



NALA

ENVIRONMENTAL

CONSULTING FIRM

**DEVELOPMENT OF A BATTERY ENERGY STORAGE SYSTEM
(BESS) AND ASSOCIATED INFRASTRUCTURE LOCATED
WITHIN THE 33KV/132KV SUBSTATION FOR THE
AUTHORISED SUTHERLAND AND RIETRUG WIND ENERGY
FACILITIES, NORTHERN CAPE PROVINCE**

ENVIRONMENTAL MANAGEMENT PROGRAMME

(DFFE REF.: 14/12/16/3/3/1/2458)

DECEMBER 2022

DOCUMENT DETAILS

Applicant	:	Sutherland Wind Farm (Pty) Ltd
Title	:	Development of a Battery Energy Storage System (BESS) and associated infrastructure located within the 33kv/132kv IPP substation for the authorised Sutherland and Rietrug Wind Energy Facilities, Northern Cape Province: Environmental Management Programme
Authors/EAPs	:	Nala Environmental (Pty) Ltd Arlene Singh Norman Chetsanga Justin Jacobs
Purpose of Report	:	Public Participation (review and comment)
Date	:	December 2022

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 need of a proposed activity. Alternatives may include location or site alternatives, activity alternatives, process or technology alternatives, temporal alternatives or the 'do nothing' alternative.

Ambient sound level: The reading on an integrating impulse sound level meter taken at a measuring point in the absence of any alleged disturbing noise at the end of a total period of at least 10 minutes after such meter was put into operation.

Assessment: The process of collecting, organising, analysing, interpreting and communicating information which is relevant.

Biological diversity: The variables among living organisms from all sources including, terrestrial, marine and other aquatic ecosystems and the ecological complexes they belong to.

Commence: The start of any physical activity, including site preparation and any other activity on site furtherance of a listed activity or specified activity, but does not include any activity required for the purposes of an investigation or feasibility study as long as such investigation or feasibility study does not constitute a listed activity or specified activity.

Construction: Construction means the building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity as per the EIA Regulations. Construction begins with any activity which requires Environmental Authorisation.

Cumulative impacts: The impact of an activity that in itself may not be significant, but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

Decommissioning: To take out of active service permanently or dismantle partly or wholly, or closure of a facility to the extent that it cannot be readily re-commissioned. This usually occurs at the end of the life of a facility.

Development area: the identified area (located within the study area) where the supporting infrastructure is planned to be located.

Development footprint: the defined area (located within the development area) where the various supporting infrastructure is planned to be constructed. This is the actual footprint of the infrastructure, 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 at the place of the activity (e.g. noise generated by blasting operations on the site of the activity). These impacts are usually associated with the construction, operation, or maintenance of an activity and are generally obvious and quantifiable.

Disturbing noise: A noise level that exceeds the ambient sound level measured continuously at the same measuring point by 7 dB or more.

'Do nothing' alternative: The 'do nothing' alternative is the option of not undertaking the proposed activity or any of its alternatives. The 'do nothing' alternative also provides the baseline against which the impacts of other alternatives should be compared.

Ecosystem: A dynamic system of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.

Endangered species: Taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating. Included here are taxa whose numbers of individuals have been reduced to a critical level or whose habitats have been so drastically reduced that they are deemed to be in immediate danger of extinction.

Endemic: An "endemic" is a species that grows in a particular area (is endemic to that region) and has a restricted distribution. It is only found in a particular place. Whether something is endemic or not depends on the geographical boundaries of the area in question and the area can be defined at different scales.

Environment: the surroundings within which humans exist and that 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 (Department of Environmental Affairs) of a listed activity or specified activity in terms of the National Environmental Management Act (No 107 of 1998) and the EIA Regulations promulgated under the Act.

Environmental assessment practitioner (EAP): An individual responsible for the planning, management and coordinating of environmental management 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 EPC Contractor with the environmental specifications of the EMPr and the conditions of the Environmental Authorisation

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

Environmental impact assessment: 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 development 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 in order to guide the implementation of a project or facility and its ongoing maintenance after implementation.

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 for the 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.

Hazardous waste: Any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment.

Indigenous: All biological organisms that occurred naturally within the study area prior to 1800.

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: 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.

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

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

Rare species: Taxa with small world populations that are not at present Endangered or Vulnerable, but are at risk as some unexpected threat could easily cause a critical decline. These taxa are usually localised within restricted geographical areas or habitats or are thinly scattered over a more extensive range. This category was termed Critically Rare by Hall and Veldhuis (1985) to distinguish it from the more generally used word "rare."

Red Data Species: Species listed in terms of the International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species, and/or in terms of the South African Red Data list. In terms of the South African Red Data list, species are classified as being extinct, endangered, vulnerable, rare, indeterminate, insufficiently known or not threatened (see other definitions within this glossary).

Significant impact: An impact that by its magnitude, duration, intensity, or probability of occurrence may have a notable effect on one or more aspects of the environment.

Study area: Remaining Extent of Nooitgedacht Farm 148

Vulnerable species: A taxon is Vulnerable when it is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the medium-term future.

Waste: as per the NEM: Waste Amendment Act, 2014 (Act No. 26 of 2014)

- (a) 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.
- (b) 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, but any waste or portion of waste, referred to in paragraph (a) and (b), ceases to be a waste –
 - (i) once an application for its re-use, recycling or recovery has been approved or, after such approval, once it is, or has been re-used, recycled or recovered;
 - (ii) where approval is not required, once a waste is, or has been re-used, recycled or recovered;
 - (iii) where the Minister has, in terms of section 74, exempted any waste or a portion of waste generated by a particular process from the definition of waste; or
 - (iv) where the Minister has, in the prescribed manner, excluded any waste stream or a portion of a waste stream from the definition of waste.

ABBREVIATIONS

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

BGIS	Biodiversity Geographic Information System
BESS	Battery Energy Storage System
CDSM	Chief Directorate Surveys and Mapping
CEMP	Construction Environmental Management Plan
DEFF	Department of Environment, Forestry and Fisheries
NC DAERDLD	Northern Cape Department: Agriculture, Environmental Affairs, Rural Development and Land Reform
DMRE	Department of Mineral Resources and Energy
EAP	Environmental Assessment Practitioner
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPr	Environmental Management Programme
GPS	Global Positioning System
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
IFC	International Finance Corporation
IPP	Independent Power Producer
KOP	Key Observation Point
kV	Kilo Volt
LLRC	Low Level River Crossing
LUDS	Land Use Decision Support
LUPD	Land Use Planning Ordinance
MW	Mega Watt
NEMA	National Environmental Management Act
NEMAA	National Environmental Management Amendment Act
NEMBA	National Environmental Management: Biodiversity Act
NERSA	National Energy Regulator of South Africa
NHRA	National Heritage Resources Act
NSBA	National Spatial Biodiversity Assessment
NWA	National Water Act
PIA	Paleontological Impact Assessment
PM	Post Meridiem; "Afternoon"
SACAA	South African Civil Aviation Authority
SAHRA	South African National Heritage Resources Agency
SANBI	South Africa National Biodiversity Institute
SANS	South Africa National Standards
SDF	Spatial Development Framework
SMME	Small, Medium and Micro Enterprise
SAPD	South Africa Police Department

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SECTION 1: INTRODUCTION

This Environmental Management Programme (EMP) is prepared for the preconstruction finalisation process of the 33kV/132kV substation and associated infrastructure (i.e. Battery Energy Storage System (BESS) and underground cabling) for the IPP portion of the grid infrastructure for the authorised Sutherland and Rietrug Wind Energy Facilities, Northern Cape. This EMPr considers all the findings and recommendations of the specialists and stakeholders during the Basic Assessment process (2021) and the pre-construction walk throughs with a particular emphasis on the Battery Energy Storage System (BESS) facility and underground 33kV cabling that will connect the WEF to the 33kV/132kV substation.

The EMPr must be implemented to protect sensitive on-site and off-site features through controlling construction, operation and decommissioning activities that could have a detrimental effect on the environment, and through avoiding or minimising potential impacts. This EMPr is applicable to all employees and contractors working on the pre-construction, construction, and operation and maintenance phases of the project. In terms of the Duty of Care provision in S28(1) of NEMA, the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to ensure that any pollution or degradation of the environment associated with this project is avoided, halted or minimised. The document must therefore be adhered to and updated as relevant throughout the project life cycle. This document fulfils the requirement of the EIA Regulations, 2014 (as amended). The EMPr is intended as a "living" document and should continue to be updated regularly by the proponent or alternatively by the project developer.

SECTION 2: ASPECTS OF THE PROPOSED ACTIVITIES

Sutherland Wind Farm (Pty) Ltd is proposing the development of the authorised Acrux 33/132kV IPP substation and associated infrastructure (DFFE Ref.: 14/12/16/3/3/1/2458) for the authorised Sutherland (DFFE Ref: 12/12/20/1782/2/AM6) and Rietrug (DFFE Ref: 12/12/20/1782/1/AM5) Wind Energy Facilities (WEFs). The substation will connect the authorised Sutherland and Rietrug wind energy facilities to the authorised electrical grid infrastructure that runs to the proposed Koring Main Transmission Substation located in the Western Cape Province (DFFE Ref: DFFE Ref.: 14/12/16/3/3/1/2077/AM2). The authorised wind energy facilities are located approximately 23 km south of the town Sutherland while the proposed project components fall within the Karoo Hoogland Municipality under the Namakwa District Municipality. The developer has bid the wind energy facilities and associated infrastructure into the Renewable Energy IPP Procurement Programme (REIPPPP) Bid Window 5 for the procurement of up to 1 600MW of onshore wind energy technologies and has since been granted preferred bidder status for the Sutherland and Rietrug Wind Energy Facilities. This allocation is in accordance with the generation capacity required as specified in the Integrated Resource Plan 2019 and accompanying ministerial determination from the Minister for the Department of Mineral Resources and Energy (DMRE). The infrastructure and key components considered for the project component includes:

- 33kV underground cabling that will connect the wind energy facility to the substation (underground cabling along access tracks to the on-site substation)
- Development of a new Acrux 33kV/132kV IPP substation with a clearance footprint of approximately 12,14ha. The clearance footprint of the IPP portion of the substation will contain the following infrastructure:
 - **A Battery Energy Storage System (BESS) with a footprint of 2ha in extent with an export capacity of approximately 500KWh and a total storage capacity of 100MW.**
 - A laydown area with a footprint of 100m x 100m in extent;
 - An O&M Building with a footprint of 100m x 100m in extent

Remaining Extent of Nootgedacht Farm 148 has been identified for the authorised Acrux 132kV substation footprint for the authorised Sutherland and Rietrug Wind Energy Facilities.

The scope of this EMPr is applicable to the Battery Energy Storage System (BESS) with a footprint of 2ha in extent and the 33kV underground cabling that will connect the WEFs to the substation as part of the associated infrastructure for the authorised Sutherland and Rietrug Wind Energy Facilities, Northern Cape Province. A separate Generic EMPr has been prepared for the IPP portion of the on-site substation and its associated infrastructure.

Technical Details of the BESS and underground cabling:

Component	Description/Dimensions
Location of Site	23 km south of the town Sutherland in the Northern Cape Province
Battery Energy Storage System (BESS) Footprint	2ha
BESS technology	» Lithium- Ion Batteries
Capacity of BESS	» Export capacity of up to 500KWh » Total storage capacity of 100MW
Underground cabling	» 33kV cabling from the Sutherland and Rietrug Wind Energy Facilities to the IPP Portion of the substation.
Cabling capacity	» 33kV

Co-ordinates of the proposed IPP Portion of the substation footprint wherein lies the Battery Energy Storage System (BESS)- preferred Alternative-Authorised).

