



Environmental Management Programme (EMPr) for the Modderfontein Wind Energy Facility, Northern Cape and Western Cape Provinces, South Africa

terramanzi
GROUP (PTY) LTD



tel: +27 21 701 5228
fax: +27 86 558 1213
mobile: +27 82 575 3800

email: info@terramanzi.co.za
website: www.terramanzi.co.za

postal: postnet suite 211, private bag X26, tokai, 7966

CLIENT:

SARGE DEVELOPMENT (PTY) LTD
in Partnership with
MODDERFONTEIN (PTY) LTD

CONTACT: MR PIETER FRANCOIS ROUX

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List of Annexures

Annexure A contains the Glossary

Annexure B contains the generic Method Statement

Annexure C contains relevant permits applicable to the proposed development (Environmental Authorizations as applicable to this Project)

Annexure D contains design and planning documentation

Annexure E contains a detailed copy of the recommended Roles and Responsibilities of the Environmental Control Officer (ECO)

Annexure F contains the Plant Rescue and Protection Plan

Annexure G contains the Integrated Waste Management Approach

Annexure H contains the Chance Fossil Finds Procedure

Annexure I contains the EAP's Curriculum Vitae

Annexure J contains the Environmental Authorisation (once available)

Annexure K contains the DFFE Generic EMPr for Overhead Electricity Transmission and Distribution Infrastructure

Annexure L contains the DFFE Generic EMPr for the Development and Expansion of Substation Infrastructure for the Transmission and Distribution of Electricity

IMPORTANT NOTE: ALL READERS TO PLEASE FAMILIARIZE THEMSELVES WITH THE RELEVANT TERMINOLOGY CONTAINED IN THE GLOSSARY (ANNEXURE A) PRIOR TO READING THIS DOCUMENT.

Appendix 4 Regulation 1 of GN No. R. 982 of the NEMA EIA Regulations (2014, as amended) stipulates that an Environmental Management Programme (EMPr) must comply with Section 24N of the NEMA and must include the following:

Regulation	Content of Environmental Management Programme (EMPr)	Reference
A4 R1 (a)	Details of:	
	(i) <i>The EAP who prepared the report; and</i>	Section 3
	(ii) <i>The expertise of the EAP, including a curriculum vitae</i>	Section 3 and Annexure I
A4 R1 (b)	A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 1 and 4
A4 R1 (c)	A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Section 1
A4 R1 (d)	A description of the impact management objectives, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including-	Section 4
	(i) <i>Planning and design;</i>	Section 1 and 4
	(ii) <i>Pre-construction activities;</i>	Section 4
	(iii) <i>Construction activities;</i>	Section 4
	(iv) <i>Rehabilitation of the environment after construction and where applicable post closure; and</i>	Section 4
	(v) <i>Where relevant, operation activities;</i>	Section 4
A4 R1 (e)	a description and identification of impact management outcomes required for the aspects contemplated in paragraph (d);	Section 4
A4 R1 (f)	a description of proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (d) and (e) will be achieved, and must, where applicable, include actions to -	Section 4 and Annexures
	(i) <i>Avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;</i>	Section 4
	(ii) <i>Comply with any prescribed environmental management standards or practices;</i>	Section 4
	(iii) <i>Comply with any applicable provisions of the Act regarding closure, where applicable; and</i>	Section 4
	(iv) <i>comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;</i>	Section 4
A4 R1 (g)	The method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 6
A4 R1 (h)	The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 6
A4 R1 (i)	An indication of the persons who will be responsible for the implementation of the impact management actions;	Section 6
A4 R1 (j)	The time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 6
A4 R1 (k)	The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 6
A4 R1 (l)	A program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Section 6
A4 R1 (m)	An environmental awareness plan describing the manner in which-	Section 6
	(i) <i>The applicant intends to inform his or her employees of any environmental risk which may result from their work; and</i>	
	(ii) <i>risks must be dealt with in order to avoid pollution or the degradation of the environment;</i>	
A4 R1 (n)	Any specific information that may be required by the competent authority.	Section 1

1.1 PROJECT OVERVIEW

The approved Modderfontein Wind Energy Facility (WEF) development entails the construction of a 201MW renewable energy facility located within the Ubuntu and Beaufort West Local Municipalities, in the Northern Cape and Western Cape Provinces, approximately 45km south-east of Victoria West (refer to **Figure 1 and 2**) and located in the Beaufort West REDZ. The currently authorised technical specification is for 67 turbines with a hub height of up to 125m and a total blade diameter of 110m. The development will also include an on-site substation, underground transmission lines to transmit the electricity from the turbines to the on-site substation, a 132kV overhead powerline and internal access roads.

The Applicant, South African Renewable Green Energy (Pty) Ltd (SARGE) along with technical partner Modderfontein (Pty) Ltd, proposes amending the existing EA by decreasing the number of turbines from 67 to 34. The 34 turbines will be divided into two clusters to allow the applicant and technical partner to be granted separate EAs. Cluster A (9 turbines, 50.4MW) will be managed by the applicant, SARGE, and Cluster B (25 turbines, 140MW) will be managed by Modderfontein (Pty) Ltd. The generating capacity of the turbines will be upgraded from 3 MW to 5,6 MW, the hub height will be decreased to up to 119m, and the rotor diameter increased to up to 162m, for a total generating capacity of 190.4 MW.

Please note that **no additional Listed Activities** in terms of the National Environmental Management Act (No. 107 of 1998) (NEMA); Environmental Impact Assessment (EIA) Regulations 2017 (as amended) will be triggered by the proposed amendments.

Terramanzi Group (Pty) Ltd (www.terramanzi.co.za) has been appointed as the Independent Environmental Practitioner (EAP) to undertake this Application for the EA Amendment on behalf of the Applicant.

The amended wind turbine generators and supporting infrastructure will be situated on the farms Modderfontein 228 and Phaisantkraal 1, (hereinafter referred to as the site), the details of which are given in Table 1 below. The Modderfontein EA currently includes Portion 3 of farm Noblesfontein 227, but this will be removed as part of the proposed Amendment.

Table 1: Details of the land parcel(s) within the Modderfontein WEF.

Farm Name and Number	Noblesfontein 227/3	Modderfontein 228	Phaisantkraal 1
Province	Northern Cape	Northern Cape	Western Cape
District Municipality	Pixley ka Seme District Municipality	Pixley ka Seme District Municipality	Central Karoo District Municipality
Local Municipality	Ubuntu local Municipality	Ubuntu local Municipality	Beaufort West Local Municipality
Ward Number	3	3	1
Portion Number	3	0	0
SG Code	C08000000000022700003	C08000000000022800000	C05200000000000100000
GPS Coordinates	Lat: -31.772886 Lon: 23.190430	Lat: -31.730668 Lon: 23.234344	Lat: -31.799357 Lon: 23.289413



Figure 1: Locality Map indicating the approximate Modderfontein WEF Site in a Regional Context.

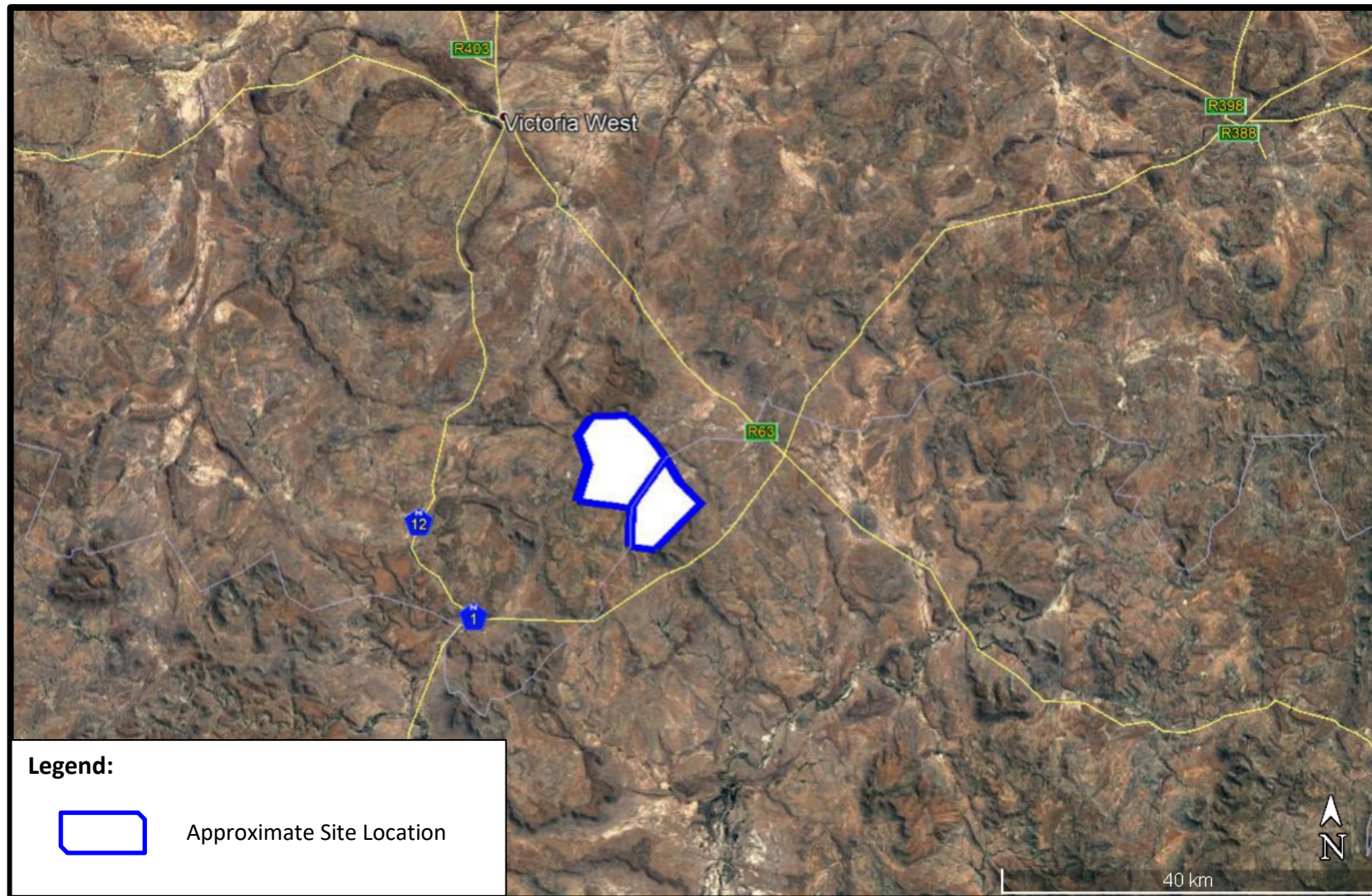


Figure 2: Locality Map indicating the approximate Modderfontein WEF Site in a Local Context.

