



ARCUS

An ERM Group Company

VOLUME II

ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE BANNA BA PIFHU WIND FARM AND GRID CONNECTION, EASTERN CAPE PROVINCE

On behalf of

BANNA BA PIFHU WIND FARM (RF) (PTY) LTD

**DFFE Reference Wind Farm: 12/12/20/2289;
12/12/20/2289/AM1; and 12/12/20/2289/AM2
DFFE Reference Grid Connection: 12/12/20/2289/1,
12/12/20/2289/1/AM1 and 12/12/20/2289/1/AM2**

DRAFT FOR PUBLIC COMMENT

JUNE 2022



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1 INTRODUCTION

Banna ba Pifhu Wind Farm (RF) (Pty) Ltd ('BWF') – the Applicant / Developer) intend to amend the valid environmental authorisation (EA) of the Banna ba Pifhu Wind Farm and Grid Connection (hereafter referred to as 'the development') through a Part II Amendment Application process. In terms of locality, the development is located approximately 3 km south of the town of Humansdorp in the Kouga Local Municipality and Sarah Baartman District Municipality, Eastern Cape Province. Electricity generated by the WEF will be transferred into the national grid via the on-site substation and 66 kV grid connection (overhead powerline) to the existing 66 kV Melkhout / St Francis overhead powerline which passes through the site.

Following an Environmental Impact Assessment (EIA) process conducted by CSIR in December 2013, the Banna ba Pifhu Wind Farm and Grid Connection applications received EA, issued by the Department of Forestry, Fisheries and the Environment (DFFE), on 21 July 2014 (i.e., DFFE Reference 12/12/20/2289 and 12/12/20/2289/1). Since the EA was received, Part I amendments were submitted and authorised by the DFFE, as below:

Development Name	DFFE Reference (as amended)	Date of EA	Expiry Date of EA
Banna ba Pifhu Wind Farm	12/12/20/2289/AM1	21 June 2017	21 July 2022
	12/12/20/2289/AM2	22 February 2022	21 July 2024
Grid Connection for the Banna ba Pifhu Wind Farm	12/12/20/2289/1/AM1	11 June 2017	21 July 2020
	12/12/20/2289/1/AM2	1 July 2020	21 July 2024

This Environmental Management Programme (EMPr) is prepared as part of the requirements of the EIA Regulations promulgated under the National Environmental Management Act (Act 107 of 1998), as amended and is to be submitted to the National Department of Forestry, Fisheries and the Environment (DFFE) as part of the application for amendment to the environmental authorisations for the development.

This document must be seen as dynamic, and updated when and if required, throughout the lifecycle of the project.

A detailed description of the project is contained in Chapter 2 of the EIA Report¹; and a description of the affected environment is provided in Chapters 3, and 5 to 14 of the EIA Report². Note that the project description was revised by the 2022 EA Amendment application process, see Section 3 of the respective EA Amendment Reports by Arcus (2022), however the baseline description detailed in the 2013 EIA conducted by CSIR remains valid.

1.1 Details of the Project Company

Details of the Developer (Applicant)	
Project Developer	Banna ba Pifhu Wind Farm (RF) (Pty) Ltd
Company Registration	2011/009072/07
Contact Person	Mr Mike Mangnall
Postal Address	PO Box 762, Wilderness, Western Cape

¹ CSIR Final EIA Report December 2013

² CSIR Final EIA Report December 2013

Details of the Developer (Applicant)	
Telephone	+27 (0)83 785 1492
Email	Mangnall@wkn-windcurrent.com

1.2 Authors of the Draft EMPR

The main authors of the draft EMPr were the CSIR project manager (Minnelise Levendal 2012), and CSIR project leader (Paul Lochner 2012). The co-authors of the draft EMPr were the specialists involved in the assessment of potential impacts identified during the EIA process. The name and role of all authors and co-authors are included in Table 1.1 below.

The EMPr has been updated based on the amendment application by Arcus Consultancy Services South Africa (Pty) Ltd ('Arcus'). Amendment authors are provided in Table 1.2 below.

Table 1-1: Draft EMPr Authors and Co-authors

EIA Management Team 2012 / 2013		
Author	Organisation	Responsibility
Paul Lochner	CSIR	Project Leader (EAPASA Certified)
Minnelise Levendal	CSIR	Project Manager
Specialist Team 2012 / 2013		
Specialist Name	Specialist Company	Specialist Study
Jamie Pote	Independent Consultant	Ecology (Flora and Fauna)
Chris van Rooyen	Chris van Rooyen Consultants	Avifauna (Birds)
Kate MacEwan	Natural Scientific Services	Bats (Final EIA Report)
Henry Holland	Independent Consultant	Visual impacts
Brett Williams	SafeTech	Noise Impacts
Dr Hugo van Zyl	Independent Economic Researchers	Socio-economic impacts
Dr Johan Binneman	Albany Museum	Archaeology
Dr John Almond	NaturaViva	Palaeontology
Johann Lanz	Independent Consultant	Soil Agricultural potential
Dr Brian Colloty	Scherman Colloty & Associates	Aquatic (Wetland) specialist
Sandy Wren	Public Process Consultants	Public Participation Process

Table 1-2: EMPr EA Amendment Authors and Co-authors

EA Amendment Management Team 2022		
Author	Organisation	Responsibility
Ashlin Bodasing	Arcus	Director and EAP (Registered EAP)
Aneesah Alwie	Arcus	EAP Assistant
EA Amendment Specialist Team 2022		
Jamie Pote	Independent Consultant	Ecology (Flora and Fauna)
Chris van Rooyen	Chris van Rooyen Consulting	Avifauna (Birds)
Craig Campbell	Arcus	Bats (EA Amendment Report)
Caroline Lotter	Inkululeko Wildlife Services	External Bats Review
Quinton Lawson and Bernard Oberholzer	Qarc and BOLA	Visual and Landscape
Morné de Jager	Enviro Acoustics Research cc	Noise
Dr Hugo van Zyl	Independent Economic Researchers	Socio-Economic
Dr Jayson Orton	ASHA Consulting	Heritage, Archaeology and Palaeontology
Johann Lanz	Independent Consultant	Soil Agricultural Potential
Dr Brian Colloty	Enviro Sci. (Pty) Ltd	Aquatic and Freshwater

1.3 Purpose and Aims of this Document

An Environmental Management Programme (EMPr) is required in terms of Appendix 4 of the National Environmental Management Act, 1998 (NEMA, Act 107 of 1998), EIA Regulations of 2014 (GNR 326), as amended.

As per the Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning (DEA&DP) Guideline for Environmental Management Plans (Lochner 2005), the over-arching objectives of an EMPr is (1) to ensure compliance with regulatory authority stipulations and guidelines, (2) to ensure sufficient allocation of resources on the project budget, (3) to verify environmental performance through information on impacts as they occur, (4) to respond to changes in project implementation not considered in the EIA, (5) to respond to unforeseen events and (6) to provide feedback for continual improvement in environmental performance.

The aim of this Environmental Management Programme is to achieve the above objectives by:

- Defining the environmental management objectives to be realised during the life of the project, in order to enhance benefits and minimise adverse environmental impacts;
- Describing detailed actions needed to achieve these objectives, and mechanisms that address changes in the project implementation, emergencies and unexpected events;
- Clarifying institutional structures, roles, communication and reporting processes;
- Describing the link between the EMPr and associated legislated requirements; and
- Describing requirements for record keeping, reporting, review and auditing.

The purpose of this EMPr is to provide consistent information and guidance for implementing the management and monitoring measures identified in the Environmental Impact Assessment (EIA) process, and to help achieve environmental policy goals. Furthermore, the purpose of this EMPr is to ensure the Applicant and its contractors/staff are in compliance with the recommendations and conditions determined through the EIA process, as well as guarantee continuous improvement of environmental and social performance, reducing negative impacts and enhancing benefits of the project.

This EMPr is a dynamic document, which should be updated when required. Moreover, it should be considered critical that the EMPr be updated to include site-specific information and specifications as required throughout the life-cycle of the facility - this will ensure that project activities are planned and implemented taking into account a changing environment and sensitive environmental features.

1.3.1 Content of the Draft EMPr

The Draft Environmental Management Programme is divided into four phases of the project cycle:

- Detailed design phase, including wind monitoring micro-siting of turbines (Section 6);
- Construction phase (Section 7);
- Operations phase (Section 8); and
- Decommissioning phase (Section 9).

The EMPr is based largely on the findings and recommendations of the EIA process. However, the EMPr is considered a “live” document and must be updated with additional information or actions during the design, construction and operations phases.

The EMPr 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 plans for the design, construction, operation and decommissioning phases consist of the following components:

- *Goal:* Over-arching environmental goal proposed for the Banna ba Pifhu project near Humansdorp.
- *Objectives:* The objectives necessary in order to meet the goal; these take into account the findings of the environmental impact assessment specialist studies.
- *Management actions:* The actions needed to achieve the objectives, taking into consideration factors such as responsibility, methods, frequency, resources required and prioritisation.
- *Monitoring:* The key monitoring actions required to check whether the objectives are being achieved, taking into consideration responsibility, frequency, methods and reporting.
- *Criteria/targets:* The criteria or targets that indicate the efficacy of the management plan. The targets should be readily measurable, understandable to the layperson, cost-effective to monitor, and meet legal requirements.
- *Remedial actions:* Where necessary, actions to be undertaken if the targets are not being met; or if there is a catastrophic event.

Goal for environmental management:

The overall goal for environmental management for the Banna ba Pifhu project is to construct and operate the project in a manner that:

- Minimises the ecological footprint of the project on the local environment;
- Minimises impacts on fauna and flora, birds, bats, and aquatic systems on site;

- Minimises visual impacts and noise impacts;
- Facilitates harmonious co-existence between the project and other land uses in the area; and
- Contributes to the environmental baseline and understanding of environmental impacts of wind farms in a South African context through providing monitoring records from the construction and operation phases, especially with regard to potential impacts on birds and bats.

1.3.2 Compliance with Appendix 4 of the EIA Regulations, as amended

Table 1-3: Content of the EMPr as per Appendix 4 of the EIA Regulations, as amended³

Appendix 4 Requirements NEMA, 1998 (Act No. 107 of 1998)		Location in EMPr
1	Content of environmental management programme (EMPr) <i>(1) An EMPr must comply with section 24N of the Act and include-</i>	
(a)	<i>details of-</i> <i>(i) the EAP who prepared the EMPr; and</i> <i>(ii) the expertise of the EAP to prepare an EMPr, including a curriculum vitae;</i>	Section 1.2 Appendix C
(b)	<i>A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;</i>	Section 3
(c)	<i>a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitives of the preferred site, indicating any areas that should be avoided, including buffers;</i>	Figure 1
(d)	<i>a description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment processed for all phased of the development including-</i> <i>(i) planning and design;</i> <i>(ii) pre-construction activities;</i> <i>(iii) construction activities;</i> <i>(iv) rehabilitation of the environment after construction and where applicable post closure; and</i> <i>(v) where relevant, operation activities;</i>	Section 6 - 9
(f)	<i>a description of proposed impact management actions, identifying the manner in which the impact management outcomes and contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to-</i> <i>(i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;</i> <i>(ii) comply with any prescribed environmental management standards or practices;</i> <i>(iii) comply with any applicable provisions of the Act regarding closure, where applicable; and</i> <i>(iv) comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;</i>	Section 6 - 9
(g)	<i>the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);</i>	Section 6 - 9

³ This supersedes Table 2.1 which was included in EMPr (CSIR, December 2013).

Appendix 4 Requirements NEMA, 1998 (Act No. 107 of 1998)		Location in EMPr
(h)	<i>the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);</i>	Section 6 - 9
(i)	<i>an indication of the persons who will be responsible for the implementation of the impact management actions;</i>	Section 6 - 9
(j)	<i>the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;</i>	Section 6 - 9
(k)	<i>the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);</i>	Section 6 - 9
(l)	<i>a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;</i>	Section 2
(m)	<i>an environmental awareness plan describing the manner in which-</i> <i>(i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and</i> <i>(ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and</i>	Section 2
(n)	<i>any specific information that be required by the competent authority.</i>	n/a

1.3.3 Updates to the Draft EMPR by Arcus

Arcus Consultancy Services South Africa (Pty) Ltd ('Arcus') has been appointed by BWF to act as the project manager and have an EAP representative to undertake the Amendment Application that is necessary due to proposed changes in project scope. Table 1.4 below reflects updates made to the EMPr by Arcus.

Table 1-4: Updates to the EMPr by Arcus

Section No.	Section	Updates by Arcus
1	Introduction (formerly Project Overview)	Includes the respective change in project scope; Details of the Arcus and specialist team which was part of the amendment process; and Includes details of the Project Company.
-	Approach to preparing the EMPr	This section was merged with Section 1; Compliance with the NEMA EIA Regulations, as amended table was updated; and Section 1.3.3 was added.
2	Roles and Responsibilities	Amended to reflect the Developer (SPV) Section 2.5 – 2.10 added.
3	The Banna ba Pifhu Development	Section added.
4 and 5	General Conditions of Environmental Authorisation	Split into Section 4 and 5 of the EMPr.
6	Management plan for design phase	Updated to include additional mitigation measures and conditions as per the EA.
7	Management plan for construction phase	Updated to include additional mitigation measures by the Avifaunal, Bats, Noise and Socio-Economic specialists, and conditions as per the EA.

Section No.	Section	Updates by Arcus
8	Management plan for operational phase	Updated to include additional mitigation measures by the Socio-Economic, bats and Noise specialists, and conditions as per the EA.
9	Management plan for decommissioning phase	Updated to include additional mitigation measures and conditions as per the EA.
10	Invasive Alien Plant Management Plan	Added as per EA requirements.
11	Plant Rescue and Protection Plan	Added as per EA requirements.
12	Open Space Management Plan	Added as per EA requirements.
13	Traffic Management Plan	Added as per EA requirements.
14	Transportation Management Plan	Added as per EA requirements.
15	Stormwater Management Plan	Added as per EA requirements.
16	Erosion Management Plan	Added as per EA requirements.
17	Fire Management Plan	Added as per EA requirements.
18	Fuel Storage Measures	Added as per EA requirements.
19	Avifauna Management Plan	Added as per EA requirements.
20	Bat Management Plan	Updated as per Bats Amendment Report, 2022.
21	BESS Management	Added due to inclusion in the application.
22	Conclusion	Section added.

2 RESPONSIBILITIES OF THE EMPR

For the purposes of the EMPr, the generic roles that need to be defined are those of the:

- Project Developer;
- Environmental Control Officer (ECO);
- Construction Manager; and
- Operations Manager.

Note: The specific titles for these functions will vary from project to project. The intent of this section is to give a generic outline of what these roles typically require.

2.1 Project Developer

The Project Developer (i.e. Banna ba Pifhu Wind Farm (RF) (Pty) Ltd ('BWF')) is the 'owner' of the project and as such is responsible for ensuring that the conditions of the EA issued by DFFE in terms of NEMA, as amended, are fully satisfied, as well as ensuring that any other necessary permits or licences are obtained and complied with. It is expected that the Project Developer will appoint the Construction Manager and the Operations Manager.

2.2 Environmental Control Officer

The Environmental Control Officer (ECO) will be responsible for overseeing the implementation of the EMPr during the construction and operations phases, and for

monitoring environmental impacts (including the impacts on wetlands), record-keeping and updating of the EMPr as and when necessary.

During *construction*, the Environmental Control Officer will be responsible for the following:

- Meeting on site with the Lead Contractor (Construction Manager) prior to the commencement of construction activities to confirm the construction procedure and designated activity zones;
- Weekly or bi-weekly (i.e. every two weeks) monitoring of site activities during construction to ensure adherence to the specifications contained in the EMPr, using a monitoring checklist that is to be prepared by the ECO at the start of the construction phase;
- Preparation of the monitoring report based on the weekly or bi-weekly site visit; and
- Conducting an environmental inspection on completion of the construction period and 'signing off' the construction process with the Construction Manager.

During *operation*, the Environmental Control Officer will be responsible for:

- Overseeing the implementation of the draft EMPr for the operation phase;
- Ensure that the necessary environmental monitoring takes place as specified in the draft EMPr; and
- Update the draft EMPr and ensure that records are kept of all monitoring activities and results.

During *decommissioning*, the Environmental Control Officer will be responsible for:

- Overseeing the implementation of the draft EMPr for the decommissioning phase; and
- Conducting an environmental inspection on completion of decommissioning and 'signing off' the site rehabilitation process.

At the time of preparing this EMPr, the ECO appointment is still to be made. The appointment is dependent upon the project proceeding to the construction phase.

2.3 Lead Contractor (Construction Manager)

The lead contractor will be responsible for the following:

- Overall construction programme, project delivery and quality control for the construction for the wind project;
- Overseeing compliance with the Health, Safety and Environmental Responsibilities specific to the project management related to project construction;
- Promoting 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;
- Ensuring 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 operation to be carried out safely;
- Meeting on site with the Environmental Control Officer prior to the commencement of construction activities to confirm the construction procedure and designated activity zones;
- Ensuring that all appointed contractors and sub-contractors are aware of this EMPr and their responsibilities in relation to the EMPr; and
- Ensuring 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 Environmental Control Officer.

At the time of preparing this EMPr, the appointment of a lead contractor has not been made and will depend on the project proceeding to the construction phase.

2.4 Operations Manager

The Operations Manager will be responsible for the following:

- Operation of the development;
- Required maintenance of the turbines; and
- Ensuring that the specified environmental monitoring programmes during operations are undertaken effectively and that the findings are analysed and applied.

2.5 Training and Induction of Employees

The ECO has a responsibility to ensure that all personnel involved in the project are aware of and are familiar with the environmental requirements for the project. The EMPr shall be part of the terms of reference (ToR) for all contractors, sub-contractors and suppliers. All Contractors have to give some assurance that they understand the EMPr and that they will undertake to comply with the conditions therein. All senior and supervisory staff members shall familiarise themselves with the full contents of the EMPr. They shall know and understand the specifications of the EMPr and be able to assist other staff members in matters relating to the EMPr.

The ECO must ensure that all staff working on site have an environmental induction. The presentation can include the following topics:

- What is meant by "Environment"?
- Why the environment needs to be protected and conserved.
- How construction activities can impact on the environment.
- What can be done to militate against such impacts?
- Awareness of emergency and spills response provisions.
- Social responsibility during construction e.g., being considerate to local residents.

A detailed environmental management and training program must be developed. The purpose of this is to ensure that all staff and workers understand what is required of them. The main components of the program can incorporate the following:

- Concept of sustainability and the reasons for good environmental management and practice.
- Potential environmental impacts.
- Mitigation measures.
- Establishing a chain of responsibility and decision making.
- Specific training requirements of certain staff, and the potential hazardous associated with the job.
- Methodologies to be used for field sampling.
- Training in the use of field equipment.
- Training in identification of non-compliance situations and procedures to be followed in such instances.
- Reporting requirements.
- Health and Safety.
- Fire management.
- HIV/AIDS.

2.6 Complaints Register and Environmental Incidents Book

Any complaints received from the community must be brought to the attention of the ECO, who will respond accordingly.

The following information will be recorded:

- Time, date and nature of the complaint;
- Response and investigation undertaken; and,

- Actions taken and by whom.

All complaints received will be investigated and a response (even if pending further investigation) will be given to the complainant within 7 days.

All environmental incidents occurring on the site will be recorded. The following information will be provided:

- Time, date, location and nature of the incident; and
- Actions taken and by whom.

2.7 Construction Environmental Monitoring

Environmental audits must be undertaken by the ECO, who acts as an independent environmental consultant, on a monthly basis, or what is deemed necessary by the ECO during times of heavy earth works and vegetation clearing, to ensure compliance with all aspects of the EMPr.

In order to facilitate communication between the Project Developer and the ECO, it is vital that a suitable chain of command is structured that will ensure that the ECO's recommendations have the full backing of the project team before being conveyed to the Contractor. In this way, penalties as a result of non-compliances with the EMPr may be justified as failure to comply with instruction from the highest authority.

2.8 Dealing with Non-Compliance with the EMPr

There may be difficulties encountered with carrying out the mitigation measures within the EMPr, this may result in non-compliance with the EMPr. It may be possible that the contractor and or the developer put in place procedures to motivate staff members to comply with the EMPr and to deal with non-compliance. The developer must make this known to the contractor at the earliest stage possible, even during the tender phase. When dealing with non-compliance, the following process is recommended to take place:

- A notice of transgression should be issued to the transgressor;
- It must be documented in a designated register; and
- It must be reported in a monthly report and made available to I&APs and DFFE upon request.

2.9 Permit Requirements

Activities undertaken during site preparation, construction and operation may require additional permits, over and above the Environmental Authorisation. Banna ba Pifhu Wind Farm (RF) (Pty) Ltd is responsible for ensuring that they hold the necessary permits in order to comply with national and local regulations. Additional permit requirements which may be required are described below.

2.9.1 Borrow Pits

A borrow pit refers to an open pit where material (soil, sand or gravel rock) is removed for use at another location. The Developer or their contractors may want to use borrow pits for certain earthworks operations, such as the construction of roads, embankments, bunds, berms, and other structures. The establishment of borrow pits is regarded as a mining activity and is legislated in terms of the Mineral and Petroleum Resources Development Act, 2002 (No. 28 of 2002) (MPRDA). A mining permit must be obtained from the Department of Minerals and Energy prior to the establishment of borrow pits on the site.

2.9.2 Water Use License

Under the National Water Act, 1998 (Act No. 36 of 1998), there are licensing procedures that need to be followed for particular “water uses”. Water uses that may be of relevance to the development and associated road construction include the following, based on the Department of Water and Sanitation (DWS) Government Notice (GN):

- GN 538 in Government Gazette (GG) 40243 of 2 September 2016 – Section 21 (a): Taking of water from a water resource, including a water course, surface water, estuary or aquifer (i.e. borehole);
- GN 509 in GG 40229 of 26 August 2016 – Section 21 (c) & (i): Altering the bed, banks, course or characteristics of a water course; and/or impeding or diverting of a flow in a water course; and
- GN 665 in GG 36820 of 6 September 2013 (Expired, as General Authorisation (GA) is only valid for 5 years, thus a full Water Use License Application (WULA) will likely be required) – Section 21 (g): Disposing of waste in a manner that may detrimentally impact on a water source which includes temporary storage of domestic waste water i.e. conservancy tanks under Section 37 of the notice.

The DWS will determine if a GA or WULA will be required during the pre-application phase and typically if one of the above water uses requires a WULA then all applications will be treated as a WULA and not GA.

2.9.3 Heritage, Archaeology and Palaeontology

- Any artefact collection or archaeological excavations are subject to a section 35 of the NHRA permit application process; and
- Should any heritage resources, including evidence of graves and human burials, archaeological material and paleontological material be discovered during the execution of the activities above, all works must be stopped immediately and heritage authorities must be notified without delay.

2.9.4 Vegetation Search and Rescue

Under the Forests Act, 1998 (Act No. 84 of 1998) (NFA), a license must be applied for from the Department of Forestry, Fisheries and the Environment (DFFE) for the removal or disturbance of any protected trees on the site, in terms of the List of Protected Tree Species promulgated under the NFA. The abundance of species of conservation concern within this habitat is relatively low and no species of high conservation concern were observed.

Furthermore, a permit from the Provincial Department of Economic Development, Environmental Affairs and Tourism (DEDEAT) must be obtained for approval for the flora and fauna search and rescue (relocation) programme.

2.10 Method Statements

Prior to construction, the developer must ensure that the contractor supply the following method statements (these must be kept on file on site):

- Vegetation clearing;
- Cement mixing;
- Hazardous waste management;
- Emergency preparedness and response;
- Hazardous spills clean up;
- Topsoil stockpiling management;
- Laydown area management;
- Pollution control measures; and
- Hazardous materials management.

3 THE BANNA BA PIFHU DEVELOPMENT

The Banna ba Pifhu Wind Farm and Grid Connection will be introduced into an agricultural landscape with dairy farming as the main land use type. Fynbos on the hills with thicket along deeper river valleys (and among palaeo-dunes) cover areas which are not cultivated. Humansdorp is the largest in-land settlement in the region and an important service centre for the agricultural community. The coastline contains numerous towns and resorts which cater for seasonal visitors and tourists, such as St Francis Bay, Cape St Francis and Oyster Bay. There are various power line and road networks covering the area. A 66 kV power line crosses the site, linking to the existing Melkhoutbosch Substation located north of the N2 - R330 interchange. The grid connection of the development will connect to the existing Eskom 66 kV line (crossing on site) which connects into the Melkhoutbosch Substation.

Table 3-1: Technical Details of the Development

Component	Description / Dimensions
Authorisation Holder (also referred to as the Project Company)	Banna ba Pifhu Wind Farm (RF) (Pty) Ltd
Location of the Site	Approximately 3 km south of the town of Humansdorp in the Kouga Local Municipality and Sarah Baartman District Municipality in the Eastern Cape Province
Site Boundary	Portion 1 of Farm No. 868 Portion 2 of the farm Diep Rivier No. 689 Portion 15 of the farm Diep Rivier No. 689 Remainder of the farm Geelhouteboom No. 688
Size of Site (ha)	1140 ha
Middle point of the facility	34° 4'10.81"S, 24° 46'42.50"E
Proposed Technology	Wind Turbines
Export Capacity	Up to 40.5 MW
On-site Substation	On site (maximum size of 100 m x 100 m) to connect to the existing 66 kV Melkhout / St Francis overhead powerline which passes through the site
Battery Energy Storage System (BESS)	Footprint of approximately 100 m x 100 m (0.5 hectares)
Grid connection	Approximately 1.2 km overhead cabling supported on intermediate poles.

4 COMPLIANCE WITH THE CONDITIONS OF THE BANNA BA PIFHU WIND FARM EA

This section of the EMPr indicates compliance with the conditions (Table 4.1) and notes specific conditions (Section 4.2 – 4.9) of the EA, dated 21 July 2014, as amended (DFFE Reference 12/12/20/2289), for which action is required by the developer and contractors / staff.

4.1 Compliance with the Conditions of the EA in the EMPr

Table 4-1: Compliance with the Conditions of the EA in the EMPr

EA Condition	EMPr Reference
Management of the Activity	
<p>12. A copy of the final development layout map must be made available for comments by registered Interested and Affected Parties and the applicant must consider such comments. Once amended, the final development layout map must be submitted to the Department for written approval prior to commencement of the activity. All available biodiversity information must be used in the finalisation of the layout map. Existing infrastructure must be used as far as possible e.g. roads. The layout map must indicate the following:</p> <ul style="list-style-type: none"> - Position of wind turbines and associated infrastructure; - Labelled / numbered turbine positions; - Foundation footprint; - Internal roads indicating width; - Wetlands, drainage lines, rivers, stream and water crossing of roads and cables; - All sensitive features; - Substation(s) inverters and/or transformer(s) sites including their entire footprint; - Connection routes (including pylon positions) to the distribution / transmission network; - All existing infrastructure on the site, such as roads; - Buildings, including accommodation; - All no-go and buffer areas; and - A map combining the final layout plan superimposed (overlain) on the environmental sensitivity map. This map must reflect the proposed location of turbines as stated in the amended EIAr and this authorisation. 	<p>The Final Site Layout Map and overlain by the Environmental Sensitivities (Figure 1) was prepared based on the further specialist site visits and micro-siting. This EMPr will be made available for public review and comment for the statutory 30-day period. The Final Site Layout Map and overlain by the Environmental Sensitivities (Figure 1) will be updated with any additional requirements based on comments received and will be submitted to the Department for approval.</p>
<p>13. Furthermore, a shapefile of the approved development layout/footprint must be submitted to this Department within two months from the date of this decision. The shapefile must be created using the Hartebeesthoek 94 Datum and the data should be in Decimal Degree Format using the WGS 84 Spheroid. The shapefile must include at a minimum the following extensions i.e. .shp; .shx; .dbf; .prj; and, .xml (Metadata file). If specific symbology was assigned to the file, then the .avl and/or the.lyr file must also be included. Data must be mapped at a scale of 1:10 000 (please specify if an alternative scale was used). The metadata</p>	<p>The shapefile of the final development will be submitted with the application to the Department.</p>

EA Condition	EMPr Reference
Management of the Activity	
must include a description of the base data used for digitizing. The shapefile must be submitted in a zip file using the EIA application reference number as the title. The shape file must be submitted to:.....	
14. The Environmental Management Programme (EMPr) submitted as part of the amended EIAr is not approved and must be amended to include measures as dictated by the final site lay-out map and micro-siting; and the provisions of this environmental authorisation. The EMPr must be made available for comments by registered Interested and Affected Parties and the applicant must consider such comments. Once amended, the final EMPr must be submitted to the Department for written approval prior to commencement of the activity. Once approved the EMPr must be implemented and adhered to.	The EMPr is updated to include measures as provided by specialists as a result of their site visits for the amendment process and will be made available for public review and comment for the statutory 30-day period. The EMPr will be updated with any additional requirements based on comments received and will be submitted to the Department for approval.
15. The EMPr is amendable and must be implemented and strictly enforced during all phases of the project. It shall be seen as a dynamic document and shall be included in all contract documentation for all phases of the development when approved.	
16. Changes to the EMPr, which are environmentally defensible, shall be submitted to this Department for acceptance before such changes could be effected.	
17. The Department reserves the right to amend the EMPr should any impacts that were not anticipated or covered in the amended EIAr be discovered.	
18. The provisions of the approved EMPr including recommendations and mitigation measures in the amended EIAr and specialist' studies shall be an extension of the conditions of this EA and therefore noncompliance with them would constitute noncompliance with the EA.	
19. The EMPr must include the following:	
19.1 All recommendations and mitigations measures recorded in the amended EIAr.	The EMPr has been updated with the recommendations and measure as recorded in the amended EIAr (CSIR, 2013); and the Amendment Reports (Arcus, 2022).
19.2 All mitigation measures as listed in the specialist reports must be included in the EMPr and implemented.	The EMPr has been updated with the recommendations and measures as recorded in the specialists EIA reports (2011 - 2013), and Amendment Reports (2019 - 2022).
19.3 The requirements and conditions of the authorisation	This EMPr has been updated accordingly with the conditions of the authorisation.
19.4 The final site layout map.	See Appendix B: Figure 1.
19.5 An alien invasive management plan to be implemented during construction and operation of the facility. The plan must include mitigation measures to reduce the invasion of alien species	Section 9 - Invasive Alien Plant Management Plan

EA Condition	EMPr Reference
Management of the Activity	
and ensure that the continuous monitoring and removal of alien is undertaken.	
19.6 A plant rescue and protection plan which allows for the maximum transplant of conservation important species from areas to be transformed. This plan must be compiled by a vegetation specialist familiar with the site in consultation with the ECO and be implemented prior to commencement of the construction phase.	Section 10 – Plant Rescue and Protection Plan Section 11 – Open Space Management Plan
19.7 A re-vegetation and habitat rehabilitation plan to be implemented during the construction and operation of the facility. Restoration must be undertaken as soon as possible after completion of construction activities to reduce the amount of habitat converted at any one time and to speed up the recovery to natural habitats.	Appendix A – Specification Guideline for Rehabilitation
19.8 A traffic management plan for the site access roads to ensure that no hazards would result from the increased truck traffic and that traffic flow would not be adversely impacted. This plan must include measures to minimize impacts on local commuters e.g. limiting construction vehicles travelling on public roadways during the morning and late afternoon commute time and avoid using roads through densely populated built-up areas so as not to disturb existing retail and commercial operations.	Section 13 – Traffic Management Plan Section 14 – Transportation Management Plan
19.9 A storm water management plan to be implemented during the construction and operation of the facility. The plan must ensure compliance with applicable regulations and prevent off-site migration of contaminated storm water or increased soil erosion. The plan must include the construction of appropriate design measures that allow surface and subsurface movement of water along drainage lines so as not to impede natural surface and subsurface flows. Drainage measures must promote the dissipation of storm water run-off.	Section 15 – Stormwater Management Plan
19.10 An erosion management plan for monitoring and rehabilitating erosion events associated with the facility. Appropriate erosion mitigation must form part of this plan to prevent and reduce the risk of any potential erosion.	Section 16 – Erosion Management Plan
19.11 An effective monitoring system to detect any leakage or spillage of all hazardous substances during their transportation, handling, use and storage. This must include	Section 17 – Fire Management Plan Section 18 – Fuel Storage Measures

EA Condition	EMPr Reference
Management of the Activity	
precautionary measures to limit the possibility of oil and other toxic liquids from entering the soil or storm water systems.	
19.12 Measures to protect hydrological features such as streams, rivers, pans, wetlands, dams and their catchments, and other environmental sensitive areas from construction impacts including the direct or indirect spillage of pollutants.	Section 18 – Fuel Storage Measures
19.13 An avifauna and bat monitoring programme to document the effect of the operation of the energy facility on avifauna and bats. This must be compiled by a qualified specialist and must be conducted in accordance to the minimum requirements guidelines produced by Bird Life South Africa and the South African Bat Advisory Panel.	Section 19 - Avifauna Management Plan Section 20 – Bat Management Plan
19.14 An environmental sensitivity map indicating environmental sensitive areas and features identified during the EIA process.	See Appendix B: Figure 1.
19.15 A map combining the final layout map superimposed (overlain) on the environmental sensitivity map. This map must reflect the proposed location of the turbines as stated in the EIAr in the amended layout and this authorisation.	See Appendix B: Figure 1.

4.2 Environmental Control Officer (ECO) and Duties

- Condition 20: The holder of this authorisation must appoint an independent qualified Environmental Control Officer (ECO) with experience or expertise in the field for the construction phase of the development. The ECO will have the responsibility to ensure that the conditions referred to in this authorisation are implemented and to ensure compliance with the provisions of the EMPr.
- Condition 21: The ECO must be appointed before commencement of any authorised activity.
- Condition 22: The ECO must meet with the contractors to discuss the conditions of the EA and the contents of the EMPr prior to any site clearing occurring.
- Condition 23: Once appointed, the name and contact details of the ECO must be submitted to the Director: Compliance Monitoring of the Department.
- Condition 24: The ECO must remain employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the site is ready for operation.
- Condition 25: The ECO must:
 - Condition 25.1: Keep record of all activities on site, problems identified, transgressions noted and a schedule of tasks undertaken by the ECO.
 - Condition 25.2: Keep and maintain a detailed incident (including spillage of bitumen, fuels, chemicals, or any other material) and complaint register on site indicating how these issues were addressed, what rehabilitation measures were

taken and what preventative measures were implemented to avoid re-occurrence of incidents/complaints.

- Condition 25.3: Keep and maintain a daily site diary.
- Condition 25.4: Keep copies of all reports submitted to the Department.
- Condition 25.5: Keep and maintain a schedule of current site activities including the monitoring of such activities.
- Condition 25.6: Obtain and keep record of all documentation, permits, licences and authorisation, waste disposal certificates, hazardous waste landfill site licences etc. required b
- Condition 25.7: Compile a monthly monitoring report.

4.3 Recording and Reporting to the Department

- Condition 26: The holder of this authorisation must keep all records relating to monitoring and auditing on site and make it available for inspection to any relevant and competent authority in respect of this development.
- Condition 27: All documentation e.g. audit/monitoring/compliance reports and notifications, required to be submitted to the Department in terms of this authorisation, must be submitted to the Director: Compliance Monitoring at the Department.

4.4 Environmental Audit Report

- Condition 28: The holder of the authorisation must submit an environmental audit report to the Department within 30 days of completion of the construction phase (i.e. within 30 days of site handover) and within 30 days of completion of rehabilitation activities.
- Condition 29: The environmental audit report must:
 - Condition 29.1: Be compiled by an independent environmental auditor;
 - Condition 29.2: Indicate the date of the audit, the name of the auditor and the outcome of the audit;
 - Condition 29.3: Evaluate compliance with the requirements of the approved EMPr and this environmental authorisation;
 - Condition 29.4: Include measures to be implemented to attend to any non-compliances or degradation noted;
 - Condition 29.5: Include copies of any approvals granted by other authorities relevant to the development for the reporting period;
 - Condition 29.6: Highlight any outstanding environmental issues that must be addressed, along with recommendations for ensuring these issues are appropriately addressed;
 - Condition 29.7: Include a copy of this authorisation and the approved EMPr;
 - Condition 29.8: Include all documentation such as waste disposal certificates, hazardous waste landfill site licences etc. pertaining to this authorisation; and
 - Condition 29.9: Include evidence of adherence to the conditions of this authorisation and the EMPr where relevant such as training records and attendance records.

4.5 Commencement of the Activity

- Condition 30: The authorised activity shall not commence within twenty (20) days of the date of signature of the authorisation.
- Condition 31: An appeal under section 43 of the National Environmental Management Act (NEMA), Act 107 of 1998 (as amended), does not suspend an environmental authorisation or exemption, or any provisions or conditions attached thereto, or any directive, unless the Minister, MEC or delegated organ of state directs otherwise.

- Condition 32: Should you be notified by the Minister of a suspension of the authorisation pending appeal procedures, you may not commence with the activity until such time that the Minister allows you to commence with such an activity in writing.
- Condition 33: The holder of this authorisation must obtain a Water Use Licence from the Department of Water and Sanitation (DWS) prior to the commencement of the project should the holder impact on any wetland or water resource. A copy of the license must be kept by the ECO.

4.6 Notification to Authorities

- Condition 34: Fourteen (14) days written notice must be given to the Department that the activity will commence. Commencement for the purposes of this condition includes site preparation. The notice must include a date on which it is anticipated that the activity will commence. This notification period may coincide with the Notice of Intent to Appeal period, within which construction may not commence.

4.7 Operation of the Activity

- Condition 35: Fourteen (14) days written notice must be given to the Department that the activity operational phase will commence.
- Condition 36: The holder of this authorisation must compile an operational EMPr for the operational phase of the activity or alternatively, if the holder has an existing operational environmental management system, it must be amended to include the operation of the authorised activity.
- Condition 37: The EMPr must form part of the contract with the EPC Contractor appointed to construct the proposed facility, and must be used to ensure compliance with environmental specifications and management measures.

4.8 Site Closure and Decommissioning

- Condition 38: Should the activity ever cease or become redundant, the applicant shall undertake the required actions as prescribed by legislation at the time and comply with all relevant legal requirements administered by any relevant and competent authority at that time.

4.9 Specific Environmental Conditions

Conditions 39 – 131 in the EA (DFFE Ref. 12/12/20/2289, dated 21 July 2014, as amended) (Appendix D), are specific to the Banna ba Pifhu Wind Farm. The status of each condition is provided in Table 4.2 below.

Table 4-2: Specific EA Conditions to be implemented for the Banna ba Pifhu Wind Farm

EA Condition No.	Condition in the EA	Status
Avifauna and bats		
39.	A bird and bat monitoring programme must be implemented to document the effect of the operation of the energy facility on avifauna and bats. Active breeding nests in the immediate surroundings must be monitored during the construction phase and further mitigation measures must be discussed with the avifaunal specialist and implemented if necessary.	Monitoring programme must be updated post walkthrough.
40.	The results of the pre-construction bird monitoring programme completed in March	Complete.

EA Condition No.	Condition in the EA	Status
	and mid April 2012 <i>and the additional site surveys/visits completed in September 2018 and January 2022</i> must inform the final layout and the construction schedule of the energy facility.	
41.	A construction monitoring plan to survey bird communities on the Wind Energy Facility must be implemented to monitor impacts resulting from the infrastructure installations. This plan must have a minimum duration of at least 1 (one) year.	Monitoring programme must be updated post walkthrough.
42.	Post-construction avifauna and bat monitoring by an independent monitor should take place for at least two years after operation has commenced. This must be done in accordance with Birdlife South Africa/Endangered Wildlife Trust: Best practice guidelines for avian monitoring and impact mitigation at proposed wind energy development sites in Southern Africa.	To be adhered to once facility becomes operational.
43.	Reports regarding bird monitoring must be submitted to the relevant provincial environmental department, Birdlife South Africa, the Endangered Wildlife Trust (EWT) and this Department on a quarterly basis. The report will assist all stakeholders in identifying potential and additional mitigation measures and to establish protocols for a bird monitoring programme for wind energy development in the country.	To be adhered to once facility becomes operational.
44.	The facility must be designed to discourage the use of infrastructure components as perching or roosting substrates by birds and bats.	To be adhered to.
45.	During construction the applicant must restrict the construction activities to the footprint area. No access to the remainder of the property is allowed.	To be adhered to.
46.	Anti-collision devices such as bird flappers must be installed where power lines cross avifaunal corridors (e.g. grasslands, rivers, wetlands, and dams). The input of an avifaunal specialist must be obtained for the fitting of the anti-collision devices onto specific sections of the line once the exact positions of the towers have been surveyed and pegged. Additional areas of high sensitivity along the preferred alignment must also be identified by the avifaunal specialist for the fitment of anti-collision devices. These devices must be according to Eskom's Transmission and EWT's Guidelines.	To be adhered to. Developer to implement with assistance from avifaunal specialist (it should be noted that this is specific for the grid connection and not the WEF).
47.	All powerlines linking wind turbines to each other and to the internal substation must be buried, where technically feasible. Power	Must be adhered to.