Corner Co-ordinates	Latitude	Longitude
Centre Point	32°37'58.33"S	20°57'47.58"E

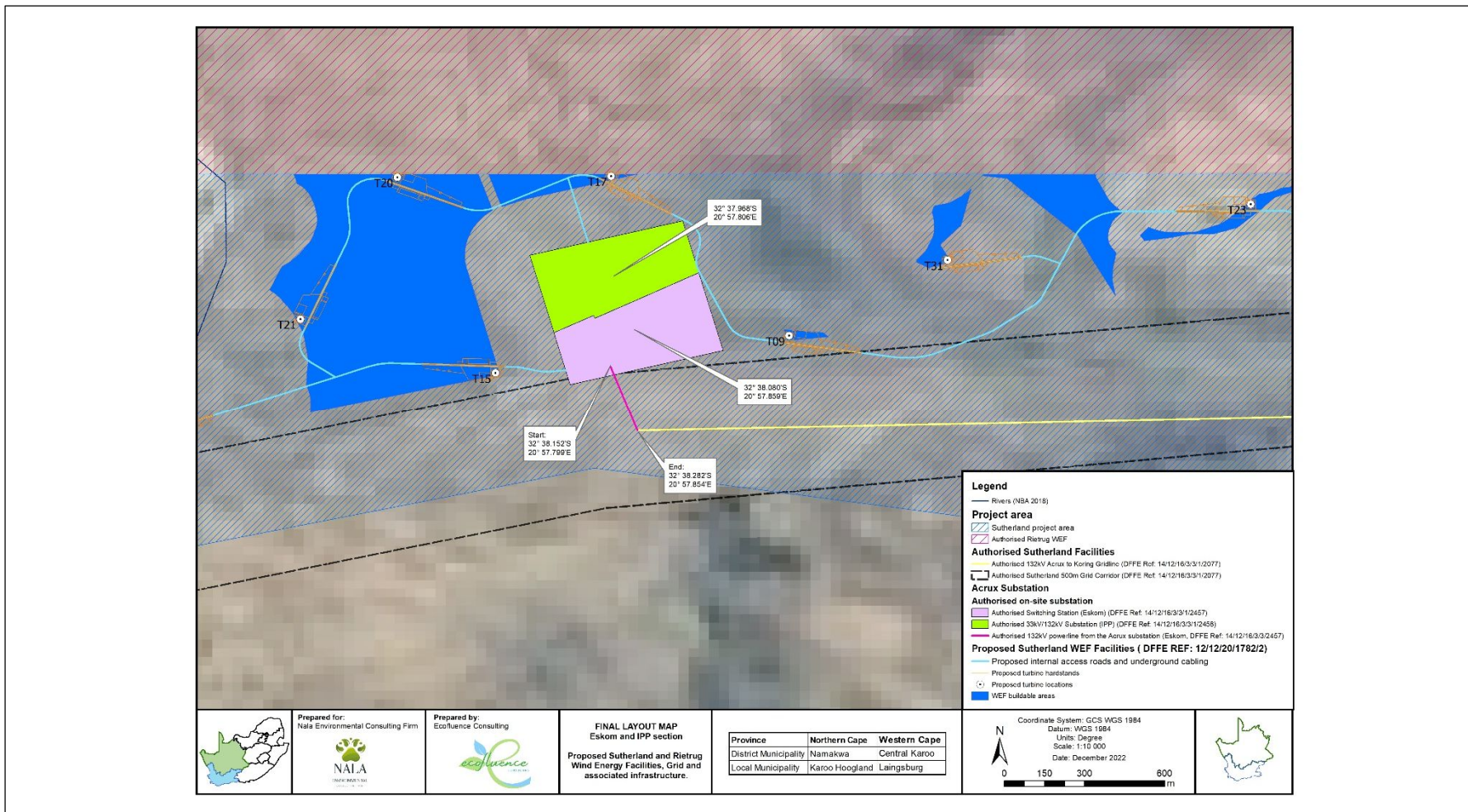


Figure 2.1: Layout map for the proposed 33kV/132kV IPP Substation (green) that will house the Battery Energy Storage System (BESS) and 33kV cabling infrastructure associated with the authorised Sutherland and Rietrug Wind Energy Facilities.

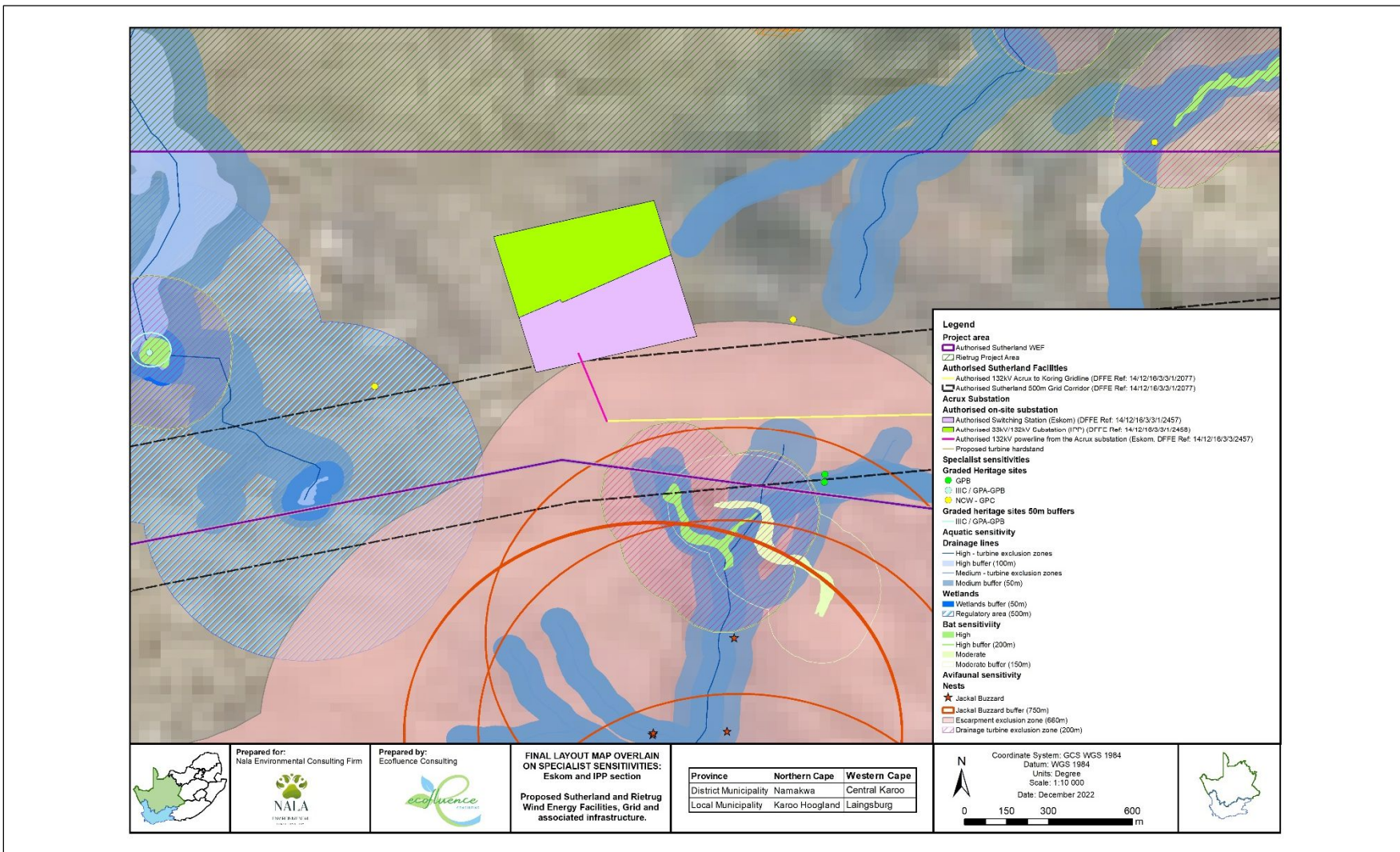


Figure 2.2: Environmental sensitivity of the study area for the authorised 33kV/132kV substation (green) that will house the Battery Energy Storage System (BESS) and cabling infrastructure associated with the authorised Sutherland and Rietrug Wind Energy Facilities. *Escarpment exclusion zone applicable to wind turbines only

2.1. Authors of this EMP

This Final EMPr was compiled by Nala Environmental (Pty) Ltd. Nala Environmental is an environmental consultancy firm established in December 2020. The main line of business is the compilation of environmental impact assessments for a variety of industries. The Nala Environmental management team has a broad client base from both the private and government sectors which has developed over the past 10 years. Nala Environmental is experience in undertaking environmental impact assessments spans across South Africa, with significant experience in the Northern Cape, Western Cape, Eastern Cape, Mpumalanga and Kwa-Zulu Natal Provinces. The Environmental Assessment Practitioners (EAP) for this project are Arlene Singh who is registered with the Environmental Assessment Practitioner’s Association of South Africa (EAPASA) and the South African Council for Natural Scientific Professions (SACNASP) and Norman Chetsanga who is registered with the South African Council for Natural Scientific Professions (SACNASP).

Table 3.3: The team consisting of Environmental Assessment Practitioners, and various specialists to provide technical expertise.

Name	Organisation	Role/Specialist Study
Environmental Assessment Practitioners		
Arlene Singh	Nala Environmental (Pty) Ltd	Environmental Assessment Practitioner (SACNASP) (EAPASA)
Norman Chetsanga	Nala Environmental (Pty) Ltd	Environmental Consultant (SACNASP)
Justin Jacobs	Nala Environmental (Pty) Ltd	Junior Environmental Consultant
Specialists (Final Pre-construction walkthroughs)		
Dr Jayson Orton	ASHA Consulting (Pty) Ltd	Archaeological Pre-construction Survey
Dr Brian Colloty	EnviroSci (Pty) Ltd.	Aquatic Pre-construction Walkthrough
Dr Wynand Vlok	BioAssets Biological Assessments	Ecological Pre-construction Walkthrough
Mr John E. Almond	Natura Viva cc	Paleontological Pre-construction Survey and walkthrough
Mr Chris Van Rooyen	Chris van Rooyen Consulting	Avifauna Pre-construction Walkthrough
Mr Werner Marais	Animalia Consulting	Bat Pre-construction Walkthrough

SECTION 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 this 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 infrastructure. An effective EMPr is concerned with both the immediate outcome as well as the long-term impacts of the project.

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) through to those incurred during the construction activities themselves (erosion, noise, dust) to those incurred during site rehabilitation (soil stabilisation, re-vegetation) and operation. The EMPr also defines monitoring requirements in order 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 the Battery Energy Storage System (BESS) infrastructure and underground cabling associated with the Sutherland and Rietrug WEF. 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 the Sutherland and Rietrug WEF/or as the project 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 planning, construction, rehabilitation and operation phases of the project in order to minimise the extent of environmental impacts, and to manage environmental impacts associated with the Battery Energy Storage System (BESS) infrastructure and underground cabling associated with the Sutherland and Rietrug WEF. 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 during the Basic Assessment process (2021) and the preconstruction final walkthroughs 2022

The mitigation measures identified within the BA process carried out in 2021 and the pre-construction walkthrough are systematically addressed in the EMPr, ensuring the minimisation of adverse environmental impacts to an acceptable level.

The proponent must ensure that the implementation of the project complies with the requirements of all environmental authorisations, permits, and obligations emanating from relevant environmental legislation. This obligation is partly met through the development and the 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 site. It is important that this document 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 Environmental Authorisation, the stipulations in the Environmental Authorisation shall prevail over those 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 life cycle.

SECTION 4- CONTENT OF THE EMP

4.1. Contents of the EMP

Where applicable, this EMP addresses the five phases of the project cycle: (1) Project Design phase; (2) Construction phase; (3) Operational phase; (4) Rehabilitation phase and (5) Decommissioning phase.

The EMP follows an approach of identifying an over-arching goal and objectives, accompanied by management actions that are aimed at achieving these objectives. The management actions are presented in a table format in order to show the links between the goal and associated objectives, actions, responsibilities, monitoring requirements and targets. The management plan for the design, construction, operational and decommissioning phases consist of the following components:

- » Impact: The potential positive or negative impact of the development that needs to be enhanced, mitigated or eliminated;
- » Mitigation/Management action: The actions needed to achieve the objectives of enhancing, mitigating or eliminating impacts;
- » Monitoring: The key monitoring actions required to check whether the objectives are being achieved, taking into consideration methodology, frequency and responsibility.

4.2. Goal for environmental management:

The overall goal for environmental management for the development of the supporting infrastructure to the BESS is to construct and operate the project in a manner that achieves the goals presented in Figure 4.1



Figure 4.1 Environmental management goals for the proposed project

4.3. SITE LAYOUT PLAN AND ENVIRONMENTAL SENSITIVITY MAP

Sutherland Wind Farm (Pty) Ltd considered two alternatives for the location of the Battery Energy Storage System (BESS) and underground cabling within the IPP portion of the substation.

Based on as synthesis of the recommended mitigation actions and a comparative analysis of the various layout alternatives, the **preferred and authorised layout plan is Alternative 1 for the IPP portion of the grid infrastructure (refer to Figure 2.1. and 2.2)**

Preferred Alternative (authorised):

- 33kV underground cabling will connect the wind energy facility to the IPP portion of the 33kV/132kV substation.
- 132kV IPP Substation Alternative 1 (Preferred Alternative- Authorised):
 - A 33kV/132kV IPP Portion of the substation is proposed to be located within the authorised Sutherland WEF site. The substation footprint is approximately 12,14ha and will house the O&M Buildings, Laydown area and Battery Energy Storage System (**BESS**) infrastructure. The proposed location of the IPP portion of the 33kV/ 132kV substation will allow for the Direct Current (DC) power from the authorised Rietrug Wind Farm (12-12-20-1782-1) and Sutherland Wind Farm (12-12-20-1782-2) will be converted into Alternating Current (AC) power in the inverters and the voltage will be stepped up to medium voltage in the inverter transformers. As the location of the 33kV/132kV IPP substation is located within the authorised Sutherland WEF site, it avoids environmentally sensitive areas, provides suitable terrain and is deemed as technically feasible from an engineering perspective. Therefore this alternative was selected as the preferred alternative.