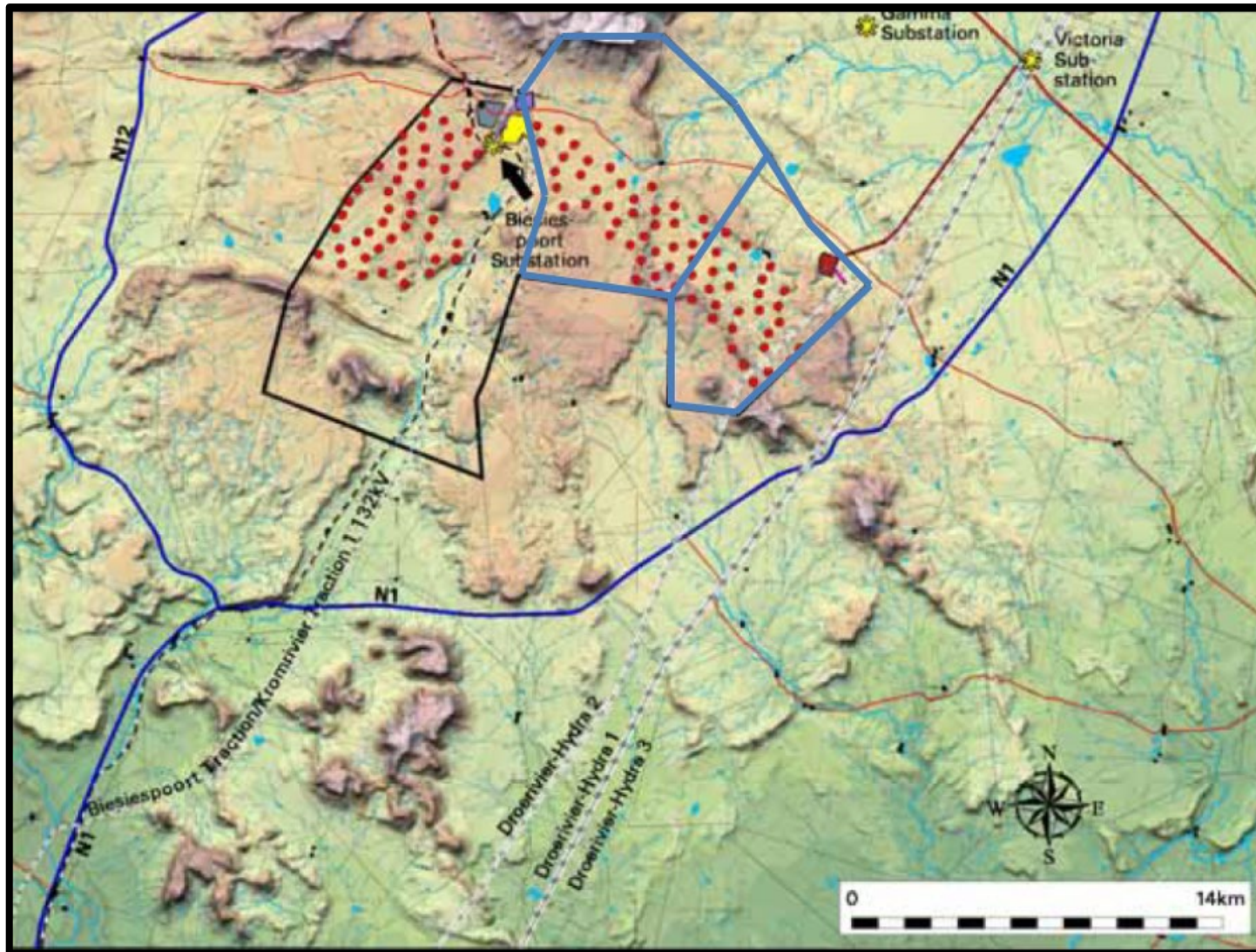


Figure 3: Site Detail Map of the Modderfontein WEF project, showing the site and separate farm boundaries (in blue) as well as the 67 original authorised turbine positions. (Source: Karoo Final EIA by Savanah, 2011)

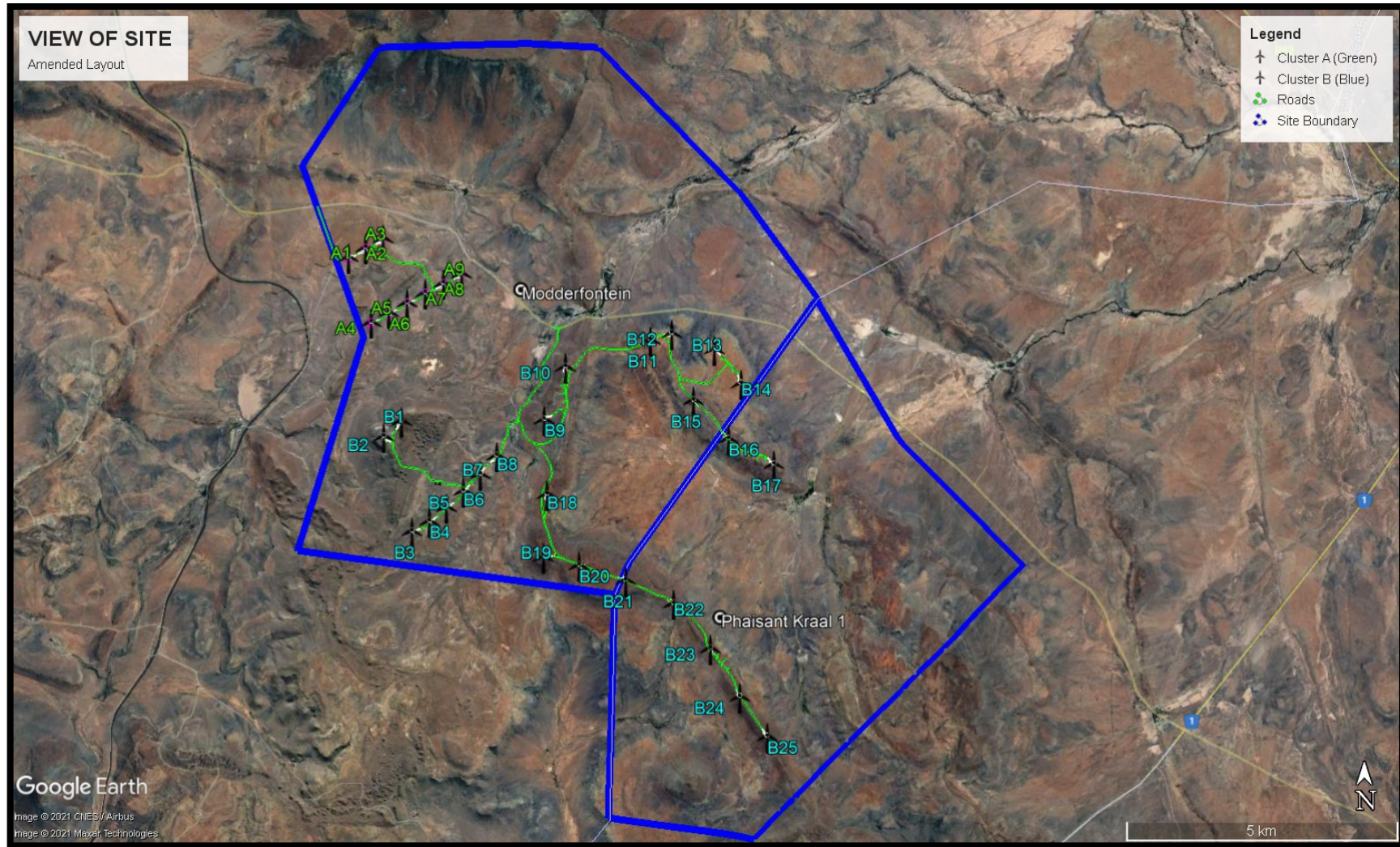


Figure 4: The proposed amended layout for the Modderfontein WEF indicating the two separate turbine clusters: Cluster A, the 50.4MW cluster, and Cluster B, the 140MW cluster.

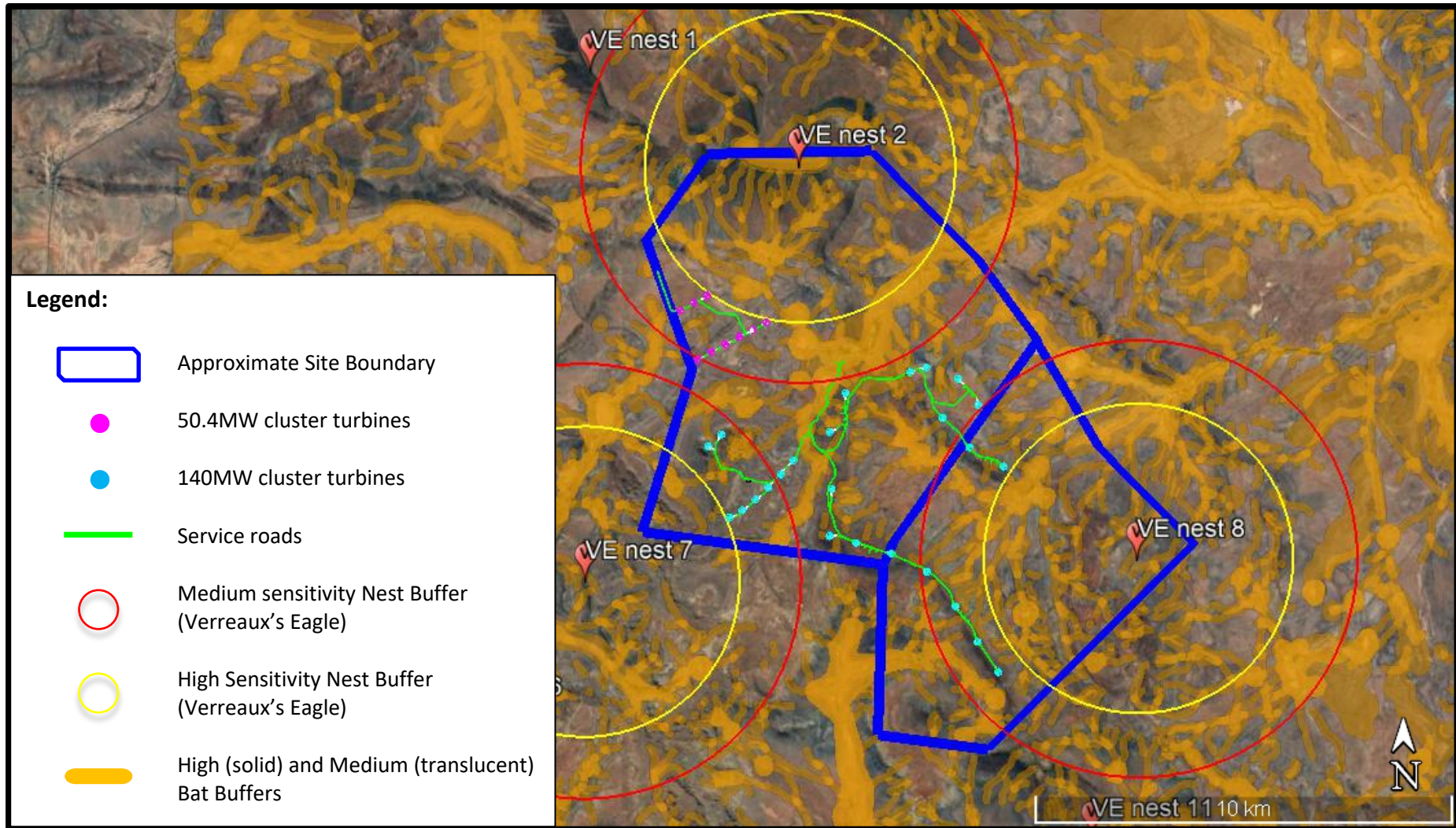


Figure 5: Map for the Modderfontein WEF overlaying the final amended layout with the bat and avifaunal sensitivity maps.

1.2 PROJECT COMPONENTS

The Applicant, SARGE (Pty) Ltd., and technical partner, Modderfontein (Pty) Ltd., wish to amend the turbine specifications of the authorised Modderfontein WEF based on newer, more efficient turbine technology to cater for a broad range of wind and site conditions, with improved reliability, serviceability and exceptional energy capture and delivery.

The proposed amendment will result in:

- Decrease in the number of turbines from 67 to 34.
- Decrease the turbine hub height from a maximum of 125m to a maximum of 119m.
- Increased turbine rotor diameter from a maximum of 110m to a maximum of 162m.
- Increased turbine electricity generating capacity from 3MW to 5.6MW per turbine, for a total generating capacity of 190.4MW.
- Division of the 34 turbines into two clusters, with individual EAs issued to the two separate technical partners.

The changes in the turbine specifications do not trigger any new listed activities.

The project components for each cluster are given below.