EA Condition No.	Condition in the EA	Status
	lines linking the wind energy facility to the grid may be above the ground.	
48.	A pre-construction walk-through of the approved powerline alignment and turbine positions by a bat specialist, avifaunal specialist and ecologist, must be conducted to ensure that the micro siting of the turbines, pylons and powerline alignments have the least possible impact, there are no nest sites of priority species on or close to the construction corridor and all protected plant species impacted are identified.	Site visits were conducted for the final amended layout. Pre-construction walkthrough of the revised final layout must be adhered to.
Vegetation, wetlands and water resources		
49.	Vegetation clearing must be limited to the authorised footprint.	To be adhered to.
50.	Before the clearing of the site, the appropriate permits must be obtained from the relevant Department of Agriculture for the removal of plants listed in the National Forest Act and from the relevant provincial departments for the destruction of species protected in terms of the specific provincial legislation. Copies of the permits must be kept by the ECO.	The abundance of species of conservation concern within this habitat is relatively low and no species of high conservation concern were observed during the site visit for the amendment. Botanical specialist to confirm requirements before construction.
51.	Construction activities must be restricted to demarcated areas to restrict the impact on sensitive environmental features.	To be adhered to.
52.	All areas of disturbed soil must be reclaimed using only indigenous grass and shrubs. Reclamation activities shall be undertaken according to the rehabilitation plan to be included in the final EMPr.	To be adhered to.
53.	Topsoil from all excavations and construction activities must be salvaged and reapplied during reclamation.	To be adhered to.
54.	No exotic plants must be used for rehabilitation purposes; only indigenous plants of the area must be utilised.	To be adhered to.
55.	No activities will be allowed to encroach into a water resource without a Water Use License being in place from the Department of Water and Sanitation.	GA / WUL must be obtained from the relevant Department.
56.	Cleared alien vegetation must not be dumped on adjacent intact vegetation during clearing but must be temporarily stored in a demarcated area.	To be adhered to.
57.	Removal of alien invasive species or other vegetation and follow-up procedures must be in accordance with the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983).	To be adhered to.

EA Condition No.	Condition in the EA	Status
58.	The holder of this authorisation must ensure that all 'no-go' and buffer areas are clearly demarcated (using fencing and appropriate signage) before construction commences.	To be adhered to.
59.	Contractors and construction workers must be clearly informed of the no-go areas.	To be adhered to.
60.	Where roads pass right next to major water bodies, provisions must be made for fauna such as toads to pass under the roads by using culverts or similar structures.	To be adhered to.
61.	Bridge design must be such that it minimises impact to riparian areas with minimal alterations to water flow and must allow the movement of fauna and flora.	To be adhered to.
62.	The final development area should be surveyed for species suitable for search and rescue, which should be trans-located prior to the commencement of construction.	To be adhered to.
63.	Electric fencing should not have any strands within 30cm of the ground, which should be sufficient to allow smaller mammals, reptiles and tortoises to pass through, but still remain effective as a security barrier.	To be adhered to.
64.	Disturbed areas must be rehabilitated as soon as possible after construction with locally indigenous plants to enhance the conservation of existing natural vegetation on site.	To be adhered to.
65.	Wetlands, rivers and river riparian areas must be treated as "no-go" areas and demarcated as such. No vehicles, machinery, personnel, construction material, fuel, oil, bitumen or waste must be allowed into these areas without the express permission of and supervision of the ECO, except for rehabilitation work in these areas.	To be adhered to.
66.	Workers must be made aware of the importance of not destroying or damaging the vegetation along rivers and wetland areas and this awareness must be promoted throughout the construction phase.	To be adhered to.
67.	Freshwater ecosystems located in close proximity to the construction areas must be inspected on a regular basis (but especially after rainfall) by the ECO for signs of disturbance, sedimentation and pollution from construction activities. If signs of disturbance, sedimentation or pollution are noted, immediate action must be taken to remedy the situation and, if necessary, a freshwater ecologist must be consulted for advice on the most suitable remediation measures.	To be adhered to.

EA Condition No.	Condition in the EA	Status
68.	No discharge of effluents or polluted water must be allowed into any rivers or wetland areas.	To be adhered to.
69.	If-construction areas are to be pumped of water (e.g. after rains), this water must be pumped into an appropriate settlement area, and not allowed to flow into any rivers or wetland areas.	To be adhered to.
70.	Workers must be made aware of the importance of not polluting rivers or wetlands and of not undertaking activities that could result in such pollution, and this awareness must be promoted throughout the construction phase.	To be adhered to.
71.	Freshwater ecosystems located in close proximity to the construction areas must be inspected on a regular basis (but especially after rainfall) by the ECO for signs of disturbance, sedimentation and pollution from construction activities. If signs of disturbance, sedimentation or pollution are noted, immediate action must be taken to remedy the situation and, if necessary, a freshwater ecologist must be consulted for advice on the most suitable remediation measures.	To be adhered to.
Roads and transportation		
72.	Wind turbines should be erected at least 500 metres from the national road reserve boundary and 500 metres from any point of intersection.	The amended layout does not have any turbines within 500 m from the national road reserve boundary or 500 metres from any point of intersection. The developer must ensure any micro siting takes this into consideration prior to construction.
73.	If this cannot be achieved, then an application will have to be submitted to SANRAL for consideration and approval. No access to the wind farm facility will be granted from the national road.	All turbines are further than 500 m from the national road reserve boundary and 500 m from any point of intersection.
74.	Existing road infrastructure must be used as far as possible for providing access to the proposed turbine positions. Where no road infrastructure exists, new roads must be placed within existing disturbed areas or environmental conditions must be taken into account to ensure that minimum amount of damage is caused to natural habitats.	The updated layout adheres to the condition. The developer must ensure any micro siting takes this into consideration prior to construction.
75.	Signs must be placed along construction roads to identify speed limits, travel restrictions, and other standard traffic control information. To minimize impacts on local commuters, consideration must be given to limiting construction vehicles	To be adhered to.

EA Condition No.	Condition in the EA	Status
	travelling on public roadways during the morning and late afternoon commute time.	
76.	Internal access roads must be located to minimize stream crossings. All structures crossing streams must be located and constructed such that they do not decrease channel stability or increase water velocity.	The updated layout adheres to the condition. The developer must ensure any micro siting takes this into consideration prior to construction.
77.	A designated access to the site must be created and clearly marked to ensure safe entry and exit.	To be adhered to.
78.	Signage must be erected at appropriate points warning turning traffic and the construction site.	To be adhered to.
79.	Construction vehicles carrying materials to the site must avoid using roads through densely populated built-up areas so as not to disturb existing retail and commercial operations.	To be adhered to.
80.	Road borders should be regularly maintained to ensure that vegetation remains short and that they therefore serve as an effective firebreak.	To be adhered to.
81.	Roads must be designed such that changes to surface water runoff are avoided and erosion is not initiated.	To be adhered to.
82.	All construction vehicles must adhere to a low speed limit to avoid collisions with susceptible species such as snakes and tortoise.	To be adhered to.
Noise		
83.	House located close to Noise Sensitive Area (NSA) 10 must be relocated before commencement of construction activities	Not applicable. NSD10 (NSA10 from the previous report compiled by Williams, 2013) is vacant and no longer used for residential purposes and / nor will be used in the future for residential purposes and is therefore not noise sensitive.
84.	The holder of this authorisation must ensure that the National Noise Control Regulations and SANS10103:2008 are adhered to and measures to limit noise from the work site are implemented.	To be adhered to.
85.	The holder of this authorisation must ensure that the construction staff working in areas where the 8-hour ambient noise levels exceed 75dBA wear ear protection equipment.	To be adhered to.
86.	The holder of this authorisation must ensure that all equipment and machinery are well maintained and equipped with silencers.	To be adhered to.

EA Condition No.	Condition in the EA	Status
87.	The holder of this authorisation must provide a prior warning to the community when a noisy activity e.g. blasting is to take place.	To be adhered to.
88.	All wind turbines should be located at a setback distance of 500 m from any homestead and a day/night noise criteria level at the nearest residents of 45dB(A) should be used to locate the turbines. The 500 m setback distance can be relaxed if local factors; such as high ground between the noise source and the receiver, indicates that a noise disturbance will not occur.	The amended noise report highlights that the projected noise levels will be around 45 dBA at NSD09. Measures included in this EMPr must be adhered to for mitigation.
89.	Positions of turbines jeopardizing compliance with accepted noise levels should be revised during the micro-siting of the units in question and predicted noise levels re-modelled by the noise specialist, in order to ensure that the predicted noise levels are less than 45dB(A).	To be adhered to.
90.	Construction staff must be trained in actions to minimise noise impacts.	To be adhered to.
Visual resources		
91.	The holder of this authorisation must reduce visual impact during construction by minimising areas of surface disturbance, controlling erosion, using dust suppression techniques and restoring exposed soil as closely as possible to their original contour and vegetation.	To be adhered to.
92.	A lighting engineer must be consulted to assist in the planning and placement of light fixtures in order to reduce visual impacts associated with glare and light trespass.	To be adhered to.
93.	Lighting of main structures (turbines) and ancillary buildings must be designed to minimise light pollution without compromising safety, and turbines must be lit according to Civil Aviation Regulations.	To be adhered to.
94.	Signage on or near wind turbines must be avoided unless they serve to inform the public about wind turbines and their function.	To be adhered to.
95.	Commercial messages and graffiti on turbines must be avoided.	To be adhered to.
Human health and safety		
96.	A health and safety programme must be developed to protect both workers and the general public during construction, operation and decommissioning of the energy facility. The programme must establish a safety zone for wind turbines from residences and occupied buildings, roads, right-of ways and other public access areas that is sufficient to	Programme must be produced prior to construction.

EA Condition No.	Condition in the EA	Status
	prevent accidents resulting from the operation of the wind turbines.	
97.	Potential interference with public safety communication systems (e.g. radio traffic related to emergency activities) must be avoided.	To be adhered to.
98.	The holder of this authorisation must ensure that the operation of the wind facility complies with the relevant communication regulations or guidelines relating to electromagnetic interference, e.g. microwave, radio and television transmissions.	To be adhered to.
99.	The holder of this authorisation must obtain approval from the South Africa Civil Aviation Authority that the wind facility will not interfere with the performance of aerodrome radio Communication, Navigation and Surveillance (CNS) equipment, especially the radar, prior to commencement of the activity. A copy of the approval must be kept on site by the ECO.	A copy of the conditional and final approval must be kept on site by the ECO.
100.	The holder of this authorisation must obtain approval from the South Africa Weather Services (WeatherSA) that the energy facility will not interfere with the performance of their equipment especially radar, prior to commencement of the activity. A copy of the approval must be kept on site by the ECO.	A copy of the final approval must be kept on site by the ECO.
101.	The holder of this authorisation must train safety representatives, managers and workers in workplace safety. The construction process must be compliant with all safety and health measures as prescribed by the relevant act.	To be adhered to.
102.	Liaison with land owners / farm managers must be done prior to construction in order to provide sufficient time for them to plan agricultural activities.	To be adhered to.
103.	No unsupervised open fires for cooking or heating must be allowed on site.	To be adhered to.
Hazardous materials and waste management		
104.	Areas around fuel tanks must be bunded or contained in an appropriate manner as per the requirements of SABS 089:1999 Part 1.	To be adhered to.
105.	Leakage of fuel must be avoided at all times and if spillage occurs, it must be remedied immediately.	To be adhered to.
106.	Hazardous waste such as bitumen, oils, oily rags, paint tins etc. must be disposed of at an approved waste landfill site licensed to accept such waste.	To be adhered to.
107.	No dumping or temporary storage of any materials may take place outside designated	To be adhered to.

EA Condition No.	Condition in the EA	Status
	and demarcated Laydown areas, and this must all be located within areas of low environmental sensitivity.	
108.	Hazardous substances must not be stored where there could be accidental leakage into surface or subterranean water.	To be adhered to.
109.	Hazardous and flammable substances must be stored and used in compliance to the applicable regulations and safety instructions. Furthermore, no chemicals- must be stored nor may any vehicle maintenance occur within 350 m of the temporal zone of wetlands, a drainage line with or without an extensive floodplain or hillside wetlands.	To be adhered to.
110.	Temporary bunds must be constructed around chemical storage to contain possible spills.	To be adhered to.
111.	Spill kits must be made available on-site for the clean-up of spills.	To be adhered to.
112.	An integrated waste management approach must be implemented that is based on waste minimisation and must incorporate reduction, recycling and re-use options where appropriate. Where solid waste is disposed of, such disposal shall only occur at a landfill licensed in terms of section 20(b) of the National Environment Management Waste Act, 2008 (Act 59 of 2008).	To be adhered to.
113.	The holder of this authorisation must provide sanitation facilities within the construction camps and along the road so that workers do not pollute the surrounding environment. These facilities must be removed from the site when the construction phase is completed as well as associated waste to be disposed of at a registered waste disposal site.	To be adhered to.
114.	The holder of this authorisation must take note that no temporary site camps will be allowed outside the footprint of the development area as the establishment of such structures might trigger a listed activity as defined in the Environmental Impact Assessment Regulations, 2014 as amended.	To be adhered to.
Excavation and blasting activities		
115.	Underground cables and internal access roads must be aligned as much as possible along existing infrastructure to limit damage to vegetation and watercourses.	To be adhered to.
116.	Foundations and trenches must be backfilled with originally excavated materials as much as possible. Excess excavation materials must be disposed of only in approved areas	To be adhered to.

EA Condition No.	Condition in the EA	Status
	or, if suitable, stockpiled for use in reclamation activities.	
117.	Borrow materials must be obtained only from authorised and permitted sites. Permits must be kept on site by the ECO.	To be adhered to.
118.	Anti-erosion measures such as slit fences must be installed in disturbed areas.	To be adhered to.
Air emissions		
119.	Dust abatement techniques must be used before and during surface clearing, excavation, or blasting activities.	To be adhered to.
120.	Appropriate dust suppression techniques must be implemented on all exposed surfaces during periods of high wind. Such measures may include wet suppression, chemical stabilisation, the use of a wind fence, covering surfaces with straw chippings and re vegetation of open areas.	To be adhered to.
Historical / cultural / palaeontological resources		
121.	There must be constant monitoring of fresh bedrock excavations for fossil remains. All substantial occurrences of newly-exposed fossil remains reported by the ECO must be recorded and rescued by the relevant qualified palaeontologist.	To be adhered to.
122.	Construction managers/foremen must be informed before construction starts of the possible types of heritage sites and cultural material that may be encountered and the procedures to follow when they find sites.	To be adhered to.
123.	All buffers and no-go areas stipulated in the EIAr and amendment report must be adhered to for both the facilities and all roads and power lines.	To be adhered to.
124.	Should any human remains be uncovered during development they must be immediately protected <i>in situ</i> and reported to the heritage authorities or to an archaeologist. The remains will need to be exhumed at the cost of the developer.	To be adhered to.
125.	All construction and maintenance crew and vehicles (except small vehicles which may use existing farm tracks) must be kept out of the buffer zones.	To be adhered to.
126.	The final layout must be shown to the appointed archaeologist before implementation to confirm that all significant heritage resources have been adequately protected.	To be adhered to.
Turbine Positions		

EA Condition No.	Condition in the EA	Status
127.	Turbines must be positioned in such a way that shadow flicker does not affect any farm building.	To be adhered to.
128.	The final placement of turbines must follow a micro-siting procedure involving a walk-through and identification of any sensitive areas by botanical and avifaunal specialists.	Site visits were conducted for the final amended layout. Pre-construction walkthrough of the revised final layout must be adhered to.
General		
129.	A copy of this environmental authorisation and the approved EMPr must be kept at the property where the activity will be undertaken. The authorisation and approved EMPr must be produced to any authorised official of the Department who requests to see it and must be made available for inspection by any employee or agent of the holder of the authorisation who works or undertakes work at the property.	To be adhered to.
130.	The holder of the authorisation must notify both the Director: Integrated Environmental Authorisations and the Director: Compliance Monitoring at the Department, in writing and within 48 (forty-eight) hours, if any condition of this authorisation cannot be or is not adhered to. Any notification in terms of this condition must be accompanied by reasons for the non-compliance.	To be adhered to.
131.	National government, provincial government, local authorities or committees appointed in terms of the conditions of this authorisation or any other public authority shall not be held responsible for any damages or losses suffered by the holder of the authorisation or his/her successor in title in any instance where construction or operation subsequent to construction be temporarily or permanently stopped for reasons of non-compliance by the holder of the authorisation with the conditions of authorisation as set out in this document or any other subsequent document emanating from these conditions of authorisation.	Acknowledged by the applicant

5 COMPLIANCE WITH THE CONDITIONS OF THE BANNA BA PIFHU GRID CONNECTION EA

This section of the EMPr indicates compliance with the conditions (Table 5.1) and notes specific conditions (Section 5.2 – 5.9) of the EA, dated 21 July 2014, as amended (DFFE Reference 12/12/20/2289/1), for which action is required by the developer and contractors / staff.

5.1 Compliance with the Conditions of the EA in the EMPr.

Table 5-1: Compliance with the Conditions of the EA in the EMPr

EA Condition No.	EMPr Reference
Management of the activity	
<p>13. The Environmental Management Programme (EMPr) submitted as part of the amended EIAr is not approved and must be amended to include measures as dictated by the final site lay-out map and micro-siting; and the provisions of this environmental authorisation. The EMPr must be made available for comments by registered Interested and Affected Parties and the applicant must consider such comments. Once amended, the final EMPr must be submitted to the Department for written approval prior to commencement of the activity. Once approved the EMPr must be implemented and adhered to.</p>	<p>The EMPr was updated to include measures as provided by specialists as a result of the site visits and micro-siting and will be made available for public review and comment for the statutory 30-day period. The EMPr will be updated with any additional requirements based on comments received and will be submitted to the Department for approval.</p>
<p>14. The EMPr is amendable and must be implemented and strictly enforced during all phases of the project. It shall be seen as a dynamic document and shall be included in all contract documentation for all phases of the development when approved.</p>	
<p>15. Changes to the EMPr, which are environmentally defensible, shall be submitted to this Department for acceptance before such changes could be effected.</p>	
<p>16. The Department reserves the right to amend the EMPr should any impacts that were not anticipated or covered in the amended EIAr be discovered.</p>	
<p>17. The provisions of the approved EMPr including recommendations and mitigation measures in the amended EIAr and specialist' studies shall be an extension of the conditions of this EA and therefore noncompliance with them would constitute noncompliance with the EA.</p>	
<p>18. The following must be included in the amended final EMPr:</p>	
<ul style="list-style-type: none"> • Final layout of the proposed power line, including final tower positions and their GPS co-ordinates; 	<p>See Appendix B: Figure 1.</p> <p>The powerline may be built underground if feasible.</p>
<ul style="list-style-type: none"> • The findings and recommendations made by the avifaunal specialist and the botanist as per conditions 35 and 36, under specific conditions. 	<p>The final powerline route was assessed by the specialist during their site visit for the amended layout. Recommendations is included in the EMPr.</p>
<ul style="list-style-type: none"> • EMPr must include all other licenses and permits required for the construction of the proposed development. 	<p>The EMPr includes and / or recommends all other licenses and permits required for the construction of the development.</p>
<p>19. Once approved, the EMPr must be implemented and adhered to.</p>	

5.2 Monitoring

- Condition 20: The applicant must appoint a suitably experienced independent Environmental Control Officer (ECO) for the construction phase of the development that will have the responsibility to ensure that the mitigation/rehabilitation measures and recommendations referred to in this authorisation are implemented and to ensure compliance with the provisions of the EMPr.

- Condition 20.1: The ECO shall be appointed before commencement of any authorised activity.
- Condition 20.2: Once appointed, the name and contact details of the ECO must be submitted to the Director: Compliance Monitoring of the Department.
- Condition 20.3: The ECO shall keep record of all activities on site, problems identified, transgressions noted and a task schedule of tasks undertaken by the ECO.
- Condition 20.4: The ECO shall remain employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the site is ready for operation.
- Condition 20.5: Records relating to monitoring and auditing must be kept on site and made available for inspection to any relevant and competent authority in respect of this development

5.3 Recording and Reporting to the Department

- Condition 21: All documentation e.g. audit/monitoring/compliance reports and notifications, required to be submitted to the Department in terms of this authorisation, must be submitted to the Director: Compliance Monitoring at the Department.
- Condition 22: The holder of the authorisation must submit an environmental audit report to the Department within 30 days of completion of the construction phase (i.e. within 30 days of site handover) and within 30 days of completion of rehabilitation activities.
- Condition 23: The environmental audit report must indicate the date of the audit, the name of the auditor and the outcome of the audit in terms of compliance with the environmental authorisation conditions as well as the requirements of the EMPr.
- Condition 24: Records relating to monitoring and auditing must be kept on site and made available for inspection to any relevant and competent authority in respect of this development

5.4 Commencement of the Activity

- Condition 25: The authorised activity shall not commence within twenty (20) days of the date of signature of the authorisation.
- Condition 26: An appeal under section 43 of the National Environmental Management Act (NEMA), Act 107 of 1998 (as amended), does not suspend an environmental authorisation or exemption, or any provisions or conditions attached thereto, or any directive, unless the Minister, MEC or delegated organ of state directs otherwise.
- Condition 27: Should you be notified by the Minister of a suspension of the authorisation pending appeal procedures, you may not commence with the activity until such time that the Minister allows you to commence with such an activity in writing.

5.5 Notification to Authorities

- Condition 28: Fourteen (14) days written notice must be given to the Department that the activity will commence. Commencement for the purposes of this condition includes site preparation. The notice must include a date on which it is anticipated that the activity will commence. This notification period may coincide with the Notice of Intent to Appeal period.

5.6 Operation of the Activity

- Condition 29: Fourteen (14) days written notice must be given to the Department that the activity operational phase will commence.

5.7 Site Closure and Decommissioning

- Condition 30: Should the activity ever cease or become redundant, the applicant shall undertake the required actions as prescribed by legislation at the time and comply with all relevant legal requirements administered by any relevant and competent authority at that time.

5.8 Specific Environmental Conditions

Conditions 31 – 45 in the EA (DFFE Ref. 12/12/20/2289/1, dated 21 July 2014, as amended) (Appendix E), are specific to the Banna ba Pifhu Grid Connection. The status of each condition is provided in Table 5.2 below.

Table 5-2: Specific EA Conditions to be implemented for the Banna ba Pifhu Wind Farm

EA Condition No.	Condition in the EA	Status
31.	Activities which require a Water Use License must not be allowed to encroach into a water resource without a water use licence being in place from the Department of Water Affairs.	GA / WUL must be obtained from the relevant Department prior to construction.
32.	The facility must be designed to discourage the use of infrastructure components as perching or roosting substrates by birds and bats.	To be adhered to.
33.	Anti-collision devices such as bird flappers must be installed where power lines cross avifaunal corridors (e.g. grasslands, rivers, wetlands, and dams). The input of an avifaunal specialist must be obtained for the fitting of the anti-collision devices onto specific sections of the line once the exact positions of the towers have been surveyed and pegged. Additional areas of high sensitivity along the preferred alignment must also be identified by the avifaunal specialist for the fitment of anti-collision devices. These devices must be according to Eskom's Transmission and EWT's Guidelines.	To be adhered to. Developer to implement with assistance from avifaunal specialist.
34.	All power lines linking wind turbines to each other and to the internal substation must be buried, where technically feasible. Power lines linking the wind energy facility to the grid may be above the ground.	To be adhered to.
35.	A pre-construction walk-through of the approved powerline alignment and turbine positions by a bat specialist, avifaunal specialist and ecologist, must be conducted to ensure that the micro siting of the turbines, pylons and powerline alignments have the least possible impact, there are no nest sites of priority species on or close to the construction corridor and all protected plant species impacted are identified.	Site visits were conducted for the final amended layout. Pre-construction walkthrough of the revised final layout must be adhered to.
36.	A botanist must be appointed to perform a final walkthrough of the alignment to identify sensitive plant species, and assist in	Site visits were conducted for the final amended layout.

EA Condition No.	Condition in the EA	Status
	identifying the areas that require protection once final pylon positions are pegged.	Pre-construction walkthrough of the revised final layout must be adhered to.
37.	A permit must be obtained from the relevant nature conservation agency for the removal or destruction of indigenous protected and endangered plant and animal species.	To be adhered to.
38.	Copies of all permits required for the construction of the proposed must be submitted to the Department for record keeping.	To be adhered to.
39.	No exotic plants must be used for rehabilitation purposes; only indigenous plants of the area must be utilised.	To be adhered to.
40.	Vegetation clearing must be kept to an absolute minimum. Mitigation measures must be implemented to reduce the risk of erosion and the invasion of alien species.	To be adhered to.
41.	Construction must include appropriate design measures that allow surface and subsurface movement of water along drainage lines so as not to impede natural surface and subsurface flows. Drainage measures must promote the dissipation of storm water run-off.	To be adhered to.
42.	An integrated waste management approach must be implemented that is based on waste minimisation and must incorporate reduction, recycling, re-use and disposal where appropriate. Any solid waste shall be disposed of at a landfill licensed in terms of section 20 (b) of the National Environment Management Waste Act, 2008 (Act 59 of 2008).	To be adhered to.
General		
43.	A copy of this environmental authorisation and the approved EMPr must be kept at the property where the activity will be undertaken. The authorisation and approved EMPr must be produced to any authorised official of the Department who requests to see it and must be made available for inspection by any employee or agent of the holder of the authorisation who works or undertakes work at the property.	To be adhered to.
44.	The holder of the authorisation must notify both the Director: Integrated Environmental Authorisations and the Director: Compliance Monitoring at the Department, in writing and within 48 (forty-eight) hours, if any condition of this authorisation cannot be or is not adhered to. Any notification in terms of this condition must be accompanied by reasons for the non-compliance.	To be adhered to.

EA Condition No.	Condition in the EA	Status
45.	National government, provincial government, local authorities or committees appointed in terms of the conditions of this authorisation or any other public authority shall not be held responsible for any damages or losses suffered by the holder of the authorisation or his/her successor in title in any instance where construction or operation subsequent to construction be temporarily or permanently stopped for reasons of non-compliance by the holder of the authorisation with the conditions of authorisation as set out in this document or any other subsequent document emanating from these conditions of authorisation.	Acknowledged by the applicant

6 MANAGEMENT PLAN FOR DESIGN PHASE

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
1. Turbine selection, design and layout to minimise impact on the visual character of the area.	Non uniform turbines, larger clusters of turbines, and haphazard layout in the landscape give rise to a strong visual impact and negative public response.	<p>a) Turbines should have uniform design, speed, colour, height and rotor diameter.</p> <p>b) Turbines must be positioned in such a way that shadow flicker does not affect any farm building.</p> <p>c) The final placement of turbines must follow a micrositing procedure involving a walk-through and identification of any sensitive areas by botanical and avifaunal specialists.</p> <p><i>Responsibility: Project Developer</i></p>	<p>Ensure that turbine design and layout is uniform.</p> <p><i>Responsibility: Project Developer</i></p>	Uniform and harmonious layout for the wind farm.	None identified.
2. Minimise noise emissions through selection of appropriate modern turbine technology.	Use of older technology turbines could generate higher noise levels.	<p>a) Use modern wind turbines to ensure minimum noise emissions.</p> <p>b) All wind turbines should be located at a setback distance of 500 m from any homestead and a day/night noise criteria level at the nearest residents of 45dB(A) should be used to locate the turbines. The 500m setback distance can be relaxed if local factors; such as high ground between the noise source and the receiver, indicates that a noise disturbance will not occur.</p> <p>c) Positions of turbines jeopardizing compliance with accepted noise levels should be revised during the micro-siting of the units in question and predicted noise levels re-modelled by the noise specialist, in order to ensure that the</p>	<p>Confirm that noise emissions for actual selected turbines are comparable to or better than examples of turbines used in noise study for the EIA.</p> <p><i>Responsibility: Project Developer</i></p>	Predicted noise from the turbines at the identified Noise Sensitive Areas to be less than the 45 dBA presented in SANS 10103:2008 for rural areas.	None identified.

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>predicted noise levels are less than 45dB(A).</p> <p><i>Responsibility: Project Developer</i></p>			
3. Design of turbines and power lines to minimise risk of collisions for birds.	<p>Turbine rotors inconspicuous to birds.</p> <p>Birds encouraged to perch on turbine towers.</p> <p>Above grounds power lines cross bird flight paths.</p>	<p>a) Turbine blades and towers to be white to maximize conspicuousness to flying birds.</p> <p>b) Plan power lines between turbines to be underground (except possibly where lines cross water courses) and minimise above-ground connection to sub-station.</p> <p>c) The results of the pre-construction bird monitoring should determine the need and scope for post construction monitoring.</p> <p>d) The facility must be designed to discourage the use of infrastructure components as perching or roosting substrates by birds and bats.</p> <p><i>Responsibility: Project Developer</i></p>	<p>Review final design to confirm that turbine design colour is white.</p> <p>Review the findings of the pre-construction bird survey.</p> <p><i>Responsibility: Project Developer</i></p>	Design of turbines to minimise impacts on birds.	None identified.
4. Manage turbines to minimise the risk of collision or barotrauma for bats.	Turbines inconspicuous to bats	<p>a) Continue with the pre-construction bat monitoring programme as agreed to with the bat specialist to better understand bat occurrences in the study area, and thereby to inform the management actions to minimise impacts on bats.</p> <p><i>Responsibility: Project Developer</i></p>	<p>Conduct pre-construction bat monitoring to develop a baseline that can be used to inform management actions during the operations phase.</p> <p><i>Responsibility: Project Developer</i></p>	<p>Post-construction monitoring data collected to inform management actions during the operations phase.</p> <p>Banna ba Pifhu Wind Farm report on post-construction bat monitoring at their site over one year assists in</p>	None identified.

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
				developing a data for bats in the local area.	
5. Manage stormwater and ancillary infrastructure to minimise environmental impacts	Stormwater damage on site	<p>a) All roads and cranepads will be constructed in a manner that water will be able to run into the unsealed ground. Water running onto the sealed area of the foundations of approx. 250 m² each will drain into the ground next to the foundations. Drainage systems which are in place before construction of the wind farm will not be changed and will be reinstated should construction work damage these.</p> <p>b) Bridge design must be such that it minimise impact to riparian areas with minimal alterations to water flow and must allow the movement of fauna and flora.</p> <p>c) Wind turbines should be erected at least 500 metres from the national road reserve boundary and 500 metres from any point of intersection.</p> <p>d) If this cannot be achieved, then an application will have to be submitted to SANRAL for consideration and approval. No access to the wind farm facility will be granted from the national road.</p> <p>e) Existing road infrastructure must be used as far as possible for providing access to the proposed turbine positions. Where no road infrastructure exists, new roads should be placed within existing disturbed areas or environmental conditions must be taken into account to</p>	<p>Monitor stormwater drainage and report any potential problems to inform management actions during the operations phase.</p> <p><i>Responsibility: Project Developer</i></p>	Stormwater management measures in place leading to effective stormwater management on site.	None identified

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>ensure the minimum amount of damage is caused to natural habitats.</p> <p>f) Roads must be designed so that changes to surface water runoff are avoided and erosion is not initiated.</p> <p><i>Responsibility: Project Developer</i></p>			
6. Minimise impacts on roads and traffic during transportation of turbines to site.	Impacts to roads and traffic during transportation of turbines to site.	<p>a) A Transport Management Plan will be prepared by Banna ba Pifhu Wind Farm and the turbine supplier as part of the technical planning for the project. Details with regard to the transporting of the turbines to site (route from port; safety aspects; possible structural damage to roads and who pays; road traffic disruption etc.) will be incorporated into the Transport Management Plan.</p>	<p>The Transport Management Plan will include a pre-construction assessment of the R330 and the DR 1763. After the construction phase, a post-construction assessment will be done to identify possible impacts to the roads. The road will then be upgraded as required by the relevant authority. Banna ba Pifhu Wind Farm will liaise with the local authority on this matter.</p> <p><i>Responsibility: Project Developer, Banna ba Pifhu Wind Farm</i></p>	A Transport Management Plan in place to inform the transportation of the turbines to the site and to reduce potential impacts on roads and traffic.	None identified.

7 MANAGEMENT PLAN FOR CONSTRUCTION PHASE

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
7.1 Minimising the project impact on flora and fauna (in particular designated areas for protecting ecosystem processes)					
1. Minimise loss of vegetation cover from construction of the turbines and access roads to the turbine sites	Turbine positions and design of roads are not informed by the "no-go" areas identified in the sensitivity map and leads to unnecessary clearing of natural habitat.	<p>a) Micro-siting of footprints should avoid sensitive vegetation as far as possible.</p> <p>b) Access roads to the turbines must avoid any ephemeral pans, if present. This is unlikely to be an issue, but must be considered in access road planning. The impact of access roads will be greater where they traverse habitats on exposed outcrops and small thicket clumps (microhabitats).</p> <p>c) River crossing and clearing of thicket should be avoided as far as possible.</p> <p>d) Crossing of riparian areas should use existing road crossings where possible.</p> <p>e) Signs must be placed along construction roads to identify speed limits, travel restrictions, and other standard traffic control information. To minimize impacts on local commuter, consideration should be given to limiting construction vehicles travelling on public roadways during the morning and late afternoon commute time.</p> <p>f) Internal access roads must be located to minimize stream crossings. All structures crossing streams must be located and constructed so that</p>	<p>Ensure layout (design) of turbines and construction of the roads minimise the impact on natural habitat.</p> <p>Ensure that plant species of special concern (SSCs) are removed before clearing.</p> <p>Ensure river crossing and clearing of thicket are avoided where possible.</p> <p>Ensure that crossing of riparian areas uses existing road crossings.</p> <p><i>Responsibility: ECO</i></p>	Turbine positions and road layout is strictly in accordance with the current preferred layout prepared by Banna which take due cognisance of the environmental constraints identified by the specialists. Removal and relocation of all SSC (species of special concern)	None identified.

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>they do not decrease channel stability or increase water velocity.</p> <p>g) A designated access to the site must be created and clearly marked to ensure safe entry and exit.</p> <p>h) Signage must be erected at appropriate points warning of turning traffic and the construction site.</p> <p>i) Construction vehicles carrying materials to the site should avoid using roads through densely populated built-up areas so as not to disturb existing retail and commercial operations.</p> <p>j) Road borders should be regularly maintained to ensure that vegetation remains short and that they therefore serve as an effective firebreak.</p> <p>k) All construction vehicles should adhere to a low speed limit to avoid collisions with susceptible species such as snakes and tortoises.</p> <p>l) Disturbed areas must be rehabilitated as soon as possible after construction with locally indigenous plants to enhance the conservation of existing natural vegetation on site. No exotic plants may be used for rehabilitation purposes.</p> <p><i>Responsibility: Construction Manager</i></p>			
2. Minimise direct loss of habitat from turbine footprints	Construction impacts are not properly managed.	a) The construction site must be clearly demarcated prior to the commencement of construction.	Final siting of footprints should be undertaken by the Banna ECO in	In the final layout, sensitive micro-siting of the turbine footprints lead to	None identified.

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
	"No go" areas for construction are not enforced	<p>b) Contractors and construction workers must be clearly informed of the no-go areas on site (i.e. outside demarcated areas) and held accountable for any infringements that may occur.</p> <p>c) A suitable control measure (such as a fine system) must be implemented to discourage infringement by contractors on the no-go areas.</p> <p>d) Activities including but not restricted to the following must not be permitted in designated no go areas: Dumping of any material during and after construction; turning of vehicles; or trampling.</p> <p>e) Any additional project footprint (e.g. for construction and lay-down areas) should be sited in areas approved in consultation with the ECO and preferably in areas where habitat is already transformed.</p> <p><u>Responsibility: Construction Manager and ECO</u></p>	<p>consultation with respective specialists and proponent to minimise any unnecessary loss of natural resources.</p> <p><u>Responsibility: ECO and Project Proponent</u></p>	negligible impact on the designated conservation networks and areas.	
3. Protection of plant and animal species of special concern	Loss of species of special concern (SCC) through poor on-site management during construction.	<p>a) Species of Special Concern (SCC) and protected plant species (identified in Table 5.7 in the vegetation report in Chapter 5) must be removed from the sites prior to development taking place, so far as possible. A suitable timeframe must be allowed before construction commences to undertake the plant rescue and relocation.</p> <p>b) Relocation of SSC, where unavoidable, must be into adjacent areas or a</p>	If SSC have to be moved or relocated, the relevant permits must be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF) for the removal of plants listed in the National Forest Act and from DEDEA, as per	Zero or close to zero loss of readily identifiable species of special concern on the project site species.	None identified.

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>suitable nursery. Plants that are not necessarily SSC but which can be used during rehabilitation should be identified and stored appropriately on-site for use after construction. Ensure that SSCs are removed before clearing and, where permits are required under the applicable legislation, such as the provincial nature conservation legislation and National Forest Act, among others; these are obtained prior to removal of plant species.</p> <p><i>Responsibility: ECO</i></p>	<p>requirements of the Provincial Nature Conservation Ordinance of 1974.</p> <p><i>Responsibility: ECO and Project Proponent</i></p>		
<p>4. Remove and store all topsoil from areas to be excavated; and use this topsoil in later rehabilitation of disturbed areas, e.g. the lay-down area, construction yard, trenches for electrical cables, foundation areas, and the access roads.</p>	<p>Excessive and unnecessary clearing of natural habitat.</p> <p>Top soil is mixed with other material (e.g. rock and rubble) and cannot be replaced as part of the rehabilitation programme.</p>	<p>a) Demarcate the areas to be cleared at each turbine location and do not allow vehicles and construction activities to extend outside of these demarcated areas.</p> <p>b) Excavated topsoil (top 20 cm, if this exists) to be stockpiled in the demarcated areas.</p> <p>c) Excavated/disturbed areas on site and adjacent to the site (apart from on-site borrow pits, which are subject of a separate application and approval) have topsoil replaced to a depth of at least 10 cm during the rehabilitation phase of the construction period (provided such soil is available from on-site stockpiles). This applies to the underground electrical cable route, road verges, area around turbine concrete foundations (to enable grazing to the edge of the foundation), parts of lay-down area where topsoil</p>	<p>Ensure that topsoil is stored as specified until replaced.</p> <p>Ensure that excavated / disturbed areas have topsoil replaced to a depth of at least 10 cm, (provided material is available).</p> <p><i>Responsibility: ECO</i></p>	<p>All topsoil is stored and replaced without loss.</p> <p>All topsoil is replaced in excavated / disturbed areas as part of the rehabilitation programme.</p>	<p>None identified.</p>

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>was disturbed, and the rehabilitation along on the edges of the access roads.</p> <p><i>Responsibility Construction Manager and contractors and sub-contractors</i></p>			
5. Minimise the risk of invasion by alien plant species into the disturbed areas	Alien plant species may pose a threat to the re-establishment of indigenous species.	<p>a) A long term alien management plan to monitor, eradicate and control invasive plant species must be implemented by Banna within their lease areas.</p> <p>b) Cleared alien vegetation must not be dumped on adjacent intact vegetation during clearing but should be temporarily stored in a demarcated area (in consultation with the relevant botanical specialist or ECO).</p> <p>c) Cleared vegetation must be either removed from site or burned <i>in situ</i> in the temporary storage area.</p> <p>d) Any seed bearing material should be removed from the drainage area to prevent the spread of seed.</p> <p>e) Chopped brushwood can be used to stabilise steep areas that may be susceptible to erosion during clearing activities.</p> <p>f) Kikuyu grass must NOT be utilised during redressing of verges, turbine footprints and other landscaped areas within the site.</p> <p>g) Vegetation clearing should occur in parallel with the construction</p>	<p>An alien plant management programme has been developed, funded and implemented affectively within the Banna lease area.</p> <p>A suitable re-vegetation or rehabilitation plan must be implemented after alien vegetation clearing.</p> <p><i>Responsibility: ECO and Project Developer</i></p>	Removal of all alien species within the construction area	None identified.