A comprehensive environmental sensitivity map based on the findings of the final preconstruction walkthroughs is presented in Figure 2.2 on the environmental sensitivity map.

The final layout plan is based on the environmental sensitivity map and includes the following specifics:

- Battery Energy Storage System (BESS), O&M Building and lay-down area located in the vicinity of the proposed substation and maintenance buildings;
- The underground cabling adjoining to the 33kV/132kV substation will be alongside the internal access road.
- Biodiversity permits will be applied as required on the revised layout within the development footprint.

In addition to the above the following specifics are part of the preferred environmental option for the proposed development:

- Design of the buildings compatible in scale and form with rural buildings of the surrounding area;
- Perimeter fencing using a mesh fencing (e.g. clearvu type); and
- External lighting should be confined to the substation and maintenance buildings. Lights should be low-level and fitted with reflectors to avoid light spillage

SECTION 5- ROLES AND RESPONSIBILITIES

To achieve the goals set out in this EMPr there are responsibilities that need to be defined for the following key roles (Table 5.1):

- Competent Authority
- Project Developer;
- Developer's Project Manager
- Lead Contractor Environmental Control Officer (ECO); and
- Development Environmental Officer (dEO)

➤ Contractor Environmental Officer (cEO)

Table 5.1: Roles and responsibilities associated with the construction, operation and decommissioning of the proposed development of the supporting infrastructure in line with this EMPr.

Role	Responsibilities
Authority	<p>Department of Forestry, Fisheries and the Environment (DFFE) is the designated authority responsible for authorising/approving this EMPr. DFFE has overall responsibility for ensuring that the Project Developer complies with the conditions of its Environmental Authorisation (EA) as well as this EMPr. DFFE must also be responsible for approving any amendments that may be required to the EMPr. In terms of Section 30 of NEMA, DFFE is to be notified immediately should there be an incident on site where the release of a hazardous substance was unexpected, sudden, and uncontrolled, including from a major emission, fire, or explosion, that causes, has caused, or may cause significant harm to the environment, human life, or property.</p>
Project Developer (Sutherland Wind Farm (Pty) Ltd)	<p>The Project Developer is the 'owner' of the project and, as such, has the following responsibilities:</p> <ul style="list-style-type: none"> • Be familiar with the recommendations and mitigation measures of this EMPr; • Ensure that the conditions of the Environmental Authorisation issued in terms of NEMA are fully adhered to; • Ensure that other necessary permits or licenses are obtained and complied with; • Appoint the ECO and the Lead Contractor. <p>It is proposed that Sutherland Wind Farm (Pty) Ltd will implement the Self-Build Option for the supporting electrical infrastructure to be constructed. Following the construction phase, the supporting electrical infrastructure will either be transferred into the ownership of Eskom or otherwise remain in the ownership of Sutherland Wind Farm (Pty) Ltd. This entails that should Eskom take ownership of the electrical infrastructure, the operational, maintenance and decommissioning requirements will be their responsibility.</p>
Developer's Project Manager (DPM)	<p>The Project Developer is accountable for ensuring compliance with the EMPr and any conditions of approval from the competent authority (CA). Where required, an environmental control officer (ECO) must be contracted by the Project Developer to objectively monitor the implementation of the EMPr according to relevant environmental legislation, and the conditions of the environmental authorisation (EA). The Project Developer is further responsible for providing and giving mandate to enable the ECO to perform responsibilities, and he must ensure that the ECO is integrated as part of the project team while remaining independent.</p> <p>The responsibilities of the DPM's are to:</p> <ul style="list-style-type: none"> • Be fully conversant with the conditions of the EA; • Ensure that all stipulations within the EMPr are communicated and adhered to by the Developer and its Contractor(s); • Issuing of site instructions to the Contractor for corrective actions required; • Monitor the implementation of the EMPr throughout the project by means of site inspections and meetings. Overall management of the project and EMPr implementation; and • Ensure that periodic environmental performance audits are undertaken on the project implementation.
Principal Agent	<p>For the purposes of this document the "Principal Agent" refers to any person (such as the architect, engineer, or project manager) authorised by Sutherland Wind Farm (Pty) Ltd to oversee the planning, design, and</p>

	<p>construction phases of the project. Any on-site decisions regarding environmental management are ultimately the responsibility of the Principal Agent, who will report to the Proponent.</p> <p>The responsibilities of the Principal Agent are to:</p> <ul style="list-style-type: none"> • Ensure that the requirements as set out in this EMPr and by the relevant Authorities are adhered to and implemented. • Assist the ECO in ensuring that the conditions of the EMPr are being adhered to and promptly issuing instructions requested by the ECO, to the Contractor. All site instructions pertaining to environmental matters issued by the Principal Agent are to be copied to the ECO. • Ordering the removal of person(s) and/or equipment not complying with the specifications or issuing a stop works order (as required by the ECO or otherwise). • Issuing of penalties for transgressions of environmental site specifications. • Providing input into the ECO's ongoing internal review of the EMPr. • Training of contractors on environmental matters • Management of the contractors in terms of the EMPr. • Review of contractor method statements.
<p>Contractor</p>	<p>Contractor The Contractor and its sub-constructors are responsible for overall execution of the activities envisioned in the construction phase, including implementation and compliance with the recommendations and conditions specified in this EMPr. Furthermore, the Contractor's responsibilities are to:</p> <ul style="list-style-type: none"> • Ensure that all appointed contractors and sub-contractors are aware of this EMPr and their responsibilities in relation to the plan; • Meet on-site with the Project Developer's ECO prior to the commencement of construction activities to confirm the construction procedure and designated activity zones; • Ensure that each subcontractor employ an ECO (or have a designated ECO function) to monitor and report on the daily activities on-site during the construction period; • Implement the overall construction programme, project delivery and quality control for the construction of the project; • Oversee compliance with the Health, Safety and Environmental Responsibilities specific to the project management related to project construction; • Promote total job safety and environmental awareness by employees, contractors and sub-contractors and stress to all employees and contractors and sub-contractors the importance that the project proponent attaches to safety and the environment; • Ensure that safe, environmentally acceptable working methods and practices are implemented and that sufficient plant and equipment is made available properly operated and maintained, to facilitate proper access and enable any operational to be carried out safely; • Ensure that all appointed contractors and sub-contractors repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in the EMPr, to the satisfaction of the Project Developer's ECO. • Implement the Traffic Management Plan set out in this EMPr (Appendix J, K); • Implement the Storm Water Management Plan set out in this EMPr (Appendix G).
<p>Environmental Control Officer (ECO)</p>	<p>The ECO should have appropriate training and experience in the implementation of environmental management specifications. The primary role of the ECO is to act as an independent quality controller and monitoring agent regarding all environmental concerns and associated environmental impacts. In this respect, the ECO is to conduct periodic site inspections, attend regular site meetings, pre-empt problems and suggest mitigation and be available to advise on incidental issues that arise. The ECO is also required to conduct compliance audits,</p>

	<p>verifying the monitoring reports submitted by the cEO. The ECO provides feedback to the Project Manager regarding all environmental matters. The Contractor, cEO and dEO are answerable to the Environmental Control Officer for non-compliance with the Performance Specifications as set out in the EA and EMPr.</p> <p>The ECO provides feedback to the Project Manager, who in turn reports back to the Contractor and potential and Registered Interested & Affected Parties (RI&APs), as required. Issues of non-compliance raised by the ECO must be taken up by the Project Manager, and resolved with the Contractor as per the conditions of his contract. Decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e. those that are deemed to be a variation, not allowed for in the Performance Specification) must be endorsed by the Project Manager. The ECO must also, as specified by the EA, report to the relevant CA as and when required.</p> <p>Responsibilities of the ECO are to</p> <ul style="list-style-type: none"> • Be aware of the findings and conclusions of all EA related to the development; • Be familiar with the recommendations and mitigation measures of this EMPr; • Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them; • Undertake regular and comprehensive site inspections / audits of the construction site according to the generic EMPr and applicable licenses in order to monitor compliance as required; • Educate the construction team about the management measures contained in the EMPr and environmental licenses; • Compilation and administration of an environmental monitoring plan to ensure that the environmental management measures are implemented and are effective; • Monitoring the performance of the Contractors and ensuring compliance with the EMPr and associated Method Statements; • In consultation with the Developer Site Supervisor order the removal of person(s) and/or equipment which are in contravention of the specifications of the EMPr and/or environmental licenses; • Liaison between the DPM, Contractors, authorities and other lead stakeholders on all environmental concerns; • Compile a regular environmental audit report highlighting any non-compliance issues as well as satisfactory or exceptional compliance with the EMPr; • Validating the regular site inspection reports, which are to be prepared by the contractor Environmental Officer (cEO); • Checking the cEO's record of environmental incidents (spills, impacts, legal transgressions etc.) as well as corrective and preventive actions taken; • Checking the cEO's public complaints register in which all complaints are recorded, as well as action taken; and sub-contractors may have their own ECOs, or designate ECO functions to certain personnel.
<p>Development Environmental Officer (dEO)</p>	<p>The dEOs will report to the Project Manager and are responsible for implementation of the EMPr, environmental monitoring and reporting, providing environmental input to the Project Manager and Contractor's Manager, liaising with contractors and the landowners as well as a range of environmental coordination responsibilities.</p> <p>Responsibilities of the dEO are to</p> <ul style="list-style-type: none"> • Be fully conversant with the EMPr; • Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures;

	<ul style="list-style-type: none"> • Ensure that all stipulations within the EMPr are communicated and adhered to by the Employees, Contractor(s) ; • Confine the development site to the demarcated area; • Conduct environmental internal audits with regards to EMPr and authorisation compliance (on cEO); • Assist the contractors in addressing environmental challenges on site; • Assist in incident management: • Reporting environmental incidents to developer and ensuring that corrective action is taken, and lessons learnt shared; • Assist the contractor in investigating environmental incidents and compile investigation reports; • Follow-up on pre-warnings, defects, non-conformance reports; • Measure and communicate environmental performance to the Contractor; • Conduct environmental awareness training on site together with ECO and cEO; • Ensure that the necessary legal permits and/or licenses are in place and up to date; • Acting as Developer’s Environmental Representative on site and work together with the ECO and contractor;
<p>Contractor Environmental Officer (cEO)</p>	<p>Each Contractor affected by the EMPr should appoint a cEO, who is responsible for the on-site implementation of the EMPr (or relevant sections of the EMPr). The Contractor’s representative can be the site agent; site engineer; a dedicated environmental officer; or an independent consultant. The Contractor must ensure that the Contractor’s Representative is suitably qualified to perform the necessary tasks and is appointed at a level such that she/he can interact effectively with other site Contractors, labourers, the Environmental Control Officer and the public. As a minimum the cEO must meet the following criteria:</p> <p>Responsibilities of the cEO are to</p> <ul style="list-style-type: none"> • Be on site throughout the duration of the project and be dedicated to the project; • Ensure all their staff are aware of the environmental requirements, conditions and constraints with respect to all of their activities on site; • Implementing the environmental conditions, guidelines and requirements as stipulated within the EA, EMPr and Method Statements; • Attend the Environmental Site Meeting; • Undertaking corrective actions where non-compliances are registered within the stipulated timeframes; • Report back formally on the completion of corrective actions; • Assist the ECO in maintaining all the site documentation; • Prepare the site inspection reports and corrective action reports for submission to the ECO; • Assist the ECO with the preparing of the monthly report; and • Where more than one Contractor is undertaking work on site, each company appointed as a Contractor will appoint a cEO representing that company

SECTION 6 – HERITAGE AND PALAEOANTHROPOLOGICAL IMPACTS MANAGEMENT PLAN

Impact management outcome: Potential impact on heritage and archaeological resources						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Management of Impacts to archaeology and impacts to the cultural landscape.	Project Manager/ ECO / dEO / cEO in consultation with the Contractor and ECO	<p>Impacts to archaeology would occur during construction only, while impacts to the cultural landscape would occur during all phases of the development.</p> <p>Develop and implement procedures for situations where archaeological sites or remains are uncovered</p> <p>If any evidence of archaeological sites or</p>	<p>During construction only (Archaeology impacts).</p> <p>During all development phases (cultural landscape impacts)</p> <p>During all development phases (cultural landscape impacts)</p>	ECO	Ongoing (Monthly)	Record and monitor ongoing impacts and proof of communication to SAHRA APM Unit and the required procedures followed in cases where material is discovered.