25 Turbine Cluster – EA to be held by Modderfontein (Pty) Ltd. C/O Mr. Rodrigo Garcia Parra

- Up to 25 wind turbines with a total generating capacity of 140MW;
- Turbines with a total generating capacity of 5.6MW;
- Rotor diameter of each turbine will be up to 162m (i.e. each blade up to 81m in length);
- Each turbine will be a steel tower (between 80 and 119m in height);
- 25 temporary laydown areas of 80m x 30m (60 000m²);
- 25 concrete foundations to support the turbine towers (15m x 15m x 2.5m in depth);
- A 132kV substation with high voltage (HV) yard footprint of Approximately 100m x 100m (10 000m²);
- Underground cabling between project components;
- One new overhead 132kV power line of up to 1.5km in length, turning into the existing Droerivier/Hydra-2400 kV line; and
- Internal access roads (5m wide and 40km long) linking the wind turbines and the infrastructure on site.

9 Turbine Cluster –EA to be held by SARGE (Pty) Ltd. C/O Mr Pieter Francois Roux

- Up to 9 wind turbines with a total generating capacity of 50.4MW;
- Turbines with a total generating capacity of 5.6MW;
- Rotor diameter of each turbine will be up to 162m (i.e. each blade up to 81m in length);
- Each turbine will be a steel tower (between 80 and 119m in height);
- 9 temporary laydown areas of 80m x 30m (60 000m²);
- 9 concrete foundations to support the turbine towers (15m x 15m x 2.5m in depth);
- A 132kV substation with high voltage (HV) yard footprint of Approximately 100m x 100m (10 000m²);
- Underground cabling between project components;
- One new overhead 132kV power line of up to 1.5km in length, turning into the existing Droerivier/Hydra-2400 kV line; and
- Internal access roads (5m wide and 40km long) linking the wind turbines and the infrastructure on site.

Please note that this EMPr addresses the construction and operation of the wind turbines and associated cabling, access roads, hard stands, storage facility, and laydown areas. Generic EMPrs as issued by the Department of Environmental Affairs (now the Department of Forestry, Fisheries and the Environment) are applicable to the proposed overhead power lines and the substation. These EMPrs are as follows:

- Generic Environmental Management Programme (EMPr) for the Development and Expansion for Overhead Electricity Transmission and Distribution Infrastructure
- Generic Environmental Management Programme (EMPr) for the Development and Expansion of Substation Infrastructure for the Transmission and Distribution of Electricity

These documents have been attached to this EMPr (Annexure K and L) for management of the Overhead Powerline and substation construction phase.

1.3 LEGISLATIVE CONTEXT OF THE EMPr

The development is subject to the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014 and as such is subject to an Environmental Application process to the Competent Authority (Department of Forestry, Fisheries and the Environment - DFFE) who will ultimately make a decision on the application. One of the requirements of the application process was that an EMPr be prepared that incorporates aspects as per the Scoping Phase Decision Letter dated 17 October 2017 and further that this EMPr complies with Annexure 4 of Government Notice Number R.982 of the NEMA EIA Regulations (2014, as amended) is produced. This EMPr must address the potential lifecycle environmental impacts of the proposed activity.

The EMPr should also adhere to the local authority by law requirements as well as any other obligatory environmental and other legal requirements.

This EMPr is a practical and achievable plan to ensure that environmental risks and opportunities (i.e. opportunities to provide environmentally friendly alternatives) are identified and addressed during the various stages of the Project life cycle (namely pre-construction, construction, operation, pre-decommissioning and decommissioning).

This document is dynamic and can be amended during the Project life cycle in order to continue adapting the document to the requirements of the environmental management on site. Changes to this Environmental Management Programme can only occur with the written approval of all parties (including the local authority and the DFFE) involved and an updated version should also be forwarded to all parties once agreed.

It is understood that the client or any future development entity (where transfer of ownership occurs) will be fully responsible for this EMPr and its requirements including any environmental rehabilitation that may be needed. This is required in terms of Section 28 (*Duty of Care and Remediation of Damage*) of the National Environmental Management Act, (Act No. 107 of 1998).

Please note that this Environmental Management Programme (EMPr) will take into account the Environmental Authorisation requirements and further the Environmental Authorisation and its Conditions of Authorisation will form part of this document and are required to be appended as Annexure J.

1.4 SUMMARY OF INDEPENDENT SPECIALIST ASSESSMENTS UNDERTAKEN DURING THE EIA PHASE

The following Specialists confirmed that the proposed amendment **may have an effect and alter the original impact ratings** (completed for the previous EIA in 2011) and therefore require an updated assessment for their following studies (to supplement this Amendment Report):

- Aquatic Specialist Study – Blue Science Pty Ltd (C/O Antonia Belcher, June 2021)
- Avifaunal Impact Assessment – Chris van Rooyen Consulting (C/O Chris van Rooyen, June 2021)
- Agro-Ecosystems Assessment– AGRInformatics Natural Resource Specialists (C/O Francois Knight, July 2021)
- Noise Impact Report – dBAcoustics (C/O BJB van der Merwe, July 2021)
- Visual Impact Assessment – Environmental Planning and Design (C/O Jon Marshall, June 2021)
- Terrestrial Ecology – Nick Helme Botanical Surveys (C/O Nick Helme, June 2021)
- Bat Specialist Report – Arcus Consultancy Services South Africa Pty Ltd (C/O Michael Brits and Mark Hodgson, June 2021)
- Heritage Impact Assessment – CTS Heritage (C/O Jenna Lavin, June 2021)
- Archaeological Specialist Study – CTS Heritage (C/O Jenna Lavin, May 2021)
- Social Impact Assessment – Batho Earth (C/O Ingrid Snyman, July 2021)
- Town Planning – Warren Petterson Planning (C/O Andries du Plessis, June 2021)
- Traffic Impact Assessment – Innovative Transport Solutions (C/O Christoff Krogscheepers, June 2021)

The impacts identified during the Amendment process include:

DESCRIPTION OF IMPACT	Overall Significance (With Mitigation)		Effect of proposed upgrades on significance with mitigation relative to No-Go Alternative
	No-Go Alternative ¹	Preferred Alternative ²	
PLANNING AND DESIGN			
Socio-economic Impacts (updated 2020 impact rating)			
Modderfontein WEF was found to be in alignment with the general provisions of the relevant national, provincial and local level policy and planning documents pertaining to renewable energy development, socio-economic development, and locational siting specific criteria.	High +	High +	No Change
CONSTRUCTION PHASE			
Ecological Impacts			
Ecological Impact 1 - Vegetation	Medium -	Medium -	No Change
Ecological Impact 2 - Threatened Fauna (2 reptile species)	Medium -	Medium -	No Change
Ecological Impact 3 - Threatened Fauna (Riverine Rabbit)	Zero	Zero	No Change
Ecological Impact 4 - Alien invasive plants	Low -	Low -	No Change
Agricultural Impacts			
Degradation of the natural resource: Soil Erosion	Low -	Low -	No Change
Disturbance to the soil profile and structure	Low -	Low -	No Change
Disturbance to surface drainage works	Low -	Low -	No Change
Disruption of farming activities	Low -	Low -	No Change
Avifaunal Impacts			
Displacement of priority species due to construction activities	Low -	Low -	No Change
Bats Impacts			
Roost destruction	Low -	Low -	No Change
Habitat Modification	Low -	Low -	No Change
Freshwater Impacts			
Disturbance of aquatic habitat; modification to flow and water quality due to the proposed	Low -	Low -	No Change

¹ The 2011 Authorized Layout.

² The 2021 Amended Layout.

DESCRIPTION OF IMPACT	Overall Significance (With Mitigation)		Effect of proposed upgrades on significance with mitigation relative to No-Go Alternative
	No-Go Alternative ¹	Preferred Alternative ²	
activities on or adjacent to aquatic ecosystems			
Loss of biodiversity & habitat, impeding flow and water quality impact	Low -	Low -	No Change
Disturbance of aquatic habitat-Facilitation of erosion and invasion by alien plants	Low -	Low -	No Change
Habitat disturbance and some flow and water quality impacts	Low -	Low -	No Change
Visual Impacts			
Views of construction activities, materials and equipment storage, and landscape disturbance	Low -	Low -	No Change
Disturbance of the landscape due to cut and fill slopes associated with road construction. This is particularly likely in areas where roads run along and through ridgelines.	Low -	Low -	No Change
Noise Impacts			
Grading and building of new roads and trenches	Low -	Low -	No Change
Preparation of the footprint, earthworks and construction of the base of the wind turbine	Low -	Low -	No Change
Construction of the wind turbines on site	Low -	Low -	No Change
Construction vehicles	Low -	Low -	No Change
Heritage Impacts			
Destruction of significant archaeological heritage resources during the construction phase	Low -	Low -	No Change
Destruction of significant palaeontological heritage resources during the construction phase	Low -	Low -	No Change
Socio-economic Impacts			
Job Creation and Skills Inequities	Medium +	Medium +	No Change
Inflow of workers	Medium -	Medium -	No Change
Influx of job seekers	Medium -	Medium -	No Change
Accommodation of workforce	Medium +	Medium +	No Change

DESCRIPTION OF IMPACT	Overall Significance (With Mitigation)		Effect of proposed upgrades on significance with mitigation relative to No-Go Alternative
	No-Go Alternative ¹	Preferred Alternative ²	
Intrusion related impacts	Low -	Low -	No Change
Local Procurement	Low +	Medium +	Positive Change
Impact on Ubuntu Local Municipality	Medium -	Low -	Positive Change
Impact on tourism	Medium +	Medium +	No Change
Visual Impact	Medium -	Low -	Positive Change
OPERATIONAL PHASE			
Ecological Impacts			
Vegetation	Medium -	Medium -	No Change
Threatened Fauna (2 reptile species)	Medium -	Medium -	No Change
Threatened Fauna (Riverine Rabbit)	Zero	Zero	
Alien invasive plants	Low -	Low -	No Change
Agricultural Impacts			
Occupation of high potential arable or cultivated land	Low -	Low -	No Change
Increased farm security	Low -	Low -	No Change
Avifaunal Impacts (updated)			
Displacement of priority species due to operational activities	Low -	Low -	No Change
Turbine collision mortality	Medium/High -	Low -	Positive Change
Bat Impacts			
Habitat creation in High-Risk Locations	Low -	Low -	No Change
Mortality during commuting and/or foraging	Low -	Low -	No Change
Mortality during migration	Medium -	Medium -	No Change
Light Pollution	Low -	Low -	No Change
Freshwater Impacts			
Disturbance of aquatic habitat-Facilitation of erosion and invasion by alien plants	Low -	Low -	No Change
Visual Impacts			
Visual impact on users of major and secondary roads in close proximity	Medium -	Medium -	No Change
Views of turbines from homesteads and settlements in close proximity	Medium -	Medium -	No Change
Views of turbines from homesteads and roads in the region	Low -	Low -	No Change
View of night time lighting including aircraft warning lights and lighting of the facility	Low -	Low -	No Change