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>progress to minimise erosion and/or run-off.</p> <p><i>Responsibility: Project Developer, Construction Manager and ECO</i></p>			
6. Ensure that all disturbed areas are rehabilitated using indigenous species	<p>Disturbed areas are not rehabilitated.</p> <p>Use of alien species for rehabilitation (e.g. grasses).</p>	<p>a) Disturbed areas will be rehabilitated with the placement of <i>in situ</i> material (top soil, where available) and the planting with indigenous species.</p> <p>b) Only indigenous plant species must be used in the re-vegetation process. The species lists contained in the Wetlands study (in Chapter 13) and Vegetation study (in Chapter 5) should be used as a guide.</p> <p><i>Responsibility: Construction Manager</i></p>	<p>Visual check to ensure that rehabilitation has been undertaken for all accessible disturbed areas.</p> <p><i>Responsibility: ECO</i></p>	<p>Disturbed areas are rehabilitated immediately after the construction phase & adequately maintained.</p>	<p>None identified.</p>
7. Minimise the impact of construction on fauna on the turbine sites	<p>Construction impacts are not properly managed.</p>	<p>a) Remove tortoises, mammals and amphibians from the turbine sites and new access roads before the start of site clearing construction and relocating these to a place similar to the place where it was found outside of the construction areas.</p> <p><i>Responsibility: ECO</i></p> <p>b) A speed limit of 60 km/h needs to be implemented on the access roads to the site and a 40 km/h speed limit on the construction sites and for the cranes (or speed limits should be implemented as agreed upon by the construction manager and the contractors and workers).</p> <p>c) Professional reptile remover (with the necessary permits) should be contacted to remove dangerous</p>	<p>Rescue operations of fauna have been conducted based on recommendations from ECO and Construction Manager.</p> <p>Monitor for injured fauna and Death on the Road (DoR) incidents</p> <p><i>Responsibility: ECO</i></p>	<p>Successful rescue operations being performed.</p>	

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>reptiles (e.g. poisonous snakes) when in conflict with the workers.</p> <p><i>Responsibility: Construction Manager</i></p>			
8. Ensure that the storage and operation of construction equipment and activities of personnel are contained within the designated work areas	Storage and operation of construction equipment and activities of personnel take place outside of demarcated construction areas.	<p>a) Before construction commences, a site map is to be prepared by the ECO in consultation with the Construction Manager, showing designated work areas, locations of temporary toilets, no-go areas, eating & cooking areas, smoking areas, concrete mixing areas (if any), fuel storage areas, vehicle routes and laydown areas.</p> <p>b) Before construction commences, mark the designated work areas on each site using poles and hazard tape or snow netting.</p> <p>c) If possible, establish laydown areas in areas that are already degraded.</p> <p><i>Responsibility (a), (b) and (c): ECO, in consultation with Construction Manager</i></p> <p>d) Educate workers on the need to stay on paths and established tracks wherever practical.</p> <p>e) Construction equipment is not to be operated outside the designated work area.</p> <p>f) Activities of personnel are restricted to the designated work areas, unless under supervision by the ECO.</p> <p>g) A penalty system is included in contractors and sub-contractors agreements, clearly documenting the penalties applicable for disturbance outside of demarcated areas.</p>	<p>Construction Manager to ensure that all contractors and sub-contractors and other operators on site are briefed at the start of their contract on environmental controls and avoidance of no-go areas.</p> <p>ECO to monitor compliance with the EMP during the construction phase, on weekly or bi-weekly basis, using a report card.</p>	Zero disturbance outside of designated work areas.	The ECO is to be notified within 24 hours if a disturbance incident occurs; penalties to be levied on defaulting contractors and sub-contractors.

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<i>Responsibility (d) to (g): ECO to identify transgressions; Construction Manager to levy penalties</i>			
9. Avoid soil erosion within and in the vicinity of the construction area	Disturbed areas are left un-rehabilitated for a long period, leading to erosion, especially if on steep slopes.	a) Uncontaminated waste water and excess run-off must not be concentrated but allowed to dissipate and seep slowly into the soil in a manner which inhibits soil erosion. <i>Responsibility: Construction Manager</i>	Weekly or bi-weekly visual inspection <i>Responsibility: ECO</i>	Minimal erosion inside the construction area and surroundings.	ECO to inform the Construction Manager if erosion occurs and investigate options to mitigate the damage.
10. Effective rehabilitation of the turbine sites and new access roads after construction	Erosion can occur and alien vegetation can spread rapidly if areas have been poorly rehabilitated.	a) Implement an effective rehabilitation programme in accordance with the guidelines provided by the botanical specialist in Appendix B.1 of the draft EMPr. <i>Responsibility: ECO and/or Construction Manager</i>	Audit of rehabilitation by the appointed botanist after construction. <i>Responsibility: ECO</i>	Long-term successful rehabilitation.	Additional rehabilitation would be required where necessary.
11. Minimise risks to changes in natural fire regime	Fynbos vegetation on site at risk as elimination of all fires is negative for fynbos-	a) Fire management plan to be implemented <i>Responsibility: ECO and/or Construction Manager</i>	Record any fires <i>Responsibility: ECO and/or Construction Manager</i>	Zero risk to fynbos on site,	None
7.2 Avoiding any project impact on heritage (palaeontological, archaeological and historical features)					
1. Identify and protect <u>archaeological</u> features that may occur on the turbine sites.	Irreversible damage to archaeological features on the turbine sites.	a) An archaeologist should be contracted to conduct inspections of the excavations made during construction. b) An archaeologist/SAHRA must be informed if any archaeological features/sites are found accidentally. c) ECO to provide training for contractors and sub-contractors on site to assist	Contact the identified archaeologist or SAHRA if any heritage features (or suspected features) are uncovered. <i>Responsibility: ECO</i>	No damage to any significant archaeological features on site. Examination, documentation and/or removal of artefacts by archaeologist.	If archaeological features are uncovered unexpectedly during construction, stop construction and consult an

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>them in identifying potential features of archaeological value.</p> <p>d) Construction managers/foremen must be informed before construction starts on the possible types of heritage sites and cultural material they may be encountered and the procedures to follow when they find sites.</p> <p>e) Should any human remains be uncovered during development they must be immediately protected in situ and reported to the heritage authorities or to an archaeologist. The remains will need to be exhumed at the cost of the developer.</p> <p><i>Responsibility: ECO</i></p>			archaeologist or SAHRA.
2. Identify and protect <u>palaeontological</u> features that may occur on the turbine sites.	Destruction, disturbance or sealing-in of buried fossils during bedrock excavations and construction work.	<p>a) If construction involves substantial bedrock excavations ECO should be alerted to the possibility of buried fossil heritage and all major bedrock excavations should be examined at intervals for fossil material by the ECO. Should the ECO be uncertain, the relevant experts should be consulted.</p> <p>b) If any substantial fossil remains are found or exposed, these should be safeguarded, preferably <i>in situ</i>, while SAHRA is contacted by the ECO and a qualified palaeontologist is contracted to record and sample the occurrence. Mitigation in the form of fossil recording and collection will have a</p>	<p>Contact the identified palaeontologist and archaeologist if any heritage features (or suspected features) are uncovered.</p> <p><i>Responsibility: ECO</i></p>	<p>No damage to any significant palaeontological or archaeological features on site.</p> <p>Examination, documentation and/or removal of artefacts by archaeologist or palaeontologist.</p>	<p>ECO to inform the palaeontologist or archaeologist if any damages occur to features on site, and investigate options for mitigating damage.</p>

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p><u>positive</u> impact on our appreciation of local fossil heritage.</p> <p>c) ECO to be present on site during major excavation and trenching.</p> <p>d) ECO or relevant specialist to provide training for contractors and sub-contractors on site to assist them in identifying potential features of palaeontological value.</p> <p>e) There must be constant monitoring of fresh bedrock excavations for fossil remains. All substantial occurrences of newly-exposed fossil remains reported by the ECO must be recorded and rescued by the relevant qualified palaeontologist.</p> <p>f) All buffers and no-go areas stipulated in this report must be adhered to for both the facilities and all roads and power lines.</p> <p>g) All construction and maintenance crew and vehicles (except small vehicles which may use existing farm tracks) should be kept out of the buffer zones.</p> <p>h) The final layout should be shown to the appointed archaeologist before implementation to confirm that all significant heritage resources have been adequately protected.</p> <p><i>Responsibility: ECO or relevant specialist</i></p>			
7.3 Prevention of soil and groundwater contamination					
1. Prevent the spillage of fuel, oil, grease or any other hazardous	Contamination of soil and risk of damage to vegetation and/or fauna	a) Construction equipment is checked daily (by Contractor) to ensure that no fuel spillage takes place from	Check daily that no spills have taken place	Zero spillage of fuel, oil grease or any	Rapid removal, cleaning and replacement of

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
substances on site and remedy this should it occur	through spillage of fuels, oils and other hazardous substances	<p>construction vehicles or machinery, and monitored weekly by the ECO.</p> <p>b) Spilled fuel, oil or grease is retrieved where possible, and contaminated soil removed, cleaned and replaced. Contaminated soil to be collected by the Contractor (under observation of ECO) and disposed of at a waste site designated for this purpose.</p> <p>c) Portable bioremediation kit (to remedy chemical spills) is to be held on site and used as required.</p> <p>d) Bunded containment to be provided below and around any fuel storage containers.</p> <p><u>Responsibility): Civil contractors and sub-contractors, Construction Manager and ECO</u></p>	<u>Responsibility: Construction Manager and ECO</u>	hazardous substances on site	any contaminated soil.
2. Prevent spillage of cement, sand and stone into soil and vegetation beyond the defined area for concrete mixing and batching	Contamination of soil (change in pH) and risk of damage to vegetation and/or fauna through spillage of concrete	<p>a) Concrete mixing area (if any) is defined in the site map. 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>b) 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>c) Any excess sand, stone and cement must be removed from site at the completion of the construction period</p>	<p>Check daily that sand, stone and cement are stored and handled as instructed</p> <p><u>Responsibility: ECO</u></p>	Minimum spillage of cement into the environment; zero spillage beyond the site	Rapid removal and cleaning of cement spillage.

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<i>Responsibility (a) to (c): Civil contractors, sub-contractors and Construction Manager</i>			
7.4 Effective management of civil contractors and sub-contractors					
1. Ensure disciplined operation of sub-contractors	Contractors and sub-contractors are not aware of the requirements of the draft EMPr, leading to unnecessary impacts on the environment.	<p>a) The terms of this EMPr 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>b) Contractors and sub-contractors will not be permitted to remain on the site overnight.</p> <p>c) Contractors and sub-contractors will use the chemical toilet/s situated in a designated area of the site; no personal hygiene (e.g. washing) will be permitted outside the designated area.</p> <p>d) 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 surrounding areas.</p> <p>e) 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>f) No one other than the ECO or personnel authorised by the ECO, will disturb or pick plants outside the demarcated construction area.</p> <p>g) No one other than the ECO or personnel authorised by the ECO, will</p>	<p>Check compliance with specified conditions on a weekly or bi-weekly basis, using a report card, and allocate fines when necessary.</p> <p><i>Responsibility: ECO</i></p>	Full compliance with specified conditions in contracts of sub-contractors.	Significant fines to be imposed by construction manager for infringements.

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>disturb animals on the site (no trapping, shooting etc.).</p> <p>h) Animals disturbed during construction activities should not be harmed but should be allowed to move off to an undisturbed area of the site.</p> <p>i) Feral dogs and cats should not be fed or encouraged to visit the site.</p> <p><i>Responsibility: Construction Manager and ECO</i></p> <p>j) Fines system to be established clearly documenting the penalties to be applied for contravening the above requirements. This fines system must be established before construction commenced and included in sub-contracts.</p> <p><i>Responsibility: Construction Manager in consultation with ECO</i></p>			
7.5 Minimisation of Visual impacts					
1. Minimise contrast with surrounding environment and visibility of the turbines to humans	A non-specified turbine colour (i.e. a bright colour) could result in increased visual impact on local residents and passersby.	<p>a) Ensure that the turbines are painted a non-reflective white colour (as required in the Civil Aviation legislation)</p> <p>b) Dust suppression is important during construction as dust will increase the visibility of the project</p> <p>c) Good housekeeping measures must be implementing-e.g. no dumping of waste</p> <p><i>Responsibility: Project Developer, Construction Manager and ECO</i></p>	<p>Ensure that the specified paint colour is included in the purchasing specifications and complied with during construction.</p> <p><i>Responsibility: Project Developer and ECO</i></p>	Turbines blend in with the landscape by painting it a non-reflective white colour. Good house-keeping measures implemented.	Any departure from the specified colour should be corrected before operation commences.

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
7.6 Satisfy human safety and aviation requirements					
1. Ensure adequate earthing and lightning protection for the turbines	Risk to the turbines and surrounding environment from lightning and/or inadequate earthing.	a) Ensure proper bonding is carried out inside the turbines; a copper ring is attached below the soil surface to earth down conductors and earthing rods. <i>Responsibility: Construction Manager</i>	Ensure that earthing and lightning protection are installed and functional before construction is completed. <i>Responsibility: Construction Manager and ECO</i>	Earthing and lightning protection fully functional.	None required
2. Ensure that the facility complies with Civil Aviation Authority requirements for turbine visibility to aircraft, i.e. red pulsating light on the turbine tower	Risk to aircraft if turbines are not lit according to the Civil Aviation Regulations.	a) Mount aviation warning lights on turbine hub and/or such measures required by the Civil Aviation Authority. <i>Responsibility: Project Developer and Construction Manager</i>	Ensure that aviation warning lights or other measures are functional before construction is completed. <i>Responsibility: Project Developer, ECO</i>	Aviation warning lights or other measures are functional at all times. Compliance with Civil Aviation Regulations	None required
3. Colour of turbines to be conspicuous to minimize aircraft collision risks and comply with the Civil Aviation Regulations of 1997. ⁴	Turbines, including rotors inconspicuous to aircraft.	a) Turbine blades to be white to be conspicuous to aircraft pilots or painted as per the requirements of the Civil Aviation Regulations. <i>Responsibility: Construction Manager, Project Developer</i>	Verify that the turbine blades are white. <i>Responsibility: ECO</i>	Turbine design maximizes conspicuousness to aircrafts. Compliance with Civil Aviation Regulations	None identified.
7.7 Minimise impacts on birds and bats					

⁴ According to the Aviation Act, 1962, Thirteenth Amendment of the Civil Aviation Regulations (CAR's), 1997: "Wind turbines shall be painted bright white to provide maximum daytime conspicuousness. The colours grey, blue and darker shades of white should be avoided altogether. If such colours have been used, the wind turbines shall be supplemented with daytime lighting, as required." Camouflage, even if it were effective as a mitigatory measure (see Gipe 1995 and Stanton 1996), can therefore not be used.

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
1. Minimize the risk of birds and bats colliding with turbines and/or powerlines.	<p>Birds attracted by perching opportunities, towers and turbines, leading to entanglement and bird deaths.</p> <p>Bird species are killed due to collision with turbines</p> <p>Priority bird species are killed by electrocution or entanglement with powerlines.</p> <p>Bats are killed due to baro-trauma and collision with turbines.</p>	<p>a) Power line connections between the turbines to be underground, except where crossing streams (where erosion could occur).</p> <p>b) For above ground power lines, consult with a bird specialist to determine the the need for fitting bird anti-collision markers (Bird Flight Diverters (BFDs) on these power lines.</p> <p>c) Further bat monitoring is required for the post-construction bat monitoring to be in line with the latest bat guidelines.</p> <p><i>Responsibility: (a) and (b) Project Developer and Construction Manager (c) Project Developer and bat specialists</i></p>	<p>Minimise the extent of above-ground power lines.</p> <p>Ensure that anti-collision markers are fit to the power line prior commissioning of the wind farm.</p> <p><i>Responsibility: ECO</i></p>	<p>No collisions by birds during construction phase</p> <p>No collisions by bats during construction phase</p>	None identified.
2. Minimize the risk of displacement of priority bird species by disturbance	Priority bird species displaced by disturbance	<p>a) Restrict the construction activities to the footprint area. Do not allow any access to the remainder of the property.</p> <p><i>Responsibility: Construction Manager and ECO</i></p>	<p>Ensure that construction activities are restricted to footprint area.</p> <p><i>Responsibility: ECO</i></p>	Priority bird species are not displaced due to disturbance during construction phase.	None identified.
3. Minimize the loss of roosts for bat species and impacts on bats during construction	<p>Clearing of trees and aoes result in the loss of roosts for bat species.</p> <p>New bat habitat created on site.</p>	<p>a) Recommended buffer zones must be adhered to;</p> <p>b) Riparian zones must be avoided;</p> <p>c) Thicket habitat must be avoided;</p> <p>d) Avoid road and powerline crossings over rivers and gorges where possible;</p> <p>e) Minimizing the extent of the footprint area to be disturbed by pre-</p>	<p>Ensure that construction activities are restricted to footprint area and identified roosting sites are avoided.</p> <p><i>Responsibility: ECO</i></p>	Roosts for bat species are not impacted upon.	None identified.

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>construction and construction activities at the turbine locality; and</p> <p>f) Minimize the extent, as far as applicable, to be developed as roads, power lines, fences and other infrastructure associated with the wind energy project.</p> <p>g) Should any new cave or tunnel roosts be discovered near to site, revised buffers must be placed on these systems.</p> <p>h) The completion of the long-term bat monitoring is required for the post-construction bat monitoring to be in line with the latest bat guidelines. Further operational mitigation measures will be instituted if necessary, following the post-construction monitoring.</p> <p><i>Responsibility: Construction Manager, ECO, bat specialist and Banna ba Pifhu Wind Farm</i></p>			
4. Prevent displacement or exclusion (displacement) of bats from foraging areas and the loss or shifting of flight paths due to wind turbine construction and operation	Turbines erected too close to areas where bats may roost	<p>a) A minimum distance of 250 m from blade tip to blade tip should be kept open between each turbine;</p> <p>b) Keep lighting to minimum;</p> <p>c) All road and security lights should be hooded and directed downward to minimize horizontal and skyward illumination. For these lights and any lights in the turbine nacelle, minimize use of high intensity lighting, steady-burning, or bright lights such as sodium vapour, quartz, halogen, or</p>	<p>Ensure that 200 m setback is implemented from areas where bats may roost and a setback of 200 m around water bodies.</p> <p>Monitoring of other actions specified, e.g. keep all turbines outside Highly</p>	<p>Setback of 200 m from bat roost areas and 200 m from water bodies maintained.</p> <p>Turbines kept outside Highly sensitive watercourse No-Go areas.</p> <p>Lighting kept to a minimum.</p>	None identified.

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>other bright spotlights. Red flashing safety lights, as required by the South Africa Civil Aviation Authority cannot be avoided.</p> <p>d) All internal turbine nacelle and tower lighting should be extinguished when unoccupied.</p> <p>e) Minimize impacts to wetlands and water resources by following all applicable provisions of the National Water Act and keep all turbines outside of Highly Sensitive No-Go areas.</p> <p><i>Responsibility: Construction Manager and ECO</i></p>	sensitive water course No-Go areas.		
7.8 Minimise impacts on birds based on the Avifaunal Assessment for the Amendment Report					
5. Minimize the risk of displacement of priority bird species by disturbance and habitat transformation	Priority bird species displaced by disturbance	<p>a) Do not allow any access to the remainder of the property during the construction period.</p> <p>b) Measures to control noise and dust should be applied according to current best practice in the industry.</p> <p>c) Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum.</p> <p>d) Following construction, rehabilitation of all areas disturbed (e.g. temporary access tracks and laydown areas) must be undertaken and to this end a habitat restoration plan is to be developed by a rehabilitation specialist.</p>	<p>Ensure that construction activities are restricted to footprint area.</p> <p><i>Responsibility: ECO</i></p>	Priority bird species are not displaced due to disturbance during construction phase.	None identified.

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<i>Responsibility: Construction Manager and ECO</i>			
7.9 Minimise the risk of fire as a result of the construction activities					
1. Prevent veldt fires as a result of workers smoking and/or making fires for heating or cooking purpose.	Workers smoking/ starting fires (i.e. cooking, heating purposes) in undesignated areas	a) Designate smoking areas as well as areas for cooking, where the fire hazard could be regarded as insignificant. b) Educate workers on the dangers of open and/or unattended fires. <i>Responsibility: Construction Manager</i>	Adhoc checks to ensure workers are smoking/starting fires only in designated areas <i>Responsibility: ECO</i>	Zero veldt fires due to smoking/heating	If a veldt fire is caused it should be put out immediately or the fire brigade must be contacted to extinguish the fire
7.10 On-site waste management					
1. Avoid any storage of solid, liquid or hazardous waste on site and prevent waste spillages.	Solid and liquid wastes (i.e. wastewater from construction and painting activities) disposed of on the site could cause environmental problems (e.g. pollution / change in soil pH)	a) All construction waste (concrete, steel, rubbles etc.) to be removed from the site. b) Other non-hazardous solid waste (e.g. packaging material) to be disposed of at a licensed landfill. c) All liquid waste (used oil, paints, lubricating compounds and grease) to be packaged and disposed of by appropriate means. d) Adequate containers for the cleaning of equipment and materials (paint, solvent) must be provided as to avoid spillages. e) Waste water from construction and painting activities must be collected in a designated container and disposed off at a suitable disposal point off site. <i>Responsibility: Construction Manager</i>	Waste removal and disposal to be monitored throughout construction <i>Responsibility: ECO</i>	No waste storage or disposal on site; all waste disposed of as specified in the Environmental Authorisation and relevant regulations.	The ECO to be notified within 24 hours of any waste spillage incidents on site (e.g. fuel spillage). ECO and Construction Manager to ensure necessary clean-up actions taken.

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
2. Ensure that wastes are managed in an environmentally friendly manner	Wastes burned/buried on site. Dispersal of waste on site. Wastes remaining on site after the construction phase.	<p>a) A refuse control system will be established for the construction period to efficiently separate and remove all forms of solid waste from the site for recycling, or disposal at a licensed disposal site.</p> <p>b) Under no circumstances is any solid waste to be burned or buried on or in the vicinity of the site.</p> <p>c) Waste collection points must be sealed/enclosed to eliminate the risk of wind scatter and scavenging by wildlife.</p> <p>d) All waste products resulting from electrical installations along the road will be entirely removed from the site.</p> <p><i>Responsibility: Construction Manager and ECO</i></p>	Waste removal and disposal to be monitored daily throughout construction <i>Responsibility: ECO</i>	Recycling of wastes where possible Zero impact of construction wastes on the environment	None identified.
7.11 Minimise construction noise					
1. Minimise noise from construction	Vehicles, earth moving and terracing of sites, construction of access roads and hard standing areas.	<p>a) Ambient noise monitoring to be conducted at the NSD 01, 09 and 11, as well as any other areas the specialist will identify during the construction period. Project proponent to appoint a qualified noise specialist to undertake the noise monitoring.</p> <p>b) Conduct noise sensitivity training for all construction staff</p> <p>c) Temporary noise screens to be installed around noisy, static equipment and activities such as generators, piling, cutting and drilling</p>	Ambient noise monitoring to be conducted at NSD 01, 09 and 11 prior to the construction period. <i>Responsibility: Project Developer to appoint noise specialist; ECO to monitor that noise monitoring is undertaken</i>	SANS 10103:2008 maximum limit for ambient noise for rural areas of 45 dB(A) maintained.	Construction halted if the construction noise exceeds 45dB(A) for rural areas.

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>d) Limit high noise activities to daytime operations when possible.</p> <p>e) The holder of authorisation must ensure that the National Noise Control Regulations and SANS 10103:2008 are adhered to and measures to limit noise from the work site are implemented.</p> <p>f) The holder of authorisation must ensure that the construction staff working in areas where the 8-hour ambient noise levels exceed 75dBA must wear ear protection equipment.</p> <p>g) The holder of authorisation must ensure that all equipment and machinery are well maintained and equipped with silencers.</p> <p>h) The holder of authorisation must provide a prior warning to the community when a noisy activity e.g. blasting is to take place.</p> <p><i>Responsibility: Project Developer to appoint noise specialist</i></p>			
7.12 Minimise construction noise based on Noise Assessment for the Amendment Report					
1. Minimise noise from construction	Vehicles, earth moving and terracing of sites, construction of access roads and hard standing areas.	a) Ensure a good working relationship between the developer/contractor and all potentially noise-sensitive receptors. Communication channels should be established to ensure prior notice to the sensitive receptor if work is to take place close to them (especially if work is to take place within 500m from them at night). Information that should be provided to	The developer must investigate any reasonable and valid noise complaint if registered by a receptor staying within 2,000 m from location where construction activities are taking place or from an operational wind turbine.	SANS 10103:2008 maximum limit for ambient noise for rural areas of 45 dB(A) maintained.	Construction halted if the construction noise exceeds 45dB(A) for rural areas.

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>potentially sensitive receptor(s) includes:</p> <ul style="list-style-type: none"> • Proposed working dates, the duration that work will take place in an area and working times; • The reason why the activity is taking place; • The construction methods that will be used; and • Contact details of a responsible person where any complaints can be lodged should there be an issue of concern. <p>b) Ensure that equipment is well maintained and fitted with the correct and appropriate noise abatement measures if available. Engine bay covers over heavy equipment could be pre-fitted with sound absorbing material. Heavy equipment that fully encloses the engine bay should be considered, ensuring that the seam gap between the hood and vehicle body is minimised.</p> <p>c) Incorporating a component covering environmental noise in the induction programme for employees and contractors. This is to create sensitivity for potential noise impacts created by the project and the potential effect on NSD.</p> <p>d) The developer must investigate any reasonable and valid noise complaint if registered by a receptor staying within 2000 m from location where</p>	<p>The developer must implement a noise monitoring programme to do ambient sound measurements prior to the construction of, and at least once during the operational phase, to confirm that the noise levels are less than 45 dBA at NSDs 01, 09 and 11.</p> <p><i><u>Responsibility:</u></i> <i><u>Developer to appoint noise specialist; ECO to monitor that noise monitoring is undertaken</u></i></p>		

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		construction activities are taking place or from an operational wind turbine.			
7.13 Minimising the project impact on wetlands					
1. Minimise the impact of construction on wetlands	Construction impacts are not properly managed and wetlands and aquatic systems are negatively impacted upon	<p>a) The proposed layout should keep the number of watercourse crossings to a minimum. Should new crossings be required, large hard engineered surfaces should be level with natural ground, when observed in cross section.</p> <p>b) All wetland areas plus a buffer of 50 m and water courses with a buffer of 32 m should be excluded from the development footprint. Existing roads should be used.</p> <p>c) 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 into wetland or rivers. Washing and cleaning of equipment should also be done within the bermed or bunded areas, in order to trap any cement and prevent excessive soil erosion. These sites must be re-vegetated after construction has been completed. Mechanical plant and bowsers must not be refuelled or serviced within or directly adjacent to any river channel. It is therefore suggested that all construction camps, lay down areas, batching plants or areas and any stores should be more than 50 m from</p>	<p>Ensure that construction activities are restricted to footprint area and do not impact on wetlands and other aquatic systems.</p> <p><i>Responsibility: ECO</i></p>	Wetlands and aquatic systems not impacted upon during construction or by development footprint	None identified

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>any demarcated wetland or riverine area.</p> <p>d) During construction, erosion should be monitored while areas of vegetation are being cleared. Hard engineered surfaces that increase surface water run-off should be limited and effective stormwater management provided.</p> <p>e) Wetlands, rivers and river riparian areas must be treated as "no-go" areas and appropriately demarcated as such. No vehicles, machinery, personnel, construction material, fuel, oil, bitumen or waste must be allowed into these areas without the express permission of and supervision by the ECO, except for rehabilitation work in these areas.</p> <p>f) Workers must be made aware of the importance of not destroying or damaging the vegetation along rivers and in wetland areas and this awareness must be promoted throughout the construction phase.</p> <p>g) Freshwater ecosystems located in close proximity to the construction areas must be inspected on a regular basis by the ECO for signs of disturbance from construction activities. If signs of disturbance are noted, immediate action must be taken to remedy the situation and, if necessary, a freshwater ecologist must be consulted for advice on the most suitable remediation measures.</p>			

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>h) No discharge of effluents or polluted water must be allowed into any rivers or wetland areas.</p> <p>i) If construction areas are to be pumped of water (e.g. after rains), this water must be pumped into an appropriate settlement area, and not allowed to flow into any rivers or wetland areas.</p> <p>j) Workers must be made aware of the importance of not polluting rivers or wetlands and of not undertaking activities that could result in such pollution, and this awareness must be promoted throughout the construction phase.</p> <p>k) Freshwater ecosystems located in close proximity to the site must be inspected on a regular basis (but especially after rainfall) by the ECO for signs of sedimentation and pollution. If signs of sedimentation or pollution are noted, immediate action must be taken to remedy the situation and, if necessary, a freshwater ecologist must be consulted for advice on the most suitable remediation measures.</p> <p><i>Responsibility: ECO, Construction Manager and Project Developer</i></p>			
7.14 Additional impacts on wetlands					
1. Minimise the impact of construction on wetlands	Construction impacts are not properly managed and wetlands and aquatic systems are negatively impacted upon	a) A comprehensive rehabilitation plan be implemented from the project onset within watercourse areas (including buffers) to ensure a net benefit to the aquatic environment. This should form	Ensure that construction activities are restricted to footprint area and do not impact on wetlands	Wetlands and aquatic systems not impacted upon during construction or by development footprint	None identified

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>part of the suggested walk down as part of the final EMP preparation preconstruction.</p> <p><i>Responsibility: ECO, Construction Manager and Project Developer</i></p>	<p>and other aquatic systems.</p> <p><i>Responsibility: ECO</i></p>		
7.15 Minimise impacts on agricultural soil potential					
1. Minimise disturbance of run-off and resultant potential impact on erosion	Construction activities are not properly managed and water run-off and erosion occur.	<p>a) Water run-off from all constructed and altered surfaces including roads, where slopes pose an erosion hazard, will be managed with an appropriate system to divert or channel any collected run-off water into existing natural or constructed waterways.</p> <p>b) An effective run-off management plan is a specific requirement of the Environmental Management Plan. As part of this, erosion will be monitored and corrective action will be implemented to the run-off plan in the event of any erosion problems.</p> <p>c) No new roads are proposed on slopes where erosion is a potential hazard (see site plan).</p> <p>d) None of the wind farm development occurs on land that has contour banks</p> <p><i>Responsibility: Construction Manager and Project Developer</i></p>	<p>Water run-off effectively managed to prevent erosion</p> <p><i>Responsibility: ECO</i></p>	Development of effective run-off management plan to prevent water run-off and subsequent erosion.	Corrective action will be implemented to the run-off plan in the event of any erosion problems.
7.16 Minimise impacts associated with obtaining material from borrow pits					
1. Minimise disturbance to the environment with the potential sourcing of material from borrow pits.	Material from borrow pits sourced without the necessary permits from the Department of Mineral Resources.	a) The requirements of the Mineral and Petroleum Resources Act (Act 28 of 2002) to obtain material from borrow pits for road upgrades will be adhered to if applicable. The applicant will	The necessary permits obtained from the Department of Mineral Resources if applicable.	Proper procedures followed and the necessary permits obtained to source material from borrow	None identified

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>apply for the necessary permits from the Department of Mineral Resources to obtain material from borrow pits should they decide to do so.</p> <p>b) Excavated material from the foundations will be used for the road upgrades as far as possible.</p> <p>c) Existing borrow pits will be used and backfilled afterwards.</p> <p><i>Responsibility: Construction Manager, ECO and Banna ba Pifhu Wind Farm</i></p>		pits if required. Impacts to the environment kept to a minimum.	
7.17 Overall compliance with the conditions of the Environmental Authorisation					
1. Handover the site to the project operator at the end of the construction phase, in a form that satisfies all possible requirements of the Environmental Authorisation for the construction phase.	Possible Environmental conditions of approval (issued by DFFE) for the construction phase are not satisfied, leading to the project operation being delayed.	<p>a) Audit the implementation of the draft EMPr requirements for the construction phase.</p> <p><i>Responsibility: Construction Manager, ECO and Banna ba Pifhu Wind Farm</i></p>	<p>Audit report on compliance with actions & monitoring requirements in the Construction Phase EMPr</p> <p><i>Responsibility: ECO</i></p>	Full compliance with the EMPr specifications & possible Environmental Authorisation requirements for construction phase.	None identified.
7.18 Influx of people based on the Socio-Economic Assessment for the Amendment Report					
1. Impacts associated with the influx of people	Negative impacts on social structures and increased 'social ills' such as increased crime levels, increased alcohol and drug use, increased teenage and unwanted pregnancies, increased prostitution and increases in sexually	<p>a) A 'locals first' policy with regard to construction and operational labour needs.</p> <p>b) That the community will be able to contact the site manager to report any issues which they may have. The site manager will be stationed within the area and will therefore be available on hand to deal with and</p>	<p>Safety, Health and Wellness of local people.</p> <p><i>Responsibility: Developer & ECO</i></p>	Local employment	

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
	<p>transmitted diseases (STDs).</p>	<p>address any concerns which may be raised.</p> <p>c) That a complaints register will be available on site to any individual who may have a particular complaint with regards to the construction or operations processes.</p> <p>d) The applicant should establish a Monitoring Forum for the project. The Forum should be established before the construction phase commences and should include key stakeholders, including representatives from the local community, local councillors, farmers, and the contractor. The role of the Forum would be to monitor the project and the implementation of the recommended mitigation measures.</p> <p>e) The applicant and the contractors should, in consultation with representatives from the Monitoring Forum, develop a Code of Conduct for the project. The code should identify what types of behaviour and activities by workers are not permitted in agreement with surrounding land owners. For example, access on land that is not part of the development will not be allowed (no short cuts by workers going from home to site over land that is not part of the project).</p> <p>f) The applicant and the contractor should implement an HIV/AIDS</p>			

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>awareness programme for all construction workers at the outset of the construction phase;</p> <p>g) The contractor should make necessary arrangements to enable workers from outside the area to return home over weekends and or on a regular basis during the construction phase. This would reduce the risk posed by non-local construction workers to local family structures and social networks;</p> <p>h) The contractor should make the necessary arrangements for ensuring that all non-local construction workers are transported back to their place of residence once the construction phase is completed.</p>			

8 MANAGEMENT PLAN FOR OPERATIONS PHASE

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
1. Minimise the impact of the wind turbines on birds caused by collisions with turbines	Poor visibility of turbines to flying birds causing birds to collide with wind turbines leading to mortality.	<p>a) Once the turbines have been constructed, post-construction monitoring as per the latest <i>Best practice guidelines for avian monitoring and impact mitigation at proposed wind energy development sites in southern Africa</i> should be implemented to compare actual collision rates with predicted collision rates. If actual collision rates indicate unsustainable mortality levels, the following mitigation measures will have to be considered:</p> <p>b) The dataset must be analysed in order to establish the statistical significance of potential trends that have been identified so far (e.g. the influence of wind direction and wind strength). This will assist in the formulation of the final recommendations.</p> <p>c) Negotiating appropriate off-set compensation for turbine related collision mortality with the developer.</p> <p>d) As a last resort, halting operation of specific turbines during peak flight periods, or reducing rotor speed, to reduce the risk of collision mortality.</p> <p>e) Provide quarterly Avifauna Monitoring Reports to Birdlife SA (BLSA), Endangered Wildlife Trust (EWT) and the DFFE.</p> <p><i>Responsibility: Project Developer; bird specialist and Operations Manager</i></p>	<p>Analyse monitoring results and compile annual monitoring report.</p> <p>Ensure that the report is made publicly available so that a database of bird monitoring impacts relevant to South African wind farms can be developed.</p> <p><i>Responsibility: Project Developer and bird specialist</i></p>	<p>Zero bird strikes at turbine sites. This target can be revised based on monitoring data.</p> <p>The database on the effects of the Banna turbines on South African species of birds contributes to the national database.</p>	<p>Halting operation of specific turbines during high risk conditions, or reducing rotor speed, to reduce the risk of collision mortality.</p>

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
2. Minimise or avoid displacement of priority bird species due to disturbance caused by the operation of the wind farm.	Priority bird species displaced by disturbance	<p>a) Post-construction monitoring should be implemented to assess the impact of displacement, particularly on priority species. Monitoring should be implemented, using the same protocol as the pre-construction monitoring.</p> <p>b) Should the results of the post-construction monitoring indicate significant displacement of priority species, appropriate offset compensation should be negotiated with developer to compensate for the loss of priority species habitat.</p> <p>c) Very little practical mitigation is possible other than to restrict access to the remainder of the property. Maintenance personnel and vehicles must be strictly supervised in order for ensure that no unnecessary disturbance of priority species takes place.</p> <p><i>Responsibility: Project Developer and bird specialist</i></p>	<p>Analyse post-construction monitoring results and compile annual monitoring report.</p> <p><i>Responsibility: bird specialist</i></p>	Priority bird species not displaced by disturbance.	Should the results of the post-construction monitoring indicate significant displacement of priority species, appropriate offset compensation should be negotiated with project proponent to compensate for the loss of priority species habitat.
Additional monitoring of the Grasmere Large Dam Blue Crane Roost based on the Avifaunal Assessment for the Amendment Report					
3. Additional monitoring (with night vision equipment) of the Grasmere Large Dam Blue Crane roost site	Turbines erected too close to areas where Grasmere Large Dam Blue Crane Roost is.	<p>a) A circular turbine exclusion buffer zone of at least 1.6km, measured from the northern shore of the Grasmere Large Dam (-34.080135°, 24.764032°), should be implemented around the Grasmere Blue Crane roost site.</p> <p>b) Additional monitoring of the Grasmere Large Dam Blue Crane roost site needs to be implemented over four seasons, before the wind farm becomes operational, to gain additional</p>	All of these aspects will need to be investigated in order to arrive at a curtailment regime (if need be) for periods of high risk i.e. that period when the birds arrive to roost and leave again to forage elsewhere.	Gain additional information on flight activity to and from the roost.	Curtailment regime to be implemented, during high risk periods.

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>information on flight activity to and from the roost.</p> <p>c) Once the turbines have been constructed, post-construction monitoring should be implemented to compare actual collision rates with predicted collision rates.</p> <p>d) Should mortality of priority species be recorded, the avifaunal specialist, in consultation with external experts and relevant NGO's such as BLSA, must determine annual mortality thresholds for those priority species killed by turbine collisions.</p> <p>e) If the annual projected (adjusted) collision rate exceeds the pre-determined threshold level, shutdown on demand (SDoD) must be implemented for high risk priority species</p> <p>f) Aspects that need to be investigated are the:</p> <ul style="list-style-type: none"> • Influence of wind direction and strength on flight direction and flight height; • The seasonal variations in numbers and how/if the risk window is influenced by weather conditions e.g. whether the birds come in to roost earlier on overcast days, as one would expect, due to the light failing earlier. <p><i>Responsibility: Bird Specialist and ECO</i></p>			

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
4. Minimise the impact of the wind turbines on bat mortality caused by collisions or barotrauma	Bats fly and forage in close proximity to the rotor blades. Bats are attracted to turbines.	<p>a) Turbine rotor swept area not to reach within the 200 m buffer area around all wetlands.</p> <p>b) Gaps of at least 250m are left open between turbines, 250m from blade tip to blade tip. Banna has already met this requirement in terms of their current layout;</p> <p>c) Curtailment Curtailment is when a turbine is only allowed to rotate once the wind exceeds a specific speed. The theory behind curtailment is based on the negative correlation between bat activity and wind speed i.e., that bat activity decreases as wind speed increases.</p> <p>d) Post Construction Monitoring. Long-term post-construction monitoring must be conducted according to the latest guidelines at the time of commencement of operation and should be conducted to monitor the effectiveness of the mitigation and residual bat impacts, in order to readjust mitigation measures;</p> <p>e) Adaptive Mitigation Planned and systematic process for continuously improving environmental management practices by learning about their outcomes. Adaptive management provides flexibility to identify and implement new mitigation measures or to modify existing ones during the life of a project.</p>	<p>Analyse the bat monitoring data and re-evaluate the monitoring programme.</p> <p>Based on the bat monitoring and carcass counts, determine whether mitigation by off-site bat boxes will off- set the mortalities. Operational management actions need to be applied to further reduce impacts on bats.</p> <p><i>Responsibility: Project Developer and bat specialist</i></p>	<p>Create a database of bat mortalities occurring on the wind farm site.</p> <p>Thereby contribute information on the bat species occurring in the area and the impact of wind farms on bats.</p>	<p>Should the results of the post-construction monitoring indicate significant mortality of bat species, appropriate operational management actions need to be negotiated with project proponent to reduce further impacts on bats.</p>

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>f) Advanced radar systems for early detection of bats is not recommended at a site like Banna, where high bats activity levels occur nightly, as these systems are designed to detect large movements of bats, and the warning system would be triggered too often. This can however be further investigated during the post-construction monitoring phase.</p> <p>g) Use of acoustic deterrents These devices may reduce bat fatalities by discouraging bats from approaches sound sources, and hence the turbines they are attached too (Arnett et al. 2013). Preliminary test of this technology in South Africa has showed positive results (MacEwan pers. comm.) but additional testing needs to occur before this can be relied on as a mitigation measure to reduce bat fatalities. Deterrents and curtailment could be used and tested together to determine which is the most effective.</p> <p><i><u>Responsibility: Project Developer and bat specialist</u></i></p>			
5. Minimise visual impacts of the permanent structure and ancillary equipment	Spare parts and ancillary equipment stored in highly visible areas	<p>a) No permanent outside storage of equipment, spare parts or other ancillary materials should be visible. Keep these off-site where possible, or limited to low visibility sites.</p> <p>b) The site should be kept in a clean and well-maintained condition.</p> <p>c) The exterior of any visible surface of the turbines should be cleaned, repainted,</p>	<p>Monitoring to ensure that the measures are implemented and that good housekeeping measures are in place.</p> <p><i><u>Responsibility: ECO</u></i></p>	Proper housekeeping measures in place to reduce visual impact. Wind project has a clean and harmonious presence in the landscape. Thereby	Appropriate actions to be taken by the developer or Operations Manager if housekeeping measures are not implemented or maintained.