		<p>remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA.</p> <p>If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490), must be alerted immediately as</p>				
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		per section 36(6) of the NHRA.				
Minimise damage or destruction of archaeological sites or graves	Project Manager/ ECO	Cordon off and protect the archaeological site with a 30 m buffer if feasible.	Pre-Construction	ECO	Once-off at commencement	Cordon off site as no-go area
Minimise damage or destruction of archaeological sites or graves	Construction Manager or Contractor	Rescue information, artefacts or burials before extensive damage occurs. Reporting chance finds as early as possible, protect in situ and stop work in immediate area	Pre-construction and during construction	ECO	Ongoing basis Whenever on site (at least weekly)	Inform staff and carry out periodical inspections of excavations
Minimise Visible landscape scarring	Construction Manager or Contractor	Ensure disturbance is kept to a minimum and does not exceed project requirements. Rehabilitate areas not needed during operation.	During construction	ECO	Ongoing basis As required	Monitoring of surface clearance relative to approved layout
Minimise damage to possible chance fossil remains discovered	Project Manager/ ECO	Be alert to the possibility of scientifically important fossil remains being found on the surface or	Pre-construction and during construction	ECO	Ongoing basis	Continuous monitoring of

		<p>exposed by fresh excavations during construction</p> <p>Should substantial fossil remains be discovered, these should be safeguarded (preferably in situ) and the ECO / ESO should alert the South African Heritage Resources Agency (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Phone: +27 (0)21 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za)</p>			As required	possible chance finds
<p>The sites identified for avoidance must be avoided (Northern Cape);</p> <p>Any unsurveyed sections of the approved final layout must be checked in the field prior to commencement of construction in case of further small sites requiring recording or mitigation (Northern Cape)</p>	Project Manager/ dEO / cEO in consultation with the Contractor	Flagging of no-go areas is required for sites less than 30 m from the project footprint (Northern Cape). This must be done before construction and the sites	Pre-construction and during construction and as and when required	ECO/ dEO / cEO in consultation with the Contractor	Once before construction and as and when required	Proof of flagged no-go areas for sites less than 30m from the project footprint

		<p>must be monitored for compliance during construction by the ECO (at least weekly while construction is busy in the relevant areas)</p> <p>(Sites that are not visually prominent and are located more than 30 m from the footprint should not be flagged, as it is preferable to not draw attention to them). All sites lying less than 30 m from the footprint are assumed to be at risk from construction work and should be flagged as no-go areas;</p> <p>No stones may be removed from any heritage sites (Northern Cape);</p>				<p>Evidence of waypoint 503 testing results</p> <p>Evidence of undisturbed heritage sites</p>
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Management of Impacts to archaeology and impacts to the cultural landscape.	Project Manager/ dEO / cEO in consultation with the Contractor	All construction work must occur within the demarcated project footprints and vehicles may not move outside of these areas (Northern Cape) ;	Pre-construction and during construction	ECO/ dEO / cEO in consultation with the Contractor	During construction and as and when required	Evidence of all construction work occurring within demarcated footprints
Compliance to permit requirements	Project Manager/ dEO / cEO in consultation with the Contractor	A Permit application must be lodged with SAHRA for any mitigation required in Northern Cape (currently none is needed); and	Pre-construction and during construction	ECO/ dEO / cEO in consultation with the Contractor	During construction and as and when required	Proof of permit application lodged with SAHRA
The ECO / ESO responsible for the WEF and Grid Connection Infrastructure developments should be made aware of the possibility of important fossil remains (vertebrate bones, teeth and burrows, petrified wood, plant-rich horizons etc.) being found or unearthed during the construction phase of the projects. Monitoring for fossil material of all major surface clearance (including access roads) and deeper (>1m) excavations by the ESO on an on-going basis during the construction phase is therefore recommended. Significant fossil finds should be safeguarded, preferably in situ, and reported at the earliest opportunity SAHRA for recording and sampling by a professional palaeontologist. If triggered, these mitigation actions to conserve	Suitably qualified specialist in consultation with the ECO	Appoint a suitably qualified specialist to carry out the monitoring of excavations for fossils, artefacts and important heritage material and to train ECO to identify potential heritage resources that may be identified during construction activities. The implementation of the Change Find Fossil Procedure.	Construction	ECO/ Heritage / Palaeontological Specialist	Once- off prior to commencement of construction and weekly during the construction phase	Proof of appointment of specialist. Records of liaison with SAHRA and implementation of Chance Find Fossil Procedure and reporting in ECO monitoring reports.

<p>legally-protected fossil heritage are considered to be essential.</p> <p>The palaeontologist must apply for a Fossil Collection Permit from SAHRA for professional mitigation in the Northern Cape. All fieldwork and reporting should meet the standards of international best practice as well as those developed for PIA reports by SAHRA (2013). Fossil material collected must be safeguarded and curated within an approved palaeontological repository (e.g. museum or university collection) with full collection data.</p>						
<p>New fossil material encountered or exposed during the Construction Phase is best handled through the Chance Fossil Finds Protocol. The Environmental Control Officer (ECO) / Environmental Site Officer (ESO) responsible for the WEF and grid connection developments should be made aware of the possibility of important fossil remains (vertebrate bones, teeth and burrows, petrified wood, plant-rich horizons etc.) being found or unearthed during the construction phase of the projects. Monitoring for fossil material of all major surface clearance (including access roads) and deeper (>1m) excavations by the Environmental</p>	<p>Suitably qualified specialist in consultation with the ECO</p>	<p>The final, approved layouts of the Grid Connection Infrastructure must be cross-checked by a professional palaeontologist against the available palaeontological database prior to commencement of site clearing and excavation activities. Residual, potentially sensitive,</p>	<p>Construction</p>	<p>ECO/ Palaeontological Specialist</p>	<p>Weekly during the construction phase</p>	<p>Proof of appointment of specialist.</p> <p>Evidence of fossil finds as per ECO audit reporting.</p> <p>Implementation of Chance Find Fossil Procedure and reporting in ECO monitoring reports.</p>

<p>Site Officer on an on-going basis during the construction phase is therefore recommended. Significant fossil finds should be safeguarded, preferably in situ, and reported at the earliest opportunity to SAHRA for recording and sampling by a professional palaeontologist. If triggered, these mitigation actions to conserve legally-protected fossil heritage are considered to be essential.</p>		<p>unsurveyed sectors of the approved project footprint must be surveyed and mitigated in the Pre-construction Phase (prior to any site clearance and bedrock excavations) by a professional palaeontologist, with recording and judicious sampling or collection of scientifically valuable fossil material.</p> <p>The palaeontologist responsible for any mitigation work in the Northern Cape will need to apply for a Fossil Collection Permit from SAHRA for professional mitigation in the Northern Cape. All fieldwork and reporting should meet the standards of international best practice as well as those developed for PIA</p>				<p>Proof of Fossil Collection Permit on file</p>
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		<p>reports by SAHRA (2013) Fossil material collected must be safeguarded and curated within an approved palaeontological repository (e.g. museum or university collection) with full collection data.</p> <p>Appoint a suitably qualified specialist to carry out the monitoring of excavations for fossils, artefacts and important heritage material and to train ECO to identify potential heritage resources that may be identified during construction activities.</p> <p>The implementation of the Change Find Fossil Procedure.</p>				
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<p>The sites identified for avoidance must be avoided where possible or else scheduled for mitigation as required (it is assumed that sites far from the authorised layout will not be impacted but in the event that major changes occur the developer must take cognisance of all previously recorded sites)</p>	<p>DPM and a suitably qualified specialist dEO / cEO in consultation with the Contractor and ECO</p>	<p>Undertake a Heritage Walk-through Survey Spatially identify and demarcate areas of heritage significance as per the Heritage Impact Assessment and the Heritage Walk-through Report</p>	<p>Pre-construction</p>	<p>ECO</p>	<p>Once, prior to the commencement of construction</p>	<p>Proof of avoidance of sensitive heritage features through details of avoidance and photographic records</p>
<p>If any archaeological material or human burials are uncovered during the course of development, work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.</p>	<p>DPM and a suitably qualified specialist dEO / in consultation with the Contractor</p>	<p>Undertake a Heritage Walk-through Survey Spatially identify and demarcate areas of heritage significance as per the Heritage Impact Assessment and the Heritage Walk-through Report</p>	<p>Pre-construction</p>	<p>Project Developer</p>	<p>Once, prior to the commencement of construction</p>	<p>Proof of avoidance of sensitive heritage features through details of avoidance including demarcation and photographic records</p>

SECTION 7 – AVIFAUNAL IMPACTS MANAGEMENT PLAN

Impact management outcome: Reduce potential impact on avifauna						
Impact Management Action	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Minimise displacement due to disturbance associated with the construction of the IPP substation, associated infrastructure including the Battery Energy Storage System (BESS) and 33Kv underground cabling .</p> <p>Minimise displacement due to habitat transformation associated with the construction of IPP substation and associated infrastructure.</p>	Project Manager /ECO	<ul style="list-style-type: none"> » Construction activity should be restricted to the immediate footprint of the infrastructure. » An 800m all infrastructure exclusion zone must be implemented around the Black Harrier nest to prevent potential disturbance of the breeding pair » Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of priority species. » Removal of vegetation must be restricted to a minimum » Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of SCC. 	During design & prior to the commencement of the construction activities.	ECO	Before Commencement and Ongoing	All activities constantly monitored for restriction into immediate footprint and prescribed access control

		<ul style="list-style-type: none"> » Removal of vegetation must be restricted to a minimum. Measures to control noise and dust should be applied according to current best practice in the industry. » Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum. Construction of new roads should only be considered if existing roads cannot be upgraded » Vehicle and pedestrian access to the site should be controlled and restricted to access roads to prevent unnecessary disturbance of SCC 				
Minimise electrocutions within the substation yard	Project Manager/ ECO	» The hardware within the proposed transmission substation yard is too complex to warrant any mitigation for electrocution at this stage. It is recommended that if on-going impacts are recorded once	For duration of project lifecycle	ECO	Ongoing (Monthly)	Record and monitor ongoing impacts

		<p>operational, site specific mitigation (insulation) be applied reactively. This is an acceptable approach because Red List priority species is unlikely to frequent the substation and be electrocuted.</p> <ul style="list-style-type: none"> » All internal 33kV medium voltage cables are to be buried. » There is one VE nest which is situated less than 1km from the proposed grid (closest distance 640m). 1km is the recommended no-disturbance buffer in the VE guidelines. 				
Minimise displacement due to disturbance associated with the decommissioning of the substation	ECO	<ul style="list-style-type: none"> » Decommissioning activity should be restricted to the immediate footprint of the infrastructure. » Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of priority species. » Measures to control noise and dust should be applied according to current best practice in the industry. 	Decommissioning phase	ECO	During the decommissioning phase	Footprint restriction and access control monitored and maintained during decommissioning.

		» Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum.				
Construction activity should be restricted to the immediate footprint of the infrastructure, and in particular to the proposed road network. Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of SCC. Construction of new roads should only be considered if existing roads cannot be upgraded.	EEO	Demarcation of no-go areas and implementation of monitoring programmes.	Construction	EEO Operation and maintenance team	Once-off prior to commencement of construction and monthly as and when required.	Evidence of demarcation being maintained through photographic records as per the final layout.
Removal of vegetation must be restricted to a minimum.	cEO and contractor	Demarcate areas of indigenous vegetation to be avoided before clearance is undertaken	Construction and operation (i.e. for maintenance purposes)	EEO Operation and maintenance team	Weekly, and as and when required	No unnecessary clearance of indigenous vegetation is undertaken
Vehicle and pedestrian access to the site should be controlled	EEO / cEO / dEO	Access control must be implemented	Commencement and for the	EEO	Ongoing	Access control register

and restricted to access roads to prevent unnecessary disturbance of SCC.			duration of the Operational phase			
Reduce Noise disturbance from movement associated with construction activities at the development footprint which would lead to the displacement of avifauna from the area.	ECO	<p>A EMPr must be implemented, which gives appropriate and detailed description of how construction activities must be conducted. All contractors are to adhere to the CEMPr and should apply good environmental practice during construction. The CEMPr must specifically include the following:</p> <ol style="list-style-type: none"> 1. No off-road driving; 2. Maximum use of existing roads, where possible; 3. Measures to control noise and dust according to latest best practice; 4. Restricted access to the rest of the property; 5. Strict application of all recommendations in the biodiversity specialist report pertaining to the 	Construction phase	ECO/ Contractor	Weekly	Proof as per ECO Audit reporting

		limitation of the footprint, including limiting vegetation clearance to an absolute minimum				
Prevent unnecessary displacement of avifauna by ensuring that the rehabilitation of transformed areas is implemented where possible by an appropriately qualified rehabilitation specialist, according to the recommendations of the botanical specialist study	ECO/ Contractor	<ol style="list-style-type: none"> 1. Develop a Rehabilitation Plan and ensure that it is approved. 2. Monitor rehabilitation via site audits and site inspections to ensure compliance. Record and report any non-compliance 	Post construction	ECO/ Botanical Specialist	<ol style="list-style-type: none"> 1. Once-off 2. Once a year 3. As and when required 	<p>Proof of appointment of rehabilitation specialist to develop HRP.</p> <p>Site inspections to monitor progress of HRP.</p>
<p>Minimise displacement due to disturbance associated with the construction of the IPP substation, associated infrastructure including the Battery Energy Storage System (BESS) and 33Kv underground cabling .</p> <p>Minimise displacement due to habitat transformation</p>	Project Manager /ECO	<ul style="list-style-type: none"> » Construction activity should be restricted to the immediate footprint of the infrastructure. » An 800m all infrastructure exclusion zone must be implemented around the Black Harrier nest to prevent potential disturbance of the breeding pair » Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of priority species. 	During design & prior to the commencement of the construction activities.	ECO	Before Commencement and Ongoing	All activities constantly monitored for restriction into immediate footprint and prescribed access control