DESCRIPTION OF IMPACT	Overall Significance (With Mitigation)		Effect of proposed upgrades on significance with mitigation relative to No-Go Alternative
	No-Go Alternative ¹	Preferred Alternative ²	
Views of roads as seen by observers in close proximity to the WEF.	Low -	Low -	No Change
Shadow flicker affecting residents of homesteads	Low -	Low -	No Change
Industrialisation of views over a relatively natural Karoo landscape	Low -	Low -	No Change
Views of industrialised landscape being obvious within views of natural landscape areas that are popular with tourists	Low -	Low -	No Change
Noise Impacts			
Noise generated by the wind turbines	Low -	Low -	No Change
Traffic	Low -	Low -	No Change
Sub-station and overhead power lines	Low -	Low -	No Change
Heritage Impacts			
<i>No impacts are expected during the operational phase of the project</i>			
Socio-economic Impacts			
Job creation	Medium +	Medium +	No Change
Intrusion Impacts	Medium -	Low -	Positive Change
Impact on tourism	Medium +	Medium +	No Change
Local Procurement	Low +	Medium +	Positive Change
Local Economic Contribution	Medium +	Medium +	No Change
Social development and social services support	Medium +	Medium +	No Change
Land Value	Medium -	Low -	Positive Change
Visual impact and sense of place	Medium -	Medium -	No Change
DECOMMISSIONING PHASE			
<i>Decommissioning impacts are equivalent to the construction phase impacts</i>			
CUMULATIVE IMPACTS			
Ecological Impacts			
Loss of endangered vegetation types and plant species	Medium -	Medium -	No Change
Agricultural Impacts			
Disruption of farming activities	Low -	Low -	No Change
Avifaunal Impacts			
Displacement and mortality of priority species due to construction and operational activities of the WEF	Low -	Low -	No Change

DESCRIPTION OF IMPACT	Overall Significance (With Mitigation)		Effect of proposed upgrades on significance with mitigation relative to No-Go Alternative
	No-Go Alternative ¹	Preferred Alternative ²	
Bat Impacts			
Bat mortality due to the construction and operational activities of the WEF	Low -	Low -	No Change
Freshwater Impacts			
Habitat disturbance and some flow and water quality impacts	Low -	Low -	No Change
Visual Impacts			
Presence of large/tall wind energy turbine towers which will result in local change to the scenic landscape	Medium -	Medium -	No Change
Noise Impacts			
Noise generated by the wind turbines	Low -	Low -	No Change
Heritage Impacts			
Impact on heritage resources on the WEF site	Low -	Low -	No Change
Socio-economic Impacts			
In terms of cumulative impacts there would be the potential for sequential visibility (e.g., the effects of seeing two or more wind farms along a single journey, e.g., road or walking trail). This would apply to motorists travelling along the N12 and local roads. The findings of the VIA indicate that the consideration of cumulative visual impacts relates to the proposed wind energy farm in the context of other similar developments planned for the area.	Medium -	Medium -	No Change
The proposed Modderfontein WEF and establishment of the other renewable energy facilities in the Ubuntu Local Municipality and the Beaufort West Local Municipality also have the potential to result in significant positive cumulative socio-economic impacts for both municipalities. The positive cumulative impacts include creation of employment, skills development, and training opportunities (construction and operational phase), creation of downstream business opportunities and	High +	High +	No Change

DESCRIPTION OF IMPACT	Overall Significance (With Mitigation)		Effect of proposed upgrades on significance with mitigation relative to No-Go Alternative
	No-Go Alternative ¹	Preferred Alternative ²	
stimulation of the local property market.			

Refer to the Basic Assessment Report for Full Specialist Studies

1.5 OVERALL FINDINGS FOR THE PROJECT

The most prominent design considerations informing the EIA Phase of the Project were the following:

- Bird aspects
- Bat aspects
- Botanical aspects
- Heritage aspects
- Noise aspects
- Visual aspects

It is important to highlight, that an extensive collaborative process was undertaken by the Applicant, the EAP and the professional team to arrive at the Preferred Alternative, which, based on the process followed, represents best practice.

Based on the information presented in this EMPr, as informed by the statutory requirements, independent expert studies, public consultation, commenting authorities and the competent authority, the findings of this Basic Assessment indicate that the Project, in the form of the **Preferred/ Amended Alternative**, (read strictly in conjunction with the mitigation measures, which must form part of the Conditions of the Environmental Authorisation) **will not result in unacceptable negative impacts and the positive impacts identified represent a significant and sustainable socio-economic opportunity for the farmers involved in the development and the South African renewable energy industry.**

Accordingly, there is no reason to suggest that the preferred alternative cannot be authorised by the Competent Authority.

2 STRUCTURE OF THIS EMPR

Section 1 provides an introduction to the Project as well as a summary of the specialist assessments.

Section 2 details the structure of this EMPr.

Section 3 deals with the terms of reference for this EMPr as well as identifies environmental risks and opportunities.

Section 4 documents the environmental objectives, targets and measures for each environmental risk identified.

Section 5 relates to the impacts associated with the decommissioning phase.

Section 6 deals with the implementation of the EMPr including the assignment of roles and responsibilities, visits by the ECO, documented procedures and handling of complaints related to the Project.

Annexure A contains the glossary.

Annexure B contains the generic Method Statement.

Annexure C contains relevant permits applicable to the proposed development (Environmental Authorisations as applicable to this Project).

Annexure D contains design and planning documentation.

Annexure E contains a detailed copy of the recommended Roles and Responsibilities of the Environmental Control Officer (ECO).

Annexure F contains the Plant Rescue and Protection Plan

Annexure G contains the Integrated Waste Management Approach

Annexure I contains The EAP's CV.

Annexure J contains the Environmental Authorisation (once available).

Annexure K contains the DFFE Generic EMPr for Overhead Electricity Transmission and Distribution Infrastructure.

Annexure L contains the DFFE Generic EMPr for the Development and Expansion of Substation Infrastructure for the Transmission and Distribution of Electricity.

3 TERMS OF REFERENCE

This EMPr was designed and produced in accordance with the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations 2014, as amended. This EMPr also includes the best practice provisions recommended in Section 3 the New South Wales (Australia) Environmental Management System Guidelines (2009) which are recognized as International Best Practice and based on the ISO 14001 system, as well as any applicable statutory environmental requirements. The EMPr includes important information from the original environmental process undertaken for the overall WEF which must be taken into consideration and implemented with this component of the WEF.

Terramanzi Group (Pty) Ltd (TMG), is the consulting firm appointed to undertake this Application for Environmental Authorisation (EA) on behalf of the Applicant.

Johann Killian is the EAP responsible for this report. Johann is an environmental consultant with more than 7 years of experience in the environmental management industry. He is registered with SACNASP as a Professional Natural Scientist in the field of Earth Science. Johann holds a BSc in Earth Science as well as a BSc (Hons) in Geology from the University of Stellenbosch, and is a senior member of the Environmental Services Team at Terramanzi Group (Pty) Ltd. Refer to Annexure I for a copy of the EAPs CV.

Johann Killian was assisted and supported on this Project and the associated Report writing by Evan Milborrow, who holds a BSc in Chemistry and Biochemistry, a BSc (Hons) and MSc in Molecular and Cell Biology from the University of Cape Town, and is a junior member of the Environmental Services Team at Terramanzi Group (Pty) Ltd.

Johann Killian, on behalf of TMG, the consulting firm appointed to undertake the environmental permitting process as detailed in this report, hereby declares that the EAP and the firm have no conflicts of interest related to the work of this Report. Specifically, the EAP and the firm declare that they have no personal financial interests in the property and/or activity being assessed in this report, and that they have no personal or financial connections to the relevant property owners, developers, planners, financiers or consultants of the property or activity, other than fair remuneration for professional services rendered for this Report to the Competent Authority. The EAP and the firm declare that the opinions expressed in this Report are independent and a true reflection of the professional expertise exercised.

Terramanzi Group (Pty) Ltd is a **Level 4 Broad Based Black Economic Empowerment Company** and is **professionally accredited** with a number of relevant industry bodies as well as being an approved supplier on the **Western Cape Supplier Database** ("WCSD"), in line with the Preferential Procurement Policy Framework Act No. 5 of 2000 (PPPFA).

3.1 ENVIRONMENTAL IMPACT ASSESSMENTS

The proposed development is subject to a Basic Assessment Process in terms of the NEMA Environmental Impact Assessment Regulations (2014, as amended). This lifecycle Environmental Management Programme (“EMPr”) is an appendix to the BAR and is in compliance with the requirements of the Competent Authority in terms of Annexure 4 of GN No. R. 982 of the NEMA EIA Regulations (2014, as amended).

3.2 STATUTORY OBLIGATIONS

The applicant should incorporate the following statutory and best practice requirements as part of any contract documentation related to the construction, operation and decommissioning (if required) of the proposed development:

- The National Environmental Management Act, Act 107 of 1998 (NEMA)
- National Environmental Management: Biodiversity Act 10 of 2004 (as amended)
- National Water Act, 1998 (Act No. 36 of 1998) (as amended)
- National Heritage Resources Act, Act 25 of 1999 (as amended)
- The National Environmental Management: Waste Act (March 2008)
- Relevant SANS codes

3.3 CONTRACT OBLIGATIONS

It is understood that all contract documentation related to the construction, operation and decommissioning (if required) of the proposed development will include the conditions of this EMPr. It is important to note that the contract obligations must include the recording of any complaints on the Project in the environmental register (defined below). Further, it is incumbent on the ECO to keep an accurate audit trail showing compliance with the EMPr during construction phase.

3.4 ENVIRONMENTAL RISKS

The following environmental risks have been identified based on the available information:

Potential Impact	EMP reference
PRE CONSTRUCTION	
Bulk Services Identification	Refer to Section 4.1
Permits	Refer to Section 4.1
Site Boundaries	Refer to Section 4.1
“No-Go” Areas	Refer to Section 4.1
Training	Refer to Section 4.1
Site Layout	Refer to Section 4.1
Working Hours	Refer to Section 4.1
Bat Management	Refer to Section 4.1
Heritage Management	Refer to Section 4.1
Aquatic and Fresh Water Management	Refer to Section 4.2
Socio-Economic Management	Refer to Section 4.1
CONSTRUCTION PHASE	
Appropriate Machinery Management	Refer to Section 4.2
Waste Management	Refer to Section 4.2
Safety and First Aid	Refer to Section 4.2
Air Quality Management	Refer to Section 4.2
Water Quality Management	Refer to Section 4.2
Hazardous Material (Bitumen, Oils and Lubricants) Management	Refer to Section 4.2
Hazardous Material (Fuels and Oils) Management	Refer to Section 4.2
Workshop, Equipment Maintenance and Storage Management	Refer to Section 4.2
Noise Pollution Management	Refer to Section 4.2
Blasting/Drilling/Demolitions	Refer to Section 4.2
Concrete Mixing (Batching) Management	Refer to Section 4.2
Establishment of Construction Laydown Area	Refer to Section 4.2
Fire Management	Refer to Section 4.2
Traffic Control	Refer to Section 4.2
Storm water and Erosion Management	Refer to Section 4.2
Natural Vegetation Management	Refer to Section 4.2
Heritage (including Archaeological) Resource Management	Refer to Section 4.2
Aquatic and Fresh Water Management	Refer to Section 4.2
Faunal Management	Refer to Section 4.2
Avifaunal Management	Refer to Section 4.2
Bat Management	Refer to Section 4.2
Visual Management	Refer to Section 4.2
Topsoil Management	Refer to Section 4.2
Agricultural Management	Refer to Section 4.2
OPERATIONAL PHASE	
Hazardous Materials Management	Refer to Section 4.3
Socio-Economic Management	Refer to Section 4.3
Storm water and Erosion Management	Refer to Section 4.2
Natural Vegetation Management	Refer to Section 4.3
Heritage (including Archaeological) Resource Management	Refer to Section 4.3
Aquatic and Fresh Water Management	Refer to Section 4.2
Faunal Management	Refer to Section 4.3
Avifaunal Management	Refer to Section 4.3

ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE MODDERFONTEIN WIND ENERGY FACILITY

Bat Management	Refer to Section 4.3
Visual Management	Refer to Section 4.3
Noise Pollution Management	Refer to Section 4.3
Emergency Management	Refer to Section 4.3
Fire Management	Refer to Section 4.3
DECOMMISSIONING PHASE	
Please refer to the Construction Phase Impacts	

3.5 ENVIRONMENTAL OPPORTUNITIES

It would be responsible of the applicant to implement the principles below to minimise environmental risks and maximise environmental opportunities as defined above.