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>repaired or replaced if it rusts, corrodes or otherwise visibly deteriorates.</p> <p>d) All fencing should be kept in a clean and repaired condition.</p> <p>e) Electric fencing should not have any strands within 30 cm of the ground, which should be sufficient to allow smaller mammals, reptiles and leopard tortoises to pass through, but still remain effective as a security barrier.</p> <p>f) All fugitive waste or debris should be collected and removed from the site and properly disposed.</p> <p>g) Lighting should be designed to minimise light pollution without compromising safety. Investigate using motion sensitive lights for security lighting. Turbines are to be lit according to Civil Aviation regulations.</p> <p>h) The holder of authorisation must reduce visual impacts during construction by minimising areas of surface disturbance, controlling erosion, using dust suppression techniques and restoring exposed soil as closely as possible to their original contour and vegetation.</p> <p>i) A lighting engineer must be consulted to assist in the planning and placement of light fixtures in order to reduce visual impacts associated with glare and light trespass.</p> <p>j) Lighting of main structures (turbines) and ancillary buildings should be</p>		<p>reducing potential negative visual impacts.</p>	

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>designed to minimise light pollution without compromising safety.</p> <p>k) Signage on or near wind turbines must be avoided unless they serve to inform the public about wind turbines and their function.</p> <p>l) Commercial messages and graffiti on turbines must be avoided.</p> <p>Actions that may <u>enhance</u> the positive visual aspects of the development:</p> <p>a) Maintenance of the turbines is important. A spinning rotor is perceived as being useful. If a rotor is stationary when the wind is blowing it is seen as not fulfilling its purpose and a negative impression is created.</p> <p>b) Signs near wind turbines should be avoided unless they serve to inform the public about wind turbines and their function. Advertising billboards should be avoided.</p> <p>c) An information kiosk (provided that the kiosk and parking area is located in a low visibility area) and trails along the wind farm can enhance the project by educating the public about the need and benefits of wind power.</p> <p><i>Responsibility: Project Developer and Operations Manager</i></p>			
6. Minimise noise impacts during operations	Noise levels exceed the SANS 10103:2008 maximum limit for ambient noise for 45 dB(A) for rural areas.	a) Ambient noise monitoring to be conducted at the NSDs 01, 09 and 11 at least once during operation to verify the noise emissions meet the noise rating limit as per SANS 10103:2008.	Ambient noise monitoring at NSD 01, 09, and 11 at least once during operation.	SANS 10103:2008 maximum limit for ambient noise for 45dB(A) applied for rural areas.	Should the turbines not comply with the SANS maximum limit of 45 dB(A) the project proponent needs to

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>b) Monitoring to be done annually for the first three years to confirm that the actual noise complies with the SANS 10103 standards.</p> <p>c) The developer must investigate any reasonable and valid noise complaint if registered by a receptor staying within 2000 m from location where construction activities are taking place or from an operational wind turbine.</p> <p>d) The developer must select the appropriate mitigation measure to ensure that the noise levels at NSD10 is less than 45 dBA, alternatively, a contract with the land owner that the dwelling will not be used for residential purposes during the operational phase.</p> <p>e) The developer must implement a noise monitoring programme to collect ambient sound measurements prior to the construction of, and at least once during the operational phase, to confirm that the noise levels are less than 45 dBA at NSD09 and NSD04.</p> <p><i>Responsibility: Project Developer to appoint a noise specialist</i></p>	<p>Noise monitoring by a qualified noise specialist at three NSA's per year over a three year period.</p> <p><i>Responsibility: Project Developer to appoint a noise specialist</i></p>		<p>take adequate measures to ensure that the noise standards are met.</p>
7. Minimise surface water and stormwater impacts on wetlands	Surface and stormwater impacts on wetlands are not managed	<p>a) Surface water flows should not be diverted or impeded or over-abstracted (inclusive of groundwater). This will prevent future changes in the hydrological regime that supports habitats and the associated species.</p>	<p>Stormwater impacts monitored</p> <p><i>Responsibility: Operations Manager and ECO</i></p>	Stormwater management plan in place and stormwater adequately managed on site	None identified

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>b) A stormwater management plan should be created for the development for the operations phase.</p> <p>c) Stormwater should be managed using suitable structures such as swales, gabions and rock rip-wrap so that any run-off from the development site is attenuated prior to discharge. Silt and sedimentation should be kept to a minimum, through the use of the above mentioned structures and by also ensuring that all structures do not create any form of additional erosion.</p> <p><i>Responsibility: Operations Manager</i></p>			
8. Minimise impact on agricultural soil potential	Water-run off not managed properly posing an erosion hazard.	<p>a) Water run-off from all constructed and altered surfaces including roads, where slopes pose an erosion hazard, will be managed with an appropriate system to divert or channel any collected run-off water into existing natural or constructed waterways. An effective run-off management plan is a specific requirement of the Environmental Management Plan.</p> <p>b) No new roads are proposed on slopes where erosion is a potential hazard.</p> <p>c) None of the wind farm development should occur on land that has contour banks.</p> <p>d) For all excavations and other direct disturbance of the soil surface (e.g for roads, buildings) that are to be returned to agricultural use, the upper 20 cm of the top soil will be stripped, stockpiled, and then re-spread over the surface of</p>	Water run-off is monitored <i>Responsibility: Operations Manager and ECO</i>	Effective run-off management plan is implemented. Water-run is not causing an erosion hazard,	Erosion will be monitored and corrective action will be implemented to the run-off plan in the event of any erosion problems.

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>the backfilled excavation or disturbed surface, during rehabilitation.</p> <p>e) The wind farm utilises existing roads wherever possible and so the length of required new roads, and disturbance to agricultural soil as a result, is minimised.</p> <p>f) If crop spraying by aircraft is ever required, the wind farm undertakes to lock all necessary turbines (with 1 days' notice) with the blades parked in parallel to facilitate easy access for aeroplanes between them. Crop spraying by aeroplane is usually done when there is little or no wind.</p> <p>g) The distance between turbines should facilitate easy access for aeroplanes between them.</p> <p>h) Banna is committed to enabling the landowner to use the property for sustainable agriculture and as such will not limit usage of the area. In the event that an activity would interfere with the free flowing of the wind to the turbine, the landowner and Banna would need to come to an agreement as to the exact location of such activities.</p> <p><i>Responsibility: Project Developer and Operations Manager</i></p>			
9. Enhance Economic positive impacts	Workers and sub-contractors from outside the local area are used. Local economic benefits not enhanced.	<p>a) Opportunities for the training of unskilled and skilled workers from local communities should be maximized.</p> <p>b) Local sub-contractors should be used where possible and contractors from outside the local area that tender for</p>	<p>Local workforce is monitored.</p> <p><i>Responsibility: Project Developer and Operations Manager</i></p>	Targets should preferably be set for how much local labour should be used based on the needs of the proponent and the	None identified

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>work should also be required to meet targets for how many locals are given employment.</p> <p>c) The proponent should continue to explore ways to enhance local community benefits with a focus on broad-based BEE through mechanisms such as community shareholding schemes, trusts, preferential procurement, etc.</p> <p><i>Responsibility: Project Developer</i></p>		availability of existing skills and people that are willing to undergo training.	
Influx of people based on the Socio-Economic Assessment					
10. Impacts associated with the influx of people	Negative impacts on social structures and increased 'social ills' such as increased crime levels, increased alcohol and drug use, increased teenage and unwanted pregnancies, increased prostitution and increases in sexually transmitted diseases (STDs).	<p>a) A 'locals first' policy with regard to construction and operational labour needs.</p> <p>b) That the community will be able to contact the site manager to report any issues which they may have. The site manager will be stationed within the area and will therefore be available on hand to deal with and address any concerns which may be raised.</p> <p>c) That a complaints register will be available on site to any individual who may have a particular complaint with regards to the construction or operations processes.</p> <p>d) The applicant should establish a Monitoring Forum for the project. The Forum should be established before the construction phase commences and should include key stakeholders, including representatives from the local community, local councillors, farmers,</p>	<p>Safety, Health and Wellness of local people.</p> <p><i>Responsibility: Developer & ECO</i></p>	Local employment	

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
		<p>and the contractor. The role of the Forum would be to monitor the project and the implementation of the recommended mitigation measures.</p> <p>e) The applicant and the contractors should, in consultation with representatives from the Monitoring Forum, develop a Code of Conduct for the project. The code should identify what types of behaviour and activities by workers are not permitted in agreement with surrounding land owners. For example, access on land that is not part of the development will not be allowed (no short cuts by workers going from home to site over land that is not part of the project).</p> <p>f) The applicant and the contractor should implement an HIV/AIDS awareness programme for all construction workers at the outset of the construction phase;</p> <p>g) The contractor should make necessary arrangements to enable workers from outside the area to return home over weekends and or on a regular basis during the construction phase. This would reduce the risk posed by non-local construction workers to local family structures and social networks;</p> <p>h) The contractor should make the necessary arrangements for ensuring that all non-local construction workers are transported back to their place of residence once the construction phase is completed.</p>			

Management Objectives	Risk Sources	Management Actions	Monitoring	Targets	Remedial actions
11. Increased financial security for farming operations	Positive impact to farmers, due to reliable income from turbine rental	i) Responsibility of the project developer	<i>Responsibility: Developer & ECO</i>		

9 MANAGEMENT PLAN FOR DECOMMISSIONING

Objectives	Risk Sources	Actions	Monitoring	Targets	Remedial actions
1. Return the area of the turbines to its original state.	Insufficient funds to finance decommissioning and the rehabilitation necessary.	<p>a) Develop a closure, decommissioning and rehabilitation plan that satisfies best practice requirements for wind farms and for habitat management. This plan should include the removal of wind farm infrastructure, with the exception of the below ground foundations.</p> <p>b) A decommissioning plan will be submitted to the local authority for approval with confirmation of the necessary funding as requested by the Local Municipality. The decommissioning will be undertaken in accordance with the conditions of the environmental authorisation, once issued. All the necessary legal requirements for decommissioning will be adhered to at such time.</p> <p><i>Responsibility: Operations Manager</i></p>	<p>Audit the implementation of the closure and rehabilitation plan</p> <p><i>Responsibility: Operations Manager</i></p>	Site returned in a condition that enables ongoing agricultural activities currently undertaken on site and does not foreclose other potential options.	None identified.

10 INVASIVE ALIEN PLANT MANAGEMENT PLAN

10.1 Construction Phase Activities

The following management actions are aimed at reducing soil disturbance during the construction phase of the development, as well as reducing the likelihood that alien species will be brought onto site or otherwise encouraged.

Construction Phase Action	Frequency
The ECO is to provide permission prior to any vegetation being cleared for development.	Daily
Clearing of vegetation should be undertaken as the work front progresses – mass clearing should not occur unless the cleared areas are to be surfaced or prepared immediately afterwards.	Weekly
Where cleared areas will be exposed for some time, these areas should be protected with packed brush, or appropriately battered with fascine work. Alternatively, jute (Soil Saver) may be pegged over the soil to stabilise it.	Weekly
Cleared areas that have become invaded can be sprayed with appropriate herbicides provided that these are such that break down on contact with the soil. Residual herbicides should not be used.	Weekly
Although organic matter is frequently used to encourage regrowth of vegetation on cleared areas, no foreign material for this purpose should be brought onto site. Brush from cleared areas should be used as much as possible. The use of manure or other soil amendments is likely to encourage invasion.	Weekly
Clearing of vegetation is not allowed within 32 m of any wetland, 80 m of any wooded area, within 1:100 year flood lines, in conservation servitude areas or on slopes steeper than 1:3, unless permission is granted by the ECO for specifically allowed construction activities in these areas	Weekly
Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas. (Particular attention must be paid to imported material such as building sand or dirty earth-moving equipment.) Stockpiles should be checked regularly and any weeds emerging from material stockpiles should be removed.	Weekly
Alien vegetation regrowth on areas disturbed by construction must be controlled throughout the entire site during the construction period.	Monthly
The alien plant removal and control method guidelines should adhere to best-practice for the species involved. Such information can be obtained from the DWAF Working for Water website.	Monthly
Clearing activities must be contained within the affected zones and may not spill over into demarcated No Go areas.	Daily
Pesticides may not be used. Herbicides may be used to control listed alien weeds and invaders only	Monthly
Wetlands and other sensitive areas should remain demarcated with appropriate fencing or hazard tape. These areas are no-go areas (this must be explained to all workers) that must be excluded from all development activities.	Daily

10.1.1 Monitoring Actions - Construction Phase

The following monitoring actions should be implemented during the construction phase of the development.

Monitoring Action	Indicator	Timeframe
Document alien species present at the site	List of alien species	Pre-construction
Document alien plant distribution	Alien plant distribution map within priority areas	3 Monthly
Document & record alien control measures implemented	Record of clearing activities	3 Monthly
Review & evaluation of control success rate	Decline in documented alien abundance over time	Biannually

10.2 Operational Phase Activities

The following management actions are aimed at reducing the abundance of alien species within the site and maintaining non-invaded areas clear of aliens.

Operational Phase Action	Frequency
Surveys for alien species should be conducted regularly. Every 6 months for the first two years after construction and annually thereafter. All aliens identified should be cleared.	Every 6 months for 2 years and annually thereafter
Where areas of natural vegetation have been disturbed by construction activities, revegetation with indigenous, locally occurring species should take place where the natural vegetation is slow to recover or where repeated invasion has taken place following disturbance.	Biannually, but revegetation should take place at the start of the rainy season
Areas of natural vegetation that need to be maintained or managed to reduce plant height or biomass, should be controlled using methods that leave the soil protected, such as using a weed-eater to mow above the soil level.	When necessary
No alien species should be cultivated on-site. If vegetation is required for aesthetic purposes, then non-invasive, water-wise locally-occurring species should be used.	When necessary

10.2.1 Monitoring Actions - Operational Phase

The following monitoring actions should be implemented during the operation phase of the development.

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

10.3 Decommissioning Phase Activities

The following management actions are aimed at preventing the invasion, by alien plant species, of the re-vegetated areas created during the decommissioning phase. Re-vegetation of the disturbed site is aimed at approximating as near as possible the natural vegetative conditions prevailing prior to operation.

Decommissioning Phase Action	Frequency
All damaged areas shall be rehabilitated if the infrastructure is removed and the facility is decommissioned	Once off
All natural areas must be rehabilitated with species indigenous to the area. Re-seed with locally-sourced seed of indigenous grass species that were recorded on site pre-construction.	Once off, with annual follow up re-vegetation where required
Maintain alien plant monitoring and removal programme for 3 years after rehabilitation.	Biannually

10.3.1 Monitoring Actions - Decommissioning Phase

The following monitoring and evaluation actions should take place during the decommissioning phase of the development

Monitoring Action	Indicator	Timeframe
Monitor newly disturbed areas where infrastructure has been removed to detect and quantify any aliens that may become established for 3 years after decommissioning and rehabilitation	Alien plant surveys and distribution map	Biannually until such time as the natural vegetation has recovered sufficiently to resist invasion.
Monitor re-vegetated areas to detect and quantify any aliens that may become established for 3 years after decommissioning and rehabilitation	Alien plant surveys and distribution map	Biannually for 3 years
Document alien plant control measures implemented & success rate achieved	Records of control measures and their success rate. A decline in alien distribution and cover over time at the site	Annually for 3 years

11 PLANT RESCUE AND PROTECTION PLAN

11.1 Purpose

The purpose of the plant rescue and protection plan is to implement avoidance and mitigation measures to reduce the impact of the development on listed and protected plant species and their habitats. Although this report identifies those species suitable for search and rescue at the site, it is important to note that a preconstruction walk-through by a botanical specialist of the site would also be important to refine the list of species identified for search and rescue, as well as locate such species prior to construction.

The objective of rescuing plants on the project area is to prevent the loss of species either directly or through future extinction and minimising impacts of development on population dynamics of species of conservation concern.

Preserving the natural configuration of habitats as part of ecosystems, thus ensuring a diverse but stable hydrology, substrate and general environment for species to be able to become established and persist.

11.2 Effect of removing individual species of conservation concern

Species of conservation concern are declining either due to overexploitation or because their range of occupancy is limited and further infringed on by development. Most plant populations require a certain minimum number of individuals within a population or metapopulation to allow for sufficient genetic transfer between individuals. This prevents

genetic erosion and hence weakening of the ability of individuals to persist in their environments. Similarly, where the distance between metapopulations is significantly increased due to fragmentation and the resultant loss of some populations, populations may suffer genetic decline due to restricted movement of pollen. Pollinators or other species that depend on a particular plant species for a specific microhabitat or food source may be equally affected because of the reduction of available resources. Therefore, the aim of plant rescue actions are always to maintain as many individuals of a plant population in as close proximity to the original habitat as possible to minimise loss of individuals and fragmentation of populations to prevent the creation of future extinction debts of the development.

11.3 Plant Rescue and Protection

Successful plant rescue can only be achieved if:

- Species can be removed from their original habitat with minimal damage to the plant, especially the roots.
- All plants removed are safely stored and treated according to their specific requirements prior to being transplanted again.
- They are relocated into a suitable habitat and protected from further damage and all disturbances to aid their re-establishment.
- Timing of planting activities is planned with the onset of the growing season.
- Steps are taken where necessary to aid the initial establishment of vegetation, including occasional watering.

11.4 Time of Planting

- All planting shall be carried out as far as is practicable during the period most likely to produce beneficial results (i.e. during the peak growing season), but as soon as possible after completion of a section of earthworks.
- Drainage line rehabilitation preparation must be done during autumn, and planting of appropriate species in these areas should commence during early spring after the first rains.

11.5 Plant Search and Rescue

Prior to construction, once all the areas where topsoil will be removed or areas will be transformed have been demarcated, the ECO and contractor will be responsible to remove all bulbous species from the topsoil, as well as succulents and small indigenous shrubs that can be transplanted. These are to be kept in a raised, protected position in a designated area until they can be replanted again as part of the rehabilitation process. Further details are listed in the Habitat Rehabilitation Plan (Appendix A).

12 OPEN SPACE MANAGEMENT PLAN

The objective of open space management is to restore, enhance and rehabilitate open spaces, improve climate change adaptations through the minimisation of biodiversity loss, and mitigate against environmental degradation. Management actions consider open spaces and natural areas as well as community perceptions of these.

In the context of the proposed development the primary purpose of the open plan management plan is therefore to:

- Minimise visual impact on the character of the area; and
- Maintain biodiversity within the area to ensure that no long-term negative impacts occur on the local environment.

In order to maintain biodiversity, the Alien Invasive, Plant Rescue and Protection and Re-vegetation and Habitat Management Plans must be adhered to. In addition, the following actions should be implemented by the Contractor and Project Company:

- Promote environmental awareness in all employees and sub-contractors and create an understanding of the environmental sensitivities of the project site;
- No waste, including organic matter may be disposed of anywhere on site, except in provided bins placed at convenient locations, especially during the construction period. Disciplinary actions should be taken against littering;
- Open spaces are to be kept free of alien plants and weeds;
- Indigenous plants may not be collected or removed from the site;
- Access to the facility should be strictly controlled;
- All visitors and contractors should be required to sign-in;
- Signage at the entrance should indicate that disturbance to fauna and flora is strictly prohibited.

The following activities should not be permitted by anyone except the landowner or his representatives:

- No fires within the site;
- No hunting, collecting or disturbance of fauna and flora, except where required for the safe operation of the facility and only by the Environmental Officer on duty and with the appropriate permits and landowner permission;
- No driving off of demarcated roads; and
- No interfering with livestock.

13 TRAFFIC MANAGEMENT PLAN

The objective of the traffic management plan is the prevention of incidents from the use of vehicles and disturbance of local traffic on public roads during the construction, operation and decommissioning phases of the proposed projects. Traffic volumes are most likely to increase during the construction phase. However, due to the location of the site, and the low volume of traffic on public roads in the area the impact is expected to be low.

Actions to be implemented by the Contractor and Project Company:

- Site-specific traffic plan to be developed and implemented during the detailed design phase prior to construction;
- Limit use of private cars by arranging mini bus transport service for workers;
- Monitor for overloading of vehicles;
- Use only well trained, suitably qualified and experienced drivers in possession of an appropriate and valid driver's license;
- All vehicles must be roadworthy and serviced regularly;
- Clear and visible signage must be placed on and around site, clearly demarcating safe entry and exit points;
- Require all drivers to abide by standard road and safety procedures on site;
- When travelling on public roads all speed limits and rules of the road must be adhered to; and
- Limit dust generation by applying dust suppressants and postponing dust generating activities during period of strong winds and enforcing a strict speed limit of 40 km/h on unpaved roads.

Monitoring actions to be conducted by the ECO:

- Maintain incidents / complaints register for community complaints; and
- Monitor dust generation and implementation of management actions detailed above.

14 TRANSPORTATION MANAGEMENT PLAN

The Transportation Management Plan aims to ensure the safe transportation of all components required for the construction of the proposed project to the construction site. This includes the turbines, substation transformers, electrical cables and pylon structures.

Transport requirements for the WEF project will require the use of abnormal load vehicles as stipulated in the TRH 11, especially in the construction phase of the project for the delivery of construction materials and turbine components. Very little to no special transport will be required during the remainder of the development phases as standard transport will be used.

All wind turbine components are considered to be abnormal loads, either through length, weight or height, usually comprising of 3 tower sections, 1 hub, 1 nacelle and 3 blades. These require different truck / trailer combinations and configurations to be transported. These issues will be investigated at a later stage when the transporting contractor and the plant hire companies apply for the necessary permits from the permit issuing authorities. The heaviest component of a wind turbine is the nacelle (approximately 67 to 85 tons depending on manufacturer and design of the unit). Combined with road-based transport, it has a total vehicle mass of approximately 130 000 kg (for the 85-ton unit). Thus, route clearances and permits will be required for transporting the nacelle by road-based transport.

Blades are the longest component, and need to be transported on a specially imported extendible blade transport trailer or in a rigid container with rear steerable dollies. The blades can be transported individually, in pairs or in three's although different manufacturers have different methods of packaging and transporting the blades. Where required, existing public roads may need to be upgraded along the proposed equipment transport route to allow for the transportation and delivery of wind turbine components and other associated infrastructure components. The national roads on the potential national access routes are generally of high standard and many of the structures have been assessed for load bearing capacity and height clearance in the past. Turbine supplier/s or the contractor selected for implementation would be responsible for the transportation of wind turbine components to site.

A complete transportation management plan must be undertaken prior to construction.

14.1 Permit requirements

In transportation of loads the following guidelines are available. According to the TRH 11, the expected load dimensions are classified as abnormal load, therefore an exemption permit for each province that the load has to transit is required.

Provision for the type of abnormal loads in this development is made in the National Road Transport Act (NRTA), and specifically in Section 81 of the NRTA, which reads as follows:

"Vehicle and load may be exempted from provisions of Act.

An MEC may, subject to such conditions as upon payment of such fees or charges as he or she may determine, authorise in writing, either generally or specifically, the operation on a public road of a vehicle which does not comply with the provisions of this Act or the conveyance on a public road of passengers or any load otherwise that in accordance with the provisions of this Act."

When the movement of an abnormal load is considered to be in the economic and/or social interest of the country, an exemption permit may be issued to allow a vehicle(s) transporting such an abnormal load to operate on a public road for a limited period. The fundamental principles guiding this process are:

- An exemption permit for an abnormal load will only be considered for an indivisible load, abnormal in dimension and/or mass, where there is no possibility of transporting the load in a legal manner.
- The risks to other users must be reduced to a level equivalent to what it would be without the presence of the abnormal vehicle on the road; and
- The conditions imposed must take the economic and/or social interest of the country and public at large into account.

14.2 Types of Abnormalities

The WEF is anticipated to carry loads that are considered to be indivisible, can be abnormal either dimensionally or abnormal in mass or abnormal both dimensionally and in mass.

The following is the Legally Permissible Maximum Dimensions / Mass:

Length- Truck & Semi-trailer (Tri-Axle) Overall length of combination (Including load projections) -18.50m. Superlink (6m + 12m trailers) Overall length of combination (No load projections) –22.00m.

Width -2.60 m.

Height- 4.30 m measured from the ground. Height of conventional trailer is 1.60m from ground to trailer deck, therefore permissible height of load is 2.70m.

Weight 13.50m Tri-Axle 28 Ton / 15.00m Tri-Axle 30 Ton. Superlink 34 Ton gross (6.00m –10 / 12 Ton & 12m –24 / 22 Ton)

The WEF components are classified as an Abnormal Load and will necessitate the application to the Department of Transport and Public Works for a permit authorising the conveyance of said load.

With the required permits in place, the following escort vehicles (whether it is the clients own escort vehicles or provincial traffic officer) will be necessary to escort the transportation of abnormal loads. The anticipated escort vehicles are presented in Table 14-1.

It must be noted Loads with a height of 4.70m measured from the ground require –1 x Own Escort vehicle. For loads of 5.50m + high Telkom & Eskom Clearances are required for the lifting of overhead lines. Upon final selection of WT models to be used, the exact amount of escort vehicles can be determined.

Table 14-1: Escort Vehicles

Component	Details	Escort Vehicles
Tower	Length: 150 m	3 Tower sections/WT 2 x Provincial Traffic Escorts (subject to width of load)
Tip to Height	Blade Length: up to 95 m Hub Height: up to 150 m Rotor: up to 190 m	3 Blades/WT Connected to 1 Hub/WT 2 x Provincial Traffic Escorts (subject to width of load)

The following actions should be implemented by the developer and Contractor:

- Apply for all relevant permits for abnormal loads and route clearances with the relevant authorities prior to construction;
- Appoint a qualified specialist to conduct a detailed site-specific Transport Risk Assessment during the detailed design phase and prior to construction;
- Determine the pre-construction condition of the road immediately prior to construction by carrying out a condition assessment or from recent pavement management system condition assessments if available from the Provincial Authorities;

- Public notices regarding any planned abnormal load transports must be placed at the construction site to inform affected parties;
- Abnormal loads must conform with legal maximum dimensions, and vehicles carrying abnormal loads must display sufficient signage;
- Any roads damaged during the transportation of components, or from other construction vehicles must be rehabilitated and returned to pre-construction conditions.

The following monitoring activities should be carried out by the ECO:

- Conduct site audits and report non-compliance with the above-mentioned conditions

15 STORMWATER MANAGEMENT PLAN

The objective of the storm water management plan (SWMP) is to prevent increased soil erosion, to contain any contaminated run-off and to avoid water logging and pollution. No stormwater must be discharged directly into natural watercourses and any stormwater run-off must be captured / managed on site to reduce the downstream effect of pollutants and the potential for flooding. This is particularly important due to the site, although not directly linked, being upstream of two estuarine systems. Grass swales are ideal in this scenario, as stormwater management features and are easily created due to the nature of the surrounding soils and geology.

The Erosion Management Plan (see below) must therefore be seen in conjunction with the SWMP. Actions are listed that will ensure that storm water is channelled in a controlled manner from roads and substations towards natural drainage lines, without impeding natural surface flows.

- Develop and implement a site-specific storm water management plan during the detailed design phase of the projects and prior to construction;
- In the detailed design phase of the project minimise any water crossings and utilise existing roads wherever possible;
- Enforce 50 m construction buffers of all rivers, streams and waterbodies;
- Should new roads be required to cross any banks or channels these must be secured with erosion protection (i.e. gabions etc.);
- Monitor for erosion during the clearing of vegetation;
- Avoid hard-engineered surfaces (i.e. construct gravel roads and not asphalt roads wherever possible);
- Roads in steep areas must be equipped with side drainages and culverts that channel the run-off to natural drainage lines without gaining velocity and causing erosion;
- Construction camps and temporary ablution facilities must be located beyond the 1:100-year flood line;
- Stockpiles must be located on flat areas and protected from erosion;
- The substation site design must include side water outlets and an adequate slope to allow storm water run-off from the paved areas; and
- Prevent surface run-off from areas of potential contamination.

16 EROSION MANAGEMENT PLAN

16.1 Purpose

The purpose of the erosion management plan is to implement avoidance and mitigation measures to reduce the erosion potential and the likely impact of erosion associated with the construction and operational phases of the facility. As part of the management plan, measures to protect hydrological features from erosion damage are included.

16.2 Scope and Limitations

This plan is intended at introducing measures aimed at reducing the negative impacts of erosion on biodiversity as well as reducing the vulnerability of the site to erosion problems during the construction and operational phases of the development. The focus is on managing runoff and reducing the construction phase impact on ecologically sensitive areas. The plan does not cover engineering-side issues which are of relevance to soil management and erosion. Therefore, issues such as the potential presence of heaving clays, compressible soils, perched water tables, dispersive soils and corrosive groundwater at the site are beyond the general scope of this study and are not directly dealt with. These issues would need to be addressed and their relevance assessed during detailed geotechnical investigation of the site.

16.3 Background

16.3.1 Types of Erosion

Erosion comes in several forms, some of which are not immediately obvious. The major types of erosion are briefly described below:

Raindrop impact

This is the erosion that occurs due to the “bomb blast” effect of raindrop impact. Soil particles can be blasted more than a meter into the air. Apart from loosening soil particles, the effect can also break soil aggregates apart and form a clay seal on the surface which resists infiltration and results in increased levels of runoff. This effect is most important when large areas of exposed soils are present. If the site is cleared, then this effect will play an important role as it results in the soil surface becoming sealed which reduces infiltration and increases runoff, leading to erosion.

Sheet Erosion

This is the removal of a shallow and uniform layer of soil from the surface. It is caused initially by raindrop splash and then by runoff. Sheet erosion is often difficult to see as no perceptible channels are formed. Accumulated sediment at the bottom of the slope is often the only indicator. This is likely to be an important erosion type at the site given the gently sloping nature of the site and the susceptible soils.

Rill Erosion

This is the removal of soil from the surface whereby small channels or rills up to 300 mm are formed. It is caused by runoff concentrating into depressions, wheel tracks etc.

Gully Erosion

This is the removal of soil from the surface and sub-surface caused by concentrated runoff eroding channels greater than 300 mm deep. Gully erosion often begins as rill erosion.

Wind Erosion

Wind erosion results from soil particles being picked up, bounced or moved by the wind. Wind erosion is primarily a problem in arid areas and may affect sands soils as well as fine-textured soils. Vegetation cover is usually an effective barrier to wind erosion, but large soils losses or degradation can occur in disturbed areas or on croplands.

16.3.2 Promoting Factors

Rainfall characteristics

High-intensity, short-duration storm events have much greater erosion potential than low intensity, longer duration storm events with the same runoff volume. Intense storms produce larger raindrops, and are more likely to break up the soil and dislodge particles.

Soil erodibility

Soil erodibility is determined by the soils ability to resist detachment and transport due to rainfall, runoff and infiltration capacity. Well-structured soils with a high clay content are generally least erodible. Some clays are dispersible meaning that they break down when wet and become highly erodible. Silts and fine sands are highly erodible.

Length and Steepness of Slope

Steeper slopes cause runoff velocities to increase, resulting in increased erosion. As the slope length increases the opportunity for runoff to concentrate and achieve an erosive velocity increases.

Soil Surface Cover

Soil surface cover such as vegetation and mulch protect the soil surface from raindrop impact, reduce flow velocity, disperse flow, and promote infiltration and the deposition of sediment. This is a basic principle underlying many erosion control approaches which aim to modify the surface characteristics in order to reduce the flow velocity and reduce the potential for erosion. In this regard it is important to note that many of the practices which are used to enhance rehabilitation potential are also useful in reducing erosion potential.

16.3.3 Erosion and Sediment Control Principles

The goals of erosion and sediment control during and after construction at the site should be to:

- Protect the land surface from erosion;
- Intercept and safely direct run-on water from undisturbed upslope areas through the site without allowing it to cause erosion within the site or become contaminated with sediment.
- Progressively revegetate or stabilise disturbed areas.
- Prevent damage to hydrological features such as drainage lines or wetlands, either within or adjacent to the site.

These goals can be achieved by applying the following principles:

1. Integrate project design with site constraints.
2. Plan and integrate erosion and sediment control with construction activities.
3. Minimise the extent and duration of disturbance.
4. Control stormwater flows onto, through and from the site in stable drainage structures.
5. Use erosion controls to prevent on-site damage.
6. Use sediment controls to prevent off-site damage.
7. Control erosion and sediment at the source.
8. Stabilise disturbed areas promptly.
9. Inspect and maintain control measures.

16.3.4 On-Site Erosion Management

Exposed and unprotected soils are the main cause of erosion in most situations. Therefore, the erosion management plan and the revegetation and rehabilitation plan should be closely linked to one another and should not operate independently, but should rather be

seen as complementary activities within the broader environmental management of the site and should therefore be managed together.

General factors to consider regarding erosion risk at the site includes the following:

- Soil loss will be greater during wet periods than dry periods. Intense rainfall events outside of the wet season, such as occasional unseasonal showers can also however cause significant soil loss. Therefore, precautions to prevent erosion should be present throughout the year.
- Soil loss is related to the length of time that soils are exposed prior to rehabilitation or stabilization. Therefore, the gap between construction activities and rehabilitation should be minimized. Allied to this the fact that topsoil does not store well and should preferably be used within a month or at most within 3 months to aid in the revegetation and rehabilitation of disturbed areas.
- Phased construction and progressive rehabilitation are important elements of the erosion control strategy.
- The extent of disturbance will influence the risk and consequences of erosion. Therefore, large areas should not be cleared at a time, especially in areas such as slopes where the risk of erosion is higher.

16.4 Concentration of flows into downstream areas

Road crossings over drainage lines, streams and wetlands can impact downstream wetland ecosystems. Crossings that result in narrowing of the downstream system can result in concentration of flows and channelization downstream. This may result in a loss of wetland function, and result in the drying out and shrinkage of the wetland area. Erosion and increased vulnerability to invasion of drier banks by alien vegetation may occur.

- Culverts should be adequately spaced such that they do not result in shrinkage of downstream wetlands. Where roads cross minor drainage channels, a single culvert may be adequate, aligned with the downstream drainage line. Where more substantial wetland systems are intercepted by a road, sufficient culverts should be provided such that downstream shrinkage of wetland width does not occur. Moreover, culverts should be aligned, as far impossible, with existing, natural channels.
- All crossings of drainage systems should ensure that both surface and shallow subsurface flows can be accommodated where appropriate and that unnatural channelization does not occur downstream.

16.5 Runoff Concentration

The increase in hardened surfaces associated with roads, and other infrastructure will lead to a significant increase in volume and velocity of flow generated from these areas during large rainfall events.

Runoff from road surfaces is usually channelled off of the road surface towards the downslope side of the road. On steep slopes, the volumes and velocity of runoff generated may result in erosion of the surrounding areas. Therefore, specific measures to curb the speed of runoff water is usually required in such areas, such as rock beds or even gabions. In addition, these areas should be monitored for at least a year after construction to ensure that erosion is not being initiated in the receiving areas. Once erosion on steep slopes has been initiated, it can be very difficult to arrest.

16.5.1 Diversion of Flows

Diversion of flows from natural drainage channels may occur when roads interrupt natural drainage lines, and water is forced to run in channels along the manipulated road edge to formalized crossing points. Even slight diversion from the natural drainage line can result

in excessive downstream erosion, as the new channel cuts across the slope to reach the valley bottom. Should the access road to the site traverse any major drainage lines, the following principles should apply:

- Adequate culverts should be provided along the length of all roads to prevent diversion of flow from natural drainage lines.
- Culverts should be carefully located, such that outlet areas do in fact align with drainage lines.
- The downstream velocity of runoff should be managed, such that it does not result in downstream erosion – on steep slopes, where roads have been constructed on cut areas, allowance should be made for culverts to daylight sufficiently far down the slope that their velocities are managed and erosion does not occur.
- Where necessary, anti-erosion structures should be installed downstream of road drains – these may comprise appropriate planting, simple riprap or more formal gabion or other structures.
- Roads and their drainage system should be subject to regular monitoring and inspection, particularly during the wet season, so that areas where head cut erosion is observed can be addressed at an early stage.

16.6 Monitoring Requirements

16.6.1 Construction Phase

The following monitoring actions should be implemented during the construction phase of the development

Monitoring Action	Indicator	Timeframe
Identify all river and drainage line crossings affected by the development	Map of sites of potential concern	Preconstruction
Monitor cleared areas for erosion problems	Record of monitoring site, problems encountered and remedial actions implemented	Monthly during the rainy season and following significant rainfall events otherwise
Monitor vegetation clearing activities near sensitive areas such as wetlands or drainage lines	Activity log of monitoring actions and any mitigation and avoidance measures implemented	Monthly during the rainy season and following significant rainfall events otherwise
Monitor revegetated and stabilised areas	Record of monitoring site, problems encountered and remedial actions implemented	Monthly during the rainy season and following significant rainfall events otherwise

16.6.2 Operational Phase

The following monitoring actions should be implemented during the operational phase of the development:

Monitoring Action	Indicator	Timeframe
Monitor for the development of new erosion problems across the site, with a focus on areas where water has been diverted or collected from upslope onto downslope areas	Map of erosion problem areas	Quarterly
Document erosion control measures implemented	Records of control measures and their success rate.	Quarterly

Monitoring Action	Indicator	Timeframe
Document the extent of erosion at the site and the remedial actions implemented	Decline in erosion and vulnerable bare areas over time	Biannually

17 FIRE MANAGEMENT PLAN

The National Veld and Forest Fires Act (Act 101 of 1998) states that it is the landowner's responsibility to ensure that the appropriate equipment as well as trained personnel are available to combat fires.

Although fires are not a regular occurrence at the site, fires may occasionally occur under the right circumstances. Ignition risk sources in the area include the following:

- Lightning strikes;
- Rail systems;
- Personnel within the facility; and
- Infrastructure such as transmission lines.

17.1.1 Firebreaks

Extensive firebreaks are not recommended as a fire risk management strategy at the site. The site is very large compared to the extent of the infrastructure and the maintenance of firebreaks would impose a large management burden on the operation of the facility. In addition, the risk of fires is not distributed equally across the site and within many of the lowlands of the site, there is not sufficient biomass to carry fires and the risk of fires within these areas is very low. Rather targeted risk management should be implemented around vulnerable or sensitive elements of the facility such as substations or other high-risk components. Within such areas, the extent over which management action needs to be applied is relatively limited and it is recommended that firebreaks are created by mowing and that burning to create firebreaks is not used as this in itself poses a risk of runaway fires. Where such firebreaks need to be built such as around substations, a strip of vegetation 5 - 10 m wide can be cleared manually and maintained relatively free of vegetation through manual clearing on an annual basis. However, if alien species colonise these areas, more regular clearing should be implemented.

18 FUEL STORAGE MEASURES

18.1 Storage Tanks

The storage tanks will be within contained areas to prevent spills contaminating soil and water, and with a design to capture and contain a volume of spill of at least 110% of the volume of stored fuel. These containers can be built in concrete and painted with anti-corrosive paint. The floor of the container must be inclined to permit the collection of the spilled liquids.