<p>associated with the construction of IPP substation and associated infrastructure.</p>		<ul style="list-style-type: none"> » Removal of vegetation must be restricted to a minimum » Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of SCC. » Removal of vegetation must be restricted to a minimum. Measures to control noise and dust should be applied according to current best practice in the industry. » Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum. Construction of new roads should only be considered if existing roads cannot be upgraded » Vehicle and pedestrian access to the site should be controlled and restricted to access roads to prevent unnecessary disturbance of SCC 				
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Construction activity should be restricted to the immediate footprint of the infrastructure, and in particular to the proposed road network. Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of SCC. Construction of new roads should only be considered if existing roads cannot be upgraded.	ECO	>> Demarcation of no-go areas and implementation of monitoring programmes.	Construction	ECO Operation and maintenance team	Once-off prior to commencement of construction and monthly as and when required.	Evidence of demarcation being maintained through photographic records as per the final layout.
Removal of vegetation must be restricted to a minimum.	cEO and contractor	Demarcate areas of indigenous vegetation to be avoided before clearance is undertaken	Construction and operation (i.e. for maintenance purposes)	ECO Operation and maintenance team	Weekly, and as and when required	No unnecessary clearance of indigenous vegetation is undertaken
Vehicle and pedestrian access to the site should be controlled and restricted to access roads to prevent unnecessary disturbance of SCC.	ECO / cEO / dEO	Access control must be implemented	Commencement and for the duration of the Operational phase	ECO	Ongoing	Access control register

<p>Minimise displacement due to disturbance associated with the decommissioning of the substation</p>	<p>ECO</p>	<ul style="list-style-type: none"> » Decommissioning activity should be restricted to the immediate footprint of the infrastructure. » Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of priority species. » Measures to control noise and dust should be applied according to current best practice in the industry. » Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum. 	<p>Decommissioning phase</p>	<p>ECO</p>	<p>During the decommissioning phase</p>	<p>Footprint restriction and access control monitored and maintained during decommissioning.</p>
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SECTION 8 – AQUATIC ECOLOGY (FRESHWATER IMPACT) MANAGEMENT PLAN

Impact management outcome: Potential impact on aquatic (freshwater) resources						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Reduce loss of riparian systems and disturbance of the alluvial water courses during the construction, operation and decommissioning phase	Project Manager/ECD	No direct impact or disturbance riparian systems and alluvial water courses during the construction, operation and decommissioning phase as such features are avoided.	N/A	ECD	N/A	N/A
Minimise the impact on freshwater resource systems through the increase in surface runoff on form and function during the operational and decommissioning phases	Project Manager/ECD	<ul style="list-style-type: none"> » Infrastructure footprint and associated area of disturbance should be minimised as far as practically possible » Any storm-water within the BESS site must be handled in a suitable manner, i.e. trap sediments, and reduce flow velocities » Stormwater from the BESS and hard stand areas, must be managed using appropriate channels and swales when located within steeper areas. » The runoff should be dissipated over a broad area covered by natural vegetation or managed using appropriate channels and swales. 	Construction, operation and decommissioning phase	ECD	Before commencement and Ongoing	<p>Monitor and implement the methods of minimising the impacts.</p> <p>Implementation of mitigation measures</p>

		<ul style="list-style-type: none"> » Storm water run-off infrastructure must be maintained to mitigate both the flow and water quality impacts of any storm water leaving the BESS sites. » No stormwater runoff must be allowed to discharge directly into any water course from the BESS, and flows from these substations should be allowed to dissipate over a broad area covered by natural vegetation. 				
Manage increase in sedimentation and erosion during the construction, operational and decommissioning phase	Project Manager/ECO	<ul style="list-style-type: none"> » Any erosion problems observed to be associated with the project infrastructure should be rectified as soon as possible and monitored thereafter to ensure that they do not re-occur. » All bare areas, as a result of the development, should be revegetated with locally occurring species, to bind the soil and limit erosion potential. » Regular monitoring of the site (minimum of twice annually) to identify possible areas of erosion is recommended, particularly after large summer thunder storms have been experienced. » Site rehabilitation should aim to restore surface drainage patterns, natural soil and vegetation as far as is feasible. » An erosion control management plan should be utilised to prevent erosion » There should be reduced activity at the site after large rainfall events when the soils are wet. No 	Construction, operation and decommissioning phase	ECO	Before commencement and Ongoing	<p>Monitor and implement the methods of minimising the impacts.</p> <p>Implementation of erosion control measures</p>

		<p>driving off of hardened roads should occur immediately following large rainfall events until soils have dried out and the risk of bogging down has decreased.</p> <ul style="list-style-type: none"> » Any storm-water within the site must be handled in a suitable manner, i.e. trap sediments, and reduce flow velocities » Stormwater from the BESS and other hard stand areas, must be managed using appropriate channels and swales when located within steep areas. » Storm water run-off infrastructure must be maintained to mitigate both the flow and water quality impacts of any storm water leaving the BESS sites. » Stormwater from any access or internal roads must be managed so that this does not interfere with the regional hydrology and or create the potential for any erosion. » Silt traps should be used where there is a danger of topsoil eroding and entering streams and other sensitive areas. » Construction of gabions and other stabilisation features to prevent erosion, if deemed necessary. » No stormwater runoff must be allowed to discharge directly into any water course from the substations, and flows from these substations should be allowed to dissipate over a broad area covered by natural vegetation. 				
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		<ul style="list-style-type: none"> » Store hydrocarbons off site where possible, or otherwise implement hydrocarbon storage using impermeable floors with appropriate bunding, sumps and roofing. » Handle hydrocarbons carefully to limit spillage. » Ensure vehicles are regularly serviced so that hydrocarbon leaks are limited. » Designate a single location for refuelling and maintenance, outside of any freshwater resource features. » Keep a spill kit on site to deal with any hydrocarbon leaks. » Remove soil from the site which has been contaminated by hydrocarbon spillage. 				
Reduce potential compromise ecological processes as well as ecological functioning of important freshwater resource habitats	Project Manager/ECO	<ul style="list-style-type: none"> » All highly sensitive major ephemeral washes and their associated buffer areas should be regarded as No-Go areas for all construction activities. » The recommended buffer areas between the delineated freshwater resource features and proposed project activities should be maintained. » Vegetation clearing to be kept to a minimum. No unnecessary vegetation to be cleared. » The potential stormwater impacts of the proposed developments areas should be mitigated on-site to address any erosion or water quality impacts. 	Construction phase	ECO	Before commencement and Ongoing	Monitor and implement the methods of minimising the impacts.

		<ul style="list-style-type: none"> » Good housekeeping measures as stipulated in the EMPr for the project should be in place where construction activities take place to prevent contamination of any freshwater features. » All construction materials including fuels and oil should be stored in demarcated areas that are contained within berms / bunds to avoid spread of any contamination. Washing and cleaning of equipment should also be done in berms or bunds, in order to trap any cement and prevent excessive soil erosion. Mechanical plant and bowsers must not be refuelled or serviced within or directly adjacent to any channel. It is therefore suggested that all construction camps, lay down areas, batching plants or areas and any stores should be outside of any demarcated water courses. » Disturbed areas should be rehabilitated through reshaping of the surface to resemble that prior to the disturbance and vegetated with suitable local indigenous vegetation. » All alien plant re-growth (mostly forbs) must be monitored, and should it occur, these plants should be eradicated. The scale of the operation does however not warrant the use of a Landscape Architect and / or Landscape Contractor 				
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<p>Reduce impact on localized surface water quality during the construction, operation and decommissioning phase (chemical pollutants (hydrocarbons from equipment and vehicles, cleaning fluids, cement powder, wet concrete, shutter-oil, etc.) associated with site-clearing machinery and construction activities could be washed downslope into the freshwater resource features.)</p>	<p>Project Manager/ECO</p>	<ul style="list-style-type: none"> » Implement appropriate measures to ensure strict use and management of all hazardous materials used on site » Implement appropriate measures to ensure strict management of potential sources of pollutants (e.g. litter hydrocarbons from vehicles and machinery, cement during construction, etc.) » Implement appropriate measures to ensure the containment of all contaminated water through careful run-off management on the development site. » Implement appropriate measures to ensure strict control over the behaviour of construction workers. » Working protocols incorporating pollution control measures (including approved method statements by the Contractor) should be clearly set out in the Construction Environmental Management Plan (CEMP) for the project and strictly enforced. » Appropriate ablution facilities should be provided for construction workers during construction of the BESS. 	<p>construction, operation and decommissioning phase</p>	<p>ECO</p>	<p>Before commencement and Ongoing</p>	<p>Monitor and implement the methods of minimising the impacts.</p> <p>Implementation of pollution control measures</p>
<p>Vegetation clearing should occur in a phased manner in accordance with the construction programme to minimise erosion and/or run-off.</p>	<p>dEO / cEO Contractor</p>	<ul style="list-style-type: none"> » Develop a construction programme that will accommodate vegetation clearing in a phased manner. 	<p>Pre-construction /Construction</p>	<p>ECO</p>	<p>Once, prior to the commencement of the construction phase and</p>	<p>No evidence of increased erosion due to cleared vegetation left</p>

					during construction phase.	for long periods. Compliance to vegetation clearing programme.
All construction materials including fuels and oil should be stored in demarcated areas that are contained within berms / bunds to avoid spread of any contamination. Washing and cleaning of equipment should also be done in berms or bunds, in order to trap any cement and prevent excessive soil erosion. Mechanical plant and bowsers must not be refuelled or serviced within or directly adjacent to any channel. It is therefore suggested that all construction camps, lay down areas, batching plants or areas and any stores should be outside of any demarcated water courses.	Contractor	>> Where hazardous waste is stored these must be clearly marked	During the Construction Phase	ECO	Monthly	Photographic proof that containers are marked as per the requirements

<p>All cleared areas must be re-vegetated after construction has been completed.</p>	<p>dEO / cEO Contractor</p>	<p>>> Revegetate all cleared areas after construction has been completed.</p>	<p>Operation</p>	<p>ECO</p>	<p>During and after construction phase.</p>	<p>Proof of all areas previously cleared and showing revegetation evidence Compliance to vegetation clearing programme.</p>
<p>All alien plant re-growth (mostly forbs) must be monitored, and should it occur, these plants should be eradicated. The scale of the operation does however not warrant the use of a Landscape Architect and / or Landscape Contractor.</p>	<p>dEO / cEO Contractor</p>	<p>>> Carry out monitoring and eradication of alien plant regrowth.</p>	<p>Operation</p>	<p>ECO</p>	<p>During and after construction phase.</p>	<p>No evidence of unattended alien plant regrowth</p>

SECTION 9 – BAT MANAGEMENT PLAN

Impact management outcome: Minimise disturbance to bats						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Minimisation of light pollution and artificial habitat creation</p> <p>Keep artificial lighting to a minimum on the infrastructure (O&M buildings), while still adhering to safety and security requirements.</p>	<p>Relevant specialist in consultation with the Project Developer</p>	<p>It must become mandatory to only use lights with low sensitivity motion sensors that switch off automatically when no persons are nearby, to prevent the creation of regular insect gathering pools, where practically possible without compromising security requirements</p> <p>Aviation lights should remain as required by aviation regulations.</p> <p>Bi-annual visits to the facility at night must be conducted for the operational lifetime of the facility by operational staff of the facility, to assess the lighting setup and whether the passive motion sensors are functioning correctly.</p>	<p>Operational phase</p>	<p>Project Developer</p>	<p>Once, prior to the commencement of construction and as and when required during operation.</p>	<p>Proof of installation of low motion sensors and their maintenance as required</p>

		The bat specialist conducting the operational bat mortality monitoring must conduct at least one visit to site during night-time to assess the placement and setup of outside lights on the facility. When lights are replaced and maintenance on lights is conducted, this Mitigation Action Plan must be consulted.				
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SECTION 10 – TERRESTRIAL ECOLOGY

Impact management outcome: Reduce potential impact on fauna and flora						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Minimise potential impacts on vegetation and listed protected plant species	Project Manager /ECO	<ul style="list-style-type: none"> » Pre-construction walk-through of the substation footprint (including BESS) to locate species of conservation concern that can be translocated or avoided. » A spring survey for red data and protected plants must be undertaken for the approved final layout in order to finalise the applications for permits prior to the commencement of construction and site clearing activities. 	During design & prior to the commencement of the construction activities.	ECO/ Specialist Ecologist	Before Commencement and Ongoing	Walkthrough reports of file (Appendix AI) and translocation evidence.