Sustainable development is best summarised by an extract from the United Nations World Commission on Environment and Development and reads as follows:

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs... As such it requires the promotion of values that encourage consumption standards that are within the bounds of the ecologically possible and to which all could reasonably aspire." (Our Common Future, WCED, 1987)¹.

The NEMA Principles state that sustainable development requires the consideration of all relevant factors including the following:

- *That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied;*
- *that pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;*
- *that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;*
- *that waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;*
- *that the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource;*
- *that the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised;*
- *that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and*
- *that negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.*

In this regard, **sustainable technology alternatives** that are technologically and environmentally superior to "standard" technologies should be promoted at all times which will assist in meeting compliance with the above Principles. All recommendations relating to the above and as contained in this EMPr should therefore be implemented.

4 ENVIRONMENTAL OBJECTIVES, TARGETS AND MEASURES

4.1 PRE-CONSTRUCTION PHASE IMPACTS

4.1.1 Bulk Services Identification

Objectives: To minimise any possible damage to bulk services as a result of pre-construction and construction related activities.

Targets: To comply with any local authority by laws regarding bulk services and to avoid additional costs and potential project delays due to damage to these services.

Measures:

- If any bulk services are required to be relocated and/or re-routed, then the appropriate permits/approvals must be sought.
- The location of existing bulk services must be determined to prevent accidental damage to these facilities.
- Relevant permits must be filed in Annexure C of this EMPr.

4.1.2 Permits

Objectives: To ensure that the necessary permits regarding any activities related to construction activities are in place prior to construction starting.

Targets: To ensure that the construction works can proceed without possible delays and/or legal repercussions during building works as a result of outstanding permits and/or non-compliance with permits.

Measures:

- The client shall issue a list of applicable permitting conditions together with the respective permits/authorisations to the ECO prior to the start of construction works.
- Permits are to be acquired from the relevant authorities should protected or RDL floral species be removed or relocated.

4.1.3 Site Boundaries

Objectives: To ensure that site boundaries are agreed to by the ECO, Principal Agent and Contractor prior to the start of the site operations.

Targets: To contain construction activities to the development site/s and prevent unauthorised access (pedestrian or vehicular) and to demarcate potentially sensitive areas and or vegetation.

Measures:

- The Contractor must fence or clearly demarcate the area where construction activities are taking place.

- Access to the site must be restricted, to ensure that members of the public are not able to gain access other than via the designated, controlled access points.

4.1.4 “No-Go” Areas

Objectives: To minimise any potential impacts to identified sensitive areas.

Targets: To prevent possible impacts to any identified sensitive areas on site.

Measures:

- Before any work commences on site, sensitive areas must be demarcated in conjunction with the ECO.
- A plant rescue and protection- plan must be compiled 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.
- Any plant rescue or protection must be undertaken in terms of the Plant Rescue and Protection Plan (see Annexure F).
- A construction site layout plan must be compiled and approved by the ECO, clearly stipulating where the ablutions, equipment, machinery, etc. are required to be placed, thereby not allowing any encroachments on the sensitive areas on site.
- Should additionally working space be required at a later date, this must be agreed between the Principal Agent, Contractor, and ECO.
- Authorisation from the Principal Agent must only be given once the potential impacts have been assessed by the ECO.
- Any construction activities taking place prior to the above will constitute a serious violation of this EMP and are liable to a fine as detailed within this EMP.
- No vehicles should be allowed to drive through designated sensitive areas.
- An open space management plan must be compiled before construction begins, to be implemented during construction and operation of the facility.

4.1.5 Training

Objectives: To ensure that all staff working on site are adequately trained on the requirements of this EMP and are legally compliant with relevant legislation.

Targets: To ensure that the requirements of this EMP are understood and implemented by all staff (as and when required) on site.

Measures:

- The ECO will provide for on-going training sessions (as required), to ensure that all staff working on site are familiar with the workings and requirements of this EMP.
- An interpreter should be provided as required.

4.1.6 Construction Phase Site Layout

Objectives: To designate areas on site for various types of construction related activities.

Targets: To ensure an efficient and orderly layout that promotes safe access.

Measures:

- The location of the Contractor's camp, toilet facilities and storage areas must be agreed to by the ECO, Principal Agent and Contractor prior to the commencement of work at the site.
- A sketch diagram of the above is required by the ECO.
- These areas must all be kept tidy, sanitary and in good condition throughout the project.
- Any construction activities taking place prior to the above will constitute a serious violation of this EMPr and are liable to a fine as detailed within this EMPr.
- All development footprint areas should remain as small as possible and should not encroach onto no-go areas. It must be ensured that these areas are off-limits to construction vehicles and personnel unless these personnel are involved in rehabilitation activities. Very strict control of edge effects must be practiced.

4.1.7 Working Hours

Objectives: To designate working hours for construction related activities.

Targets: To ensure that the hours of operation shall be restricted to those stipulated by the local authority.

Measures:

- The Contractor shall at all times ensure that working hours are restricted to those stipulated by the local authority.
- Modifications to the above may only take place through the local authority and the ECO must be notified in writing.

4.1.8 Bat Management

Objectives: To aid in the conservation of bat populations present on the site and inform the final WEF layout to minimise impacts.

Targets: To ensure all turbines are located away from high sensitivity bat areas and minimise operational phase impact on bat populations.

Measures

- Twelve months pre-construction acoustic monitoring to be completed prior to the commencement of construction; this must be according to the latest available monitoring guideline at the time of commencement.
- Results of the monitoring must inform the final design and layout of the facility and initial mitigation plan.

4.1.9 Heritage Management

Objectives: To aid in the conservation of heritage (including archaeological) resources and promote the enhancement and good management of such features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to management of such resources.

Measures

- Inhabited settlements and farms must be excluded from development except where access existing roads are used.
- A no-go development buffer of 100m must be implemented around SAHRIS Sites 34716, 34631 and 34632, and archaeological sites MDF_WEF 40 and MDF_WEF 68. This will require an amendment to the proposed revised layout of the roads.
- A no-go development buffer of 100m must be implemented around Sites MDF 028 and MDF 029. This will require an amendment to the proposed revised layout of the roads, and relocation of a single turbine.
- A Heritage Management Plan for rock engravings, rock painting and gong rocks must be compiled and submitted to SAHRA
- A pre-construction walkdown of the final authorised layout including the powerline route must be conducted by both an archaeologist and a palaeontologist to identify any areas requiring targeted mitigation in the form of excavation or removal of heritage resources. A walkdown report detailing the findings of the walkdown and the final layout must be submitted to SAHRA.

4.1.10 Aquatic and Fresh Water Management

Objectives: To aid in the conservation of Aquatic and Fresh water ecosystems and promote the enhancement and good management of such features on site.

Targets: To ensure compliance with the statutory requirements relating to management of natural freshwater resources.

Measures:

- A buffer of at least 100 m between the delineated aquatic ecosystems and all the proposed project activities should be maintained adjacent to the river in which larger river and valley bottom wetlands occur as well as at least 50m buffer adjacent to the smaller tributaries and drainage features.
- Encroachment into freshwater ecosystems and their recommended buffer areas must be avoided as far as possible.
- A Storm Water Management Plan must be compiled, to be implemented during construction and operation of the facility. The plan must:
 - ensure compliance with applicable regulations;
 - prevent offsite migration of contaminated storm water;
 - prevent increased soil erosion;

- 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;
- include drainage measures that promote the dissipation of storm water run-off;
- include drainage measures for the management of stormwater runoff from new roads and other hardened surfaces (including the bases of the wind turbines), so as to minimise the hydrological changes to freshwater ecosystems in the study area as far as possible.
- The existing road infrastructure must be utilised as far as possible to minimise the overall disturbance created by the proposed project.
- Where new roads need to be constructed, the existing road infrastructure must be rationalised and any unnecessary temporary roads decommissioned and rehabilitated to reduce the disturbance of the area and within the river beds.
- For new roads to the turbines, these should be located at least 100m outside of the drainage/riverbeds.
- Where access routes need to be constructed through the watercourses, the disturbance of the channels should be limited. Wetland areas should be avoided and any road adjacent to a wetland feature should also remain outside of the 50m buffer zone.
- A strategic wetland rehabilitation plan/programme should be prepared by and implemented under the guidance of a wetland ecologist, as compensation for the anticipated loss of wetlands on the proposed development site through the placement of turbines and roads in wetland areas.

4.1.11 Socio-economic Management:

Objective: To maximise impacts on employment in the area during the pre-construction phase.

Targets: To ensure that employment for local people is guaranteed during the construction phase.

Measures:

DISRUPTION TO AGRICULTURAL ACTIVITIES

- The developer should negotiate fair compensation with the landowners and users; this should account for disruptions to livelihood activities (e.g. agriculture). This is a private negotiation that will be handled on an individual basis.
- The construction schedule and process should be designed to minimise impacts on agricultural activities and other livelihood activities. Seasonal farming practices are to be accommodated.
- The construction schedule should be presented to the directly affected landowners and key interested parties for input prior to finalisation.

CHANGED SENSE OF PLACE

- The construction schedule and process should be designed to minimise impacts on surrounding social receptors; night-time work should be avoided where possible.

4.2 CONSTRUCTION PHASE IMPACTS

Please note that upon completion of construction phase activities, all related structures, materials and waste must be removed from site.

4.2.1 Appropriate Machinery Management

Objectives: To minimise possible nuisance effects and environmental damage through the use, storage and/or handling of machinery during the construction works.

Targets: To ensure that impacts and damage to the environment are minimised via the responsible use of appropriate machinery on site.

Measures:

- The Contractor shall ensure that any delivery drivers are informed of all procedures and restrictions (no-go areas) required to comply with the specifications. The Contractor shall ensure that these delivery drivers are supervised during off loading and made well aware of the specification of the site.
- The Contractor shall at all times carefully consider what machinery is appropriate to the task in the context of this EMPr while minimising the extent of environmental impact.
- Materials shall be appropriately secured and/or covered to ensure safe transportation between destinations.
- Loads containing but not limited to, sand, stone, fine vegetation, chips, paper cement sand and waste, will be appropriately covered to ensure that such materials do not spill during the transportation of such materials. The Contractor in charge will be responsible for any required “clean-ups” resulting from failure to by his employees or suppliers to properly cover the required materials.
- Construction machinery must be located away from sensitive areas when parked for extended periods of time.
- A dedicated parking area must be defined with drip trays beneath any leaking equipment and fuel/lubricant absorbing media (peat/moss type products) within these drip trays must be used to contain any spilled liquids.
- These materials must be replaced regularly to prevent over-saturation and potential spillage of free phase product. This material must be disposed of as hazardous waste and be collected by an approved Contractor/delivered to a suitable waste site.
- 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.
- Chain of custody documentation must be provided as proof of final end recipient.
- All spills are to be recorded in the Environmental Register, including any clean-up actions taken to remediate the spillage. Such actions are to be agreed with the ECO prior to taking place.
- In the event of spillage on site, the ECO should contact the municipality to determine whether the spillage constitutes a NEMA Section 30 incident.

4.2.2 Waste Management

Objectives: To minimise possible environmental damage through inappropriate waste management on site or related to the site.

Targets: To ensure that the handling of waste is in accordance with the statutory requirements of the local authority by laws and the NEM: Waste Act (2008).

Measures:

- Implement the Integrated Waste Management Approach (Annexure G).

1) Liquid Waste:

- Storage areas that contain hazardous substances must be covered and bunded with an approved impermeable liner or have some form of secondary containment.
- The Contractor shall keep Material Safety Data Sheet (MSDS) on-site for all potentially hazardous materials used.
- Suitably trained personnel shall be available on the site during working hours so that in the event of human exposure to any hazardous materials that the correct first aid actions are taken. This training should also include environmental spill containment procedures.
- Spills in bunded areas must be cleaned up, removed and disposed of safely from the bunded area as soon after detection as possible to minimize pollution risk and reduced bunding capacity.
- Chain of Custody documentation must be provided for any hazardous substances disposed of as proof of end recipient.
- No discharge of pollutants such as cement, concrete, chemicals, fuels or oils will be allowed into any water resource.
- The areas around fuel tanks will be bunded.
- Only above ground temporary storage tanks will be allowed on site.
- Contaminated or potentially contaminated water will be kept separated from unpolluted storm water.