The storage tanks must also have a cover protection on top, prepared for drainage and collection of runoff.

18.2 General Procedures

- Transport routes for the transport of fuel will be clearly indicated;
- Pollution control equipment (spill and leak cleaning kits) must be readily available;
- Ensure personnel training, including: measures to prevent fuel spills, to treat/clean fuel spills, how to react on spill of flammable liquids on clothing and in the inhalation of vapours, leaks simulations; fuel vapour recovery processes, etc. Keep records of all training;

- Maintain the premises and equipment in a clean and tidy state;
- Regularly clean outdoor areas with a broom;
- Wastewater from outside areas must be directed to the contaminated water drainage system, and not enter the storm water system;
- Used oils (waste oil) will be collected, re-used, stored and disposed of in line with disposal procedures for hazardous wastes; and
- Ensure the proper management of other hazardous wastes (contaminated soils, used spilling kits, waste lube, etc.).

Filling operations

- Isolate the area by cones and a rope;
- Prohibit refueling operations during tank filling operations;
- Avoiding having people who are not involved in the operation within a 10-metre radius;
- Prohibit smoking and the use of mobile telephones or any other ignition sources during tank filling operations or vehicle refueling, within a 3-metre radius;
- Use a tight-fill cap to completely seal off the connections between the tubing and the trucks and station's tanks;
- Engines must be turned off during refueling; and
- Prevent overflowing and spilling situations when the storage tanks are being filled (verify filling sensors and be aware of overflow alarms).

Preventing Accidents with fuel mixtures

Establish a procedure to deal with the potential occurrence of these situations, such as:

- The chemicals and reaction mechanisms associated with the substances mixed or blended must be well understood and documented;
- Chemical and process hazards must be understood and addressed and the facilities should ensure that process equipment, controls, and procedures are designed, installed and maintained to safely operate the process;
- All employees should understand the chemical and process hazards;
- Facilities should establish a system for Standard Operating Procedures and ensure that they are understood and followed;
- Display clear and informative messages for users of the station, as to how to deal with this situation; and
- Prepare a procedure to suitably dispose of wastes recovered from the batches of fuel mixture.

Spill Kits

- Emergency spill kits of absorbent material (e.g., sand) must be provided and stored next to the higher risk sites, and must be easily-accessible, ideally outside, in order to allow an immediate response when a spill occurs. This will be clearly labelled and ready for use.
- Drums for the storage of contaminated material must be provided.
- An accurate drawing of the local drainage system shall be posted next to the spill kit.

Closure Phase

- During the closure phase, there may be loss of product into the soil, as a result of a deliberate or accidental release during closure and removal of tanks and tubing. In addition, this risk may arise outside of the facility site, if the tanks and/or tubing are not properly disposed of.

- In the closure phase, it is important to remove all tanks and pipes. A risk may arise if the tanks are left on site with residual products. As the integrity of the equipment will no longer be ensured or monitored.
- During closure, it must be ensured that facilities do not present a risk to the environment, health or safety. Measures must be taken to ensure that the closure does not result in an unacceptable risk, including:
 - Any and all waste products will be removed from the tanks. Care will be taken to ensure that no product is lost into the soil. Tank closure must be carried out safely, with the removal of explosive vapours, for example by filling the tanks with water or inert gases. All tanks will be safe prior to their removal from the ground. Similar methods will be employed prior to the removal of the pipes.
 - Water used in this process will be contaminated with residual product, and thus a water contamination risk may arise if the contaminated water is not disposed of in a way which is appropriate for hydrocarbon contamination. This would normally imply the removal to a suitable waste handling facility.
 - According to best environmental practices, the tanks, tubing and distributors will be disposed of. However, if the tanks remain *in situ*, it will be ensured that the procedure is safe. After making the tanks inert and safe, they will be filled in with sand, concrete, inert mud or hydrophobic foam.
 - The tanks and associated tubing which are no longer considered appropriate or safe for fuel storage will not be used for storage of other hydrocarbons, without first ensuring their integrity.
 - The oil/water separators will be removed for disposal, off the facility site. Otherwise they will be filled in a similar way to the tanks. Regardless of the fate of the oil/water separator, all liquid and mud waste will be removed (off the facility site) and all the inlets and outlets will be sealed.
 - Whatever drainage system left behind will be modified to ensure that it does not serve as a path for pollutants to reach groundwater or other waters.
 - If the deactivation is temporary, product can be left in the tanks. In this case, all monitoring procedures will be carried out as if the facility were in operation. If for any reason the monitoring cannot carry on, the tanks will be emptied and made inert.
 - Personnel involved in the closure of a filling and fuel station will be aware and respect obligations with regards to waste disposal, in line with the best practices described above.

Environmental Aspect	Action or Measure
Prevent accidental spills from entering the stormwater drainage system	Provide cleaning equipment conceived specifically to deal with minor spills as may occur at the station.
	Place a clearly-identified spill kit in a visible location for each fueling line.
	Develop a step-by-step guide to use of the spill kit.
	Develop an evacuation plan and/or response procedures for emergencies involving large fuel spills.
	Train the whole team in the emergency response procedures. Make sure that all staff knows where the emergency equipment is to be found and is acquainted with its maintenance.
	Label all of the stormwater drains on site in the proximity of the facilities as "Clean Water Only".
	Inspect the fuel distribution area in order to confirm that rainwater drained or emptied from the roof doesn't enter the areas marked out.

Environmental Aspect	Action or Measure
	Check whether the embankment around the fuel distribution area is in good condition and has the capacity to contain a fuel leak in the event of an emergency.
Minimise the risks of environmental contamination and from issues of workers' health and safety	Provide training to the staff regarding the disposal of material contaminated with fuel, such as absorbent material from the spill kit, soaked in fuel.
	Ensure that the product safety cards for all fuels and oils are up-to-date and accessible at all times.
Minimise the risks of fuel leaks as may result in pollution of the sub-soil and groundwater	Check if there is fuel, from a possible leak, in the spill containment sumps installed at the tank's discharge nozzle.
	Check if there is fuel, from a possible leak, in the all tanks containment sumps, installed on the manhole to the storage tanks. In the event of suspected leakage, report it immediately.
	Check if there is fuel or lube, from a possible leak in the containment sumps installed under the tanks.
Minimise the risks of fuel leaks as this may result in pollution of the sub-soil and groundwater	Check if there is fuel, from a possible leak, in the chambers of the containment sumps installed under the pumps.
Minimise the risks of harmful emissions to the atmosphere and the loss of fuel	Check that lids, flanges and connections are closed.
	Confirm that the ventilation conduits are not blocked.
	Supervise the fuel deliveries.
Minimise the risks of water pollution	Carry out an Oil-Water Separator inspection to ensure effective treatment.
Integrity control	Adequate maintenance and calibration of the monitoring equipment.

19 AVIFAUNA MANAGEMENT PLAN

The avifauna monitoring and management plan must be implemented during the post construction and operation of the facility. This plan must be updated prior to the commencement of construction and be further informed by the pre-construction walk through and additional pre operations monitoring effort to be undertaken by an avifaunal specialist. Construction phase monitoring must inform operational requirement and the management plan must be updated to reflect this.

Monitoring requirements	Responsible Person	Applicable Development Phase
<p>The monitoring should include the following (as per BARESG guidelines):</p> <ul style="list-style-type: none"> • Post-construction monitoring should be started as the facility becomes operational, bearing in mind that the effects of the wind facility may change over time; • Post-construction monitoring can be divided into two categories: (a) quantifying bird numbers and movements (replicating baseline data collection), and (b) estimating bird mortalities; • Carcass monitoring should be undertaken by trained observers, willing to cover 4-5 turbines per day in all weather and over-seen by an ornithologist competent to determine species identification and a manager to collate and analyze each year's data; • Estimating bird fatality rates includes: (a) estimation of searcher efficiency and scavenger removal rates; (b) carcass searches; and (c) data analysis incorporating systematically collected data from (a) and (b); • A minimum of 30-40% of the wind farm footprint should be methodically searched for fatalities throughout the year, with a search interval informed by scavenger removal trials and objective monitoring. Any evidence of mortalities or injuries within the remaining area should be recorded and included in reports as incidental finds; • The search area should be defined and consistently applied throughout monitoring; • Observed mortality rates must be adjusted to account for searcher efficiency (which could change seasonally depending on vegetative condition of the site), scavenger removal and the proportion of the facility covered by the monitoring effort. Some of these factors may change seasonally due to the breeding season of scavengers and whether visibility of the survey area changes through the year; • The duration and scope of post-construction monitoring should be informed by the outcomes of the previous year's monitoring, and reviewed annually; 	<p>ECO and Avifaunal specialist</p>	<p>Construction and Operation</p>

Monitoring requirements	Responsible Person	Applicable Development Phase
<ul style="list-style-type: none"> • Post-construction monitoring of bird abundance and movements and fatality surveys should be undertaken throughout the lifespan of the development according to applicable guidelines; and • If significant problems are found or suspected, the post-construction monitoring should continue in conjunction with adaptive management and mitigations, taking into account the risks related to the particular site and species involved. 		

An assessment guided by these principles is required not only to enact and experiment with different mitigation measures where significant mortality occurs, but to allow data to be collected that will benefit the welfare of avifauna at other renewable energy farms. This is also important for a study of cumulative avian impacts for the increasing number of wind farms planned across South Africa’s landscape.

Based on the results of the additional monitoring conducted at the wind farm, the following additional mitigation measures are recommended:

- A circular turbine exclusion buffer zone of at least 1.6km, measured from the northern shore of the Grassmere Large Dam (-34.080135°, 24.764032°), should be implemented around the Grasmere Blue Crane roost site.
- Additional monitoring of the Grasmere Large Dam Blue Crane roost site needs to be implemented over four seasons, before the wind farm becomes operational, to gain additional information on flight activity to and from the roost. This is necessary to establish if a curtailment regime is required for periods of high risk i.e. that period when the birds arrive to roost and leave again to forage elsewhere.

20 BAT MANAGEMENT PLAN

20.1 Updated Bat Curtailment Plan, 2020

The original curtailment plan designed based on the 2012/2013 pre-construction bat monitoring results has been updated based on a greater understanding of bat-wind farm impacts in South Africa (Table 20.1). The plan supersedes the original plan created by Natural Scientific Services (NSS). No turbines can be located in High or Medium to High bat sensitive areas, which has been adhered to. For all remaining turbines, initial curtailment as per Table 20.1. Operational monitoring must be conducted for at least the first two years of operation and curtailment assessed on an on-going basis (e.g. on a six-monthly basis) against threshold levels and updated as needed.

Finally, a possible additional mitigation measure that can be considered is the use of acoustic deterrents. These devices may reduce bat fatalities by discouraging bats from approaching sound sources, and hence the turbines they are attached to (Arnett et al. 2013). Preliminary test of this technology in South Africa has showed positive results (MacEwan pers. comm.) but additional testing needs to occur before this can be relied on as a mitigation measure to reduce bat fatalities. Therefore, deterrents are not required as a primary mitigation option but they can be investigated as an alternative to curtailment. Deterrents and curtailment could be used and tested together to determine which is the most effective.

Table 20-1: Updated Bat Curtailment Plan for Banna Ba Pifhu Wind Farm

1 October - 30 November			
Curtailment Start Time	Curtailment Finish Time	Cut-in Wind Speed	Min. Temp. Celsius
18h30 in the evening	21h00 the same evening	5 m/s	13.5°C
1 December - 30 January			
Curtailment Start Time	Curtailment Finish Time	Cut-in Wind Speed	Min. Temp. Celsius
19h30 in the evening	22h00 the same evening	4.5 m/s	13.5°C
02h30 in the morning	04h30 the same morning	4.5 m/s	13.5°C
1 - 28 February			
Curtailment Start Time	Curtailment Finish Time	Cut-in Wind Speed	Min. Temp. Celsius
19h00 in the evening	21h30 the same evening	5 m/s	13.5°C
1 March - 15 April			
Curtailment Start Time	Curtailment Finish Time	Cut-in Wind Speed	Min. Temp. Celsius
18h00 in the evening	21h00 the same evening	5 m/s	13.5°C
15 June - 15 July (for fruit bats)			
Curtailment Start Time	Curtailment Finish Time	Cut-in Wind Speed	Min. Temp. Celsius
17h30 in the evening	20h30 the same evening	5 m/s	13.5°C

21 BATTERY SAFETY MANAGEMENT PLAN

The risk assessment mitigation measures provided below has been incorporated into a Battery Safety Management Plan. This risk assessment has been prepared to ensure that safety risks related to the BESS are understood, accounted for and mitigated as far as practicable.

The following international guidance has been considered during the preparation of this Risk Assessment:

- Allianz Risk Consulting (ARC), Tech Talk Volume 26 (2019). Battery Energy Storage Systems (BESS) using Li-ion batteries⁵;
- National Fire Protection Association (NFPA) 855, Standard for the Installation of Stationary Energy Storage Systems, (2020 edition currently under development and not yet available)⁶;
- UL 9540, Standard for Energy Storage Systems and Equipment⁷;
- Consolidated Edison and New York State Energy Research and Development Authority - Considerations for ESS Fire Safety (February 2017)⁸;
- The Energy Operators Forum "Good Practice Guide" (December 2014)⁹;
- Institute of Engineering and Technology - Code of Practice for Electrical Energy Storage Systems (August 2017)¹⁰; and
- The Energy Institute: Battery Storage Guidance Note 1 - Battery Storage Planning (August 2019)¹¹.

The above standards and legislations are not specifically applicable to the proposed BESS for the Banna Development, but notwithstanding, has provided valuable guidance for the preparation of this risk assessment.

The Risk Assessment Matrix below assesses several potential situations which could result in a possible detrimental environmental hazard. These are:

1. The actual **risks** associated with the delivery, connection, operation, maintenance, disconnection and disposal of the batteries.
2. The **likelihood** of these actual risks occurring.
3. The **significance** of the impacts should these risks take place.
4. Appropriate and practical **mitigation** measures and/or management actions to reduce likelihood of the risk occurring and/or the impact.

⁵ <https://www.aqcs.allianz.com/news-and-insights/risk-advisory/tech-talk-volume-26-bess-english.html>

⁶ <https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=855>

⁷ https://standardscatalog.ul.com/standards/en/standard_9540_1

⁸ <https://www.nyserda.ny.gov/-/media/Files/Publications/Research/Energy-Storage/20170118-ConEd-NYSERDA-Battery-Testing-Report.pdf>

⁹ <https://www.eatechnology.com/engineering-projects/electrical-energy-storage/>

¹⁰ <https://shop.theiet.org/code-of-practice-for-electrical-energy-storage-systems>

¹¹ <https://eur03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fpublishing.energyinst.org%2Ftopics%2Fpower-generation%2Fbattery-storage%2Fbattery-storage-guidance-note-1-battery-storage-planning&data=01%7C01%7C%7Cfbc9f4783304951211308d72af01893%7C6b5953be6b1d4980b26b56ed8b0bf3dc%7C0&sd=ata=%2FgEjqDC2nzzxcKTFaKkUEiITiiOzTamrAsxsMz9Y4M%3D&reserved=0>

Table 21-1: High-Level BESS Risk Assessment

Possible Risk	Resultant Impact Significance	Likelihood of occurrence	Management / Mitigation
Spillages	<ul style="list-style-type: none"> - Electrocutation - Potential spillage of electrolytes or refrigerant - Vented gasses - Staff and personal injury - Contaminated Runoff 	Low	<p>Over and above the Management actions already included in the EMPr:</p> <ul style="list-style-type: none"> - Training of all staff and employees on how to handle spillages, fires and electrocutions; - Keeping records for well managed operations and maintenance; - Bunding of containers; - Installation of leak detection monitoring systems, where possible; - Implementation of spill handling and management in line with the EMPr and generic EMPr; - Provision of spill kits on site for clean-up of spills and leaks; - Immediate clean-up of spills and disposal of contaminated absorbents and materials or soil at a licensed hazardous waste disposal facility; - Demarcate all no-go and sensitive areas; - Avoid the placement of batteries near watercourses and sensitive features; - All storm water runoff must be controlled to ensure that on-site activities do not culminate in possible off-site pollution; - Material Safety Data Sheet (MSDS) Records to be kept, as well as incidents reporting register; - Recording and reporting of all significant fuel, oil, hydraulic fluid or electrolyte spills or leaks so that appropriate clean-up measures can be implemented. A copy of these records must be made available to respective provincial authorities (on request throughout the project lifecycle). - Source batteries from reputable suppliers; - Battery inspection prior to installation; - Maintenance of the BESS; - Appropriate battery design and venting control; - Source from reputable manufacturers; - Lithium-ion batteries must have battery management systems (containment, automatic alarms and shut-off systems) to monitor and protect cells from overcharging or
Thermal Runaway	<ul style="list-style-type: none"> - Soil and microbe contamination - Groundwater seepage - Downstream effects on the current terrestrial ecosystem. 		
Poor Maintenance			

Possible Risk	Resultant Impact Significance	Likelihood of occurrence	Management / Mitigation
			<p>damaging conditions, such as temperature extremes;</p> <ul style="list-style-type: none"> - Safe and appropriate storage in line with the above and the EMPr; - Frequent and appropriate disposal of both general and hazardous waste to prevent pollution of soil and groundwater; - On-site battery maintenance should only be undertaken on impermeable surfaces with secondary containment measures. Any resulting hazardous substances must be disposed of appropriately; - Development and implementation of an Emergency Response Plan in the event of a spill or leakage; - Provision of suitable emergency and safety signage on site, and demarcation of any areas which may pose a safety risk (including hazardous substances). Emergency numbers for the local police, fire department, Eskom and Kouga Municipality must be placed in a prominent clearly visible area on the site; - Safe handling which must include battery inspection prior to installation; - Development and implementation of Thermal Management Plan prior to installation/construction; and - The Department of Forestry, Fisheries and the Environment and provincial authorities: Pollution and Chemicals Management are to be duly notified immediately of any incident in terms of section 30 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA").
<p>Fire Risk</p>	<ul style="list-style-type: none"> - On-Site Fire - Fire Spread - Staff and personal injury 	<p>Medium</p>	<ul style="list-style-type: none"> - Procuring components and using construction techniques which comply with all relevant legislation; - Including automatic fire detection systems in the development design; - Including automatic fire suppression systems in the development design; - Including redundancy in the design of the BESS to provide multiple layers of protection; - Designing the BESS and substation yard to contain and restrict the spread of fire through the use of fire-resistant materials, and adequate

Possible Risk	Resultant Impact Significance	Likelihood of occurrence	Management / Mitigation
			separation between elements of the BESS; - Ensuring that Staff appointed to work within the BESS and substation area, as well as First Responders receive adequate emergency response training to a fire; and - Work with first responders and relevant personally to develop a Tactical Fire Response Plan in case of an incident.
Inappropriate Storage	<ul style="list-style-type: none"> - On site fires. - Electrical failure - Electrocution - Potential spillage of electrolytes or refrigerant - Vented gasses - Staff and personal injury - Contaminated Runoff - Soil and microbe contamination - Groundwater seepage - Downstream effects on the current terrestrial ecosystem. 	Low	Over and above the Management actions already included in the EMPr: <ul style="list-style-type: none"> - Training of all staff and employees on how to handle spillages, fires and electrocutions; - Keeping records for well managed operations and maintenance; - Bunding of containers; - Implementation of spill handling and management in line with the EMPr; - Demarcate all no-go and sensitive areas; - Avoid the placement of batteries near watercourses and sensitive features; - Material Safety Data Sheet (MSDS) Records to be kept, as well as incidents reporting register; - Source batteries from reputable suppliers; and - Battery inspection prior to installation.
Limited Employee Training and Experience	<ul style="list-style-type: none"> - Time lag for first respondent - Inability to contain spillage - Fire - Electrocution - Damage to exiting/surrounding infrastructure 	Low	<ul style="list-style-type: none"> - During the construction phase of Banna Development, first responders from the nearest major town (such as fire fighters and paramedics) must be given appropriate training on dealing with any emergency situation that may occur as a result of the BESS. Such training must be provided by the technology suppliers or an appointed service provider.
Inappropriate disposal at the end of life	<ul style="list-style-type: none"> - Potential scenario of fluids from the batteries leaking into environment. The release of such chemicals through leaching, spills or air emissions can harm communities, ecosystems and food production. - The potentially toxic materials contained in 	Medium	<ul style="list-style-type: none"> - The recycling of batteries and their potential use as e-waste. - Disposal at a licensed hazardous waste site. - Prior to construction of the Banna Development, the Applicant is to develop a dedicated Battery Recycling Programme to be adopted on-site. - Records of disposal at a licensed facility must be kept.

Possible Risk	Resultant Impact Significance	Likelihood of occurrence	Management / Mitigation
	batteries means that they are classified as hazardous materials in terms of NEM:WA. There are only a few licensed hazardous waste sites in South Africa and recycling of batteries and e-waste has been identified as a sure way of improving the lifespans of such sites.		

21.1 Fire Risk Management

To minimise the fire risk within the BESS and substation site, the following proposed design and implementation recommendations should be considered prior to installation and / or construction of the BESS. These recommendations should form part of a Tactical Fire Response Plan where applicable.

Table 21-2: Proposed Design and Implementation Recommendations for the BESS

Initial Design Recommendations
<p>1. Contact with the Fire department</p> <ul style="list-style-type: none"> • Invite the fire department to the project site to discuss the BESS hazards. An adequate emergency response is the key to avoiding an uncontrolled fire. Ensuring the fire department is aware of and understands the type of battery which will be used and its hazards. • Key questions to discuss with the fire department include: <ul style="list-style-type: none"> ▪ What is the main difference between extinguishing and cooling? ▪ How to handle a damaged battery? ▪ How to manage the flammable and toxic gases? • Plan training exercises with the fire department when the system is commissioned. • Standard Operating Procedures (SOP) & Standard Operating Guidelines (SOG) are of major importance and should be updated and tested on a regular basis.
<p>2. Construction and Location of the BESS</p> <ul style="list-style-type: none"> • Install the BESS outdoors, a minimum of 20 m from important buildings or equipment. Maintain a minimum of 3 m separation from property lines, public ways and other exposures. • Within the module, maintain a minimum of 1 m separation distance between enclosures for all units up to 50 kWh when not listed, or up to 250 kWh when listed. • Install a thermal barrier where the minimum space separation cannot be provided. • If the BESS must be located indoors, install in a 2-hour fire rated cut-off room, which is accessible directly outdoors for manual firefighting. • Restrict the access to competent employees or sub-contractors. • Ensure enclosures are non-combustible.
<p>3. Material, Equipment and Design of the BESS</p> <ul style="list-style-type: none"> • BWF should consider a 'Testing Method' for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems. A possible international standard to

Initial Design Recommendations
<p>consider would be UL 9540A¹². This standard evaluates thermal runaway, gas composition, flaming, fire spread, re-ignition and the effectiveness of fire protection systems. Data generated can be used to determine the fire and explosion protection requirements for a BESS.</p> <ul style="list-style-type: none"> Place a capacitor, transformer, and switch gear in separate rooms according to best engineering practices.
<p>4. Ventilation and Temperature Control</p> <ul style="list-style-type: none"> Install adequate ventilation or an air conditioning system to control the temperature. Maintaining temperature control is vital to the battery's longevity and proper operation as they degrade exponentially at elevated temperatures. Ensure ventilation is provided in accordance with the manufacturer's recommendations. Install and maintain the ventilation during all stages of a fire. Ventilation is important since batteries will continue to generate flammable gas as long as they are hot. Also, carbon monoxide will be generated until the batteries are completely cooled through to their core.
<p>5. Gas Detection and Smoke Detection</p> <ul style="list-style-type: none"> Install a very early warning fire detection system, such as aspirating smoke detection. Install carbon monoxide (CO) detection within the container or BESS room.
<p>6. Fire Protection and Water Supply</p> <ul style="list-style-type: none"> Investigate the possibility of installing a sprinkler protection system within the BESS containers. The sprinkler system should be designed to provide (at a minimum) 12.2 l/min/m² over 232 m². It is important to note that other extinguishing agents, such as aerosols or gaseous extinguishing systems, will extinguish the fire, but they do not provide cooling like water. Insufficient cooling allows a hot and deep-seated core to remain. The heat will rapidly spread back through the battery and reignite remaining active sections. Implement a procedure for battery submersion in the Tactical Fire Reponses Plan, as well as the WEF Emergency Response Plan to be performed by the fire department. Submerging batteries in water (preferably outdoors) after they burn has proven to be effective at cooling the batteries and neutralizing the thermal threat. They will continue to release gases, mostly carbon monoxide, but also flammable gas such as hydrogen. Therefore, it is not recommended to submerge several batteries in a confined space without adequate ventilation. Ensure that sufficient water is available for manual firefighting. The ability of the fire department to control a fire involving a BESS depends on the presence of an adequate water supply and their knowledge of the hazards. The following should be considered: <ul style="list-style-type: none"> An external fire hydrant should be located within 100 m of the BESS room or containers. The water supply should be able to provide a minimum of 1,900 l/min (500 gpm) for at least 2 hours.
<p>7. Maintenance</p>

¹² <https://www.ul.com/news/ul-9540a-battery-energy-storage-system-ess-test-method>

Initial Design Recommendations

- Follow original equipment manufacturer recommendations for the inspection, testing and maintenance of the BESS. In addition, ensure that the following (at a minimum) is completed:
 - Measure the internal resistance of the battery cells. Replace the cells when a dramatic drop is detected. This will provide a good gauge of predictable battery life.
 - Perform infrared scanning at least once per year.
 - Check for fluid leakage.
 - Implement electric terminal torquing procedures to maintain connection integrity.

22 CONCLUSION

In terms of the National Environmental Management Act 107 of 1998, as amended, everyone is required to take reasonable measures to ensure that they do not pollute the environment. Reasonable measures include informing and educating employees about the environmental risks of their work and training them to operate in an environmentally acceptable manner.

Although all foreseeable actions and potential mitigation measures and management actions are contained in this document, the EMPr should be seen as a day-to-day management document. The EMPr thus sets out the environmental and social standards, which would be required to minimise the negative impacts and maximise the positive benefits of the Banna ba Pifhu Development. The EMPr could thus change daily, and if managed correctly lead to successful construction and operational phases of the development.

APPENDIX A: SPECIFICATION GUIDELINE FOR REHABILITATION

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1 OBJECTIVES

- To provide guidelines for vegetation clearing and rehabilitation during all phases of wind farm construction.
- To re-vegetate areas disturbed as a direct result of the Banna project in a pragmatic manner to enhance sustainable re-growth of indigenous vegetation.

2 MATERIALS

Plant species used should be those that occur naturally in the nearest site with a similar soil type and aspect. A suitably qualified botanist should be consulted with in this regard.

2.1 Shrubs and trees

1. Species of special concern shall be obtained either from the site prior to clearing or from an area in close proximity to and of the same vegetation type as the site, as indicated by the Botanist.
2. Seedlings and young plants of the abovementioned plants should be collected and placed in bags to be stored in the on-site nursery before construction commences to be used during re-vegetation in consultation with an appointed horticulturalist, the ECO and a botanist.
3. Nursery plants shall be grown from locally obtained seed unless approved by the Botanist.
4. Plants shall be obtained from their natural habitat.
5. The Horticulturalist shall ensure that each plant is handled and packed in the approved manner for that species or variety, and that all necessary precautions are taken to ensure that the plants arrive on Site in a proper condition for successful growth.
6. Trucks used for transporting plants shall be equipped with covers to protect the plants from windburn. Containers shall be in a good condition. Plants shall be protected from wind during the transportation thereof.
7. No plants or plants with exposed roots shall be subjected to prolonged exposure to drying winds and sun, or subjected to water logging or force-feeding at any time after purchase.
8. The Horticulturalist shall ensure that the plants are in a good condition and free from plant diseases and pests. The Horticulturalist shall immediately remove plants containing any diseases and/ or pests from the Site.
9. All plants supplied by the Horticulturalist shall be healthy, well formed, and well rooted. Roots shall not show any evidence of having been restricted or deformed at any time. The potting materials used shall be weed free.
10. There shall be sufficient topsoil around each plant to prevent desiccation of the root system. Where plants are stored on site prior to planting they shall be maintained to ensure that the root systems remain moist.

2.2 Grass

Sods and runners

1. Grass sods shall be clean of invasive plants or weeds.
2. Sods shall be obtained from a source approved by the Botanist. Sods rejected by the Botanist shall be removed from the site immediately.

3. Grass shall have been grown specifically for sod purposes, mown regularly and cared for to provide an approved uniformity to the satisfaction of the Botanist. It shall be harvested by special machines manufactured for this purpose to ensure an even depth of cut with sufficient root material and soil.
4. Sods shall be delivered in healthy conditions and be free from weeds and disease.
5. Sods shall be obtained from an approved nursery. Nursery sods shall have been maintained regularly to the required quality. Nursery grass sods shall have at least a 30 mm layer of topsoil.
6. Sods shall be obtained directly from the surrounding area and shall contain at least a 50 mm topsoil layer and the roots shall be minimally disturbed. They shall be obtained from the near vicinity of the site from an area selected by the Botanist. The soil shall be compatible with that removed from the area to be re-vegetated and shall not have been compacted by heavy machinery.
7. Runners shall be of an approved quality and free from disease or weeds.

Indigenous vegetation sods

1. Sods of indigenous vegetation (e.g., rushes, sedges and grass) shall be obtained from areas approved by the Botanist, within or near the site.
2. The Horticulturalist shall identify suitable sods, as directed by the Botanist.
3. Sods rejected by the Botanist shall be removed from the site immediately.
4. Indigenous vegetation sods shall be clean of weeds or invasive plants in specified areas before planting.

Seed

1. The seed mix quantities and purity levels shall be specified by the horticulturalist and approved by the Botanist.
2. Seed shall be utilised for the cultivation of material for re-vegetation.
3. Seed shall be utilised for direct sowing.
4. Seed must be pre-dried then stored under cool, dry, insect free conditions until required either for cultivation in the nursery or in the rehabilitation process. Only viable, ripe seed shall be used.
5. A record of stock relevant to the project that is held in the nursery shall be provided to the Botanist on a monthly basis.

Harvested seed

1. Indigenous seed shall be harvested in areas which are free of alien/ invasive vegetation, either at the site prior to clearance or from suitable neighbouring sites, as indicated by the Botanist.
2. Following harvesting, the seed shall be dried under cool airy conditions. The seed shall be insect free and shall be stored in containers under cool conditions that are free of rodents or insects. No wet, mouldy or otherwise damaged seed is acceptable.
3. Seed harvested by hand from selected species, should be treated and stored separately.
4. Seed gathered by vacuum harvester, or other approved mass collection method, from suitable shrubs or from the plant litter surrounding the shrubs shall be kept apart from individually harvested seed.

5. Harvested seed obtained by means of vacuum harvesting, shall be free of excessive quantities of organic and/ or substrate material.

2.3 Mulch

Mulch shall be utilised as follows depending on local and seasonal availability of material.

Brush-cut mulch

1. The stockpiled vegetation from the clearing operations shall be reduced to mulch.
2. Indigenous plant material shall be kept separate from alien material. The vegetative material, shall be reduced by either mechanically means (chipper) or by hand-axing to sticks no longer than 100 mm. The chipped material shall be mixed with the topsoil at a ratio not exceeding 1:1.
3. Mulch shall be harvested from areas that are to be denuded of vegetation during construction activities, provided that they are free of seed-bearing alien invasive plants.
4. No harvesting of vegetation outside the area to be disturbed by construction activities shall occur.
5. Mulch shall be harvested from areas in close proximity to the site, as approved by the Botanist. Any collection of indigenous material from nearby area that will not be subject to complete denudation shall only be done in mature vegetation in areas identified by the Botanist.
6. Harvesting shall be performed in a chequer board fashion, cutting the indigenous vegetation down to 100 mm above the ground, in 2 m wide strips, leaving 2 m gaps of undisturbed vegetation in between.
7. The Horticulturalist shall take every effort to ensure the retention of as much seed as possible in mulches made from indigenous vegetation. Mulches shall be collected in such a manner as to restrict the loss of seed.
8. Brush-cut mulch shall be stored for as short a period as possible, and seed released from stockpiles shall be collected for use in the rehabilitation process.

Wood chips

1. Wood chips (including bark) shall be utilised as mulch during re-vegetation and rehabilitation of the site.
2. The chips shall be no longer than 50 mm in length or breadth and shall be free of seed. The Botanist shall approve the source of chips.
3. The wood shall be chipped during winter
4. Chips shall not be made from wood treated with preservatives.
5. Half-composted chips shall be utilised in preference to non-composted chips
6. Indigenous seed shall always be added to wood chip mulches.

Compost

1. Compost shall be utilised as mulch during re-vegetation and rehabilitation of the site.
2. The compost shall be well decayed, friable and free from weed seeds, dust or any other undesirable materials.
3. Seed free, half-composted material, such as mulled-bark, shall be used as an additive to extend indigenous mulch. No more than 50% compost shall be used under these circumstances.

2.4 Slope stabilizers and anti-erosion measures

Stabilisation cylinders

1. Stabilisation cylinders shall consist of cylindrical capsules approximately 125 mm in diameter by 1.5 m in length.
2. Stabilisation cylinders shall be manufactured from biodegradable material such as hessian or of extruded biodegradable plastic netting. The plastic material shall be sufficiently robust to last for a period of not less than 3 years and not more than 10 years before disintegrating under normal service conditions.
3. Stabilisation cylinders shall be filled with shredded or partly compressed pine chips or similar material. Only material passing through a 31 mm sieve with round holes and retained on a 5 mm sieve with square holes shall be used. Splinters and flat chips are not acceptable.
4. A seed approved by the Botanist shall be included in the cylinders.
5. Cylinders shall be anchored in position using biodegradable material.
6. Cylinders shall not be used to stabilise any rock faces.

Biodegradable netting / matting

1. Biodegradable netting/matting shall be made from jute, sisal, coir or similar material.
2. A 1 m² sample of the geofabric, geogrid or nylon (biodegradable) fabric shall be submitted to the Botanist for approval prior to procurement.
3. The netting/matting shall be sufficiently robust to last for a period of not less than 5 years under normal service conditions.
4. Holes in the netting/matting shall have a minimum size of 400 mm² and a maximum size of 900 mm² and be made from at least 4-6 mm thick cord.

Logs

1. For slopes of less than 1:3, the site shall be stabilised by means of "geojute" (if available) and continuous rows of logs, secured to the slope with timber pegs, parallel to the contour. Logs shall be untreated pine (or gum) poles of not less than 150 mm with a taper of not more than 75 mm over its length. Timber pegs to be treated and not less than 400 mm in length. Timber pegs must be longer if thicker logs than the minimum are used.
2. Logs shall be secured to the slope in such a manner that they will not become dislodged during construction and/ or planting. Logs to be secured to the slope by means of a minimum of two pegs driven into the soil not less than 250 mm deep. For logs longer than 3 m, additional pegs shall be required. Log ends to be butt-jointed and plugged with wood chips or similar to prevent water from washing through at the joint. Logs shall be placed at 2 m intervals with a bottom row parallel to the edge of the road. Logging of the slope to start at the top of the slope to prevent the stretching of the "geojute".

2.5 Soil stabilizers

1. Soil stabilisers shall consist of an organic or inorganic material to bind soil particles together and shall be a proven product able to suppress dust and form an encrustation.
2. Soil stabilisers shall be of such a quality that grass and indigenous seeds may germinate and penetrate the crust. Samples of the proposed material shall be supplied to the Botanist before any of the material is delivered to the Site.

2.6 Topsoil and subsoil

1. All soil imported to act as bedding material shall be free of alien plant seeds, and their use shall be restricted to 500 mm below the soil surface.

2.7 Boulders and rocks

1. Boulders or rocks used in rehabilitation shall come from comparable geomorphological units to those that they are being utilised to rehabilitate.
2. Where possible, boulders and rocks utilised during rehabilitation, shall be collected from the Site and stockpiled prior to the commencement of construction activities on Site.

3 INFRASTRUCTURAL REQUIREMENTS

Vegetation clearing

1. A plant relocation and vegetation clearing plan should be designed if appropriate before construction commences
2. Areas to be cleared of vegetation should be clearly demarcated before clearing commences.
3. Areas should only be stripped of vegetation as and when required, especially grasses, to minimize erosion risk.
4. Once demarcated the area to be cleared of vegetation should be surveyed by the vegetation clearing team under the supervision of the botanist and horticulturalist to identify and mark species suitable for rescue.
5. Plants to be rescued should include both species of special concern requiring removal for relocation as well as species that would be suitable for use in rehabilitation.
6. Depending on growth form this material should be appropriately removed from its locality and stored in the nursery holding areas or immediately relocated where it may be required elsewhere immediately.
7. Small trees and shrubs (<1 m in height) can often be rescued and planted temporarily in potting bags for later use.
8. Arboreal species (orchids) should be collected attached to the substrate (i.e. branch) they are growing on and stored (hung) in a moist, lightly shaded nursery area for later relocation.
9. Wherever possibly any seed material should be collected immediately and stored for later use, particularly species that occur in low numbers.
10. Before any earthmoving activities are commenced any ripe grass seed should be collected (using a sickle or similar implement), dried and stored for use during regressing.
11. Comprehensive notes should be kept as to the identification, habitat, and any potential biophysical requirements of plants, and any species of special concern removed for relocation should have a GPS locality recorded.
12. Grass sods can also be collected for immediate use in any areas requiring revegetation.

Topsoil

1. Sufficient topsoil must be stored for later use during decommissioning, particularly from outcrop areas.
2. Topsoil shall be removed from all areas where physical disturbance of the surface will occur.

3. All available topsoil shall be removed after consultation with the Botanist and horticulturalist prior to commencement of any operations.
4. The removed topsoil shall be stored on high ground within the footprint outside the 1:50 flood level within demarcated areas.
5. Topsoil shall be kept separate from overburden and shall not be used for building or maintenance of roads.
6. The stockpiled topsoil shall be protected from being blown away or being eroded. The application of a suitable grass seed/runner mix will facilitate this and reduce the minimise weeds.

Road Construction

1. Should a portion of the access road be newly constructed the following must be adhered to:
 - Water courses and steep gradients shall be avoided as far as practical; and
 - Adequate drainage and erosion protection in the form of cut-off berms or trenches shall be provided where necessary.
2. No other routes shall be used by vehicles or personnel for the purpose of gaining access to the site.
3. Newly constructed roads shall be adequately maintained so as to minimise dust, erosion or undue surface damage.
4. The liberation of dust into the surrounding environment shall be effectively controlled by the use of inter alia, water spraying and /or other dust-allaying agents. The speed of haul trucks and other vehicles must be strictly controlled to avoid dangerous conditions, excessive dust, or excessive deterioration of the road being used.
5. The access road to the site must be strictly maintained during the operation process. Sections of the access road that erode during the construction phase shall be suitably rehabilitated upon completion of the project.

Operating Procedures in the Study Area

1. Grass and vegetation of the immediate environment, or adapted grass / vegetation will be re-established on completion of construction activities, where applicable.
2. No firewood to be collected on site and the lighting of fires must be prohibited.
3. Cognisance is to be taken of the potential for endangered species occurring in the area and appropriate measures must be implemented.

Excavations and Disturbed Areas

Whenever any excavation is undertaken, the following procedures shall be adhered to:

1. Topsoil shall be handled as described in this EMPr.
2. The construction site will not be left in any way to deteriorate into an unacceptable state.
3. Once overburden, rocks and coarse natural material have been placed in the waste pile, they will be profiled with acceptable contours (including erosion control measures), and the previous stored topsoil shall be returned to its original depth over the area.
4. The area shall be fertilised if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally occurring flora.