<p>Minimise disturbance of sensitive areas</p>	<p>Project Manager/ECO</p>	<ul style="list-style-type: none"> » On the rock sheets the <i>Mesembryanthemaceae</i>, <i>Colchicaceae</i>, <i>Crassulaceae</i> and <i>Apocynaceae</i> were present and therefore these areas are sensitive and must be avoided. It will be important to keep a 5m buffer around the outer edges to ensure no permanent damage results. No driving over these areas are permitted at any time. » The landscape, with the drainage features, have a number of small drainage lines that congregate into larger streams. These areas must be avoided as far as possible and limited crossing is recommended » It is very important to stay within the 8/10m corridor (final layout of the road system) for the roads during construction. 	<p>Pre-construction and construction activities</p>	<p>ECO/ Specialist Ecologist</p>	<p>Before Commencement and Ongoing</p>	<p>Proof of buffers put in place and adhered to.</p> <p>Evidence of non-compliance as per ECO audit reports</p>
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		<ul style="list-style-type: none"> » No activity must occur outside the road margins. » It is recommended that the road layout follow the less steep inclines and contours to limit access on steep and sensitive slopes. » No driving over the sensitive bedrock sheets are allowed at any time during the construction, operational or decommissioning phases for this project. This include any driving into the veld outside any demarcated corridors or footprint areas. » All activities during construction must be restricted to take place within the footprint area 				
Minimise erosion potential	Project Manager/ECO	<ul style="list-style-type: none"> » All hard surfaces (roads footprints) will contribute to the erosion potential and the accelerated flow velocities from 	Pre-construction and construction activities	ECO/ Specialist Ecologist	Before Commencement and Ongoing	No evidence of erosion

		<p>roads, culverts and areas cleared of vegetation are of concern.</p> <ul style="list-style-type: none"> » It will be important to monitor these areas regularly, especially downstream of these zones, as accelerated flows are the main concern related to increased erosion. » The exposed areas must be rehabilitated to prevent erosion and to ensure no alien plant species establish in these areas. As plants associated with the vegetation unit are slower to recover, the clearing footprint must be kept to an absolute minimum e.g. leave 300mm basal layer. 				
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SECTION 9 - EROSION MANAGEMENT PLAN

Project aspect	Mitigation Objectives	Management actions	Monitoring		
			Methodology	Frequency	Responsibility
a) CONSTRUCTION PHASE					
9.1 Increased wind erosion and resultant deposition of dust	Prevent wind erosion and resultant deposition of dust on the surrounding indigenous vegetation	<p>9.1.1 Sand, stone and cement are stored in demarcated areas, and are covered or sealed to prevent wind erosion and resultant deposition of dust on the surrounding indigenous vegetation.</p> <p>9.1.2 During construction, efforts should be made to retain as much natural vegetation as possible on the site, to reduce disturbed areas and maintain plant cover, thus reducing erosion risks. All measures required for the treatment of runoff generated on the building platform during construction should be in place before site clearing commences.</p>	Check that sand, stone and cement are stored and handled as instructed (9.1.1)	Daily(9.1)	Construction manager and ECO(9.1)
9.2 Excessive loss of natural vegetation in development footprint area of the BESS and	Prevent loss of natural vegetation through erosion	9.2.1 Vegetation clearing during construction must be restricted to the footprint of the IPP substation Battery Energy Storage System (BESS) and planned infrastructure only. It should be phased to ensure that the minimum area of soil is exposed to potential erosion at any one time.	<p>ECO to be on site to monitor vegetation clearing (9.2.1).</p> <p>Regular monitoring for erosion to ensure that no erosion problems are occurring at the site. All erosion</p>	<p>Daily (9.2.1).</p> <p>Weekly initially, then monthly (9.2.2, 10.2.3).</p>	<p>ECO and management team</p> <p>Contractor (9.2.2, 9.2.3).</p>

underground cabling.		<p>9.2.2 . Ensure that steep slopes are not de-vegetated unnecessarily and subsequently become hydrophobic (i.e. have increased runoff and a decreased infiltration rate) increasing the erosion potential.</p> <p>9.2.3 During construction the top soil should be removed and separately stored from sub-soil (in piles not > 2 m). Stockpiles not used in 3 months after stripping must be seeded to prevent dust and erosion.</p>	problems observed should be rectified as soon as possible (9.2.2, 9.2.3).		
Project aspect	Mitigation Objectives	Management actions	Monitoring		
			<i>Methodology</i>	<i>Frequency</i>	<i>Responsibility</i>
b) OPERATION PHASE					
9.3 Excessive loss of natural vegetation in development footprint area and resulting impacts on species of special concern	Prevent loss of natural vegetation through erosion.	<p>The use of silt fences and sand bags must be implemented in areas that are susceptible to erosion. Other erosion control measures that can be implemented are as follows:</p> <p>1) Brush packing with cleared vegetation,</p> <p>2) Planting of vegetation,</p> <p>3) Hydro seeding/hand sowing. All erosion control mechanisms need to be regularly maintained.</p>	<p>ECD to advise on seed to be used, based on plant checklist for the development area</p> <p>Monitor efficiency of erosion control measures</p>	Weekly or monthly	ECD and operations manager

<p>9.4 Manage habitat fragmentation (loss of landscape connectivity) and loss of Faunal Habitat</p>	<p>Minimise habitat fragmentation and loss of connectivity</p>	<p>9.4.1 Regular monitoring for erosion to ensure that no erosion problems are occurring at the site as a result of the roads and other infrastructure. All erosion problems observed should be rectified as soon as possible.</p>	<p>Regular monitoring for erosion to ensure that no erosion problems are occurring at the site. All erosion problems observed should be rectified as</p>	<p>Monthly</p>	<p>ECO and Project Operator</p>
<p>c) DECOMMISSIONING PHASE</p>					
<p>9.5 No specific impacts are associated with the decommissioning phase other than those from the operational phase that will still be relevant for the duration of the decommissioning phase due to on-going occupation of the area.</p> <p>10.6 Rehabilitation must be executed in such a manner that surface run-off will not cause erosion of disturbed areas. Monitoring: Final external audit of area to confirm that area is rehabilitated to an acceptable level (once off event to be conducted by ECO).</p>					

SECTION 10 - INITIAL HARZADOUS SUBSTANCES LEAKAGE OR SPILLAGE MONITORING

Project aspect	Mitigation Objectives	Management actions	Monitoring		
			Methodology	Frequency	Responsibility
a) CONSTRUCTION PHASE					
10.1. Contamination of soil and risk of damage to vegetation and/or fauna through spillage of concrete	Avoid soil contamination and risk of damage to vegetation and/or fauna through spillage of concrete	<p>10.1.1 Concrete mixing area (if any) must be defined in the site map and restricted to this area. If any concrete mixing takes place on site, this is to be done on board or plastic sheeting, which is to be removed from the site once concreting is completed; or in areas to be covered by further construction.</p> <p>10.1.2 Any excess sand, stone and cement must be removed from site at the completion of the construction period</p>	Check that sand, stone and cement are stored and handled as instructed	Daily	Construction manager and ECO

<p>10.2. Contamination of soil and risk of damage to vegetation and/or fauna through spillage of fuels and oils</p>	<p>Avoid soil contamination and risk of damage to vegetation and/or fauna through spillage of fuels and oils</p>	<p>10.2.1 Check construction equipment daily (by Contractor) to ensure that no fuel spillage takes place from construction vehicles or machinery, and monitored weekly by ECO. Any fluids drained from the machinery during servicing should be collected in leak-proof containers and taken to an appropriate disposal or recycling facility.</p> <p>10.2.2 No refuelling, storage, servicing, or maintenance of equipment should take place within sensitive environmental resources in order to reduce the risk of contamination by spills. Spilled fuel, oil or grease is retrieved where possible, and contaminated soil removed, cleaned and replaced.</p> <p>10.2.3 Contaminated soil to be collected by the Contractor (under observation of ECO) and disposed of at a hazardous waste site designated for this purpose. Under no circumstances shall contaminated soil be added to a spoils pile and transported to a regular disposal site.</p> <p>10.2.4 No refuelling or servicing should be undertaken without absorbent material or drip pans properly placed to contain spilled fuel. Portable bioremediation kit (to remedy chemical spills) is to be held on site and used as required and around any fuel storage containers.</p>	<p>Check that no spills have taken place (10.2.1 to 10.2.5)</p>	<p>Daily</p>	<p>Construction manager and ECO</p>
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		<p>10.2.5 All equipment refuelling, servicing and maintenance activities should only be undertaken within appropriately sealed/contained or bunded designated areas.</p> <p>10.2.6 All maintenance materials, oils, grease, lubricants, etc. should be stored in a designated area in an appropriate storage container.</p> <p>10.2.7 Chemical toilets used during construction must be regularly cleaned. Chemicals used in toilets are also hazardous to the environment and must be controlled. Portable chemical toilets could overflow if not pumped regularly or they could spill if dropped or overturned during moving. Care and due diligence should be taken at all times.</p>			
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Project aspect	Mitigation Objectives	Management actions	Monitoring		
			Methodology	Frequency	Responsibility
b) OPERATION PHASE					
10.3 Impacts due to management solid and liquid wastes disposed of on the site during operation phase	Prevent environmental problems (e.g. pollution / change in soil pH)	<p>10.3.1 All operation waste (concrete, steel, rubbles etc.) to be removed from the site.</p> <p>10.3.2 Other non-hazardous solid waste (e.g. packaging material) to be disposed of at a licensed landfill.</p> <p>10.3.3 All liquid waste (used oil, paints, lubricating compounds and grease) to be packaged and disposed of by appropriate means.</p> <p>10.3.4 Adequate containers for the cleaning of equipment and materials (paint, solvent) must be provided as to avoid spillages.</p> <p>10.3.5 Waste water from operation and painting activities must be collected in a designated container and disposed off at a suitable disposal point off site.</p>	Waste removal and disposal to be monitored throughout operation (10.3.1 to 10.3.5)	Monthly (10.3.1 to 10.3.5)	Operation manager and ECO (10.3.1 to 10.3.5)

<p>10.4 Contamination of soil and risk of damage to vegetation and/or fauna through spillage of fuels and oils at Battery Energy Storage System (BESS) development area.</p>	<p>Avoid soil contamination and risk of damage to vegetation and/or fauna through spillage of fuels and oils</p>	<p>10.4.1 Maintenance equipment and Battery Energy Storage System (BESS) infrastructure is checked by Contractor to ensure that spillage does not take place from vehicles, machinery and Battery Energy Storage System (BESS) infrastructure.</p> <p>10.4.2 Spilled fuel, oil or grease is retrieved during operation where possible and contaminated soil removed, cleaned and replaced.</p> <p>10.4.3 Contaminated soil to be collected by the Contractor and disposed of at a waste site designated for this purpose.</p> <p>10.4.4 Portable bioremediation kit (to remedy chemical spills) is to be held on site and used as required.</p> <p>10.4.5 Bunded containment to be provided below and around any fuel storage containers and Battery Energy Storage System (BESS) infrastructure.</p>	<p>Implement specifications for maintenance equipment use as specified by Contractor (10.4.1, 10.4.5).</p> <p>Implement specifications for removal and disposal of contaminated soil equipment use as specified by Contractor (10.4.2, 10.4.3).</p> <p>Ensure that a well maintained Portable bioremediation kit (to remedy chemical spills) is available on site and that site workers and contractors knows its location and instructions (10.4.4).</p>	<p>Monthly (10.4.1 to 10.4.5)</p>	<p>Operations Manager, ECO and contractors (10.4.1 to 10.4.5)</p>
<p>c) DECOMMISSIONING PHASE</p>					
<p>10.5 No specific impacts are associated with the decommissioning phase other than those from the operational phase that will still be relevant for the duration of the decommissioning phase due to on-going occupation of the area.</p>					

SECTION 11 - HEALTH AND SAFETY MANAGEMENT PLAN

Project aspect	Mitigation Objectives	Management actions	Monitoring		
			Methodology	Frequency	Responsibility
a) CONSTRUCTION PHASE					
11.1. Risk to health and Safety of persons involved in site and pre construction activities.	Provide guidance in relation to Health and Safety of persons involved in site and pre construction activities.	<p>11.1.1 A risk assessment should be made by the contractor (or Developer staff member if in-house preliminary investigations are being undertaken) undertaking the work before work begins to identify those hazards that are likely to be encountered and determine the control measures required. This shall be reviewed by the supervisor or relevant manager. The significant findings of an assessment shall be recorded, e.g. in a method statement. Method statements should describe the plant and equipment and the safe methods of working required to control the risks generated.</p> <p>11.1.2 Every part of the site which is in use should be sufficiently lit, including approach and traffic routes. This should be, as far as possible, by natural light. Where work will take place beyond daylight hours, artificial lighting should be provided.</p>	Check compliance with specified conditions	<p>Weekly or biweekly (11.1.1)</p> <p>Ongoing (11.1.2)</p>	Construction manager and ECO

		Consideration should also be given to the need for lighting at work sites where there is an interface with members of the public. This may be required after construction work ceases for the day.			
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SECTION 12 - ENVIRONMENTAL AWARENESS PLAN AND FIRE MANAGEMENT PLAN

A number of key elements should be included into the Final environmental awareness plan to be prepared by the ECO of the proposed project, including: explanation of the basic key environmental concepts; importance of the environment, including the management thereof; examples of environmental degradation/pollution and the source of those; role that the employees play in protecting the environment; rules to protect the environment and a review of the South African laws which protect the environment.

