Road Diversion Project	Sasol (Pty) Ltd	Social Specialist/Report Writer
Pretorius Park Housing Development	Luengo Consulting	Social Specialist/Report Writer
Grave Relocation Project	Exxaro Resources	Social Specialist/Report Writer
Syferfontein Housing Development	LTE Consulting	Social Specialist/Report Writer
Leeuwpan Lifex Project	Exxaro Resources	Social Specialist/Report Writer
Environmental Authorisation required for Proposed Palmietkuilen Colliery near Springs	Canyon Resources (Pty) Ltd	Social Specialist/Report Writer
Environmental Authorisation required for the Agnes Gold Mine, Barberton	Galaxy Gold Reefs (Pty) Limited	Social Specialist/Report Writer
Environmental Authorisation for the Proposed Hendrina Underground Coal Mine, Mpumalanga	Glencore Operations South Africa (Pty) Ltd	Social Specialist/Report Writer
Environmental authorisation applications(Waste management, Water use license, EMP)	Various	Social Specialist/Report Writer
Environmental Authorisation Applications related to the Construction of Power Station, Associated Infrastructure, and Coal Mine near Colenso, KZN	Dunrose Investments 244 for Colenso Power (Pty) Ltd	Project Administrator/ Social Specialist
Environmental Awareness Training	Various	Facilitator
Legal register	Various	Report Compiler
Dynamics and Incidence of Child Abuse, Neglect and Exploitation(DICANE)	Department of Social Development	Facilitator
The Alexandra Environment Public Upgrade-management of the public participation process	Johannesburg Development Agency	Project Administrator
Cities Green Transport Programme	South African Cities Network	Project Researcher
Project Management of the EPWP Construction of the Mvoti Regional Landfill	Department of Environmental Affairs	Project Researcher
Development of climate change adaptation and mitigation programme	Department of Agriculture Forestry and Fisheries	Project Researcher
Capacity Building in spatial transformation	South African Cities Network	Project Researcher