4 CONSTRUCTION

4.1 Preparation of ground surface

1. Prior to the application of topsoil, the ground surface shall be ripped or scarified with a mechanical ripper to a depth of approximately 150 mm.
2. Prior to the application of topsoil, the ground surface shall be ripped or scarified by hand tilling to a depth of approximately 150 mm. {this specification shall be used on small sites}
3. Compacted soil shall be ripped to a depth of greater than 250 mm. The ripped area shall be hand-trimmed.
4. The subsoil shall be thoroughly tilled to a depth of at least 100 mm by means of a plough, disc, harrow or any other approved method until the condition of the soil is acceptable, as approved by the Botanist.
5. Where tilling is difficult, the Horticulturalist shall use rotary tillage machinery until no clods or lumps larger than 40 mm in size remain, and the mixing of soil is acceptable to the Botanist.
6. In road cuttings, a weed-free gravel / sand / organic mix shall be utilised as a sub-surface layer.
7. Topsoil shall be applied.
8. Subsequent to the addition of the sub-soil, topsoil shall be spread evenly over the ripped or tilled surface to a depth of 75-150 mm on flat ground or to a minimum depth of 75 mm on slopes of 1:3 or steeper or as specified in this specification.
9. The final prepared surface shall not be smooth but furrowed to follow the natural contours of the land, with scattered rocks of varying sizes according to the natural condition of the area.
10. Where sodding is required slight scarification shall be carried out to contain the sods. The soil shall be uniformly moist to a depth of 150 mm prior to planting or seeding. If this condition is not met by rainfall, the Horticulturalist, as directed by the Botanist, shall carry out irrigation.

4.2 Soil stabilization

Various options can be utilized for soil stabilization, based on material availability.

Straw stabilisation

1. Straw shall be utilised as a binding material in areas with deep sand, where possible.
2. Baled straw shall be placed on the cleared area, opened and spread evenly by hand or machine at a coverage rate of 1 bale per 10 m² over the area to be stabilised. It shall then immediately be rotovated into the upper 100 mm layer of soil. This operation shall not be attempted when the wind strength is such as to remove the straw before it can be rotovated into the sand.

Mulch stabilisation

1. Mulch shall be applied by hand to achieve a layer of uniform thickness. The mulch shall then be lightly worked into the topsoil layer so that it mixes with the soil and serves to bind it.
2. The mulch shall be spread at a coverage rate of 100 kg per 250 m² or 4 t/ha.

3. Where brush-cut material is to be utilised as mulch, this material shall be evenly spread across the area to a uniform depth of 25 mm. The mulch shall then immediately be rotovated into the upper 100 mm layer of soil. This operation shall not be attempted when the wind strength is such as to remove the mulch before it can be rotovated in.
4. In very rocky areas a layer of mulch shall be added prior to adding the top-material. The mulch must then be worked into the top-material to bind it.
5. Alien vegetation mulch shall be in a non-seed bearing state and shall be chipped prior to application. The preparation of alien vegetation mulch shall be done at source.
6. The Horticulturalist shall cut bush to a height of 400 mm above ground level from designated areas. This vegetation shall then be passed through the chipping machine as above, and be stockpiled for later use as mulch.
7. If the area is exposed to strong wind the mulch stockpile shall be covered with a fine nylon net with 100 mm x 100 mm openings.

Compost stabilisation

- The soil shall be stabilised by placing and lightly compacting a 75 mm layer of compost over the designated areas or by working a 75 mm layer of compost into the ground to a depth of 150 mm.

Stabilisation of steep slopes

1. The Horticulturalist shall take measures to protect all areas susceptible to erosion by installing all the necessary temporary and permanent drainage works as soon as possible. The Horticulturalist shall take any other measures that may be necessary to prevent surface water from being concentrated in streams and from scouring the slopes, banks or other areas.
2. If runnels or erosion channels develop, they shall be back-filled and compacted, and the areas restored to a proper condition. The Horticulturalist shall not allow erosion to develop on a large scale before effecting repairs.
3. Where artificial slope stabilisers are used, these shall be applied to the slope, preferably before topsoiling, but according to the detailed construction plan and as specified in this specification.
4. Near vertical slopes (1:1 to 1:2) shall be stabilised using hard structures following specifications.
5. Where the slopes are 1:3 to 1:6 they shall be logged or otherwise stepped (using stabilisation cylinders or similar) in order to prevent soil erosion. Logs/ cylinders must be laid in continuous lines following the contours and spaced vertically 0.8-1.2 m apart, depending on the steepness of the slope. These logs/ cylinders must be secured by means of steel pegs and wire in rocky areas, and treated wooden pegs in other areas.
6. In areas where slopes are less than 1:6, horizontal grooves, shallow steps or ledges parallel to contours shall be made on the cut slopes. They shall be made at random to appear natural.
7. In areas where slopes are less than 1:6 these slopes shall be stabilised by using logs in parallel rows, or stabilisation cylinders fastened randomly into position or using biodegradable netting. These structures shall hold the top-material on the slopes and serve as erosion prevention structures.
8. Shallow slopes shall be stabilised using commercial available and approved anti-erosion compounds.

4.3 Slope modification and stabilization

Cut slopes adjacent to roads

1. Cut and fill slopes shall be shaped and trimmed to approximate the natural condition and contours as closely as possible and be undulating. Levels, incongruous to the surrounding landscape, shall be reshaped using a grader and other earthmoving equipment.
2. All cut and fill slopes shall be left as rough as possible, and shall contain ledges to facilitate the accumulation of topsoil. The ledges shall be dug at random to appear natural. Furthermore, the Horticulturalist shall ensure that any embedded rocks that will not pose a danger to traffic, remain on the slopes.
3. Boulders / rocks, collected on the site before disturbance, shall be scattered at a predetermined density approved by the Botanist.
4. Any eroded areas deeper than 50 mm shall be either trimmed down by back cutting the slope face or repaired to the satisfaction of the Botanist with boulders and soil or any other approved method.
5. Catchwater drains shall be installed above the cut slopes.
6. Where cut slopes are greater than 4 m in height, the Horticulturalist shall construct berms at regular intervals.
7. Natural water flow paths shall be identified and subsurface drains (using riprap or superfluous rock material) or surface drains and chutes {use water speed control structures where necessary}, preferably using cemented natural rock, shall be constructed along the flow paths.
8. Near vertical slopes (1:1 to 1:2) shall be stabilised using natural rock wall structures constructed using conventional building methods or in forms with slurry forced between the structures. All structures shall have a 'natural' look and facilities for plants to grow in.
9. Near vertical slopes (1:1 to 1:2) shall be stabilised using stacked precast concrete blocks. All structures shall have a 'natural' look and facilities for plants to grow in.
10. All areas where the slopes are 1:3 to 1:6 shall be logged or otherwise stepped (using stabilisation cylinders or similar) in order to prevent soil erosion. Logs/ cylinders shall be laid in continuous lines following the contours and spaced vertically 0.8-1.2 m apart, depending on the steepness of the slope. These logs/ cylinders shall be secured by means of steel pegs and wire in rocky areas, and treated wooden pegs in other areas.
11. In areas where slopes are less than 1:6 horizontal groves and shallow steps and ledges parallel to contours shall be made on the cut slopes. They shall be made at random to appear natural.
12. In areas where slopes are less than 1:6 horizontal, these slopes shall be stabilised by using logs in parallel rows, or stabilisation cylinders fastened randomly into position shall be utilised. These structures shall hold the top-material on the slopes and serve as erosion prevention structures.

Blasted areas

1. Blasted areas shall be finished so as to be as rough as possible to facilitate establishment of vegetation, where revegetation will be implemented.

Trees and shrubs

1. One third of the fertiliser shall be scattered at the bottom of the hole, one third dug into the topsoil to be replaced in the hole and the remainder watered into the soil at surface level.

Basic re-grassing

1. 2:3:2 fertiliser shall be applied with the seed mix, at the rate of 400 kg/ha. Super phosphate shall be applied post germination at the rate of 200 kg/ha.

5 REHABILITATION

5.1 Rehabilitation Objective

The overall objective of the rehabilitation plan is to minimize adverse environmental impacts whilst maximizing the future utilization of the property. The key focus for rehabilitation for this project should therefore be on areas on site that are disturbed as a direct result of the Banna project.

Additional broad rehabilitation strategies / objectives include the following:

1. Rehabilitating the disturbed areas to take place concurrently within prescribed framework established in the EMPr.
 - All infrastructure, equipment, plant and other items used during construction will be removed from the site.
 - Waste material of any description, including scrap and rubble will be removed entirely from the site and disposed of at a recognised landfill facility. It will not be permitted to be buried or burned on site.
 - Final rehabilitation shall be completed within a specified period.

5.2 Rehabilitation Plan

The overall re-vegetation plan will be as follows:

1. Repair the aesthetic impact of the site;
2. Stabilise disturbed soil and rock faces;
3. Minimize surface erosion and consequent siltation of natural water course located on site;
4. Control wind-blown dust problems;
5. Enhance the physical properties of the soil;
6. Re-establish nutrient cycling; and
7. Re-establish a stable ecological system.

Every effort must be made to avoid unnecessary disturbance of the surrounding natural vegetation during construction operations.

Drainage and Erosion Control

To control the drainage and erosion at site the following procedures will be adopted:

1. Areas where construction is completed should be rehabilitated immediately.
2. All existing disturbed areas will be re-vegetated to control erosion and sedimentation
3. Existing vegetation will be retained as far as possible to minimize erosion problems.

Visual Impacts Amelioration

The overall visual impact of the proposed activity will be minimised by the following mitigating measures:

1. Re-topsoiling and vegetating all disturbed areas.

Topsoil and Subsoil Replacement

1. Topsoil and subsoil will be stripped separately from the area under construction. The topsoil and subsoil removed will be stockpiled separately and only used in rehabilitation work towards the end of the operation.
2. The vegetative cover will be stripped with the thin topsoil layer to provide organic matter to the relayed material and to ensure that the seed store contained in the topsoil is not diminished. Re-seeding may be required should the stockpiles stand for too long and be considered barren from a seed bank point of view. Stockpiles should ideally be stored for no longer than a year.
3. The topsoil and overburden will be keyed into the re-profiled surfaces to ensure that they are not eroded or washed away. The top-soiled surface will be left fairly rough to enhance seedling establishment, reduce water run-off and increase filtration.

5.3 Timing of planting

1. Reseeding shall occur in late winter (July to September).
2. Replanting shall occur during April / June.
3. Wetland preparation shall occur during autumn and planting shall occur during early winter after the first rains (May to June). If planting occurs in a dry late autumn (end March) or early winter (April to June) season it shall be necessary to irrigate plants to ensure their successful establishment.
4. Plant material shall be planted into the ground within a maximum period of 5 days after delivery to the Site, unless otherwise specified by the Botanist.

5.4 Planting guidelines

1. Planting guidelines must be developed by a horticulturalist and/or botanist (appointed by Banna) and agreed to by Banna prior to the start of construction.
2. These planting guidelines should cover the following aspects
 - Re-seeding;
 - Basic re-grassing and planting of grass runners;
 - Sodding, including harvesting, planting and erosion management;
 - Sourcing, holding and planting of trees and shrubs (including indigenous species rescued from site); and
 - Planting guidelines, including protection of root systems, protection and placement of topsoil, application of fertilizers, spacing of plants, application of mulch, and watering of plants.

Erosion control

1. In the case of surface wash-away or wind erosion, the Horticulturalist shall implement remedial measures, as approved by Botanist, as soon as possible.
2. Appropriate erosion control/ soil stabilisation measures shall be implemented.

5.5 Monitoring and Reporting

1. Adequate management, maintenance and monitoring will be carried out annually by the applicant to ensure successful rehabilitation of the property.

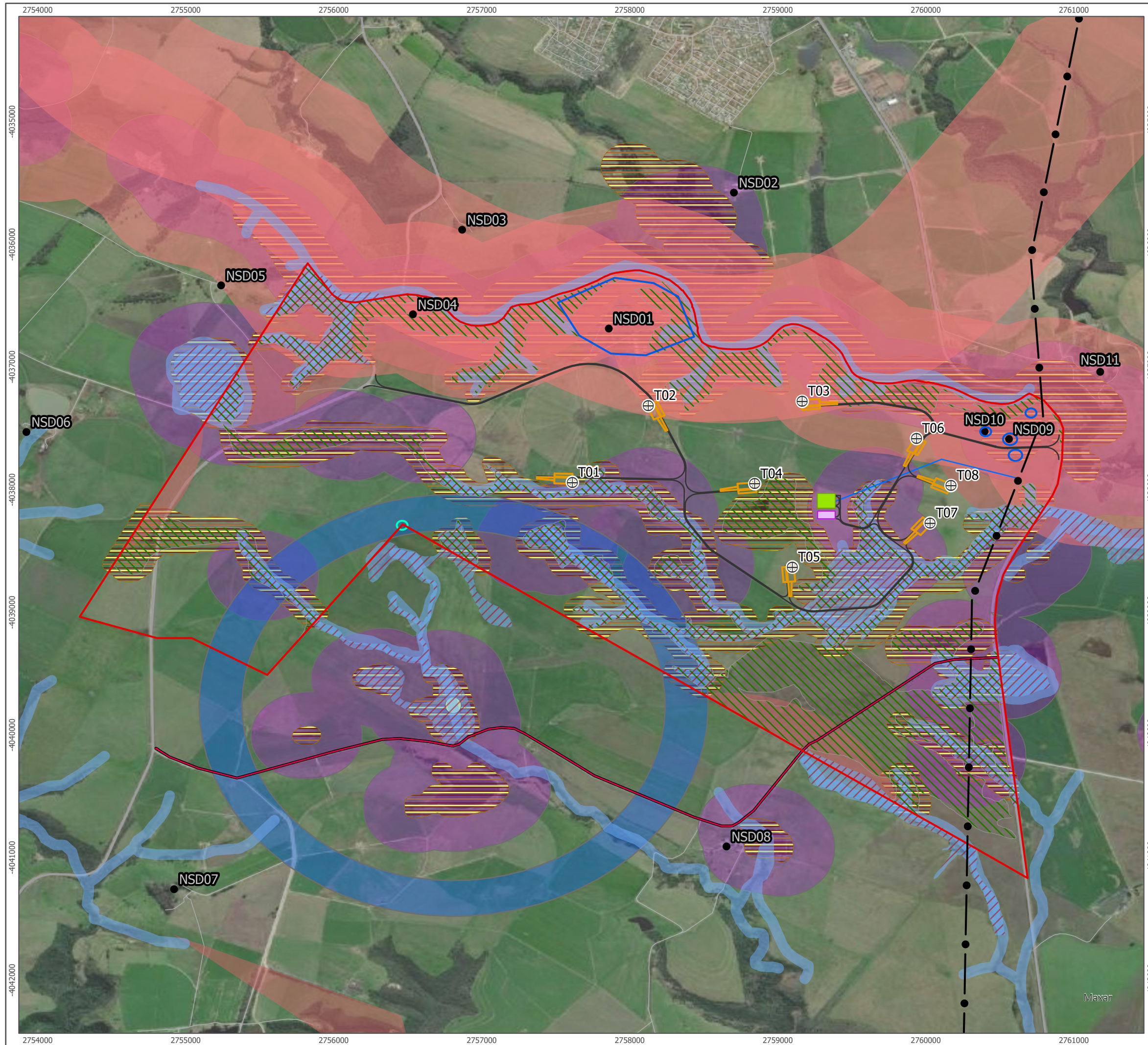
2. To minimise adverse environmental impacts associated with operations it is intended to adopt a progressive rehabilitation programme, which will entail carrying out the proposed rehabilitation procedures concurrently with construction activities.

Inspecting and Monitoring

1. Regular monitoring of all the environmental management measures and components shall be carried out to ensure that the provisions of this programme are adhered to.
2. Ongoing and regular reporting of the progress of implementation of this programme will be done. An environmental audit shall be carried out by an independent consultant on an annual/biannual basis.
3. Inspections and monitoring shall be carried out on both the implementation of the programme and the impact on plant life.

APPENDIX B: FIGURE

FIGURE 1: EMPR ENVIRONMENTAL SENSITIVITY MAP



- Existing Melkhout/St Francis Bay 2 66 kV Overhead Line
- NSD Locations
- Existing Public Roads
- ▭ Banna ba Pifhu Site Boundary
- Banna ba Pifhu WEF**
 - ⊕ Amended Turbine Locations
 - ▭ On-Site Substation
 - ▭ Battery Energy Storage System
 - Crane Hardstanding
 - Access Tracks
- Banna ba Pifhu Grid Connection**
 - Grid Connection
- Environmental WTG No-Go Sensitivities (other infrastructure permitted)**
 - ▨ High Sensitivity Riparian and Wetland Features
 - ▨ High Aquatic Sensitivity
 - ▨ High Ecological Sensitivity
- Avifauna Sensitivities**
 - Blue Crane Roost Site
 - ▨ No-Go Turbines 1.4 km buffer
- Bat Sensitivities**
 - ▨ Bat Sensitivity 281m buffer(Additional)
 - ▨ Bat Sensitivity (Original)
 - ▨ Bat Sensitivity incl. 110 m Blade(Original)
- Environmental Sensitivities (WTG and Infrastructure Permitted)**
 - ▨ Towns 2 km Buffer
 - ▨ River 500 m Buffer
 - ▨ Farms 500 - 1000 m Buffer
 - Medium Heritage Sensitivities
 - Low Heritage Sensitivities



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Environmental Sensitivities
Figure 1

Banna Ba Pifhu
Banna ba Pifhu EMPr

APPENDIX C: EAP CURRICULUM VITAE

CURRICULUM VITAE

Ashlin Bodasing

Technical Director and Environmental Assessment Practitioner

Email: ashlinb@arcusconsulting.co.za Tel: +27 (0) 21 412 1529



Specialisms

- Environmental Impact Assessments
- Environmental Management Plans
- Environmental Feasibility Studies
- Environmental Due Diligence and Compliance
- Client Relationship Management

Summary of Experience

Ashlin Bodasing is a Technical Director at Arcus Consultancy Services South Africa (Pty) Ltd. She manages the Arcus South African office and the team based in Cape Town. Having obtained her Bachelor of Social Science Degree (Geography and Environmental Management) from the University of Kwa-Zulu Natal; she has over fourteen years' experience in the environmental consulting industry in southern Africa. She has gained extensive experience in the field of Integrated Environmental Management, environmental impact assessments and public participation. She has also been actively involved in a number of industrial and infrastructural projects, including electricity power lines and substations; road and water infrastructure upgrades and the installation of telecommunication equipment, green and brown field coal mines, as well as renewable energy facilities, both wind and solar. Ashlin has excellent Project Management experience and has gained major project experience in the development of Environmental Impact Assessments, Environmental Management Plans and the monitoring of construction activities. Her areas of expertise include project management, environmental scoping and impact assessments, environmental management plans, environmental compliance monitoring and environmental feasibility studies. Experience also includes International Finance Corporation Performance Standards and World Bank Environmental Guidelines environmental due diligence reviews. She has worked in Mozambique, Namibia, Botswana, Lesotho and Zimbabwe.

Professional History

- | | |
|-----------------------|---|
| 2017 – Present | - Technical Director, Arcus Consultancy Services SA (Pty) Ltd |
| 2015 – 2017 | - Team Leader, Arcus Consultancy Services SA (Pty) Ltd
Lead Environmental Officer, Tweefontein Optimisation Project, |
| 2012 – 2015 | - Glencore / Xstrata Coal Mine, Witbank, Mpumalanga, South Africa
(<i>Secondment</i>) |
| 2007 – 2015 | - Senior Environmental Assessment Practitioner, Parsons
Brinckerhoff Africa |
| 2005 – 2007 | - Environmental Consultant, WSP Environment and Energy |

Ashlin spent over 2 years at the Glencore (previously Xstrata Coal SA) – Tweefontein Optimisation Project, as the sole environmental officer permanently on site overseeing all their construction projects, ensuring contractor compliance to EMP and Environmental Authorisations. This included the construction of the internal and external infrastructure packages. Roles include ensuring all construction and development are in line with the EIA and EMP for the project. Areas of responsibility include the Mine Infrastructure Area, the Explosives Magazine Area, construction of a secondary school, construction of residential houses, and the rail load out facility. Role also included review of environmental impact assessment applications and reports submitted to the department of environmental affairs for the project.

Qualifications and Professional Interests

- **University of Kwa-Zulu Natal, 2004**
Bachelor of Social Science (Geography and Environmental Management)
- **Environmental Assessment Practitioners Association of South Africa, 2020**
Registered Environmental Assessment Practitioner: Number 2020/780

CURRICULUM VITAE

Project Experience

Environmental Impact Assessments

- **Highlands North, South and Central Wind Energy Facilities, 2018-present.** Project Director (client liaison) and Lead EAP.
- **Paulputs Wind Energy Facility, 2018-present.** Project Director (client liaison) and Lead EAP.
- **San Kraal Wind Energy Facility, 2016- 2018.** Project Director (client liaison) and Lead EAP.
- **Phezukomoya Wind Energy Facility, 2016 – 2018.** Project Director (client liaison) and Lead EAP.
- **Kolkies and Karee Wind Energy Facilities, 2016-2016.** Project Director (Client liaison) and Lead EAP.
- **Komsberg East and West Wind Energy Facilities 2015-2016.** Project Director (Client Liaison) and EAP.
- **Umsinde Emoyeni Wind Energy Facilities, 2015-2018.** Project Director (Client Liaison) and EAP.

Ecological Impact Assessments and Monitoring

- **Confidential Wind Farm, 2017-2018, Northern Cape Province.** Project Director (Client Liaison), coordination and management of ecologists (bird and bat), review of technical and specialists impact assessments.
- **Paulputs Wind Energy Facility 2017-present, Northern Cape Province.** Project Director (Client Liaison), coordination and management of ecologists (bird and bat), review of technical and specialists impact assessments.
- **Highlands Wind Energy Facilities 2017 – 2018, Northern Cape Province.** Project Director (Client Liaison), coordination and management of ecologists (bird and bat), review of technical and specialists impact assessments.
- **Komsberg Wind Farms, 2015-2016.** Project Director (Client Liaison), coordination and management of ecologists (bird and bat), review of technical and specialists impact assessments.
- **Kolkies and Karee Wind Energy Facilities 2015-2016.** Project Director (Client Liaison), coordination and management of bird and bat specialists and review of technical and impact assessment reports.
- **Umsinde Wind Energy Facilities, Additional Bird Monitoring.** Project Director. Coordination and management of bird specialists and review of technical reports.
- **Kap Vley Wind Energy Facility, Bird and Bat Pre-Construction Monitoring.** Project Director. Coordination and management of bird and bat specialists, review of technical reports.
- **Highlands Wind Energy Facility, Bird and Bat Pre-Construction Monitoring.** Project Director. Coordination and management of bird and bat specialists, review of technical reports.
- **Hopefield Wind Farm –Operational Monitoring.** Project Manager. Coordination and management of bird and bat specialists, review of technical reports.
- **Gouda Wind Farm – Operation Monitoring.** Project Director. Coordination and management of bird and bat specialists, review of technical reports.

Feasibility Studies and Due Diligence Reviews

- **Ecological due diligence for IFC PS6 – Wind Energy Developments:** Project Manager. Review and reporting on bird and bat specialist reports to IFC/World Bank Standards – Various sites across South Africa.
- **Power Plant – Ghana.** Project Manager Compilation of environmental due diligence for refinancing, IFC and World Bank Standards, on behalf of Botswana Development Corporation.
- **Ecological Feasibility Study.** Project Director. Review of the feasibility of a site for a wind energy facility in relation to bats.

CURRICULUM VITAE

- **Environmental Feasibility Study.** Project Director and EAP. Review of a proposed site for the development of industrial facility.

Previous Project Experience

Environmental Scoping and Impact Assessments and Project Management for:

- eThekweni Municipality
- Moreland Developments
- RBCH – Bulk Materials and Handling Facility
- SAPREF
- Mittal Steel Permit Amendment
- Transnet Projects
- ArcelorMittal South Africa
- MCA-Lesotho
- Talbot Group Holdings (Australian Mining Company)
- Ncondezi Energy – Mozambique

Environmental Management Plans and Compliance Monitoring

- Nongoma Road Monitoring – Compliance Monitoring
- eThekweni Municipality - Taxi Holding Areas: Canberra Road and Umgeni Road Compilation of the EMP; and Bi-monthly compliance monitoring (site visits) and reporting.
- EMP for Kwezi V3 - Kwamashu Fuel Tank Exemption
- eThekweni Municipality - Ridgeview Road – Compliance Monitoring
- eThekweni Municipality and Merz and Mclellen - Phoenix Overhead Transmission Lines – Compliance Monitoring
- eThekweni Municipality and Merz and Mclellen - E8546 E8699 Compliance Monitoring
- eThekweni Municipality and Merz and Mclellen - Environmental Assessment and EMP
- EMP for eThekweni Municipality - Parlock Switching Station

Training and Auditing

- Petronet Alien Plant Training - Compilation of the training material for alien plant identification and removal methods.
- eThekweni Municipality - Taxi Holding Areas – Canberra and Umgeni Road - Contactor and workforce training.
- eThekweni Municipality - Kingsway Road Taxi Rank - Contactor and workforce training.

Environmental Reviews / Terms of Reference

- Biotherm Energy - Environmental Project Manager: Independent review of environmental impact assessment reports and management plans compiled for 3 wind farms in the Western Cape and 2 PV Solar Plants in the Northern Cape, to ensure compliance to IFC and World Bank Standards.
- Government of Zimbabwe – Hwange Power Station - Environmental Project Manager: Compilation of the Terms of Reference for Environmental Management Plan and Environmental and Social Audit of the Hwange Power Plant in Zimbabwe.

Pre-Feasibility Studies

- Pre-feasibility studies for eThekweni Municipality, Investec, Sekoko Coal Resources, Mulilo, Sekoko Mining and MCA-Lesotho for renewable energy, coal mines and power plants.

APPENDIX D: BANNA BA PIFHU WIND FARM EA



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

Private Bag X 447 · PRETORIA · 0001 · Fedsure Building · 315 Pretorius Street · PRETORIA
Tel (+ 27 12) 310 3911 · Fax (+ 2712) 322 2682

NEAS Reference: DEA/EIA/0000377/2011

DEA Reference: 12/12/20/2289

Enquiries: Ms Sindiswa Dlomo

Telephone: (012) 395 1856 Fax: (012) 320 7539 E-mail: Sdlomo@environment.gov.za

Mr Alam Wolfrohm
Banna ba Pifhu Wind Farm (RF) (Pty) Ltd
PO Box 762
WILDERNESS
6560

Telephone Number: (044) 877 0564

Fax Number: (086) 610 2779

PER FACSIMILE / MAIL

Dear Mr Wolfrohm

APPLICATION FOR ENVIRONMENTAL AUTHORISATION IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998: GN R. 543/544/545/546 FOR THE PROPOSED BANNA BA PIFHU 30.6 MW WIND ENERGY FACILITY ON THE BROADLANDS FARM NEAR HUMANSDORP IN THE KOUGA LOCAL MUNICIPALITY OF THE CACADU DISTRICT MUNICIPALITY, EASTERN CAPE PROVINCE

With reference to the above application, please be advised that the Department has decided to grant authorisation. The environmental authorisation (EA) and reasons for the decision are attached herewith.

In terms of regulation 10(2) of the Environmental Impact Assessment Regulations, 2010 (the Regulations), you are instructed to notify all registered interested and affected parties, in writing and within 12 (twelve) days of the date of the EA, of the Department's decision in respect of your application as well as the provisions regarding the submission of appeals that are contained in the Regulations.

Your attention is drawn to Chapter 7 of the Regulations, which prescribes the appeal procedure to be followed. This procedure is summarised in the attached document. Kindly include a copy of this document with the letter of notification to interested and affected parties.

Should the applicant or any other party wish to appeal any aspect of the decision a notice of intention to appeal must be lodged by all prospective appellants with the Minister, within 20 days of the date of the EA, by means of one of the following methods:

By facsimile: 0123207561;

By post: Private Bag X447,
Pretoria, 0001; or

By hand: 2nd Floor, Fedsure Building, North Tower,
Cnr. Lilian Ngoyi (Van der Walt) and Pretorius Streets,
Pretoria.


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Commissioner of Oaths (SA)
Chartered Accountant (SA)
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Tel: 0448745022

If the applicant wishes to lodge an appeal, it must also serve a copy of the notice of intention to appeal on all registered interested and affected parties as well as a notice indicating where, and for what period, the appeal submission will be available for inspection, should you intend to submit an appeal.

Please include the Department (*Attention: Director: Integrated Environmental Authorisations*) in the list of interested and affected parties, notified through your notification letter to interested and affected parties, for record purposes.

Appeals must be submitted in writing to:


Mr Z Hassam, Director: Appeals and Legal Review, of this Department at the above mentioned addresses or fax number. Mr Hassam can also be contacted at:

Tel: 012-310-3271

Email: AppealsDirectorate@environment.gov.za

The authorised activities shall not commence within twenty (20) days of the date of signature of the authorisation. Further, please note that the Minister may, on receipt of appeals against the authorisation or conditions thereof suspend the authorisation pending the outcome of the appeals procedure.

Yours faithfully



Mr Ishaam Abader

Deputy Director-General: Legal, Authorisations, Compliance and Enforcement

Department of Environmental Affairs

Date: 21/07/2014

CC	Mr Paul Lochner	CSIR	Tel: 021-888-2661	Fax: 021-888-3646
	Mr A Struwig	Eastern Cape DEDET	Tel: 014-508-5815	Fax: 041-585-1958
	Ms K Strydom	Kouga Local Municipality	Tel: 042-293-2517	Fax: 086-523-1710

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APPEALS PROCEDURE IN TERMS OF CHAPTER 7 OF THE NEMA EIA REGULATIONS, 2010 (THE REGULATIONS) AS PER GN R. 543 OF 2010 TO BE FOLLOWED BY THE APPLICANT AND INTERESTED AND AFFECTED PARTIES UPON RECEIPT OF NOTIFICATION OF AN ENVIRONMENTAL AUTHORISATION (EA)

APPLICANT	INTERESTED AND AFFECTED PARTIES (IAPs)
1. Receive EA from the relevant Competent Authority (the Department of Environmental Affairs (DEA)).	1. Receive EA from Applicant/Consultant.
2. Within 12 days of date of the EA notify all IAPs of the EA and draw their attention to their right to appeal against the EA in terms of Chapter 7 of the Regulations.	2. N/A.
3. If you want to appeal against the EA, submit a notice of intention to appeal within 20 days of the date of the EA with the Minister of Water and Environmental Affairs (the Minister).	3. If you want to appeal against the EA, submit a notice of intention to appeal within 20 days of the date of the EA. with the Minister of Water and Environmental Affairs (the Minister).
4. After having submitted your notice of intention to appeal to the Minister, provide each registered IAP with a copy of the notice of intention to appeal within 10 days of lodging the notice.	4. After having submitted your notice of intention to appeal to the Minister, provide the applicant with a copy of the notice of intention to appeal within 10 days of lodging the notice.
5. The Applicant must also serve on each IAP: <ul style="list-style-type: none"> a notice indicating where and for what period the appeal submission will be available for inspection. 	5. Appellant must also serve on the Applicant within 10 days of lodging the notice, <ul style="list-style-type: none"> a notice indicating where and for what period the appeal submission will be available for inspection by the applicant.
6. The appeal must be submitted in writing to the Minister within 30 days after the lapsing of the period of 20 days provided for the lodging of the notice of intention to appeal.	6. The appeal must be submitted to the Minister within 30 days after the lapsing of the period of 20 days provided for the lodging of the notice of intention to appeal.
7. Any IAP who received a notice of intention to appeal may submit a responding statement to that appeal to the Minister within 30 days from the date that the appeal submission was lodged with the Minister.	7. An Applicant who received notice of intention to may submit a responding statement to the appeal to the Minister within 30 days from the date that the appeal submission was lodged with the Minister.

NOTES:

1. **An appeal against a decision must be lodged with:-**
 - a) the Minister of Water and Environmental Affairs if the decision was issued by the Director-General of the Department of Environmental Affairs (or another official) acting in his/ her capacity as the delegated Competent Authority;
 - b) the Minister of Justice and Constitutional Development if the applicant is the Department of Water Affairs and the decision was issued by the Director-General of the Department of Environmental Affairs (or another official) acting in his/ her capacity as the delegated Competent Authority;
2. **An appeal lodged with:-**
 - a) the Minister of Water and Environmental Affairs must be submitted to the Department of Environmental Affairs;
 - b) the Minister of Justice and Constitutional Development must be submitted to the Department of Environmental Affairs;
3. **An appeal must be:-**
 - a) submitted in writing;
 - b) accompanied by:
 - a statement setting out the grounds of appeal;
 - supporting documentation which is referred to in the appeal; and
 - a statement that the appellant has complied with regulation 62 (2) or (3) together with copies of the notices referred to in regulation 62.

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environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

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Environmental Authorisation

In terms of Regulation 36 of the Environmental Impact Assessment Regulations, 2010

30.6 MW Banna ba Pifhu Wind Farm near Humansdorp, to be located on Broadlands Farm, in the
Kouga Local Municipality, Eastern Cape province

Cacadu District Municipality

Authorisation register number:	12/12/20/2289
NEAS reference number:	DEA/EIA/0000377/2011
Last amended:	First issue
Holder of authorisation:	Banna ba Pifhu Wind Farm (RF) (Pty) Ltd
Location of activity:	Remainder of Farm 688 Portion 2 of Farm 689 Portion 15 of Farm 689 Portion 1 of Farm 868 Kouga Local Municipality Cacadu District Municipality EASTERN CAPE PROVINCE

This authorisation does not negate the holder of the authorisation's responsibility to comply with any other statutory requirements that may be applicable to the undertaking of the activity.

Decision

The Department is satisfied, on the basis of information available to it and subject to compliance with the conditions of this environmental authorisation, that the applicant should be authorised to undertake the activities specified below.

Non-compliance with a condition of this authorisation may result in criminal prosecution or other actions provided for in the National Environmental Management Act, 1998 and the EIA regulations.

Details regarding the basis on which the Department reached this decision are set out in Annexure 1.

Activities authorised

By virtue of the powers conferred on it by the National Environmental Management Act, 1998 (Act 107 of 1998) and the Environmental Impact Assessment Regulations, 2010 the Department hereby authorises –

BANNA BA PIFHU WIND FARM (RF) (PTY) LTD

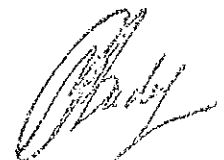
(hereafter referred to as the **holder of the authorisation**)

with the following contact details –

Mr Alam Wolfrohm
Banna ba Pifhu Wind Farm (RF) (Pty) Ltd
PO Box 762
WILDERNESS
6560


Telephone Number: (044) 877 0564
Fax Number: (086) 610 2779
Cell phone Number: (082) 529 4909
E-mail Address: Wolfrohm@wkn-windcurrent.com


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to undertake the following activities (hereafter referred to as "the activity") indicated in Listing Notices 1, Listing Notice 2 and Listing Notice 3 (GN R. 544, 545 and 546):

Listed activities	Activity/Project description
<p><u>GN R. 544 Item 10:</u> <i>"The construction of facilities or infrastructure for the transmission and distribution of electricity –</i> <i>(i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 Kilovolts..."</i></p>	<p>A new 66 kV substation will be constructed.</p> <p>SUE-MARTVAN WYK Commissioner of Oaths (SA) Chartered Accountant (SA) Registration number 20017442 Mazars 132 MITCHELL STREET, GEORGE Practise number: 900222 Tel: 0448745022</p>
<p><u>GN R. 544 Item 11:</u> <i>"The construction of</i> <i>(xi) Infrastructure or structures covering 50 square meters or more, where such construction occurs within a watercourse or within a 32 of a watercourse, measured from the edge of the watercourse, excluding where such construction will occur behind the development setback line."</i></p>	<p>The final layout may result in turbines or other infrastructure encroaching within 32 metres of a watercourse.</p>
<p><u>GN R. 544 Item 18:</u> <i>"The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from:</i> <i>(i) a watercourse"</i></p>	<p>The construction of supporting infrastructure (e.g. roads and power lines) could necessitate crossing of watercourses and thus, infilling of more than 5 m³.</p>
<p><u>GN R. 544 Item 23:</u> <i>"The transformation of undeveloped, vacant or derelict land to –</i> <i>(ii) Residential, retail, commercial, recreational, industrial or institutional use, outside an urban area and where the total area to be transformed is bigger than 1 hectare but less than 20 hectares"</i></p>	<p>The total area to be transformed to commercial use may be bigger than 1 hectare but less than 20 hectares.</p>
<p><u>GN R. 545 Item 1:</u> <i>"The construction of facilities or infrastructure for the</i></p>	<p>A facility for generating an electricity output of 30.6 MW from wind energy is proposed.</p>

Listed activities	Activity/Project description
generation of electricity where the electricity output is 20 megawatts or more."	
<p><u>GN R. 546 Item 4:</u> "The construction of road wider than 4 metres with a reserve less than 13,5 metres." (a) In the Eastern Cape; (ii) Outside urban areas, in: (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.</p>	The project may entail the construction of new roads with a width greater than 4 metres to provide access to the facility and between turbines.
<p><u>GN R. 546 Item 12:</u> "The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation." (a) Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; (b) Within critical biodiversity areas identified in bioregional plans.</p>	<p>This will depend on the area of indigenous vegetation to be cleared and whether it falls within the threatened Renosterveld vegetation on site (NEMBA listed-Endangered-Humansdorp Shale Renosterveld)</p> <p style="text-align: right;">  SUE-MARLVAN WYK Commissioner of Oaths (SA) Chartered Accountant (SA) Registration number 20017442 Mazars 132 MITCHELL STREET, GEORGE Practise number: 900222 Tel: 0448745022 </p>
<p><u>GN R. 546 Item 13:</u> "The clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation." (a) Critical biodiversity areas and ecological support areas as identified in systematic biodiversity plans adopted by the competent authority.</p>	There are some Critical Biodiversity Areas along the northern boundary of the site, depending on the final site layout.
<p><u>GN R. 546 Item 14:</u> "The clearance of an area of 5 hectare or more of</p>	This will depend on the area of indigenous vegetation to be cleared, the site falls outside

Listed activities	Activity/Project description
<p>vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation."</p> <p>(a) Eastern Cape</p> <p>(i) All areas outside urban areas.</p>	<p>of the urban edge. It is anticipated that the area to be cleared for turbine footprints, road and infrastructure will be greater than 5 ha with more than 75% consisting of indigenous vegetation.</p>
<p><u>GN R. 546 Item 16:</u></p> <p>"The construction of</p> <p>(iii) buildings with a footprint exceeding 10 square metres in size</p> <p>(iv) infrastructure covering 10 square metre or more where such construction occurs within a watercourse or within 32 metres of a watercourse measured from the edge of a watercourse excluding where such construction will occur behind the development setback line</p> <p>(a) in the eastern Cape</p> <p>(ii) Outside urban area, in</p> <p>(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or bioregional plans;</p>	<p>This will apply depending on the location of the roads and electrical infrastructure which may cross one of the watercourses on the site.</p>

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as described in the amended Environmental Impact Assessment Report (EIAr) dated December 2013 and additional information received on March 2014 at:

Preferred alternative	Longitude	Latitude
Middle point of the facility 30.6 MW Facility	24°46'42.50" E	34° 4'10.81" S

- for the proposed construction of the 30.6 MW Banna ba Pifhu Wind Farm near Humansdorp, located on the Broadlands Farm (the Remainder of Farm 688, Portion 2 of Farm 689, Portion 15 of Farm 689 and Portion 1 of Farm 868), within the Kouga Local Municipality of the Cacadu District Municipality, Eastern Cape Province, hereafter referred to as "the properties".

The infrastructure associated with this facility includes:

- 13 turbines, with a maximum generation capacity of 30.6 MW;
- Expected hub height from 80 m to 105 m and blade diameter from 90 m to 117 m;
- Reinforced concrete foundation of approximately 20 m x 20 m at a maximum depth of 3 m;
- Gravel access roads of approximately 5 m wide;
- A laydown area of maximum area 10 000 m²;
- Fencing; and,
- Existing building on site will be used as storage / maintenance and control / operations facility for the energy project.

Electrical Infrastructure alongside turbines;

- Medium voltage cables buried approximately 1 m below ground;
- New substation on site to connect to the distribution transmission system (maximum size of 100 m x 100 m). The wind farm will connect to the existing 66 kV Melkhout / St Francis overhead power line which passes through the site; and
- Connection to the Eskom grid line will be via underground cabling or overhead line supported on intermediate poles.


Conditions of this Environmental Authorisation

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Scope of authorisation

1. The preferred site for the construction of a 30.6 MW Banna ba Pifhu Wind Farm and its associated infrastructure, located on the Broadlands Farm (Remainder of Farm 688, Portion 2 of Farm 689, Portion 15 of Farm 689 and Portion 1 of Farm 868) near Humansdorp, as per the above mentioned geographic coordinates is approved.
2. Authorisation of the activity is subject to the conditions contained in this authorisation, which form part of the environmental authorisation and are binding on the holder of the authorisation.
3. The holder of the authorisation is responsible for ensuring compliance with the conditions contained in this environmental authorisation. This includes any person acting on the holder's behalf, including but not limited to, an agent, servant, contractor, sub-contractor, employee, consultant or person rendering a service to the holder of the authorisation.
4. The activities authorised may only be carried out at the property as described above.