Project aspect	Mitigation Objectives	Management actions	Monitoring		
			Methodology	Frequency	Responsibility
a) DESIGN PHASE					
12.1. Potential impacts resulting of the lack of overall compliance with the Environmental conditions of approval (issued by DFFE)	Ensure compliance with all Environmental conditions of approval (issued by DFFE)	12.1.1 Audit the implementation of the EMP requirements . 12.1.2 Establish clear and transparent reporting of the activities undertaken with regard to all recommendations included in the EMP.	Audit report on compliance with actions & monitoring requirements (12.1.1 and 12.1.2)	Weekly (1.1.1 and 1.1.2)	ECO and Project Developer. Safety, Health and Environment Representative (12.1.1 and 12.1.2)

Project aspect	Mitigation Objectives	Management actions	Monitoring		
			Methodology	Frequency	Responsibility
b) CONSTRUCTION PHASE					
<p>12.2. Potential risk of fire due to construction activities or behaviour of staff on site during the construction phase</p>	<p>Prevent fire on site resulting of workers smoking/ starting fires (i.e. cooking, heating purposes) in undesignated areas</p> <p>Prevent potential loss of habitat due to risk of fire as a result of the</p>	<p>12.2.1 Designate smoking areas as well as areas for cooking, where the fire hazard could be regarded as insignificant.</p> <p>12.2.2 Educate workers on the dangers of open and/or unattended fires.</p> <p>12.2.3 Open fires must be prohibited. Appropriate fire safety training should also be provided to staff that are to be on the site for the duration of the construction phase.</p> <p>12.2.4 Fire fighting equipment must be made available at various appropriate locations on the construction site.</p>	<p>Adhoc checks to ensure workers are smoking/starting fires only in designated areas (12.2.1)</p> <p>Ensure fire safety requirements are well understood and respected by workers (12.2.2, 12.2.3, 12.2.4)</p>	<p>Daily (12.2.1)</p> <p>All phases of the project (12.2.2, 12.2.3, 12.2.4)</p>	<p>Construction manager and ECO (12.2.1)</p> <p>Lead Contractor and ECO (12.2.2, 12.2.3, 12.2.4)</p>

<p>12.3. Inappropriate behavior of civil contractors and subcontractors during the construction phase</p>	<p>Ensure that contractors and sub-contractors are aware of the requirements of the EMP, leading to unnecessary impacts on the surrounding environment.</p> <p>Ensure that contractors and sub-contractors do not induce side impacts on the surrounding environment as a result of unplanned pollution on site</p> <p>Ensure that actions by on-site contractors and sub-contractors and workers are properly managed in order to minimise impacts to surrounding environment</p>	<p>12.3.1 The terms of this EMP and the potential conditions in the environmental authorisation (from DFFE) will be included in all tender documentation and contractors and sub-contractors contracts.</p> <p>12.3.2 Contractors and sub-contractors will use the chemical toilet situated in a designated area of the site; no personal hygiene (e.g. washing) will be permitted</p> <p>12.3.3 Cooking will take place in a designated area shown on the site map and no firewood or kindling may be gathered from the site or surrounds</p> <p>12.3.4 All litter will be deposited in a clearly marked, closed, animal-proof disposal bin in the construction area; particular attention needs to be paid to food waste</p> <p>12.3.5 No one other than the ECO or personnel authorised by the ECO, will disturb or pick plants outside the demarcated construction area</p> <p>12.3.6 No one other than the ECO or personnel authorised by the ECO, will disturb animals on the site (no trapping, shooting etc.)</p>	<p>Check compliance with specified conditions using a report card, and allocate fines when necessary (12.3.1) to 12.3.6)</p>	<p>Weekly or biweekly (12.3.1 to 12.3.6)</p>	<p>Construction manager and ECO (12.3.1 to 12.3.6)</p>
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<p>12.4. Disturbance to and damage to Heritage Artefacts</p>	<p>Prevent damage to archaeological features</p>	<p>12.4.1 Maintain and enforce awareness of the possibility of uncovering of heritage features during construction phase 12.4.2 Inform all employees and contractors of the necessary procedures when discovering heritage objects/sites</p>	<p>An archaeologist or heritage authority (SAHRA) must be informed if any features/sites are found accidentally (12.4.1, 12.4.2)</p>	<p>During the construction phase (12.4.1, 12.4.2)</p>	<p>Construction manager and ECO (12.4.1, 12.4.2)</p>
<p>12.5. In the event that any unanticipated heritage features is uncovered during construction or operation (including any possible expansion of the facilities).</p>	<p>Mitigate unexpected uncovering, disturbance or destruction of archaeological resources, e.g. burial or feature.</p>	<p>12.5.1 Alert relevant heritage authority in the event of finding any feature during construction or operation. If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490), 12.5.2 Assess in the event of any expansion or possible impact beyond the area covered by this report.</p>	<p>Alert heritage authority and mitigate if deemed necessary (12.5.1, 12.5.2)</p>	<p>In the event of unexpected uncovering of feature (12.5.1, 12.5.2)</p>	<p>Project construction/operation team (12.5.1, 12.5.2)</p>

<p>12.6. Damage to or destruction of palaeontological features (e.g. fossils) that may occur on site</p>	<p>Prevent damage to palaeontological features</p>	<p>12.6.1 If any substantial fossil remains are found or exposed, these should be safeguarded, preferably in situ.</p> <p>12.6.2 Relevant heritage authority must be immediately contacted and a qualified paleontologist must record and sample the occurrence.</p>	<p>Contact the identified paleontologist and archaeologist if any heritage features (or suspected features) are uncovered</p> <p>(12.6.1, 12.6.2)</p>	<p>During Excavation (12.6.1, 14.6.2)</p>	<p>Construction manager and ECO (12.6.1, 12.6.2)</p>
<p>c) OPERATION PHASE</p>					
<p>12.7 Ensure that workers are not smoking/ starting fires (i.e. cooking, heating purposes) in undesignated areas during operation phase</p>	<p>Ensure an appropriate and efficient fire prevention/ management plan during the operation phase</p>	<p>12.7.1 Designate smoking areas as well as areas for cooking, where the fire hazard could be regarded as insignificant.</p> <p>12.7.2 Educate workers on the dangers of open and/or unattended fires.</p> <p>12.7.3 Ensure that adequate fire fighting equipment is available and easily accessible on site and within the vicinity of the Battery Energy Storage System (BESS).</p> <p>12.7.4 Contact details of emergency services and HazMat Response Contractors are to be clearly displayed on the site. All staff are to be made aware of these details and must be familiar with the procedures for notification in the event of an emergency.</p>	<p>Adhoc checks to ensure workers are smoking/starting fires only in designated areas (12.7.1, 12.7.2)</p> <p>Yearly control of firefighting equipment (12.7.3)</p>	<p>Monthly (12.7.1, 12.7.2) Yearly (12.7.3)</p>	<p>Operations Manager (12.7.1 to 12.7.3)</p>

<p>12.8 Excessive generation of waste on site during operation phase</p>	<p>Minimise the production of waste</p>	<p>12.8.1 Promote waste reduction, re-use, and recycling opportunities on site during the operation phase</p> <p>12.8.2 Ensure an adequate and sustainable use of resources</p>	<p>Monitor waste generation and collection throughout operation (12.8.1 and 12.8.2)</p>	<p>Monthly (12.8.1 and 12.8.2)</p>	<p>Operation manager and ECO (12.8.1 and 12.8.2)</p>
<p>12.9 Non respect of waste management practices</p>	<p>Ensure compliance with waste management legislation</p> <p>Prevent pollution of the environment</p>	<p>12.9.1 Control and implement waste management plans provided by contractors. Ensure that relevant legislative requirements are respected</p> <p>12.9.2 Determine specific areas on site for temporary management of waste</p>	<p>Control of waste management practices throughout operation phase (12.9.1)</p> <p>Investigate if any complaints has been expressed from the community regarding waste handling in and out the site (12.9.2)</p>	<p>Monthly (12.9.1 and 12.9.2)</p>	<p>Operation manager and ECO (12.9.1 and 12.9.2)</p>

<p>12.10 Excessive consumption of Water and waste water generation</p>	<p>Maintain reasonable levels of Water Consumption and waste water generation</p>	<p>12.10.1 Water conservation must be strongly encouraged. Where possible water must be re-used</p> <p>12.10.2 Waste water must be collected and disposed off at a suitable disposal point off site.</p> <p>12.10.3 The proposed use of detergents in wash water must conform to the specifications set out by the Project Operator.</p>	<p>Water consumption and waste water generation to be monitored throughout operational phase (14.10.1 to 14.10.3)</p>	<p>Quarterly (12.10.1 to 12.10.3)</p>	<p>Operations Manager & ECO (12.10.1 to 12.10.3)</p>
<p>12.11 Damage to or destruction of archaeological and palaeontological features (e.g. fossils) that may occur on site</p>	<p>Prevent damage to archaeological and palaeontological features</p>	<p>12.11.1 If archaeological features are uncovered unexpectedly during operation, the South African Heritage Resources Agency (SAHRA) must be immediately contacted.</p> <p>The contact details for SAHRA are: (Natasha Higgitt/Phillip Hine) Tel: 021 462 5402 Email: nhiggitt@sahra.org.za</p>	<p>An archaeologist must be informed if any features/sites are found accidentally (12.11.1)</p>	<p>During operation (12.11.1)</p>	<p>Operation manager and ECO (12.11.1)</p>

SECTION 13 - SUSTAINABLE DEVELOPMENT MANAGEMENT PLAN

Project aspect	Mitigation Objectives	Management actions	Monitoring		
			Methodology	Frequency	Responsibility
a) CONSTRUCTION PHASE					
13.1.Potential impacts resulting in the inadequate control of the generation of waste and waste management on site	Minimise the production of waste Prevent environmental problems (e.g. pollution / change in soil pH) due to solid and liquid wastes disposed of on the site	13.1.1 Promote waste reduction, re-use, and recycling opportunities on site during the construction phase 13.1.2 Ensure an adequate and sustainable use of resources 13.1.3 All construction waste (concrete, steel, rubbles etc.) to be removed from the site. 13.1.4 Other non-hazardous solid waste (e.g. packaging material) to be disposed of at a licensed landfill.	Monitor waste generation and collection throughout construction (13.1.1 and 3.1.2) Waste removal and disposal to be monitored throughout construction (13.1.3 to 13.1.7) Control of waste management practices throughout construction phase (13.1.12 and 13.1.9)	Weekly or biweekly (13.1.1 and 13.1.2) Weekly or biweekly (13.1.3 to 13.1.7) Weekly or biweekly (13.1.12 and 13.1.9) All phases of the development	Construction manager and ECO (13.1.1 and 13.1.2) Construction manager and ECO (13.1.3 to 13.1.7) Construction manager and ECO (13.1.12 and 13.1.9) Construction manager and ECO (13.1.1 to 13.1.9)