2) Solid Waste:

- Waste must be categorised by the Contractor and disposed of in a suitable manner into separate waste streams (this includes general and hazardous waste).
- The Contractor must provide an adequate number of waste receptacles for general waste at points around the construction site, and a single collection point for hazardous waste.
- The frequency of collections/emptying of waste receptacles will be at least once per week or at such a frequency that waste receptacles do not overflow.
- Particular care shall be taken with the disposal of materials that could be wind-borne or waterborne to ensure that the release of these materials is minimised (the latter is a requirement for hazardous waste). Alternatively, bins with weighted lids must be used.
- The use of netting covers or similar sealed containers must be implemented as and when required by the ESO.
- Areas demarcated for specific activities including food consumption must have suitable waste receptacles provided.

- Wherever possible recycling must be carried out.
- No dumping within the surrounding area is to be permitted.
- No burning of solid waste is allowed.
- All material used by the Contractor during the construction phase shall be managed in such a way that it does not cause pollution, or that minimises pollution. In the event of a spillage, the Contractor should have suitably trained personnel who can correctly clean up any spillage in an efficient and environmentally sound manner.

3) Hazardous Waste:

- All hazardous waste must be stored in a demarcated area and disposed of using professional waste disposal contractors. All documents relating to volumes and type of waste must be kept on site for inspection.
- Storage areas that contain hazardous substances must be covered and bunded with an approved impermeable liner or have some form of secondary containment.
- The Contractor shall keep MSDS on-site for all potentially hazardous materials used.
- Suitably trained personnel shall be available on the site during working hours so that in the event of human exposure to any hazardous materials, the correct first aid actions are taken. This training should also include environmental spill containment procedures.
- Any spills occurring on site must be cleaned up, removed and disposed of safely as soon after detection as possible to minimize pollution risk.
- Chain of Custody documentation must be provided for any hazardous substances disposed of as proof of end recipient.
- All significant spills of harmful product/waste into the soil or water resources that might lead to environmental degradation must be reported to all relevant authorities. This requirement is in terms of Section 30 (10) of NEMA.

4) Ablution Facilities

- Chemical toilet facilities are to be supplied and managed by the Contractor. These are to be located in a specific area agreed to by the ECO prior to placement and to be used by all personnel.
- The number of chemical toilets required on site (i.e. the ratio of persons working on site to number of toilets) must be determined in conjunction with the Competent Local Authority prior to works starting on site.
- These toilets are to be secured (e.g. held down with four separate cables or guy ropes) to ensure that they are not knocked over or blown over by the wind.
- Ablution facilities provided will include shelter, toilets and hand washing facilities.
- Toilets will be provided as required.
- Sanitation facilities shall be located within 100m of any point of work, but not closer than 50m from any water body, storm water channels and no-go areas; or according to the customer EMPr.
- All temporary/portable toilets will be secured to the ground to prevent them toppling due to wind or any other cause.
- Entrances to toilets will be adequately screened from public view.

- Ablution facilities provided will be maintained in a hygienic state and serviced regularly to ensure proper operation.
- Toilet paper will be supplied at ablutions.
- No spillage will be allowed when the toilets are cleaned or serviced.
- The contents of chemical toilets will be removed by an approved contractor to an approved disposal site.
- The toilets will be serviced on a scheduled programme and cleaned accordingly.

4.2.3 Safety and First Aid Management

Objectives: To minimise any potential safety or health related incidents on site.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to health and safety on a construction site.

Measures:

- All people working on site are responsible for their own safety on site. Contractors and Principal Agent/s shall at all times comply with the relevant statutory requirements including the Occupational Health and Safety Act (Act 85 of 1993).
- A comprehensive site specific first aid kit must be available on site at all times.
- At least one person trained in safety and first aid and familiar with the first aid equipment on site must be present on the site at all times.
- Emergency procedures must also be established prior to the start of construction operations on site and appended to this EMPr.

4.2.4 Air Quality (Dust Impacts) Management

Objectives: To minimise potential air quality impacts during construction related activities.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements (specifically Western Cape Noise Control Regulations of 2013 (Provincial Notice 200/2013); and National Dust Control Regulations (GN No. R. 827) of 1 November 2013, promulgated in terms of National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)) relating to air quality.

Measures:

- Wind-blown dust and sand may generate considerable negative impacts (e.g. reduced visibility for vehicles travelling along adjacent roads and nuisance to neighbours/adjacent erven). Therefore, the following is required to be taken into account:
 - The use of water bowsers and wetting down of loose soil areas, as well as the erection of shade netting screens to prevent off-site movement of dust.
 - The use of straw stabilisation or mulching of exposed sandy areas must also be considered in consultation with the ECO.
 - Speed limits for vehicles on unpaved roads and minimisation of haul distances should be implemented on site.
 - All material loads need to be properly covered during the transportation process.

- Location and treatment of material stockpile must take into consideration the prevailing winds direction and location of sensitive receptors.
- Adherence to ear duct loads and protective gear which is stipulated in the Occupational Health and Safety Act (Act No. 85 of 1993).
- In particular, no potable water may be used for dust suppression purposes.
- During the dry season and during the wind season, a water bowser must be present on site at all times to ensure that all dust is wetted and managed appropriately.
- Dust abatement techniques must be used before and during surface clearing, excavation, or blasting activities.
- 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.

4.2.5 Water Quality Management

Objectives: To minimise any potential impacts on the water quality of the site and off site through indirect impacts.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to water quality.

Measures:

- Site staff shall not be permitted to use any stream, river, open water body or natural water source adjacent to or within the designated site for the purposes of bathing, washing of clothing, or for any construction or related activities.
- Bowser water (or another source approved by the Principal Agent and ECO) should instead be used for all activities such as washing of equipment, dust suppression, concrete mixing, compaction, etc. with the latter taking place well outside any identified sensitive areas and within a demarcated area approved by the ECO.
- In particular, no potable water may be used for dust suppression purposes.
- Before an operation occurs near a waterbody, vehicles should be checked for leaks, to reduce soil and water contamination from vehicle fluids.
- Re-fuelling areas for vehicles should be bunded and located away from water resources and sensitive environments to prevent any accidental spillage contaminating soil or seeping into groundwater aquifers. All servicing area run-off should be directed towards a fully contained collection sump for recovery and appropriate disposal.
- Old engine oil must NOT be thrown on the ground or down a stormwater drain but rather collected in containers and recycled.
- If soil contamination occurs (such as due to a spill), the soil must be removed from the site and legally disposed of appropriately.
- Any spills that occur during all phases of the development must be recorded in the Environmental Register. All clean-up actions must also be recorded that was used to

remediate the spillage. All actions need to be agreed in conjunction with the ECO prior to commencing any work.

4.2.6 Hazardous Material (Bitumen Oils and Lubricants) Management

Objective: To minimise any potential hazardous material from causing environmental damage through the use, storage and/or handling of such hazardous material during the construction works.

Targets: To ensure compliance with all legal requirements, including local authority by laws and other statutory requirements relating to hazardous materials.

Measures:

- The Contractor shall ensure that all hazardous materials are stored within a bunded area.
- All hazardous material containers are required to be inspected regularly to ensure that no leaks occur.
- When hazardous materials are required to be dispensed, proper dispensing equipment should be used and made available on the site for such activities.
- The dispensing equipment is required to be stored in a waterproof container when not in use.
- Hazardous material should be used in moderation and dispensed at designated areas, which are controlled appropriately.
- The Contractor shall take all reasonable and necessary precautions to prevent accidental and incidental spillage during the use of such materials.
- In the event of a hazardous material spill, the Contractor must isolate and contain the hazardous material spillage.
- The Contractor shall clean up the spill, either by removing the contaminated soil and/or by the application of absorbent material in the event of a larger spill.
- Treatment and remediation of the spill will be undertaken to the reasonable satisfaction of the Engineer.
- The Contractor must advise that Engineers and the ECO of where any Bitumen is being stored.
- The storage area of hazardous waste should comprise of a smooth impermeable floor (concrete and/or 250um plastic cover).
- A spill kit is required to be present on the site at all times.

4.2.7 Hazardous Material (Fuels, Oils and Others) Management

Objective: To minimise any hazardous fuel and oil material from causing environmental damage through the use, storage and/or handling of such hazardous material during the construction works.

Targets: To ensure compliance with all legal requirements, including local authority by laws and other statutory requirements relating to hazardous materials.

Measures:

- Fuel may be stored on site in an area which was been approved by an Engineer and the ECO.
- The Contractor shall ensure that all liquid fuels (petrol and diesel) are stored in tanks with lids, which are firmly shut and/or in bowsers.

- The tanks or bowsers are required to be located on smooth impermeable surfaces (concrete or plastic) with an earth bund.
- The impermeable lining shall extend to the crest of the bund and the volume of the bund will be 130% of the total of the storage tanks and/or bowsers located on the site.
- The banded area is required to be sheltered from the rain.
- Provisions shall be made for refuelling at the fuel storage area, by protecting the open soil with bunding.
- If fuel will be dispensed from 200 litre drums, only empty clean drums will be able to be stored on the bare ground.
- All empty dirty drums must be stored on a banded area.
- Should the use of a 200l drum be required, proper dispensing mechanisms are required to be used and the drum will not be allowed to be tipped in order to dispense the fuel.
- The dispensing mechanism for the fuel drums will be stored in a waterproof container when it is not in use.
- The Contractor will be required to prevent unauthorised access to the fuel storage area.
- No smoking will be allowed within the vicinity of the fuel storage areas.
- The Contractor must ensure that adequate fire-fighting equipment is readily available at the fuel storage area.
- Where reasonably practicable the plant shall be refuelled at the fuel storage area or at the workshop as applicable. If it is not possible then the surface under the refuelling area must be banded with plastic and/or wooden pallets.
- The Contractor is required to ensure that absorbent materials are readily available in the vicinity of the refuelling areas to absorb and/or breakdown and where possible be designed to encapsulate minor hydrocarbon spills.
- This absorbent material must be able to absorb a minimum spill of 200l of hydrocarbons.
- The Contractor must obtain the Engineer's and ECO's approval for any refuelling or maintenance activities.
- All hazardous material containers are required to be inspected regularly to ensure that no leaks occur.
- Damaged solar panels are classified as hazardous waste and should be stored in a covered, impermeable area. These panels should be returned to the supplier for repairs or recycling, or supplied to a licensed recycling facility or licensed hazardous waste disposal facility where no recycling or re-use is possible.
- The storage of general waste in excess of 100m³ and/ or the storage of hazardous waste in excess of 80m³, excluding the storage of waste in lagoons or the temporary storage (i.e. less than 90 days) of such waste, requires the applicant to comply with GN No. 926 of 29 November 2013: National Norms and Standards for the Storage of Waste.

4.2.8 Workshop, Equipment Maintenance and Storage Management

Objective: To minimise any potentially dangerous material from causing environmental damage through the use, storage and/or establishment of such areas during the construction works.

Targets: To ensure compliance with all legal requirements, including local authority by laws and other statutory requirements relating to such storage and/or workshop and/or equipment maintenance areas.