5. Any changes to, or deviations from, the project description set out in this authorisation must be approved, in writing, by the Department before such changes or deviations may be effected. In assessing whether to grant such approval or not, the Department may request such information as it deems necessary to evaluate the significance and impacts of such changes or deviations and it may be necessary for the holder of the authorisation to apply for further authorisation in terms of the regulations.
6. This activity must commence within a period of three (03) years from the date of issue of this authorisation. If commencement of the activity does not occur within that period, the authorisation lapses and a new application for environmental authorisation must be made in order for the activity to be undertaken.
7. Commencement with one activity listed in terms of this authorisation constitutes commencement of all authorised activities.
8. The holder of an environmental authorisation must notify the competent authority of any alienation, transfer and change of ownership rights in the property on which the activity is to take place.


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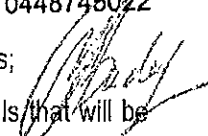


Notification of authorisation and right to appeal

9. The holder of the authorisation must notify every registered interested and affected party, in writing and within 12 (twelve) calendar days of the date of this environmental authorisation, of the decision to authorise the activity.
10. The notification referred to must –
 - 10.1. specify the date on which the authorisation was issued;
 - 10.2. inform the interested and affected party of the appeal procedure provided for in Chapter 7 of the Environmental Impact Assessment Regulations, 2010;
 - 10.3. advise the interested and affected party that a copy of the authorisation will be furnished on request; and
 - 10.4. give the reasons of the competent authority for the decision.
11. The holder of the authorisation must publish a notice –
 - 11.1. informing interested and affected parties of the decision;
 - 11.2. informing interested and affected parties where the decision can be accessed; and
 - 11.3. drawing the attention of interested and affected parties to the fact that an appeal may be lodged against this decision in the newspaper(s) contemplated and used in terms of regulation 54(2)(c) and (d) and which newspaper was used for the placing of advertisements as part of the public participation process.

Management of the activity

12. A copy of the final development layout map must be made available for comments by registered Interested and Affected Parties and the applicant must consider such comments. Once amended, the final development layout map must be submitted to the Department for written approval prior to commencement of the activity. All available biodiversity information must be used in the finalisation of the layout map. Existing infrastructure must be used as far as possible e.g. roads. The layout map must indicate the following:
 - 12.1 Position of the wind facility and its associated infrastructure;
 - 12.2 Labelled / numbered turbine positions;
 - 12.3 Foundation footprint;
 - 12.4 Internal roads indicating width;
 - 12.5 Wetlands, drainage lines, rivers, stream and water crossing of roads and cables;
 - 12.6 All sensitive features e.g. heritage sites, wetlands, pans and drainage channels that will be affected by the facility and associated infrastructure;


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- 12.7 Substation(s) inverters and/or transformer(s) sites including their entire footprint;
 - 12.8 Connection routes (including pylon positions) to the distribution/transmission network;
 - 12.9 All existing infrastructure on the site, especially roads;
 - 12.10 Buildings, including accommodation;
 - 12.11 All "no-go" and buffer areas; and
 - 12.12 A map combining the final layout plan superimposed (overlain) on the environmental sensitivity map. This map must reflect the proposed location of turbines as stated in the amended EIA and this authorisation.
13. Furthermore, a shapefile of the approved development layout/footprint must be submitted to this Department within two months from the date of this decision. The shapefile must be created using the Hartebeesthoek 94 Datum and the data should be in Decimal Degree Format using the WGS 84 Spheroid. The shapefile must include at a minimum the following extensions i.e. .shp; .shx; .dbf; .prj; and, .xml (Metadata file). If specific symbology was assigned to the file, then the .avl and/or the .lyr file must also be included. Data must be mapped at a scale of 1:10 000 (please specify if an alternative scale was used). The metadata must include a description of the base data used for digitizing. The shapefile must be submitted in a zip file using the EIA application reference number as the title. The shape file must be submitted to:


Postal Address:

Department of Environmental Affairs
Private Bag X447
Pretoria
0001

Physical address:

Department of Environmental Affairs
Fedsure Forum Building (corner of Pretorius and Lillian Ngoyi Streets)
4th Floor South Tower
315 Pretorius Street
Pretoria, 0002


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For Attention: Mr Muhammad Essop
Integrated Environmental Authorisations
Strategic Infrastructure Developments
Telephone Number: (012) 395 1734
Fax Number: (012) 395 7539
Email Address: MEssop@environment.gov.za


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14. The Environmental Management Programme (EMPr) submitted as part of the amended EIAr is not approved and must be amended to include measures as dictated by the final site lay-out map and micro-siting; and the provisions of this environmental authorisation. The EMPr must be made available for comments by registered Interested and Affected Parties and the applicant must consider such comments. Once amended, the final EMPr must be submitted to the Department for written approval prior to commencement of the activity. Once approved the EMPr must be implemented and adhered to.
15. The EMPr is amendable and must be implemented and strictly enforced during all phases of the project. It shall be seen as a dynamic document and shall be included in all contract documentation for all phases of the development when approved.
16. Changes to the EMPr, which are environmentally defensible, shall be submitted to this Department for acceptance before such changes could be effected.
17. The Department reserves the right to amend the EMPr should any impacts that were not anticipated or covered in the amended EIAr be discovered.
18. The provisions of the approved EMPr including recommendations and mitigation measures in the amended EIAr and specialist' studies shall be an extension of the conditions of this EA and therefore noncompliance with them would constitute noncompliance with the EA.
19. The EMPr amendment must include the following:
 - 19.1 All recommendations and mitigation measures recorded in the amended EIAr.
 - 19.2 All mitigation measures as listed in the specialist reports must be included in the EMPr and implemented.
 - 19.3 The requirements and conditions of this authorisation.
 - 19.4 The final site layout map.
 - 19.5 An alien invasive management plan to be implemented during construction and operation of the facility. The plan must include mitigation measures to reduce the invasion of alien species and ensure that the continuous monitoring and removal of alien species is undertaken.

- 19.6 A plant rescue and protection plan which allows for the maximum transplant of conservation important species from areas to be transformed. This plan must be compiled by a vegetation specialist familiar with the site in consultation with the ECO and be implemented prior to commencement of the construction phase.
- 19.7 A re-vegetation and habitat rehabilitation plan to be implemented during the construction and operation of the facility. Restoration must be undertaken as soon as possible after completion of construction activities to reduce the amount of habitat converted at any one time and to speed up the recovery to natural habitats.
- 19.8 A traffic management plan for the site access roads to ensure that no hazards would result from the increased truck traffic and that traffic flow would not be adversely impacted. This plan must include measures to minimize impacts on local commuters e.g. limiting construction vehicles travelling on public roadways during the morning and late afternoon commute time and avoid using roads through densely populated built-up areas so as not to disturb existing retail and commercial operations.
- 19.9 A storm water management plan to be implemented during the construction and operation of the facility. The plan must ensure compliance with applicable regulations and prevent off-site migration of contaminated storm water or increased soil erosion. The plan must include the construction of appropriate design measures that allow surface and subsurface movement of water along drainage lines so as not to impede natural surface and subsurface flows. Drainage measures must promote the dissipation of storm water run-off.
- 19.10 An erosion management plan for monitoring and rehabilitating erosion events associated with the facility. Appropriate erosion mitigation must form part of this plan to prevent and reduce the risk of any potential erosion.
- 19.11 An effective monitoring system to detect any leakage or spillage of all hazardous substances during their transportation, handling, use and storage. This must include precautionary measures to limit the possibility of oil and other toxic liquids from entering the soil or storm water systems.
- 19.12 Measures to protect hydrological features such as streams, rivers, pans, wetlands, dams and their catchments, and other environmental sensitive areas from construction impacts including the direct or indirect spillage of pollutants.
- 19.13 An avifauna and bat monitoring programme to document the effect of the operation of the energy facility on avifauna and bats. This must be compiled by a qualified specialist and must be conducted in accordance to the minimum requirements guidelines produced by Bird Life South Africa and the South African Bat Advisory Panel.

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- 19.14 An environmental sensitivity map indicating environmental sensitive areas and features identified during the EIA process.
- 19.15 A map combining the final layout map superimposed (overlain) on the environmental sensitivity map. This map must reflect the proposed location of the turbines as stated in the EIAr in the amended layout and this authorisation.

Environmental Control Officer (ECO) and duties

20. The holder of this authorisation must appoint an independent qualified Environmental Control Officer (ECO) with experience or expertise in the field for the construction phase of the development. The ECO will have the responsibility to ensure that the conditions referred to in this authorisation are implemented and to ensure compliance with the provisions of the EMPr.
21. The ECO must be appointed before commencement of any authorised activity.
22. The ECO must meet with the contractors to discuss the conditions of the EA and the contents of the EMPr prior to any site clearing occurring.
23. Once appointed, the name and contact details of the ECO must be submitted to the Director: Compliance Monitoring of the Department.
24. The ECO must remain employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the site is ready for operation.

The ECO must:

- 25.1 Keep record of all activities on site, problems identified, transgressions noted and a schedule of tasks undertaken by the ECO.
- 25.2 Keep and maintain a detailed incident (including spillage of bitumen, fuels, chemicals, or any other material) and complaint register on site indicating how these issues were addressed, what rehabilitation measures were taken and what preventative measures were implemented to avoid re-occurrence of incidents/complaints.
- 25.3 Keep and maintain a daily site diary.
- 25.4 Keep copies of all reports submitted to the Department.
- 25.5 Keep and maintain a schedule of current site activities including the monitoring of such activities.
- 25.6 Obtain and keep record of all documentation, permits, licences and authorisations such as waste disposal certificates, hazardous waste landfill site licences etc. required by this facility.
- 25.7 Compile a monthly monitoring report.

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Recording and reporting to the Department

26. The holder of this authorisation must keep all records relating to monitoring and auditing on site and make it available for inspection to any relevant and competent authority in respect of this development.
27. All documentation e.g. audit/monitoring/compliance reports and notifications, required to be submitted to the Department in terms of this authorisation, must be submitted to the Director: Compliance Monitoring at the Department.

Environmental audit report

28. The holder of the authorisation must submit an environmental audit report to the Department within 30 days of completion of the construction phase (i.e. within 30 days of site handover) and within 30 days of completion of rehabilitation activities.
29. The environmental audit report must:
 - 29.1 Be compiled by an independent environmental auditor;
 - 29.2 Indicate the date of the audit, the name of the auditor and the outcome of the audit;
 - 29.3 Evaluate compliance with the requirements of the approved EMPr and this environmental authorisation;
 - 29.4 Include measures to be implemented to attend to any non-compliances or degradation noted;
 - 29.5 Include copies of any approvals granted by other authorities relevant to the development for the reporting period;
 - 29.6 Highlight any outstanding environmental issues that must be addressed, along with recommendations for ensuring these issues are appropriately addressed;
 - 29.7 Include a copy of this authorisation and the approved EMPr;
 - 29.8 Include all documentation such as waste disposal certificates, hazardous waste landfill site licences etc. pertaining to this authorisation; and
 - 29.9 Include evidence of adherence to the conditions of this authorisation and the EMPr where relevant such as training records and attendance records.


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Commencement of the activity

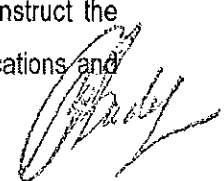
30. The authorised activity shall not commence within twenty (20) days of the date of signature of the authorisation.
31. An appeal under section 43 of the National Environmental Management Act (NEMA), Act 107 of 1998 (as amended), does not suspend an environmental authorisation or exemption, or any provisions or conditions attached thereto, or any directive, unless the Minister, MEC or delegated organ of state directs otherwise.
32. Should you be notified by the Minister of a suspension of the authorisation pending appeal procedures, you may not commence with the activity until such time that the Minister allows you to commence with such an activity in writing.
33. The holder of this authorisation must obtain a Water Use Licence from the Department of Water Affairs (DWA) prior to the commencement of the project should the holder impact on any wetland or water resource. A copy of the license must be kept by the ECO.

Notification to authorities

34. Fourteen (14) days written notice must be given to the Department that the activity will commence. Commencement for the purposes of this condition includes site preparation. The notice must include a date on which it is anticipated that the activity will commence. This notification period may coincide with the Notice of Intent to Appeal period, within which construction may not commence.

Operation of the activity

35. Fourteen (14) days written notice must be given to the Department that the activity operational phase will commence.
36. The holder of this authorisation must compile an operational EMPr for the operational phase of the activity or alternatively, if the holder has an existing operational environmental management system, it must be amended to include the operation of the authorised activity.
37. The EMPr must form part of the contract with the EPC Contractor appointed to construct the proposed facility, and must be used to ensure compliance with environmental specifications and management measures.



Site closure and decommissioning

38. Should the activity ever cease or become redundant, the applicant shall undertake the required actions as prescribed by legislation at the time and comply with all relevant legal requirements administered by any relevant and competent authority at that time.

Specific conditions

Avifauna and bats

39. A bird and bat monitoring programme must be implemented to document the effect of the operation of the energy facility on avifauna and bats. Active breeding nests in the immediate surroundings must be monitored during the construction phase and further mitigation measures must be discussed with the avifaunal specialist and implemented if necessary.
40. The results of the pre-construction bird monitoring programme completed in March and mid April 2012 must inform the final layout and the construction schedule of the energy facility.
41. A construction monitoring plan to survey bird communities on the Wind Energy Facility must be implemented too monitor impacts resulting from the infrastructure installations. This plan must have a minimum duration of at least 1 (one) year.
42. Post-construction avifauna and bat monitoring by an independent monitor should take place for at least two years after operation has commenced. This must be done in accordance with BirdLife South Africa/Endangered Wildlife Trust: Best practice guidelines for avian monitoring and impact mitigation at proposed wind energy development sites in Southern Africa.
43. Reports regarding bird monitoring must be submitted to the relevant provincial environmental department, BirdLife South Africa, the Endangered Wildlife Trust (EWT) and this Department on a quarterly basis. The report will assist all stakeholders in identifying potential and additional mitigation measures and to establish protocols for a bird monitoring programme for wind energy development in the country.
44. The facility must be designed to discourage the use of infrastructure components as perching or roosting substrates by birds and bats.
45. During construction the applicant must restrict the construction activities to the footprint area. No access to the remainder of the property is allowed.
46. Anti-collision devices such as bird flappers must be installed where power lines cross avifaunal corridors (e.g. grasslands, rivers, wetlands, and dams). The input of an avifaunal specialist must be

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obtained for the fitting of the anti-collision devices onto specific sections of the line once the exact positions of the towers have been surveyed and pegged. Additional areas of high sensitivity along the preferred alignment must also be identified by the avifaunal specialist for the fitment of anti-collision devices. These devices must be according to Eskom's Transmission and EWT's Guidelines.

47. All powerlines linking wind turbines to each other and to the internal substation must be buried. Only powerlines linking the wind energy facility to the grid may be above the ground.
48. A pre-construction walk through on the selected powerline alignment by a bat specialist, avifaunal specialist and ecologist, must be conducted to ensure that the micro-siting of the turbines has the least possible impact, there are no nests sites of priority species on or close to the construction corridor, and all protected plant species impacted are identified.

Vegetation, wetlands and water resources

49. Vegetation clearing must be limited to the authorised footprint.
50. Before the clearing of the site, the appropriate permits must be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF) for the removal of plants listed in the National Forest Act and from the relevant provincial department for the destruction of species protected in terms of the specific provincial legislation. Copies of the permits must be kept by the ECO.
51. Construction activities must be restricted to demarcated areas to restrict the impact on sensitive environmental features.
52. All areas of disturbed soil must be reclaimed using only indigenous grass and shrubs. Reclamation activities shall be undertaken according to the rehabilitation plan to be included in the final EMP.
53. Topsoil from all excavations and construction activities must be salvaged and reapplied during reclamation.
54. No exotic plants may be used for rehabilitation purposes; only indigenous plants of the area may be utilised.
55. No activities will be allowed to encroach into a water resource without a water use license being in place from the Department of Water Affairs.
56. Cleared alien vegetation must not be dumped on adjacent intact vegetation during clearing but must be temporarily stored in a demarcated area.
57. Removal of alien invasive species or other vegetation and follow-up procedures must be in accordance with the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983).

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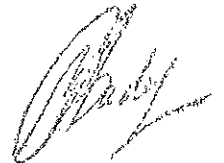
58. The holder of this authorisation must ensure that all the "No-go" and buffer areas are clearly demarcated (using fencing and appropriate signage) before construction commences.
59. Contractors and construction workers must be clearly informed of the no-go areas.
60. Where roads pass right next to major water bodies, provision shall be made for fauna such as toads to pass under the roads by using culverts or similar structures.
61. Bridge design must be such that it minimise impact to riparian areas with minimal alterations to water flow and must allow the movement of fauna and flora.
62. The final development area should be surveyed for species suitable for search and rescue, which should be translocated prior to the commencement of construction.
63. Electric fencing should not have any strands within 30cm of the ground, which should be sufficient to allow smaller mammals, reptiles and leopard tortoises to pass through, but still remain effective as a security barrier.
64. Disturbed areas must be rehabilitated as soon as possible after construction with locally indigenous plants to enhance the conservation of existing natural vegetation on site.
65. Wetlands, rivers and river riparian areas must be treated as "no-go" areas and appropriately demarcated as such. No vehicles, machinery, personnel, construction material, fuel, oil, bitumen or waste must be allowed into these areas without the express permission of and supervision by the ECO, except for rehabilitation work in these areas.
66. Workers must be made aware of the importance of not destroying or damaging the vegetation along rivers and in wetland areas and this awareness must be promoted throughout the construction phase.
67. Freshwater ecosystems located in close proximity to the construction areas must be inspected on a regular basis by the ECO for signs of disturbance from construction activities. If signs of disturbance are noted, immediate action must be taken to remedy the situation and, if necessary, a freshwater ecologist must be consulted for advice on the most suitable remediation measures.
68. No discharge of effluents or polluted water must be allowed into any rivers or wetland areas.
69. If construction areas are to be pumped of water (e.g. after rains), this water must be pumped into an appropriate settlement area, and not allowed to flow into any rivers or wetland areas.
70. Workers must be made aware of the importance of not polluting rivers or wetlands and of not undertaking activities that could result in such pollution, and this awareness must be promoted throughout the construction phase.
71. Freshwater ecosystems located in close proximity to the site must be inspected on a regular basis (but especially after rainfall) by the ECO for signs of sedimentation and pollution. If signs of sedimentation or pollution are noted, immediate action must be taken to remedy the situation and,

if necessary, a freshwater ecologist must be consulted for advice on the most appropriate measures.

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Roads and transportation

72. Wind turbines should be erected at least 500 metres from the national road reserve boundary and 500 metres from any point of intersection.
73. If this cannot be achieved, then an application will have to be submitted to SANRAL for consideration and approval. No access to the wind farm facility will be granted from the national road
74. Existing road infrastructure must be used as far as possible for providing access to the proposed turbine positions. Where no road infrastructure exists, new roads should be placed within existing disturbed areas or environmental conditions must be taken into account to ensure the minimum amount of damage is caused to natural habitats.
75. Signs must be placed along construction roads to identify speed limits, travel restrictions, and other standard traffic control information. To minimize impacts on local commuter, consideration should be given to limiting construction vehicles travelling on public roadways during the morning and late afternoon commute time.
76. Internal access roads must be located to minimize stream crossings. All structures crossing streams must be located and constructed so that they do not decrease channel stability or increase water velocity.
77. A designated access to the site must be created and clearly marked to ensure safe entry and exit.
78. Signage must be erected at appropriate points warning of turning traffic and the construction site.
79. Construction vehicles carrying materials to the site should avoid using roads through densely populated built-up areas so as not to disturb existing retail and commercial operations.
80. Road borders should be regularly maintained to ensure that vegetation remains short and that they therefore serve as an effective firebreak.
81. Roads must be designed so that changes to surface water runoff are avoided and erosion is not initiated.
82. All construction vehicles should adhere to a low speed limit to avoid collisions with susceptible species such as snakes and tortoises.



Noise

83. House located close to Noise Sensitive Area (NSA) 10 must be relocated before commencement of construction activities.
84. The holder of this authorisation must ensure that the National Noise Control Regulations and SANS10103:2008 are adhered to and measures to limit noise from the work site are implemented.
85. The holder of this authorisation must ensure that the construction staff working in areas where the 8-hour ambient noise levels exceed 75dBA must wear ear protection equipment.
86. The holder of this authorisation must ensure that all equipment and machinery are well maintained and equipped with silencers.
87. The holder of this authorisation must provide a prior warning to the community when a noisy activity e.g. blasting is to take place.
88. All wind turbines should be located at a setback distance of 500m from any homestead and a day/night noise criteria level at the nearest residents of 45dB(A) should be used to locate the turbines. The 500m setback distance can be relaxed if local factors; such as high ground between the noise source and the receiver, indicates that a noise disturbance will not occur.
89. Positions of turbines jeopardizing compliance with accepted noise levels should be revised during the micro-siting of the units in question and predicted noise levels re-modelled by the noise specialist, in order to ensure that the predicted noise levels are less than 45dB(A).
90. Construction staff must be trained in actions to minimise noise impacts.

Visual resources

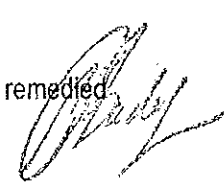
91. The holder of this authorisation must reduce visual impacts during construction by minimising areas of surface disturbance, controlling erosion, using dust suppression techniques and restoring exposed soil as closely as possible to their original contour and vegetation.
92. A lighting engineer must be consulted to assist in the planning and placement of light fixtures in order to reduce visual impacts associated with glare and light trespass.
93. Lighting of main structures (turbines) and ancillary buildings should be designed to minimise light pollution without compromising safety, and turbines must be lit according to Civil Aviation Regulations.
94. Signage on or near wind turbines must be avoided unless they serve to inform the public about wind turbines and their function.
95. Commercial messages and graffiti on turbines must be avoided.

Human health and safety

96. A health and safety programme must be developed to protect both workers and the general public during construction, operation and decommissioning of the energy facility. The programme must establish a safety zone for wind turbines from residences and occupied buildings, roads, right-of-ways and other public access areas that is sufficient to prevent accidents resulting from the operation of the wind turbines.
97. Potentials interference with public safety communication systems (e.g. radio traffic related to emergency activities) must be avoided.
98. The holder of this authorisation must ensure that the operation of the wind facility shall comply with the relevant communication regulations or guidelines relating to electromagnetic interference, e.g. microwave, radio and television transmissions.
99. The holder of this authorisation must obtain approval from the South Africa Civil Aviation Authority that the wind facility will not interfere with the performance of aerodrome radio Communication, Navigation and Surveillance (CNS) equipment, especially the radar, prior to commencement of the activity. A copy of the approval must be kept on site by the ECO.
100. The holder of this authorisation must obtain approval from the South Africa Weather Services (WeatherSA) that the energy facility will not interfere with the performance of their equipment, especially radar, prior to commencement of the activity. A copy of the approval must be kept on site by the ECO.
101. The holder of this authorisation must train safety representatives, managers and workers in workplace safety. The construction process must be compliant with all safety and health measures as prescribed by the relevant act.
102. Liaison with land owners/farm managers must be done prior to construction in order to provide sufficient time for them to plan agricultural activities.
103. No unsupervised open fires for cooking or heating must be allowed on site.

Hazardous materials and waste management

104. Areas around fuel tanks must be bunded or contained in an appropriate manner as per the requirements of SABS 089:1999 Part 1.
105. Leakage of fuel must be avoided at all times and if spillage occurs, it must be remedied immediately.



106. Hazardous waste such as bitumen, oils, oily rags, paint tins etc. must be disposed of at an approved waste landfill site licensed to accept such waste.
107. No dumping or temporary storage of any materials may take place outside designated and demarcated laydown areas, and these must all be located within areas of low environmental sensitivity.
108. Hazardous substances must not be stored where there could be accidental leakage into surface or subterranean water.
109. Hazardous and flammable substances must be stored and used in compliance to the applicable regulations and safety instructions. Furthermore, no chemicals must be stored nor may any vehicle maintenance occur within 350m of the temporal zone of wetlands, a drainage line with or without an extensive floodplain or hillside wetlands.
110. Temporary bunds must be constructed around chemical storage to contain possible spills.
111. Spill kits must be made available on-site for the clean-up of spills.
112. An integrated waste management approach must be implemented that is based on waste minimisation and must incorporate reduction, recycling and re-use options where appropriate. Where solid waste is disposed of, such disposal shall only occur at a landfill licensed in terms of section 20(b) of the National Environment Management Waste Act, 2008 (Act 59 of 2008).
113. The holder of this authorisation must provide sanitation facilities within the construction camps and along the road so that workers do not pollute the surrounding environment. These facilities must be removed from the site when the construction phase is completed as well as associated waste to be disposed of at a registered waste disposal site.
114. The holder of this authorisation must take note that no temporary site camps will be allowed outside the footprint of the development area as the establishment of such structures might trigger a listed activity as defined in the Environmental Impact Assessment Regulations, 2010.

Excavation and blasting activities

115. Underground cables and internal access roads must be aligned as much as possible along existing infrastructure to limit damage to vegetation and watercourses.
116. Foundations and trenches must be backfilled with originally excavated materials as much as possible. Excess excavation materials must be disposed of only in approved areas or, if suitable, stockpiled for use in reclamation activities.
117. Borrow materials must be obtained only from authorized and permitted sites. Permits must be kept on site by the ECO.

118. Anti-erosion measures such as silt fences must be installed in disturbed areas.

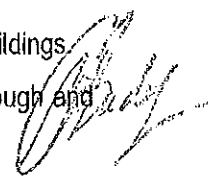
Air emissions

119. Dust abatement techniques must be used before and during surface clearing, excavation, or blasting activities.
120. Appropriate dust suppression techniques must be implemented on all exposed surfaces during periods of high wind. Such measures may include wet suppression, chemical stabilisation, the use of a wind fence, covering surfaces with straw chippings and re-vegetation of open areas.

Historical / cultural / paleontological resources

121. There must be constant monitoring of fresh bedrock excavations for fossil remains. All substantial occurrences of newly-exposed fossil remains reported by the ECO must be recorded and rescued by the relevant qualified palaeontologist.
122. Construction managers/foremen must be informed before construction starts on the possible types of heritage sites and cultural material they may be encountered and the procedures to follow when they find sites.
123. All buffers and no-go areas stipulated in this report must be adhered to for both the facilities and all roads and power lines.
124. Should any human remains be uncovered during development they must be immediately protected *in situ* and reported to the heritage authorities or to an archaeologist. The remains will need to be exhumed at the cost of the developer.
125. All construction and maintenance crew and vehicles (except small vehicles which may use existing farm tracks) should be kept out of the buffer zones.
126. The final layout should be shown to the appointed archaeologist before implementation to confirm that all significant heritage resources have been adequately protected.

Turbines position

127. Turbines must be positioned in such a way that shadow flicker does not affect any farm buildings.
128. The final placement of turbines must follow a micrositing procedure involving a walk-through and identification of any sensitive areas by botanical and avifaunal specialists.
- 

General

129. A copy of this authorisation and the approved EMPr must be kept at the property where the activity will be undertaken. The authorisation and approved EMPr must be produced to any authorised official of the Department who requests to see it and must be made available for inspection by any employee or agent of the holder of the authorisation who works or undertakes work at the property.
130. The holder of the authorisation must notify both the *Director: Integrated Environmental Authorisations* and the *Director: Compliance Monitoring* at the Department, in writing and within 48 (forty eight) hours, if any condition of this authorisation cannot be or is not adhered to. Any notification in terms of this condition must be accompanied by reasons for the non-compliance.
131. National government, provincial government, local authorities or committees appointed in terms of the conditions of this authorisation or any other public authority shall not be held responsible for any damages or losses suffered by the applicant or his successor in title in any instance where construction or operation subsequent to construction be temporarily or permanently stopped for reasons of non-compliance by the applicant with the conditions of authorisation as set out in this document or any other subsequent document emanating from these conditions of authorisation.


Date of environmental authorisation:

21 July 2014



Mr Ishaam Abader

Deputy Director-General: Legal, Authorisations, Compliance and Enforcement
Department of Environmental Affairs



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Annexure 1: Reasons for Decision

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1. Information considered in making the decision

In reaching its decision, the Department took, *inter alia*, the following into consideration -

- a) The information contained in the amended EIAr;
- b) The comments received in the EIAr included *inter alia*: the South African Heritage Resources Agency (SAHRA), Birdlife Eastern Cape, Eskom SOC Limited, South African National Roads Agency SOC Limited, Department of Water Affairs, Eskom, Department of Agriculture, Forestry and Fisheries (DAFF), Civil Aviation Authority, Department of Roads and affected parties;
- c) Mitigation measures as proposed in the amended EIAr and the EMPr;
- d) The information contained in the specialist studies contained in amended EIAr;
- e) The information contained in the specialist studies contained within Annexure E - M of the amended EIAr included, *inter alia*:

Title	Prepared by	Date
Economic Impact Assessment	Dr Hugo van Zyl: Independent Economic Researchers	-
Agricultural and soil study	Johann Lanz	-
Impact on Flora and Fauna	Mr Jamie Pote	January 2011 – May 2011
Bird Impact	Chris van Rooyen	March 2011 – March 2012
Bat Study	Natural Scientific Services	April 2012 to April 2013
Heritage Impact Assessment	Dr Johan Binneman: Eastern Cape Heritage Consultants	-
Palaeontological Impact Assessment	John E Almond	-
Visual Impact Assessment	Henry Holland	January 2011
Noise Impact	Mr Brett Williams: Safetrain CC (Safetech). Technical review was done by Sound Research Laboratories South Africa.	October 2011 (Calibration of equipment)
Wetland and Aquatic Impact Assessment	Scherman Colloty and Associates	January 2012

- f) The objectives and requirements of relevant legislation, policies and guidelines, including section 2 of the National Environmental Management Act, 1998 (Act 107 of 1998).

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2. Key factors considered in making the decision

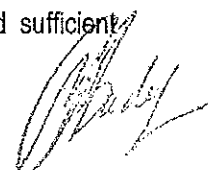
All information presented to the Department was taken into account in the Department's consideration of the application. A summary of the issues which, in the Department's view, were of the most significance is set out below.

- a) The findings of all the specialist studies conducted and their recommended mitigation measures.
- b) The 12 months (four (4) seasons) Bat and Avifaunal Monitoring Report.
- c) The need for the proposed project stems from the provision of electricity to the national grid in terms of the Renewable Energy Independent Power Producers Procurement Programme (REIPPPP) and the provision of electricity from Independent Power Producers (IPPs) as required by the Department of Energy.
- d) The proposed Banna ba Pifhu Wind Farm is located outside the proposed Eskom's Nuclear 1 Transmission Lines Corridors and therefore has no impact on Nuclear 1.
- e) The proposed facility also has no impact on the proposed transmission lines for Nuclear 1 since it is feasible to cross the 66 kV power line with the 400kv power line.
- f) The DAFF does not object to the proposed, this is subject to the position of various wind turbines.
- g) The amended EIAr identified all legislation and guidelines that have been considered in the preparation of the amended EIAr.
- h) The methodology used in assessing the potential impacts identified in the EIAr and the specialist studies have been adequately indicated.
- i) A sufficient public participation process was undertaken and the applicant has satisfied the minimum requirements as prescribed in the EIA Regulations, 2010 for public involvement.

3. Findings

After consideration of the information and factors listed above, the Department made the following findings -

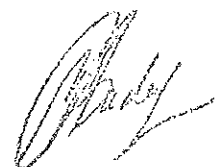
- a) The identification and assessment of impacts are detailed in the amended EIAr and sufficient assessment of the key identified issues and impacts have been completed.



- b) The closest turbine will be positioned 180 metres from existing power lines which is outside the 1.5m times the toppling distance which is up to now used as rule of thumb for the siting of towers adjacent to power lines.
- c) The CAA has no objection to the proposed development, subject to the submission of the final turbine layout before commencement of construction activities since position of turbine 10 and 12 may need to be reconsidered at a later stage.
- d) At least 5 Wind Energy Facilities have been proposed in the Kouga Municipal Area and most of them have received EAs and one is in the process of being established.
- e) The procedure followed for impact assessment is adequate for the decision-making process.
- f) The proposed mitigation of impacts identified and assessed adequately curtails the identified impacts.
- g) The information contained in the amended EIAr is deemed to be accurate and credible.
- h) EMPr measures for the pre-construction, construction and rehabilitation phases of the development were proposed and included in the amended EIAr and will be implemented to manage the identified environmental impacts during the construction process.

In view of the above, the Department is satisfied that, subject to compliance with the conditions contained in the environmental authorisation, the proposed activity will not conflict with the general objectives of integrated environmental management laid down in Chapter 5 of the National Environmental Management Act, 1998 and that any potentially detrimental environmental impacts resulting from the proposed activity can be mitigated to acceptable levels. The environmental authorisation is accordingly granted.


SUE MARI VAN WYK
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Chartered Accountant (SA)
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environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

Private Bag X 447· PRETORIA · 0001· Environment House 473 Steve Biko Road, Arcadia·PRETORIA
Tel (+ 27 12) 399 9372

DEA Reference: 12/12/20/2289/AM1

Enquiries: Mr Thando Booï

Telephone: (012) 399 9387 E-mail: TBooi@environment.gov.za

CERTIFIED A
TRUE COPY OF
THE ORIGINAL

Mr Alan Wolfromm
Banna ba Pifhu Wind Farm (RF) (Pty) Ltd
P.O. Box 762
WILDERNESS
6560

Telephone Number: (044) 877 0564
Email Address: wolfromm@wkn-windcurrent.com

NADIA TIMMERMAN
Commissioner of Oaths (SA)
Professional Accountant (SA)
Registration number 30639
Mazars

132 MITCHELL STREET, GEORGE
Practise number: 900222
Tel: 044 874 5022

PER EMAIL / MAIL

Dear Mr Wolfromm

AMENDMENT OF THE ENVIRONMENTAL AUTHORISATION ISSUED ON 21 JULY 2014 FOR THE PROPOSED BANNA BA PIFHU 30.0 MW WIND ENERGY FACILITY ON THE REMAINDER OF FARM GEELHOUTEBOOM NO. 688, REMAINDER OF PORTION 2 OF FARM DIEP RIVIER NO. 689, PORTION 15 OF FARM DIEP RIVIER NO. 689 AND PORTION 1 OF FARM BROADLANDS NO. 868 NEAR HUMANSDORP IN THE KOUQA LOCAL MUNICIPALITY OF THE CACADU DISTRICT MUNICIPALITY, EASTERN CAPE PROVINCE

The Environmental Authorisation (EA) issued for the abovementioned application by this Department on 21 July 2014 and your request for amendment to the EA received by this Department on 15 May 2017 and the acknowledgement letter dated 25 May 2017 refer.

Based on a review of the reason for requesting an amendment to the above EA, this Department in terms of Chapter 5 of the Environmental Impact Assessment Regulations, 2014, has decided to amend the EA dated 21 July 2014 as follows:

Amendment 1: Amendment to the extend validity period of the EA

The activity must commence within a period of five (05) years from the date of expiry of the EA issued on 21 July 2014 (i.e. the EA lapses on 21 July 2022). If commencement of the activity does not occur within that period, the authorisation lapses and a new application for environmental authorisation must be made in order for the activity to be undertaken.

Amendment 2: Amendment of the description of the project on the cover letter of Environmental Authorisation

From:

Application for environmental authorisation in terms of the National Environmental Management Act, 1998:543/544/545/546 for the proposed Banna ba pifhu 30.6 mw energy facility on the Broadlands farm near Humansdorp in the Kouqa Local Municipality. Eastern Cape.

To:

Application for environmental authorisation in terms of the National Environmental Management Act, 1998: GN R. 543/544/545/546 for the proposed Banna ba Pifhu 30.6 MW wind energy facility on Remainder of farm Geelhouteboom No. 688; Remainder of Portion 2 of farm Diep Rivier No. 689; Portion 15 of farm Diep Rivier No. 689; and Portion 1 of farm Broadlands No. 868 near Humansdorp in the Kouga Local Municipality of the Cacadu District Municipality, Eastern Cape Province.

Amendment 3: Amendment of the location of the activity on page 1 of the Environmental Authorisation

From:

Remainder of Farm 688
Portion 2 of Farm 689
Portion 15 of Farm 689
Portion 1 of Farm 868

Kouga Local Municipality
Cacadu District Municipality
EASTERN CAPE PROVINCE

To:

Remainder of Farm Geelhouteboom No. 688
Remainder of Portion 2 of Farm Diep Rivier No. 689
Portion 15 of Farm Diep Rivier No. 689
Portion 1 of Farm Broadlands No. 868

Kouga Local Municipality
Cacadu District Municipality
EASTERN CAPE PROVINCE

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NADIA TIMMERMAN
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Professional Accountant (SA)
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Practise number: 900222
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The applicant applied for the extension of the validity period of the EA as the development was not awarded preferred bidder status in the DoE REIPPP. The applicant intends to bid this project in the DoE REIPPP future rounds. In addition, the applicant request for the amendment of the description of the activity and its location as it was not described in detailed in the EA.

This letter must be read in conjunction with the EA dated 21 July 2014.

In terms of Regulation 4(2) of the Environmental Impact Assessment Regulations, 2014 (the Regulations), you are instructed to notify all registered interested and affected parties, in writing and within 14 (fourteen) days of the date of the EA, of the Department's decision in respect of your application as well as the fact that an appeal may be lodged against the decision in terms of the National Appeals Regulations, and the provisions regarding the submission of appeals as contained in the Regulations.

Should any person wish to lodge an appeal against this decision, he/she must submit the appeal to the appeal administrator, and a copy of the appeal to the applicant, any registered interested and affected party, and any organ of state with interest in the matter within 20 days from the date that the notification of the decision was sent to the registered interested and affected parties by the applicant; or the date that the notification of the decision was sent to the applicant by the Department, whichever is applicable.

Appeals must be submitted in writing in the prescribed form to:

Mr Z Hassam, Director: Appeals and Legal Review of this Department at the below mentioned addresses.

By email: appealsdirector@environment.gov.za;

By hand: Environment House
473 Steve Biko,
Arcadia,
Pretoria,
0083; or

By post: Private Bag X 447,
Pretoria,
0001

Please note that in terms of Section 43(7) of the National Environmental Management Act, 1998, the lodging of an appeal will suspend the environmental authorisation or any provision or condition attached thereto. In the instance where an appeal is lodged, you may not commence with the activity until such time that the appeal is finalised.

To obtain the prescribed appeal form and for guidance on the submission of appeals, please visit the Department's website at https://www.environment.gov.za/documents/forms#legal_authorisations or request a copy of the documents at appealsdirector@environment.gov.za.

Yours faithfully


Mr Obopeng T Gaoraelwe
Acting Chief Director: Integrated Environmental Authorisations
Department of Environmental Affairs

Date: 21/06/17

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THE ORIGINAL



NADIA TIMMERMAN
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Professional Accountant (SA)
Registration number 30639
Mazars
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Practise number: 900222
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forestry, fisheries & the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

Private Bag X 447· PRETORIA 0001· Environment House 473 Steve Biko Road, Arcadia· PRETORIA

DFFE Reference: 12/12/20/2289/AM2

Enquiries: Mr Lunga Dlova

Telephone: (012) 399 8524 **E-mail:** LDlova@dfpe.gov.za

Mr Mike Mangnall
Banna ba Pifhu Wind Farm (RF) (Pty) Ltd
301 Sunclare Building
21 Dreyer Street
Claremont
SOUTH AFRICA
7708

Cellphone Number: +27 (083) 785 1492
Email Address: Mangnall@wkn-windcurrent.com

PER EMAIL / MAIL

Dear Mr Mangnall

AMENDMENT OF THE ENVIRONMENTAL AUTHORISATION ISSUED ON 21 JULY 2014 FOR THE BANNA BA PIFHU 30.6 MW WIND ENERGY FACILITY ON THE BROADLANDS FARM NEAR HUMANSDORP IN THE KOUGA LOCAL MUNICIPALITY OF THE CACADU DISTRICT MUNICIPALITY, EASTERN CAPE PROVINCE

The Environmental Authorisation (EA) issued for the abovementioned application by this Department on 21 July 2014, the amendment to the EA dated 21 June 2017, your application for amendment of the EA received by the Department on 04 February 2022 and the acknowledgement letter dated 10 February 2022, refer.