	<p>Ensure compliance with waste management legislation</p>	<p>13.1.5 All liquid waste (used oil, paints, lubricating compounds and grease) to be packaged and disposed of by appropriate means.</p> <p>13.1.6 Adequate containers for the cleaning of equipment and materials (paint, solvent) must be provided as to avoid spillages.</p> <p>13.1.7 Waste water from construction and painting activities must be collected in a designated container and disposed off at a suitable disposal point off site.</p> <p>13.1.8 Control and implement waste management plans provided by contractors. Ensure that relevant legislative requirements are respected</p> <p>13.1.9 Determine specific areas on site for temporary management of waste</p>	<p>Investigate if any complaints has been expressed from the community regarding waste handling in and out the site (13.1.1 to 13.1.9)</p>	<p>(13.1.1 to 13.1.9)</p>	
<p>13.2. Disturbance of soil profile and resultant decrease in soil agricultural capability</p>	<p>Prevent impact on soil agricultural capability</p>	<p>13.2.1 Before any levelling of the area is done for construction, the upper 10cm of soil from the entire area where levelling will take place, must be stripped and stockpiled at different, convenient points around the development. It should be retained for re-spreading over the disturbed surface during rehabilitation. If no levelling is to be done on a particular area, it is not necessary to strip topsoil from that area.</p>	<p>Identify all areas that will be disturbed by levelling. Record the GPS coordinates of these, as well as the location (GPS coordinates)</p>	<p>Weekly or biweekly (13.2.1)</p>	<p>Construction manager and ECO (13.2.1)</p>

			where the topsoil from each is stockpiled (13.2.1)		
13.4. Loss of Faunal Habitat	Promote the conservation of Fauna communities in the area	13.5.1 Search and Rescue during construction to be undertaken. 13.5.2 Monitor for trapped/displaced fauna . 13.5.3 Monitor for injured fauna and DoR incidents.	Site Audit (13.5.1, 13.5.2, 13.5.3)	Weekly (13.5.1, 13.5.2, 13.5.3)	ECO (13.5.1, 13.5.2, 13.5.3)
13.6.Reduce road animal mortality from truck/vehicle and other service vehicles	Promote the conservation of Fauna communities in the area	13.6.1 Monitor for injured fauna	Site Audit (13.6.1)	Weekly and during rainfall for amphibians (13.6.1)	ECO (13.6.1)
b) DECOMMISSIONING PHASE					
13.9 Generation of Waste due to disassembly of the IPP substation Battery Energy Storage System (BESS)	Avoid substantial negative impacts at the decommissioning phase due to insufficient planning	13.9.1 Suitable receptacles must be provided for the temporary storage of various waste types such as scrap metal and concrete, until it is removed to the nearest licensed landfill. 13.9.2 Waste separation is encouraged and therefore receptacles should be labelled to reflect the different waste types.	Audit the implementation of mitigation measures recommended for the decommissioning Phase (13.9.1 and 13.9.2)	During the Decommissioning phase (13.9.1 and 13.9.2)	Lead Contractor (13.9.1 and 13.9.2)

<p>13.10 Rehabilitation of soil profile</p>	<p>Restore soil agricultural capability</p>	<p>13.10.1 The upper 10cm of soil which was stripped and stockpiled from the entire area where levelling has been conducted should be re-spread over the disturbed surface during rehabilitation: If no levelling was done on a particular area, it is not necessary to strip topsoil from that area.</p> <p>13.10.2 The final rehabilitated area must resemble the current composition and structure of the soil as far as practicably possible. Progressive rehabilitation is an important element of the rehabilitation strategy and must be implemented where feasible.</p>	<p>Ensure that all areas that were stripped, are respread with topsoil. Record co-ordinates of where each stockpile is spread. (13.10.1)</p> <p>Monitor the depth and cover of topsoil spreading and record depth at a number of points, to ensure 10cm depth. (13.10.1)</p>	<p>During rehabilitation phase (13.10.1)</p>	<p>ECC(13.10.1)</p>
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SECTION 14 - ALIEN INVASIVE VEGETATION MANAGEMENT PLAN

Project aspect	Mitigation Objectives	Management actions	Monitoring		
			Methodology	Frequency	Responsibility
a) CONSTRUCTION PHASE					
14.1 Impacts due to establishment of alien invasive plants	Avoid establishment and spread of alien invasive plants due to the project activities	<p>14.1.1 Establish an ongoing monitoring programme for construction phase to detect and quantify any alien species that may become established and identify the problem species (as per Conservation of Agricultural Resources Act and Biodiversity Act).</p> <p>14.1.2 Do not import soil stockpiles from areas with alien plants.</p> <p>14.1.3 Rehabilitate disturbed areas as quickly as possible.</p> <p>14.1.4 Keep disturbance of indigenous vegetation to a minimum.</p>	<p>Monitor the presence of alien invasive species on the development site. If any alien invasive species are detected then the distribution of these should be mapped (GPS coordinates of plants or concentrations of plants), number of individuals (whole site), age and/or size classes of plants and aerial cover of plants. The results should be interpreted in terms of the risk posed to sensitive habitats within and surrounding the project area. (14.1.1 to 14.1.4)</p>	<p>Monthly (14.1.1, 14.1.2, 14.1.3, 14.1.4)</p> <p>Immediately (14.1.5).</p>	<p>Management team & ECO (14.1.1, 14.1.2, 14.1.3, 14.1.4)</p> <p>Contractor (14.1.5).</p>

		14.1.5 Immediately control any alien plants that become established using registered control methods.	Take action to control alien plants as advised by a specialist or the Plant Protection Research Institute (14.1.5).		
b) OPERATION PHASE					
14.2 Impacts due to establishment of alien invasive plants	Avoid establishment and spread of alien invasive plants	<p>14.2.1 Continue with ongoing monitoring programme to detect and quantify any alien species that may become established and identify the problem species during operation phase.</p> <p>14.2.2 Immediately control any alien plants that become established using registered control methods.</p>	<p>Annual audit of project area and immediate surroundings. If any alien invasive species are detected then the distribution of these should be mapped (GPS co-ordinates of plants or concentrations of plants), number of individuals (whole site), age and/or size classes of plants and aerial cover of plants. The results should be interpreted in terms of the risk posed to sensitive habitats within and surrounding the project area (14.2.1)</p> <p>Take action to control alien plants as advised by a specialist or the Plant Protection Research Institute (14.2.2)</p>	<p>Reporting frequency depends on legal compliance framework (14.2.1)</p> <p>Immediately(14.2.2)</p>	<p>Project Operator (at this stage: Developer (Pty) Ltd and ECO (14.2.1 and 14.2.2)</p>

SECTION 15 - TRAFFIC MANAGEMENT PLAN INCLUDING TRANSPORTATION PLAN

Project aspect	Mitigation Objectives	Management actions	Monitoring		
			Methodology	Frequency	Responsibility
a) CONSTRUCTION PHASE					
15.1 Disturbance of local traffic due to material and workers transport onto and from site during the duration of the construction phase	Minimize the impact of the construction activities on the local traffic and avoid accidents with pedestrians, animals and other drivers on the surrounding tarred/gravel roads.	15.1.1 Avoid construction vehicles movement on the regional road during pick time 15.1.2 Ensure that all construction vehicles are roadworthy and respect the vehicle safety standards implemented by the Project Developer. 15.1.3 Implement clear and visible signalisation around the site indicating movement of construction vehicles to ensure safe entry and exit 15.1.4 Implement a comprehensive and adequate road management plan including external and internal roads to be applied by all employees and contractors on site	Road and safety requirements to be monitored throughout construction (15.1.1 to 15.1.5)	During construction (15.1.1 to 15.1.5)	Construction manager and ECO (15.1.1 to 15.1.5)

		15.1.5 Determine and restrict use of transportation routes during the construction phase. Deviation from these routes may only be allowed if exceptional circumstances e.g. if road is closed			
15.2. Generation of noise by vehicles, earth moving and terracing of site, construction of access roads and hard standing areas during construction	Avoid impact of noise on nearby people and the natural environment during construction	15.2. 1 Avoid using old and noisy construction equipment and ensure equipment is well maintained. 15.2. 2 Limit noisy construction activities to daytime only.	Ensure construction noise at the nearest farmsteads to be less than the 45 dBA presented in SANS 10103:20012 for rural areas (15.2.1 and 15.2.2)	Three times during the estimated 12 month construction period, i.e. at 3 months, 6 months, and 9 months (15.2.1 and 9.2.2)	Project Developer, Ltd (15.2.2)
15.3. Generation of dust by vehicles, earth moving and terracing of site, construction of access roads and hard standing areas during construction	Limit the generation of dust to an adequate level during construction activities Ensure that dust level comply with health and safety requirements for the	15.3.1 Implement management strategies for dust generation e.g. apply dust suppressant on exposed areas and stockpiles. 15.3.2 Postpone or reduce dust-generating activities during periods with strong wind. 15.3.3 Earthworks may need to be rescheduled or the frequency of application of dust control/suppressant increased during periods of high winds if visible	Ensure generation of dust to an adequate level during construction activities (15.3.1 to 15.3.1)	Three times during the estimated 12 month construction period, i.e. at 3 months, 6 months, and 9 months (15.3.1 to 15.3.1)	Project Developer, Ltd(15.3.1 to 15.3.1)

	duration of the construction phase Prevent dust generated on site to blow toward nearby residences outside the site.				
15.4. Generation of pollution air emissions by vehicles, earth moving and terracing of site, construction of access roads and hard standing areas during construction	Limit the release of air pollutants from vehicles and construction equipment	15.4.1 Ensure that roadworthy and safety standards are implemented at all time for all construction vehicles	Ensure release of air pollutants to an adequate level during construction activities (15.4.1)	Three times during the estimated 12 month construction period, i.e. at 3 months, 6 months, and 9 months (15.4.1)	Project Developer, (15.4.1)

b) OPERATION PHASE					
15.5. Generation of pollution emission (due to the low number of vehicles, staff and activities on site during operation)	Maintain lowest production of air pollution	15.5.1 Ensure that roadworthy and safety standards are implemented at all time for all operation vehicles	Ensure release of air pollutants to an adequate level during operation activities (15.5.1)	Yearly (15.5.1)	Project Operator (at this stage: 15.5.1)
15.6. Generation of dust due to the state of the road network on the site	Maintain lowest production of dust	15.6.1 Ensure that stored material/products with potential to generate dust (e.g. topsoil or cement) is covered 15.6.2 Ensure that road network is maintained to a good state during the entire operation phase 15.6.3 Implement management strategies for dust generation e.g. apply dust suppressant on exposed areas and stockpiles	Ensure generation of dust to an adequate level during operation activities (15.6.1)	Monthly(15.6.1)	Project Operator (15.6.1)
15.7 Noise generation (due to the low number of vehicles, staff and activities on site during operation)	Maintain lowest production of noise	15.7.1 Limit noisy maintenance/operational activities to daytime only	Ensure any operational/maintenance activity noise at the nearest farmsteads to be less than the 45 dBA presented in SANS 10103:20012 for rural areas (8.7.1)	Every three months (15.7.1)	Project Operator (15.7.1)

c) DECOMMISSIONING PHASE					
<p>15.8. Disturbance of local traffic due to material and workers transport onto and from site during the duration of the decommissioning activities</p>	<p>Minimize the impact of the decommissioning activities on the local traffic and avoid accidents with pedestrians, animals and other drivers on the surrounding tarred/gravel roads</p>	<p>15.8.1 Avoid vehicles movement on the regional road during pick time</p> <p>15.8.2 Ensure that all vehicles are roadworthy and respect the vehicle safety standards implemented by the Project Developer.</p> <p>15.8.3 Implement clear and visible signalisation around the site indicating movement of vehicles to ensure safe entry and exit</p> <p>15.8.4 Implement a comprehensive and adequate road management plan including external and internal roads to be applied by all employees and contractors on site</p> <p>15.8.5 Determine and restrict use of transportation routes during the decommissioning phase. Deviation from these routes may only be allowed if exceptional circumstances e.g. if road is closed</p>	<p>Road and safety requirements to be monitored throughout decommissioning (15.8.1 to 15.8.5)</p>	<p>During decommissioning (15.8.1 to 15.8.5)</p>	<p>ECD (15.8.1 to 15.8.5)</p>

APPENDIX 1: METHOD STATEMENTS

To be prepared by the contractor prior to commencement of the activity.

Appendix A:	EIA Project Team CVs
Appendix B:	Grievance Mechanism for Public Complaints and Issues
Appendix C:	Alien Invasive Plant and Open Space Management Plan¹
Appendix D:	Plant Rescue and Protection Plan ¹
Appendix E:	Re-vegetation and Rehabilitation Plan¹
Appendix F:	Erosion Management Plan
Appendix G:	Stormwater Management Plan
Appendix H:	Waste Management Plan
Appendix I:	Fire management and Emergency Preparedness, Plan
Appendix J:	A traffic management plan
Appendix K:	Transportation plan
Appendix L:	Bat Monitoring Programme
Appendix M:	Bird Monitoring Programme
Appendix N:	Socio-economic plan/report
Appendix O:	Key Legislation
Appendix P:	Chance Find Procedure
Appendix Q:	A3 Maps

¹ Appears in combined plan for appendices C-E

SPECIALIST FINAL WALKTHROUGH REPORTS:

Appendix A1:	Terrestrial Ecology Pre-Construction Walkthrough
Appendix B1:	Aquatic Ecology Pre-Construction Walkthrough
Appendix C1:	Avifauna Pre-Construction Walkthrough
Appendix D1:	Bat Pre-Construction Walkthrough
Appendix E1:	Archaeological Pre-Construction Walkthrough
Appendix E2:	Palaeontological Pre-Construction Walkthrough