Measures:

- Should any leaking equipment be present on this site, this equipment is required to be removed from the site immediately.
- All maintenance of equipment and vehicles on site should ideally be repaired off site or at a designated workshop area, which is appropriately bunded.
- Should emergency maintenance work be undertaken outside of the workshop area then this emergency work is required to be bunded appropriately and further such works must be approved by the Engineer and ECO prior to commencement.
- The Contractor must ensure that the workshop and/or any other maintenance areas (such as emergency maintenance areas) do not result in the contamination of the soil and/or vegetation.
- The workshop must have a smooth impermeable floor (concrete and/or plastic).
- The floor of the workshop is required to be angled towards an oil trap and/or sump to ensure that any dangerous spills are contained in the workshop area.
- Should servicing of equipment be required to be undertaken on the site then drip trays are required to be used to contain any waste oil and other lubricants.
- Drip trays are required to be used for all stationery equipment such as generator sets and compressors and all parked equipment such loaders, scrapers and vehicles on the construction site.
- All drip trays must be monitored and emptied on a daily basis.
- During rainy days and/or the rainy season the drip trays are required to be monitored continuously to ensure that they do not overflow. Where possible the Contractor is encouraged to place the drip trays and equipment during the rainy periods in sheltered areas, which will ensure that the drip trays do not overflow.
- The washing of any equipment on the site should be limited to urgent and/or preventative maintenance requirement only.
- Ass washing of any equipment should be undertaken off site and/or in the workshop area if necessary.
- The use of detergents for washing equipment should be restricted to detergents that have a low phosphate and nitrate content.
- The store man will be responsible for stacking and storage of material in the storage area at the site camp:
- Bricks, sandstone blocks, building sand, plaster sand and stone will be stored “open” on site but with special care that materials are not contaminated i.e. that different types of sand are not mixed.
- Cement will be stored in a lockable and water-proof container and will be stacked.

- Not more than 13 pockets high. Cement will be used, as far as possible, on a first-in first-out basis.
- Reinforcing bars will be stored in the open but will be placed on timber poles to avoid “contamination” by mud or soil.
- Steel door and window frames will be stored in the open but within a fenced-off secure area.
- Paint will be stored in a ventilated lockable store.

Natural Materials: Sourcing

- Materials must be sourced in a legal and sustainable way to prevent off-site environmental degradation.
- Where possible, a signed document from the supplier of natural materials should be obtained confirming that they have been obtained in a sustainable manner and in compliance with relevant legislation (legitimate source).
- Where materials are borrowed (mined), permit must be provided of authorization to mine these materials.

Stockpile Areas

- Sites for stockpile areas are to be agreed with the Principal Agent / Engineer and ECO.
- Materials are not permitted to be stockpiled underneath or against the trunks of trees, on streams, riverbanks or within floodplains.
- No material will be permitted to be stockpiled in drainage lines or where there is a potential for the stockpiled material to be washed away.
- Stockpiles must not obstruct natural water pathways.
- Stockpiles must not exceed 2m in height.
- Stockpiles to be kept clear of alien invasive weeds.

4.2.9 Noise Pollution Management

Objectives: To minimise any potential noise impacts related to the construction operations on site.

Targets: To ensure compliance with all legal requirements, including the local authority by laws and any other statutory requirements relating to noise impacts.

Measures:

Mitigation options included both management measures as well as technical changes, with the following measures proposed to manage the potential noise impact associated with the construction of the WEF.

General measures that should be applicable for the construction phase includes:

- Construction staff must be trained to minimise noise impacts.
- Ensure that the National Control Regulations and SANS 10103:2008 are adhered to and reasonable measures to limit noise from the work site are implemented.
- Ensure that the construction staff working in areas where the 8-hour ambient noise levels exceed 75.0dBA must wear ear protection devices.
- Route traffic as far as practical possible from potentially sensitive receptors.

- Minimize simultaneous construction activities where possible, using the smallest/quieter equipment when operating near receptors (within 500m).
- Where possible only operate during the day. If night-time activities are required, do not operate closer than 500m from any receptors (prevent noise impact of medium significance);
- Access roads that are to be used at night should be relocated further than 140m from receptors, or, if not possible, berms or walls should be erected close to identified receptors (located between the access road and receptors to break the line of sight with at least 1 m).
- 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 potentially sensitive receptor(s) includes:
 - 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.
 - Contact details of a responsible person where any complaints can be lodged should there be an issue of concern.
 - Warning to the community when noisy activity e.g. blasting is to take place.
- Ensure that equipment is well maintained and fitted with the correct and appropriate noise abatement measures (silencers) 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.
- All wind turbines must be located at a set-back distance of 500m from any homestead and a day/night noise criteria level at the nearest residents of 45.0dBA 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.

4.2.10 Blasting/Drilling/Demolitions Management

Objectives: To minimise impacts associated with blasting/drilling/demolition on site during construction.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to blasting and/or drilling and/or demolitions and to minimise nuisance impacts.

Measures:

- The following recommendations will be implemented in addition to normal health and safety requirements as stipulated in the Occupational Health and Safety Act (Act No. 85 of 1993).
- These activities will only take place via a competent and appropriately qualified and legally compliant Contractor.
- The Contractor shall take all necessary precautions to prevent damage to special features and the general environment, which includes the prevention of any fly rock.

- Environmental damage caused by the above activities shall be repaired and/or rehabilitated at the Contractor's expense to the satisfaction of the ECO and Principal Agent.
- None of the above activities may be carried out on Sundays or Public Holidays without the approval of all relevant authorities.
- Careful sealing off of the site and surrounding area will be carried out to ensure that all personnel are removed from the site and its immediate surrounds.
- Adequate notification and warning of blasting activities must be provided to all adjacent and or affected parties.
- Borrow materials must be obtained only from authorized and permitted sites.
- Appropriate anti-erosion measures such as silt fences must be installed in disturbed areas.

4.2.11 Concrete Mixing (Batching) Management

Objectives: To ensure that appropriate and efficient measures are undertaken on site to manage concrete mixing areas during the construction phase.

Targets: To ensure compliance with the local authority by laws, independent specialist recommendations and any other statutory requirements relating to concrete mixing.

Measures

- Batching plants are to be located in areas of low environmental sensitivity.
- The batching plant area shall be operated in a way that prevents contaminated water run-off from the batching site and polluting nearby water bodies.
- Suitable measures, such as diversion berms, to be installed to direct the wastewater to a suitable catchment area.
- Suitable screening and containment must be in place to prevent wind-blown contamination from cement storage, mixing, loading and batching operations.
- Topsoil must be cleared from the area demarcated for the batching plant prior to establishment and stockpiled for later rehabilitation purposes.
- No batching / mixing activities may occur on the ground or on any permeable surface.
- Protect the batching plant on the up-slope side (where applicable) with an earth berm or sandbags to deflect clean surface run-off water away from the plant.
- Cleaning of equipment and flushing of mixers must occur in designated wash bays (with contaminated water collected, stored / contained) to ensure that contaminated wash water does not enter the environment.
- Aggregates (Stone, Crusher Sand and River Sand) will be stored in dedicated "bins". The bins will have three walls each to contain the aggregates.
- All visible remains of excess concrete and aggregate must be removed from site and disposed of in an appropriate manner.
- Cement bags must not become litter after use. They must be disposed of in bins/skips (see waste management).
- Concrete truck drivers to adhere to the following:
 - Appropriate license code
 - Competence certificate

- Medical examination
- Training given on daily checklists etc.

4.2.12 Establishment of Construction Lay Down Area

Objectives: To minimise impacts associated with the establishment and operation of construction site lay down area.

Targets: To ensure proper management of the construction site from a centralised point

Measures:

Establishment of Construction Sites

- The contractor shall not locate the site camps in any areas in which vegetation is pristine (as defined by each contract's specifications), nor within 100m of any watercourse, nor in any area that could cause nuisance or safety hazards to surrounding landowners, inhabitants or the general public unless otherwise instructed by the Engineer and ECO.
- The site camp/office is to be clearly signposted and no unauthorized access is permitted. Relevant contact details are to be made easily visible and available to the public for the purposes of complaints/concerns or emergencies.
- A plan showing the construction site layout, including the positions of all buildings, fuel storage and hazardous materials storage areas, stockpiles, storm water management infrastructure, access points for deliveries and services, the position of site offices and ablutions and other infrastructure must be prepared and submitted to the Engineer and ECO for approval and a copy kept on site.
- The plan will detail all pollution control measures. The sites are demarcated by means of a security fence.
- Access to the sites will be limited to authorized persons and will be security controlled.
- The placement of buildings and equipment will be done to minimize the footprint and visual impact of the sites.
- Locate Materials and soil stockpile areas, fuels and chemical storage areas and batching areas away from environmentally sensitive areas.
- Down lighting will be used and it will be ensured that lighting on site does not interfere with road traffic or cause a reasonably avoidable disturbance to the surrounding community or other users of the area.
- Workers will be instructed to dispose of cigarette butts in designated areas.

Demarcation and Access Control

- Sound environmental principles must be followed whilst establishing access to the site.
- The construction sites will be properly identified and demarcated.
- The selected accesses must consider minimizing nuisance impacts on neighbours.
- Any new access tracks must be approved by the Customer/Engineer and ECO prior to construction. No roads or access tracks should be created on an ad-hoc basis.
- The utility and safety of any exiting access shall not be compromised by use for the construction work or construction-related activities, nor shall spillage, littering, accelerated erosion, or other environmental impact, occur.

Clearing and Grubbing

- Prior to clearing the ECO must be notified in order to identify and demarcate any indigenous trees or plants, nesting sites or heritage sites that require protection or translocation as per the Plant Rescue and Protection Plan (Annexure F).
- Areas of the construction site requiring clearance shall only be cleared immediately prior to construction activities commencing e.g. at the last practical stage.
- No indigenous trees or shrubs may be felled, lopped, pruned or removed without the prior permission of the ECO.
- Pruning of branches of indigenous trees will be done under direct competent supervision and sealant will be applied to cut surfaces in excess of 50mm in diameter.

4.2.13 Fire Management

Objectives: To ensure that fire as a result of the construction related activities are controlled and managed appropriately.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to fire management.

Measures

- Preferentially no fire will be lit on the site, however if required, fires must be limited to use for cooking and heating use only within a designated area. This area will be suitable distance from any fuel source.
- No burning of waste will be permitted on site.
- Suitable precautions will be taken when working with welding or grinding equipment near potential sources of combustion.
- All staff on site will be made aware of general fire prevention and control methods, and the name of the responsible person to be alerted to the presence of a fire.
- The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for. The agreement should be signed before the construction phase commences.
- The option of establishing a fire break around the perimeter of the site prior to the commencement of the construction phase should be investigated.

- Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas.
- Contractor to ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high-risk dry, windy summer months.
- Contractor to provide adequate firefighting equipment on-site.
- Contractor to provide fire-fighting training to selected construction staff.
- No construction staff, with the exception of security staff, to be accommodated on site over night.
- As per the conditions of the Code of Conduct, in the advent of a fire being caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage caused to their farms. The contractor should also compensate the firefighting costs borne by farmers and local authorities.

4.2.14 Traffic Control Management

Objectives: To ensure that traffic impacts as a result of the construction related activities are minimized.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to construction traffic. To ensure that the impacts on current traffic flows in the vicinity of the site are minimised and that complaints relating to traffic associated with the site's activities are minimised.

Measures:

- All deliveries with abnormal loads (for the transport of turbine components, main assembly cranes and other large pieces of equipment) will operate under an approved transportation plan with the necessary traffic routes and traffic accommodation plans in place.
- Implementation of 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 minimise 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.

4.2.15 Storm water and Erosion Management

Objectives: To ensure that erosion and storm water are controlled and managed.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to management of storm water and erosion.