Based on a review of the reason for requesting an amendment to the above EA, this Department, in terms of Chapter 5 of the Environmental Impact Assessment Regulations, 2014 as amended, has decided to amend the EA dated 21 July 2014 as amended, as follows:

Amendment 1: Extend the validity period of the Environmental Authorisation:

The activity must commence within a period of two (2) years from the date of expiry of the EA dated 21 July 2014, now extended to **21 July 2024**. If commencement of the activity does not occur within that period, the authorisation lapses and a new application for environmental authorisation must be made in order for the activity to be undertaken.

Reason for the amendment: The applicant, The Banna ba Pifhu Wind Farm (RF) (Pty) Ltd was not awarded preferred bidder status in the latest 5th bidding round of the DoE REIPPPP, hence no activity as authorised in the EA has commenced. It is thus the Applicants intention to bid the Wind Farm into the next REIPPPP bidding round or a private off-take opportunity, and for this reason, the existing EA will need to be extended so that the project can be bid.

The Department is aware that the environment changes constantly, as a result it might be significantly different from the one that existed at the time of the issuing of this EA, hence the validity of the EA cannot exceed a

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maximum period of 10 years. Failure to commence with construction activities within the maximum 10 year period, your EA will be deemed to have lapsed and a new application for Environmental Authorisation will have to be lodged.

This proposed amendment letter must be read in conjunction with the EA dated 21 July 2014 as amended.

In terms of the Promotion of Administrative Justice Act, 2000 (Act No 3 of 2000), you are entitled to the right to fair, lawful and reasonable administrative action; and to written reasons for administrative action that affects you negatively. Further your attention is drawn to the provisions of the Protection of Personal Information Act, 2013 (Act no. 4 of 2013) which stipulates that the Department should conduct itself in a responsible manner when collecting, processing, storing and sharing an individual or another entity's personal information by holding the Department accountable should the Department abuse or compromise your personal information in any way.

In terms of Regulation 4(2) of the Environmental Impact Assessment Regulations, 2014, as amended (the EIA Regulations), you are instructed to notify all registered interested and affected parties, in writing and within 14 (fourteen) days of the date of the EA, of the Department's as well as the provisions regarding the submission of appeals that are contained in the Regulations.

Your attention is drawn to Chapter 2 of National Environmental Management Act, 1998 (Act No. 107 of 1998) National Appeal Regulations published under Government Notice R993 in Government Gazette No. 38303 dated 08 December 2014 (National Appeal Regulations, 2014), which prescribe the appeal procedure to be followed. Kindly include a copy of this document (National Appeal Regulations, 2014) with the letter of notification to interested and affected parties in this matter.

Should any person wish to lodge an appeal against this decision, he/she must submit the appeal to the appeal administrator, and a copy of the appeal to the applicant, any registered interested and affected party, and any organ of state with interest in the matter within 20 days from the date that the notification of the decision was sent to the registered interested and affected parties by the applicant; or the date that the notification of the decision was sent to the applicant by the Department, whichever is applicable.

Appeals must be submitted in writing in the prescribed form to:

The Director: Appeals and Legal Review of this Department at the below mentioned addresses.

By email: appeals@environment.gov.za;

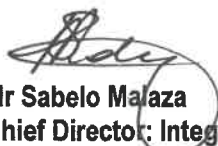
By hand: Environment House
473 Steve Biko,
Arcadia,
Pretoria,
0083; or

By post: Private Bag X447,
Pretoria,
0001;

Please note that in terms of Section 43(7) of the National Environmental Management Act, Act No. 107 of 1998, as amended, the lodging of an appeal will suspend the environmental authorisation or any provision or condition attached thereto. In the instance where an appeal is lodged, you may not commence with the activity until such time that the appeal is finalised.

To obtain the prescribed appeal form and for guidance on the submission of appeals, please visit the Department's website at https://www.environment.gov.za/documents/forms#legal_authorisations or request a copy of the documents at appeals@environment.gov.za.

Yours faithfully



Mr Sabelo Malaza
Chief Director: Integrated Environmental Authorisations
Department of Forestry, Fisheries and the Environment

Date: *22/02/2022*

cc:	David Masterson	Dave Masterson Family Trust	E-mail: dmasterson@igen.co.za
	Dayalan Govender	Eastern Cape Department of Economic Development, Environmental Affairs and Tourism	E-mail: dayalan.govender@dede.gov.za
	Mari du Toit	Kouga Local Municipality	E-mail: mduitoit@kouga.gov.za
	Ashlin Bodasing	Arcus Consultancy Services South Africa (Pty) Ltd	E-mail: ashlinb@arcusconsulting.co.za

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APPENDIX E: BANNA BA PIFHU GRID CONNECTION EA



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

Private Bag X 447 · PRETORIA · 0001 · Fedsure Building · 315 Pretorius Street · PRETORIA
Tel (+ 27 12) 310 3911 · Fax (+ 2712) 322 2682

DEA Reference: 12/12/20/2289/1

Enquiries: Ms Sindiswa Dlomo

Telephone: (012) 395 1856 **Fax:** (012) 320 7539 **E-mail:** Sdlomo@environment.gov.za

Mr Alam Wolfromm
Banna ba Pifhu Wind Farm (RF) (Pty) Ltd
PO Box 762
WILDERNESS
6560

Telephone Number: (044) 877 0564
Fax Number: (086) 610 2779

PER FACSIMILE / MAIL

Dear Mr Wolfromm

APPLICATION FOR ENVIRONMENTAL AUTHORISATION IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998: GN R. 543/544/546 FOR THE CONSTRUCTION OF THE PROPOSED ELECTRICAL GRID CONNECTION FOR THE PROPOSED BANNA BA PIFHU 30.6 MW WIND ENERGY FACILITY ON THE BROADLANDS FARM NEAR HUMANSDORP IN THE KOUGA LOCAL MUNICIPALITY OF THE CACADU DISTRICT MUNICIPALITY, EASTERN CAPE PROVINCE

With reference to the above application, please be advised that the Department has decided to grant authorisation. The environmental authorisation (EA) and reasons for the decision are attached herewith.

In terms of regulation 10(2) of the Environmental Impact Assessment Regulations, 2010 (the Regulations), you are instructed to notify all registered interested and affected parties, in writing and within 12 (twelve) days of the date of the EA, of the Department's decision in respect of your application as well as the provisions regarding the submission of appeals that are contained in the Regulations.

Your attention is drawn to Chapter 7 of the Regulations, which prescribes the appeal procedure to be followed. This procedure is summarised in the attached document. Kindly include a copy of this document with the letter of notification to interested and affected parties.

Should the applicant or any other party wish to appeal any aspect of the decision a notice of intention to appeal must be lodged by all prospective appellants with the Minister, within 20 days of the date of the EA, by means of one of the following methods:

By facsimile: 0123207561;
By post: Private Bag X447,
Pretoria, 0001; or

SUE-MARI VAN WYK
Commissioner of Oaths (SA)
Chartered Accountant (SA)
Registration number 20017442
Mazars
132 MITCHELL STREET, GEORGE
Practise number: 900222
Tel: 0448745022

By hand: 2nd Floor, Fedsure Building, North Tower,
Cnr. Lilian Ngoyi (Van der Walt) and Pretorius Streets,
Pretoria.

If the applicant wishes to lodge an appeal, it must also serve a copy of the notice of intention to appeal on all registered interested and affected parties as well as a notice indicating where, and for what period, the appeal submission will be available for inspection, should you intend to submit an appeal.

Please include the Department (*Attention: Director: Integrated Environmental Authorisations*) in the list of interested and affected parties, notified through your notification letter to interested and affected parties, for record purposes.

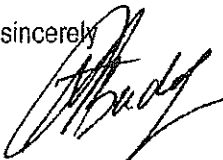
Appeals must be submitted in writing to:

Mr Z Hassam, Director: Appeals and Legal Review, of this Department at the above mentioned addresses or fax number. Mr Hassam can also be contacted at:

Tel: 012-310-3271
Email: AppealsDirectorate@environment.gov.za

The authorised activities shall not commence within twenty (20) days of the date of signature of the authorisation. Further, please note that the Minister may, on receipt of appeals against the authorisation or conditions thereof suspend the authorisation pending the outcome of the appeals procedure.

Yours sincerely



Mr Ishaam Abader
Deputy Director-General: Legal, Authorisations, Compliance and Enforcement
Department of Environmental Affairs

Date: 21/01/2014

CC	Mr Paul Lochner	CSIR	Tel: 021-888-2661	Fax: 021-888-3646
	Mr A Struwig	Eastern Cape DEDET	Tel: 014-508-5815	Fax: 041-585-1958
	Ms K Strydom	Kouga Local Municipality	Tel: 042-293-2517	Fax: 086-523-1710



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APPEALS PROCEDURE IN TERMS OF CHAPTER 7 OF THE NEMA EIA REGULATIONS, 2010 (THE REGULATIONS) AS PER GN R. 543 OF 2010 TO BE FOLLOWED BY THE APPLICANT AND INTERESTED AND AFFECTED PARTIES UPON RECEIPT OF NOTIFICATION OF AN ENVIRONMENTAL AUTHORISATION (EA)

APPLICANT	INTERESTED AND AFFECTED PARTIES (IAPs)
1. Receive EA from the relevant Competent Authority (the Department of Environmental Affairs [DEA]).	1. Receive EA from Applicant/Consultant.
2. Within 12 days of date of the EA notify all IAPs of the EA and draw their attention to their right to appeal against the EA in terms of Chapter 7 of the Regulations.	2. N/A.
3. If you want to appeal against the EA, submit a notice of intention to appeal within 20 days of the date of the EA with the Minister of Water and Environmental Affairs (the Minister).	3. If you want to appeal against the EA, submit a notice of intention to appeal within 20 days of the date of the EA. with the Minister of Water and Environmental Affairs (the Minister).
4. After having submitted your notice of intention to appeal to the Minister, provide each registered IAP with a copy of the notice of intention to appeal within 10 days of lodging the notice.	4. After having submitted your notice of intention to appeal to the Minister, provide the applicant with a copy of the notice of intention to appeal within 10 days of lodging the notice.
5. The Applicant must also serve on each IAP: <ul style="list-style-type: none"> a notice indicating where and for what period the appeal submission will be available for inspection. 	5. Appellant must also serve on the Applicant within 10 days of lodging the notice, <ul style="list-style-type: none"> a notice indicating where and for what period the appeal submission will be available for inspection by the applicant.
6. The appeal must be submitted in writing to the Minister within 30 days after the lapsing of the period of 20 days provided for the lodging of the notice of intention to appeal.	6. The appeal must be submitted to the Minister within 30 days after the lapsing of the period of 20 days provided for the lodging of the notice of intention to appeal.
7. Any IAP who received a notice of intention to appeal may submit a responding statement to that appeal to the Minister within 30 days from the date that the appeal submission was lodged with the Minister.	7. An Applicant who received notice of intention to may submit a responding statement to the appeal to the Minister within 30 days from the date that the appeal submission was lodged with the Minister.

NOTES:

1. **An appeal against a decision must be lodged with:-**
 - a) the Minister of Water and Environmental Affairs if the decision was issued by the Director-General of the Department of Environmental Affairs (or another official) acting in his/ her capacity as the delegated Competent Authority;
 - b) the Minister of Justice and Constitutional Development if the applicant is the Department of Water Affairs and the decision was issued by the Director-General of the Department of Environmental Affairs (or another official) acting in his/ her capacity as the delegated Competent Authority;

2. **An appeal lodged with:-**
 - a) the Minister of Water and Environmental Affairs must be submitted to the Department of Environmental Affairs;
 - b) the Minister of Justice and Constitutional Development must be submitted to the Department of Environmental Affairs;

3. **An appeal must be:-**
 - a) submitted in writing;
 - b) accompanied by:
 - a statement setting out the grounds of appeal;
 - supporting documentation which is referred to in the appeal; and
 - a statement that the appellant has complied with regulation 62 (2) or (3) together with copies of the notices referred to in regulation 62.


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 Commissioner of Oaths (SA)
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 132 MITCHELL STREET, GEORGE
 3 Practise number: 900222
 Tel: 0448745022





environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA


SUE-MARI VAN WYK
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Environmental Authorisation

In terms of Regulation 36 of the Environmental Impact Assessment Regulations, 2010

Construction the proposed electrical grid connection for the proposed 30.6 MW Banna ba Pifhu
Wind Farm near Humansdorp, to be located on Broadlands Farm, in the Kouga Local
Municipality, Eastern Cape province

Cacadu District Municipality

Authorisation register number:	12/12/20/2289/1
Last amended:	First issue
Holder of authorisation:	Banna ba Pifhu Wind Farm (RF) (Pty) Ltd
Location of activity:	Remainder of Farm 688 Portion 2 of Farm 689 Portion 15 of Farm 689 Portion 1 of Farm 868 Kouga Local Municipality Cacadu District Municipality EASTERN CAPE PROVINCE

This authorisation does not negate the holder of the authorisation's responsibility to comply with any other statutory requirements that may be applicable to the undertaking of the activity.



Decision

The Department is satisfied, on the basis of information available to it and subject to compliance with the conditions of this environmental authorisation, that the applicant should be authorised to undertake the activity specified below.

Non-compliance with a condition of this authorisation may result in criminal prosecution or other actions provided for in the National Environmental Management Act, 1998 and the EIA regulations.

Details regarding the basis on which the Department reached this decision are set out in Annexure 1.

Activities authorised

By virtue of the powers conferred on it by the National Environmental Management Act, 1998 (Act 107 of 1998) and the Environmental Impact Assessment Regulations, 2010 the Department hereby authorises –

Banna ba Pifhu Wind Farm (RF) (Pty) Ltd

(hereafter referred to as the **holder of the authorisation**)

with the following contact details –

Mr Alam Wolfrohm

Banna ba Pifhu Wind Farm (RF) (Pty) Ltd

PO Box 762

WILDERNESS

6560

Telephone Number: (044) 877 0564

Fax Number: (086) 610 2779

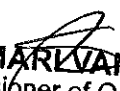
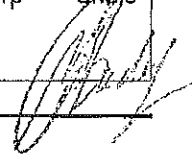
Cell phone Number: (082) 529 4909

E-mail Address: Wolfrohm@wkn-windcurrent.com

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Chartered Accountant (SA)
Registration number 20017442
Mazars
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Practise number: 900222
Tel: 0448745022



to undertake the following activity (hereafter referred to as "the activity") indicated in Listing Notices 1 (GN R. 544):

Listed activities	Activity/Project description
<p><u>GN R. 544 Item 10:</u> "The construction of facilities or infrastructure for the transmission and distribution of electricity – (i) Outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts."</p>	<p>A new 66 kV substation will be constructed on site to connect the distribution or transmission system. A new power line will be constructed to connect to the 66kV Eskom grid line. The connection from the new substation to the existing 66 kV Melkhout /St Francis overhead power line will be via underground cabling or a new 66 kV power line.</p>
<p><u>GN R. 544 Item 11:</u> "The construction of: (xi) infrastructure or structures covering 50 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line."</p>	<p>The final layout may result in electrical infrastructure or other infrastructure encroaching within 32 m of a watercourse.</p> <p style="text-align: right;">  SUE-MARLVAN WYK Commissioner of Oaths (SA) Chartered Accountant (SA) Registration number 20017442 Mazars 132 MITCHELL STREET, GEORGE Practise number: 900222 Tel: 0448745022 </p>
<p><u>GN R. 544 Item 18 (i):</u> "The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from: (i) a watercourse."</p>	<p>The construction of the power line could necessitate crossing of a wetland and thus, infilling of more than 5 m³.</p>
<p><u>GN R. 546 Item 12:</u> "The clearance of an area of 300 square metres or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation." (a) Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA</p>	<p>This will depend on the area of indigenous vegetation to be cleared and whether it falls within the threatened Renosterveld vegetation on site (NEMBA listed – endangered – Humansdorp Shale Renosterveld)</p> <p style="text-align: right;">  </p>

Listed activities	Activity/Project description
<p>or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;</p> <p>(b) Within critical biodiversity areas identified in bioregional plans;</p>	
<p><u>GN R. 546 Item 16:</u></p> <p>"The construction of:</p> <p>(iii) buildings with a footprint exceeding 10 square metres in size; or</p> <p>(iv) infrastructure covering 10 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse."</p> <p>(a) Eastern Cape</p> <p>(ii) Outside urban areas:</p> <p>(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.</p>	<p>This might apply depending on the location of roads and electrical infrastructure which may cross one of the water courses on the site. It is probable that water courses will be crossed, which will run west-east through the site</p>

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as described in the amended EIAr dated December 2013 at:

	Longitude	Latitude
Power line option 3 - Start	24°47'15.27"E	34° 3'58.58"S
Middle	24°47'31.10"E	34° 4'0.78"S
End	24°47'56.74"E	34° 4'4.48"S


- for the construction the proposed electrical grid connection for the proposed 30.6MW Banna ba Pifhu Wind Farm, on Broadlands Farm (the Remainder of Farm 688, Portion 2 of Farm 689, Portion 15 of Farm 689 and Portion 1 of Farm 868), near Humansdorp, within the Kouga Local Municipality of the Cacadu District Municipality, Eastern Cape Province, hereafter referred to as "the property".



The infrastructure associated with the grid connection works include:

- New substation on site to connect to the distribution transmission system (maximum size of 100 m x 100 m). The wind farm will connect to the existing 66 kV Melkhout / St Francis overhead power line which passes through the site; and
- Connection to the Eskom grid line will be via 66kV underground cabling or overhead power line supported on intermediate poles.

Conditions of this Environmental Authorisation


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Scope of authorisation

1. The preferred power line (Option 3, using either an overhead power line or an underground cable), routed as per the abovementioned geographic coordinates is approved. The overhead power line or underground cable must follow the same alignment as the geographic coordinates provided above.
2. Construction of this project may only commence once the Banna ba Pifhu Wind Farm (12/12/20/2289) has commenced with the construction phase.
3. Authorisation of the activity is subject to the conditions contained in this authorisation, which form part of the environmental authorisation and are binding on the holder of the authorisation.
4. The holder of the authorisation is responsible for ensuring compliance with the conditions contained in this environmental authorisation. This includes any person acting on the holder's behalf, including but not limited to, an agent, servant, contractor, sub-contractor, employee, consultant or person rendering a service to the holder of the authorisation.
5. The activities authorised may only be carried out at the property as described above.
6. Any changes to, or deviations from, the project description set out in this authorisation must be approved, in writing, by the Department before such changes or deviations may be effected. In assessing whether to grant such approval or not, the Department may request such information as it deems necessary to evaluate the significance and impacts of such changes or deviations and it may be necessary for the holder of the authorisation to apply for further authorisation in terms of the regulations.
7. This activity must commence within a period of three (03) years from the date of issue of this authorisation. If commencement of the activity does not occur within that period, the authorisation

lapses and a new application for environmental authorisation must be made in order for the activity to be undertaken.

8. Commencement with one activity listed in terms of this authorisation constitutes commencement of all authorised activities.
9. The holder of an environmental authorisation must notify the competent authority of any alienation, transfer and change of ownership rights in the property on which the activity is to take place.

Notification of authorisation and right to appeal

10. The holder of the authorisation must notify every registered interested and affected party, in writing and within 12 (twelve) calendar days of the date of this environmental authorisation, of the decision to authorise the activity.
11. The notification referred to must –
 - 11.1. specify the date on which the authorisation was issued;
 - 11.2. inform the interested and affected party of the appeal procedure provided for in Chapter 7 of the Environmental Impact Assessment Regulations, 2010;
 - 11.3. advise the interested and affected party that a copy of the authorisation will be furnished on request; and
 - 11.4. give the reasons of the competent authority for the decision.
12. The holder of the authorisation must publish a notice –
 - 12.1. informing interested and affected parties of the decision;
 - 12.2. informing interested and affected parties where the decision can be accessed; and
 - 12.3. drawing the attention of interested and affected parties to the fact that an appeal may be lodged against this decision in the newspaper(s) contemplated and used in terms of regulation 54(2)(c) and (d) and which newspaper was used for the placing of advertisements as part of the public participation process.

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Management of the activity

13. The Environmental Management Programme (EMPr) submitted as part of the amended EIAr is not approved and must be amended to include measures as dictated by the final site lay-out map and micro-siting; and the provisions of this environmental authorisation. The EMPr must be made available for comments by registered Interested and Affected Parties and the applicant must consider such comments. Once amended, the final EMPr must be submitted to the Department for

written approval prior to commencement of the activity. Once approved the EMPr must be implemented and adhered to.

14. The EMPr is amendable and must be implemented and strictly enforced during all phases of the project. It shall be seen as a dynamic document and shall be included in all contract documentation for all phases of the development when approved.
15. Changes to the EMPr, which are environmentally defensible, shall be submitted to this Department for acceptance before such changes could be effected.
16. The Department reserves the right to amend the EMPr should any impacts that were not anticipated or covered in the amended EIAr be discovered.
17. The provisions of the approved EMPr including recommendations and mitigation measures in the amended EIAr and specialist studies shall be an extension of the conditions of this EA and therefore noncompliance with them would constitute noncompliance with the EA.
18. The following must be included in the amended final EMPr:
 - Final layout of the proposed power line, including final tower positions and their GPS coordinates;
 - The findings and recommendations made by the avifaunal specialist and the botanist as per conditions 35 and 36, under specific conditions.
 - EMPr must include all other licenses and permits required for the construction of the proposed development.
19. Once approved, the EMPr must be implemented and adhered to.

Monitoring

20. The applicant must appoint a suitably experienced independent Environmental Control Officer (ECO) for the construction phase of the development that will have the responsibility to ensure that the mitigation/rehabilitation measures and recommendations referred to in this authorisation are implemented and to ensure compliance with the provisions of the EMPr.
 - 20.1. The ECO shall be appointed before commencement of any authorised activity.
 - 20.2. Once appointed, the name and contact details of the ECO must be submitted to the *Director: Compliance Monitoring* of the Department.
 - 20.3. The ECO shall keep record of all activities on site, problems identified, transgressions noted and a task schedule of tasks undertaken by the ECO.


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- 20.4. The ECO shall remain employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the site is ready for operation.
- 20.5. Records relating to monitoring and auditing must be kept on site and made available for inspection to any relevant and competent authority in respect of this development.

Recording and reporting to the Department

21. All documentation e.g. audit/monitoring/compliance reports and notifications, required to be submitted to the Department in terms of this authorisation, must be submitted to the *Director: Compliance Monitoring* at the Department.
22. The holder of the authorisation must submit an environmental audit report to the Department within 30 days of completion of the construction phase (i.e. within 30 days of site handover) and within 30 days of completion of rehabilitation activities.
23. The environmental audit report must indicate the date of the audit, the name of the auditor and the outcome of the audit in terms of compliance with the environmental authorisation conditions as well as the requirements of the EMPr.
24. Records relating to monitoring and auditing must be kept on site and made available for inspection to any relevant and competent authority in respect of this development.

Commencement of the activity

25. The authorised activity shall not commence within twenty (20) days of the date of signature of the authorisation.
26. An appeal under section 43 of the National Environmental Management Act (NEMA), Act 107 of 1998 (as amended), does not suspend an environmental authorisation or exemption, or any provisions or conditions attached thereto, or any directive, unless the Minister, MEC or delegated organ of state directs otherwise.
27. Should you be notified by the Minister of a suspension of the authorisation pending appeal procedures, you may not commence with the activity until such time that the Minister allows you to commence with such an activity in writing.


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Notification to authorities

28. Fourteen (14) days written notice must be given to the Department that the activity will commence. Commencement for the purposes of this condition includes site preparation. The notice must include a date on which it is anticipated that the activity will commence, as well as a reference number. This notification period may coincide with the Notice of Intent to Appeal period.

Operation of the activity

29. Fourteen (14) days written notice must be given to the Department that the activity operational phase will commence.

Site closure and decommissioning

30. Should the activity ever cease or become redundant, the applicant shall undertake the required actions as prescribed by legislation at the time and comply with all relevant legal requirements administered by any relevant and competent authority at that time.

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Specific conditions

31. Activities which require a Water Use License must not be allowed to encroach into a water resource without a water use licence being in place from the Department of Water Affairs.
32. The facility must be designed to discourage the use of infrastructure components as perching or roosting substrates by birds and bats.
33. Anti-collision devices such as bird flappers must be installed where power lines cross avifaunal corridors (e.g. grasslands, rivers, wetlands, and dams). The input of an avifaunal specialist must be obtained for the fitting of the anti-collision devices onto specific sections of the line once the exact positions of the towers have been surveyed and pegged. Additional areas of high sensitivity along the preferred alignment must also be identified by the avifaunal specialist for the fitment of anti-collision devices. These devices must be according to Eskom's Transmission and EWT's Guidelines.
34. All power lines linking wind turbines to each other and to the internal substation must be buried. Only power lines linking the wind energy facility to the grid may be above the ground.

35. A pre-construction walk through on the selected power line alignment by a bat specialist, avifaunal specialist and ecologist, must be conducted to ensure that the micro-siting of the turbines has the least possible impact, there are no nests sites of priority species on or close to the construction corridor, and all protected plant species impacted are identified.
36. A botanist must be appointed to perform a final walkthrough of the alignment to identify sensitive plant species, and assist in identifying the areas that require protection once final pylon positions are pegged.
37. A permit must be obtained from the relevant nature conservation agency for the removal or destruction of indigenous protected and endangered plant and animal species.
38. Copies of all permits required for the construction of the proposed must be submitted to the Department for record keeping.
39. No exotic plants may be used for rehabilitation purposes. Only indigenous plants of the area may be utilised.
40. Vegetation clearing must be kept to an absolute minimum. Mitigation measures must be implemented to reduce the risk of erosion and the invasion of alien species.
41. Construction must include appropriate design measures that allow surface and subsurface movement of water along drainage lines so as not to impede natural surface and subsurface flows. Drainage measures must promote the dissipation of storm water run-off.
42. An integrated waste management approach must be implemented that is based on waste minimisation and must incorporate reduction, recycling, re-use and disposal where appropriate. Any solid waste shall be disposed of at a landfill licensed in terms of section 20 (b) of the National Environment Management Waste Act, 2008 (Act 59 of 2008).

General

43. A copy of this authorisation and the approved EMPr must be kept at the property where the activity/ will be undertaken. The authorisation and approved EMPr must be produced to any authorised official of the Department who requests to see it and must be made available for inspection by any employee or agent of the holder of the authorisation who works or undertakes work at the property.
44. The holder of the authorisation must notify both the *Director: Integrated Environmental Authorisations* and the *Director: Compliance Monitoring* at the Department, in writing and within 48 (forty eight) hours, if any condition of this authorisation cannot be or is not adhered to. Any notification in terms of this condition must be accompanied by reasons for the non-compliance.

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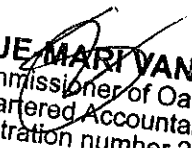
45. National government, provincial government, local authorities or committees appointed in terms of the conditions of this authorisation or any other public authority shall not be held responsible for any damages or losses suffered by the holder of authorisation or his successor in title in any instance where construction or operation subsequent to construction be temporarily or permanently stopped for reasons of non-compliance by the holder of authorisation with the conditions of authorisation as set out in this document or any other subsequent document emanating from these conditions of authorisation.

Date of environmental authorisation: 21 July 2014



Mr Ishaam Abader

Deputy Director-General: Legal, Authorisations, Compliance and Enforcement
Department of Environmental Affairs


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Annexure 1: Reasons for Decision

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1. Information considered in making the decision

In reaching its decision, the Department took, *inter alia*, the following into consideration -

- a) The information contained in the amended EIAr;
- b) The comments received in the EIAr included *inter alia*: the South African Heritage Resources Agency (SAHRA), Birdlife South Africa, South African National Roads Agency, Department of Water Affairs, Eskom, Department of Agriculture, Forestry and Fisheries (DAFF), Civil Aviation Authority, Department of Roads and affected parties;
- c) Mitigation measures as proposed in the amended EIAr and the EMPr;
- d) The information contained in the specialist studies contained in the amended EIAr;
- e) The information contained in the specialist studies contained within Annexure E - M of the amended EIAr included, *inter alia*:

Title	Prepared by	Date
Economic Impact Assessment	Dr Hugo van Zyl: Independent Economic Researchers	-
Agricultural and soil study	Johann Lanz	-
Impact on Flora and Fauna	Mr Jamie Pote	January 2011 – May 2011
Bird Impact	Chris van Rooyen	March 2011 – March 2012
Bat Study	Natural Scientific Services	April 2012 to April 2013
Heritage Impact Assessment	Dr Johan Binneman: Eastern Cape Heritage Consultants	-
Palaeontological Impact Assessment	John E Almond	-
Visual Impact Assessment	Henry Holland	January 2011
Noise Impact	Mr Brett Williams: Safetrain CC (Safetech). Technical review was done by Sound Research Laboratories South Africa.	October 2011 (Calibration of equipment)

Wetland and Aquatic Impact Assessment	Scherman Colloty and Associates	January 2012
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- f) The objectives and requirements of relevant legislation, policies and guidelines, 2 of the National Environmental Management Act, 1998 (Act 107 of 1998).

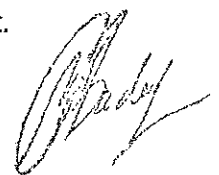
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2. **Key factors considered in making the decision**

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All information presented to the Department was taken into account in the Department's consideration of the application. A summary of the issues which, in the Department's view, were of the most significance is set out below.

- a) The findings of all the specialist studies conducted and their recommended mitigation measures.
- b) The EIAr identified all legislation and guidelines that have been considered in the preparation of the EIAr.
- c) The 12 months (four (4) seasons) Bat and Avifaunal Monitoring Report.
- d) The need for the proposed project stems from the provision of electricity to the national grid in terms of the Renewable Energy Independent Power Producers Procurement Programme (REIPPPP) and the provision of electricity from Independent Power Producers (IPPs) as required by the Department of Energy.
- e) The proposed Banna ba Pifhu Wind Farm is located outside the proposed Eskom's Nuclear 1 Transmission Lines Corridors and therefore has no impact on Nuclear 1.
- f) The proposed facility has no impact on the proposed transmission lines for Nuclear 1 since it is feasible to cross the 66 kV power line with the 400kv power line.
- g) The DAFF does not object to the proposed, this is subject to the position of various wind turbines.
- h) The amended EIAr identified all legislation and guidelines that have been considered in the preparation of the amended EIAr.
- i) The methodology used in assessing the potential impacts identified in the EIAr and the specialist studies have been adequately indicated.
- j) A sufficient public participation process was undertaken and the applicant has satisfied the minimum requirements as prescribed in the EIA Regulations, 2010 for public involvement.



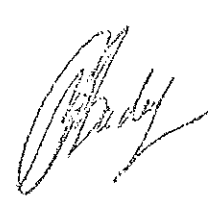
3. Findings

After consideration of the information and factors listed above, the Department made the following findings -

- a) The identification and assessment of impacts are detailed in the EIAr and sufficient assessment of the key identified issues and impacts have been completed.
- b) The procedure followed for impact assessment is adequate for the decision-making process.
- c) The proposed mitigation of impacts identified and assessed adequately curtails the identified impacts.
- d) The information contained in the EIAr is deemed to be accurate and credible.
- e) EMPr measures for the pre-construction, construction and rehabilitation phases of the development were proposed and included in the EIAr and will be implemented to manage the identified environmental impacts during the construction process.

In view of the above, the Department is satisfied that, subject to compliance with the conditions contained in the environmental authorisation, the proposed activity will not conflict with the general objectives of integrated environmental management laid down in Chapter 5 of the National Environmental Management Act, 1998 and that any potentially detrimental environmental impacts resulting from the proposed activity can be mitigated to acceptable levels. The environmental authorisation is accordingly granted.


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environmental affairs

Department:
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DEA Reference: 12/12/20/2289/1/AM1

Enquiries: Mr Muhammad Essop

Telephone: (012) 399 9406 E-mail: MEssop@environment.gov.za

CERTIFIED A
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THE ORIGINAL

Mr Alan Wolfromm
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NADIA TIMMERMAN

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Professional Accountant (SA)

Registration number 30639

Mazars

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Practise number: 900222

Tel: 044 874 5022

PER EMAIL / MAIL

Dear Mr Wolfromm

AMENDMENT OF THE ENVIRONMENTAL AUTHORISATION ISSUED 21 JULY 2014 FOR THE CONSTRUCTION OF THE ELECTRICAL GRID CONNECTION FOR THE 30.6MW BANNA BA PIFHU WIND FARM NEAR HUMANSDORP, TO BE LOCATED ON BROADLANDS FARM, IN THE KOUGA LOCAL MUNICIPALITY, EASTERN CAPE PROVINCE

The Environmental Authorisation (EA) issued for the above application by this Department on 21 July 2014 and your application for amendment of the EA received by this Department on 13 June 2017, refer.

Based on a review of the reason for requesting an amendment to the above EA, this Department, in terms of Chapter 5 of the Environmental Impact Assessment Regulations, 2014, has decided to amend the EA dated 21 July 2014, as follows:

Amendment 1: Amendment to extend the validity period of the EA:

The activity must commence within a period of three (03) years from the date of expiry of the EA issued on 21 July 2014 (i.e. the EA lapses on 21 July 2020). If commencement of the activity does not occur within that period, the authorisation lapses and a new application for environmental authorisation must be made in order for the activity to be undertaken.

The applicant applied to extend the validity period of the EA as the Wind Energy Facility was not awarded preferred bidder status in the DoE REIPPP, hence the construction of the powerline cannot commence. The applicant intends to bid this project in the DoE REIPPP future rounds.

This proposed amendment letter must be read in conjunction with the EA dated 21 July 2014.

In terms of Regulation 4(2) of the Environmental Impact Assessment Regulations, 2014 (the Regulations), you are instructed to notify all registered interested and affected parties, in writing and within 14 (fourteen) days of the date of the EA, of the Department's decision in respect of your application as well as the fact that an appeal may be lodged against the decision in terms of the National Appeals Regulations, and the provisions regarding the submission of appeals as contained in the Regulations.

Should any person wish to lodge an appeal against this decision, he/she must submit the appeal to the appeal administrator, and a copy of the appeal to the applicant, any registered interested and affected party, and any organ of state with interest in the matter within 20 days from the date that the notification of the decision was sent to the registered interested and affected parties by the applicant; or the date that the notification of the decision was sent to the applicant by the Department, whichever is applicable.

Appeals must be submitted in writing in the prescribed form to:

Mr Z Hassam, Director: Appeals and Legal Review of this Department at the below mentioned addresses.

By email: appealsdirector@environment.gov.za;

By hand: Environment House
473 Steve Biko,
Arcadia,
Pretoria,
0083; or

By post: Private Bag X447,
Pretoria,
0001

Please note that in terms of section 43(7) of the National Environmental Management Act, 1998, the lodging of an appeal will suspend the environmental authorisation or any provision or condition attached thereto. In the instance where an appeal is lodged, you may not commence with the activity until such time that the appeal is finalised.

To obtain the prescribed appeal form and for guidance on the submission of appeals, please visit the Department's website at https://www.environment.gov.za/documents/forms#legal_authorisations or request a copy of the documents at appealsdirector@environment.gov.za.

Yours faithfully



Mr Sabelo Malaza
Chief Director: Integrated Environmental Authorisations
Department of Environmental Affairs

Date: 11/02/2012

CERTIFIED A
TRUE COPY OF
THE ORIGINAL



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environment, forestry & fisheries

Department:
Environment, Forestry and Fisheries
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Private Bag X 447- PRETORIA 0001- Environment House 473 Steve Biko Road, Arcadia- PRETORIA

DEA Reference: 12/12/20/2289/1/AM2

Enquiries: Ms Constance Musemburi

Telephone: (012) 399 9416 **E-mail:** CMusemburi@environment.gov.za

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PO Box 762
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Cellphone Number: 082 529 4909
Email Address: MrWolf@wkn-windcurrent.com

PER MAIL / EMAIL

Dear Mr Wolfromm

AMENDMENT OF ENVIRONMENTAL AUTHORISATION ISSUED ON 21 JULY 2014 FOR THE CONSTRUCTION OF THE ELECTRICAL GRID CONNECTION FOR THE 30.6MW BANNA BA PIFHU WIND FARM NEAR HUMANSDORP, EASTERN CAPE PROVINCE.

The Environmental Authorisation (EA) issued for the abovementioned application by this Department on 21 July 2014, the subsequent amendments to the EA, your application for amendment of the EA received by the Department on 11 June 2020 and the acknowledgement letter dated 23 June 2020, refer.

Based on a review of the reason for requesting an amendment to the above EA, this Department, in terms of Chapter 5 of the Environmental Impact Assessment Regulations, 2014 as amended, has decided to amend the EA dated 21 July 2014 as amended, as follows:

The activity must commence within a period of four (4) years from the date of expiry of the EA issued on 21 July 2014 and extended to 21 July 2020, (i.e commence by 21 July 2024). If commencement of the activity does not occur within that period, the environmental authorisation lapses and a new application for environmental authorisation must be made in order for the activity to be undertaken.

The applicant applied to extend the validity period of the EA to ensure that the project is compliant with the requirements of the Department of Mineral Resources and Energy's Renewable Energy Independent Power Producer Procurement ("REIPPP") Programme.

The Department is aware that the environment changes constantly, as a result it might be significantly different from the one that existed at the time of the issuing of this EA, hence the validity of the EA cannot exceed a maximum period of 10 years. Failure to commence with construction activities within the maximum 10 year period, your EA will be deemed to have lapsed and a new application for Environmental Authorisation will have to be lodged.

This amendment letter must be read in conjunction with the EA dated 21 July 2014.

M.S

In terms of the Promotion of Administrative Justice Act, 2000 (Act No 3 of 2000), you are entitled to the right to fair, lawful and reasonable administrative action; and to written reasons for administrative action that affects you negatively. Further your attention is drawn to the provisions of the Protection of Personal Information Act, 2013 (Act no. 4 of 2013) which stipulates that the Department should conduct itself in a responsible manner when collecting, processing, storing and sharing an individual or another entity's personal information by holding the Department accountable should the Department abuses or compromises your personal information in any way.

In terms of Regulation 4(2) of the Environmental Impact Assessment Regulations, 2014, as amended (the EIA Regulations), you are instructed to notify all registered interested and affected parties, in writing and within 14 (fourteen) days of the date of the EA, of the Department's as well as the provisions regarding the submission of appeals that are contained in the Regulations.

Your attention is drawn to Chapter 2 of National Environmental Management Act, 1998 (Act No. 107 of 1998) National Appeal Regulations published under Government Notice R993 in Government Gazette No. 38303 dated 08 December 2014 (National Appeal Regulations, 2014), which prescribe the appeal procedure to be followed. Kindly include a copy of this document (National Appeal Regulations, 2014) with the letter of notification to interested and affected parties in this matter.

Should any person wish to lodge an appeal against this decision, he/she must submit the appeal to the appeal administrator, and a copy of the appeal to the applicant, any registered interested and affected party, and any organ of state with interest in the matter within 20 days from the date that the notification of the decision was sent to the registered interested and affected parties by the applicant; or the date that the notification of the decision was sent to the applicant by the Department, whichever is applicable.

Appeals must be submitted in writing in the prescribed form to:

The Director: Appeals and Legal Review of this Department at the below mentioned addresses.

By email: appeals@environment.gov.za ;

By hand: Environment House
473 Steve Biko Road,
Arcadia,
Pretoria,
0083; or

By post: Private Bag X447,
Pretoria,
0001;

Please note that in terms of Section 43(7) of the National Environmental Management Act, Act No. 107 of 1998, as amended, the lodging of an appeal will suspend the decision or any provision or condition attached thereto. In the instance where an appeal is lodged, you may not commence with the activity until such time that the appeal is finalised.

To obtain the prescribed appeal form and for guidance on the submission of appeals, please visit the Department's website at https://www.environment.gov.za/documents/forms#legal_authorisations or request a copy of the documents at appeals@environment.gov.za.

Yours faithfully



Mr Sabelo Malaza
Chief Director, Integrated Environmental Authorisations
Department of Environment, Forestry and Fisheries

Date: 01/07/2020

CC: Ashlin Bodasing	Arcus Consultancy Services South Africa (Pty) Ltd	Tel: (021) 412 1529	Email:ashlinb@arcusconsulting.co.za/ banna@arcusconsulting.co.za
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