Measures:

- Compilation and implementation of a Stormwater Management Plan.
- Stormwater runoff from the development should be mitigated on-site to prevent any impact on the surrounding environment.
- Storm water outfalls should be designed to reduce flow velocity and avoid downstream erosion.
- During construction, all material excavated must be protected, screened or covered to prevent off site movement (primarily wind-blown soil or surface runoff) and the surplus material must be removed from site weekly to a licensed waste disposal site or re-used if appropriate.
- All storm water channels and grids around the outside of the site should be inspected regularly to ensure that they are not blocked and or obstructed to ensure their efficient operation.
- An erosion management plan must be implemented for monitoring and rehabilitating erosion events associated with the facility. Appropriate erosion mitigation must form part of this plan to prevent and reduce risk of any potential erosion.

4.2.16 Natural Vegetation Management

Objectives: To aid in the conservation of floral habitat, floral biodiversity and protected floral species within the subject property as well as to maximise the use of indigenous landscaping and promote the enhancement and good management of natural environmental features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to natural environment management.

Measures:

- Control alien invasive plants.
 - Avoid creating conditions in which alien plants may become established:
 - a. Keep disturbance of indigenous vegetation to a minimum.
 - b. Rehabilitate disturbed areas as quickly as possible.
 - c. Do not import soil from areas with alien plants.
 - Establish an ongoing monitoring programme to detect and quantify any alien species that may become established and identify the problem species (as per Conservation of Agricultural Resources Act).
 - Immediately control any alien plants that become established using registered control methods.
- Control loss of indigenous natural vegetation.
 - The construction impacts must be contained to the footprint of the infrastructure.

- Internal access roads and underground cables should be aligned as much as possible along existing linear disturbances, eg. Roads on site, or the edges of cultivated lands, and away from steep slopes and drainage lines as much as possible.
- Unnecessary impacts on surrounding natural vegetation must be avoided.
- Any plant rescue or protection must be undertaken in terms of the Plant Rescue and Protection Plan (see Annexure F).
- Rehabilitate any disturbed areas immediately to stabilize landscapes.
- During construction, any cable and foundation trenches should be closed up as soon as possible.
- Roads, turning areas and cable trenches must avoid all rocky outcrops, and where this is not possible impact on outcrops must be minimised.

4.2.17 Heritage (including Archaeological) Resources Management

Objectives: To aid in the conservation of heritage (including archaeological) resources and promote the enhancement and good management of such features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to management of such resources.

Measures:

Graves

- In the event of any human remains or unknown grave being encountered, the material must immediately be protected, and work must cease at the location of the find. The archaeological specialist must be contacted to determine the process to be followed (usually site inspection to determine context and possible age, forensic details). ECPHRA must be informed. Depending on the findings/circumstances, an application can be made to exhume/rebury the remains.
- If the remains are older than 60 years, a permit would be required from SAHRA to exhume any human remains.

Built Environment

- Inhabited settlements and farms are excluded from development except where access existing roads are used.

General

- No construction activities may take place within 100m of the documented rock shelters containing rock paintings and boulders containing rock engravings.
- The ridges and rocky outcrops surrounding the locations of the turbines must be investigated prior to construction to establish whether undocumented rock shelters contain rock paintings and rocky outcrops contain boulders with rock engravings. If any are encountered the recommendations in point 1 must be implemented.
- No construction activities may take place within 100m of the documented stonewall structures.
- If it is inevitable that construction activities must take place within 100m of any documented and undocumented rock shelters containing paintings, rocky outcrops with boulders containing rock engravings and stone-wall structures a perimeter fence must be erected to protect the sensitive area from any possible negative impact.
- It is possible that in situ archaeological sites/remains, and human remains may be uncovered during construction. Therefore, a professional archaeologist should be appointed during the vegetation removal and construction phases of the development. This includes the construction of new roads for heavy vehicles for the transport of the wind turbines, solar panels, and other infrastructure.
- The attached Chance Fossil Finds Procedure (Annexure H) must be implemented for the duration of the construction phase.

- Should any previously undocumented heritage resources be identified during the course of the construction, operation or decommissioning of the project, work must cease in the area of the find and SAHRA must be contacted regarding a way forward.

4.2.18 Aquatic and Fresh Water Management

Objectives: To aid in the conservation of Aquatic and Fresh water ecosystems and promote the enhancement and good management of such features on site.

Targets: To ensure compliance with the statutory requirements relating to management of natural freshwater resources.

Measures:

- A buffer of at least 100m between the delineated aquatic ecosystems and all the proposed project activities should be maintained adjacent to the river in which larger river and valley bottom wetlands occur as well as at least 50m buffer adjacent to the smaller tributaries and drainage features.
- Encroachment into freshwater ecosystems and their recommended buffer areas must be avoided as far as possible.
- No water must be taken from a water resource for any purpose without authorisation in terms of the National Water Act, 1998 (Act 36 of 1998) (NWA).
- No waste or water containing waste may be disposed without authorisation in terms of the NWA and National Environmental Management: Waste Act, 2008 (Act 59 of 2008).
- All relevant sections and regulations of the NWA regarding water use must be adhered to.
- No pollution of surface water or groundwater resources may occur.
- Site management must be undertaken at the laydown area, batching plant and the individual turbine construction area. This should specifically address on-site stormwater management, in in terms of flooding, erosion and pollution potential, and prevention of pollution measures from any potential pollution sources during the construction activities such as hydrocarbon spills.
- Any stormwater that does arise within the construction sites must be handled appropriately to trap sediments and reduce flow velocities.
- No stormwater runoff from any premises containing waste, or water containing waste emanating from industrial activities and premises may be discharged into a water resource.
- Polluted stormwater must be contained.
- Any indigenous vegetation clearing within or adjacent to the watercourses should occur in a phased manner to minimise erosion and/or run-off. An Environmental Control Officer (ECO) or an appropriate specialist with knowledge and experience of the local flora be appointed during the construction phase to be able to make clear recommendations with regards to the revegetation of disturbed areas.
- Any disturbed areas should be rehabilitated and monitored to ensure that these areas do not become subject to erosion or invasive alien plant growth.
- The existing road infrastructure must be utilised as far as possible to minimise the overall disturbance created by the proposed project.

- Where new roads need to be constructed, the existing road infrastructure must be rationalised and any unnecessary temporary roads decommissioned and rehabilitated to reduce the disturbance of the area and within the river beds.
- For new roads to the turbines, these should be located at least 100m outside of the drainage/riverbeds.
- Where the crossing of rivers by infrastructure such as roads and underground services is necessary, this should be located at existing road crossings as far as possible.
- Where access routes need to be constructed through the watercourses, the disturbance of the channels should be limited. Wetland areas should be avoided and any road adjacent to a wetland feature should also remain outside of the 50m buffer zone.
- All crossings over watercourses should be such that the flow within the drainage channel is not impeded and should be constructed perpendicular to the river channel, where possible based on the contours.
- Land that has already been substantially disturbed and/or transformed from its natural state (e.g. through extensive, long-term farming activities) should be targeted for the establishment of structures and infrastructure associated with the proposed WEF, as far as possible, because this would lower the risk of impacting on freshwater ecosystems that are in a good present ecological condition.
- Provision should be made for the establishment of ecological corridors on the site, which should be located and designed through a consultative process including all the biophysical specialists involved in the environmental assessment for the project.

4.2.19 Faunal Management

Objectives: To aid in the conservation of faunal and avifaunal resources and promote the enhancement and good management of such features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to management of fauna and avifauna respectively.

Measures:

The following mitigation measures are proposed to partially reduce the significance of the various projected impacts of the Preferred Alternative:

- An Environmental Control Officer (ECO) or Environmental Site Agent (ESA) must be appointed for the duration of the construction and decommissioning phases to oversee the implementation of the EMPr.
- Limit the loss of natural habitat, since these serve as foraging, roosting, refuge and even nesting sites for several fauna species. Thus keep the extent of construction areas to the absolute minimum.
- Limit the construction activities within the transformed environments and other areas that were identified by the respective specialists as being least sensitive, i.e. avoid developments in the sensitive habitat nodes.

- Do not construct open steep-sided trenches or other deep pitfall structures that may entrap and kill amphibians, reptiles and small mammals. Where these are needed, such as for any cable and foundation trenches, they must be closed up as soon as possible, and the ECO must survey all open trenches three times a day and remove any animals that have fallen into these holes.
- Roads, turning areas and cable trenches must avoid all rocky outcrops, and where this is not possible impact on outcrops must be minimised.
- All turbine, cable and road construction through rocky areas should be preceded and accompanied by surveys for all fauna, and especially of relatively slow moving species such as tortoise and geckos, and these should be immediately translocated to similar habitat out of harms way.
- Enforce speed restrictions (60 km/h) within the WEF complex.
- Follow best practise guidelines to limit noise emissions during the construction and maintenance phases.
- Establish a fire management plan to manage controlled and rouge bush fires.
- Provide training to construction and operations staff on best practice environmental management procedures.

Note that a search-and-rescue initiative of select faunal species prior to and during the construction phase is not deemed to be worthy mitigation measure and is therefore not proposed for the Modderfontein WEF project. The ECO or ESA can deal with sporadic faunal rescue incidences whenever these occur, by releasing such animals in the nearest undeveloped area.

4.2.20 Avifaunal Mitigation Measures

Objectives: To aid in the conservation of avifaunal resources and promote the enhancement and good management of such features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to management of avifauna.

Measures:

- Minimising areas of construction to the maximum extent possible.
- The removal of trees and natural vegetation should be restricted to the maximum extent possible due to their importance of serving as foraging, roosting, refuge and even nesting sites for several bird species.
- No layover or temporary construction areas to be installed on natural vegetated area.
- Proper training should be provided to all the construction personnel. Everybody working in the area should be alert to the potential impacts of the construction phase on the bird community.
- Strict measures should be put in place to enforce speeding restrictions on all access roads, such as the installation of road signs.
- Maintenance staff should be encouraged to keep noise and other disturbances to a minimum.
- Demarcate 'no-go' areas identified during pre-construction monitoring (see below) to minimise disturbance impacts associated with the construction of the facility.

- Schedule maintenance activities to avoid disturbances in sensitive areas (identified through operational monitoring).
- Excluding development from:
 - Within 500 m of any cliff lines or elevated ridges within the development area to reduce collision risk, primarily for slope soaring raptors.
 - No turbines should be constructed within a 3.7km circular buffer zone around any Verreaux's Eagle nest.
- All the turbines should have one blade painted black or red (depending on which colour is approved by the Civil Aviation Authority) for two thirds from the tip of the blade. The developer must engage with turbine manufacturers to come up with a design that will comply with all relevant industry and aviation standards.
- Turbines in the circular 5.2km medium-risk buffer zone should be reduced to an absolute minimum. Any turbines remaining in the Verreaux's Eagle 5.2km medium-risk circular buffer zones should be subject to pro-active mitigation in the form of a proven mitigation method such as Shutdown on Demand (SDoD), using either biomonitors or an automated system such as IdentiFlight.
- Ensuring that lighting on the turbines is kept to a minimum, and is coloured (red or green) and intermittent, rather than permanent and white, to reduce confusion effects for nocturnal migrants.
- Carefully monitoring the local avifauna pre- and post-construction, and implementing appropriate additional mitigation as and when significant changes are recorded in the number, distribution or breeding behaviour of any of the priority species listed in this report, or when collision or electrocution mortalities are recorded for any of the priority species listed in this report. An essential weakness of the EIA avifauna study, given the time constraints, is the dearth of knowledge about the actual movements of key species (bustards, cranes, eagles, other raptors, flamingo's, storks) through the impact area. Such knowledge must be generated as quickly and as accurately as possible in order for this and other wind energy proposals in the area to proceed in an environmentally sustainable way. Radar tracking systems, however expensive, may be the best and most practical solution to this problem.
- Ensure that the results of pre-construction monitoring are applied to project-specific impact mitigation in a way that allows for the potential cumulative effects on the local/regional avifauna of any other wind energy projects proposed for this area.
- Additional mitigation might include re-scheduling construction or maintenance activities on site, shutting down problem turbines either permanently or at certain times of year or in certain conditions, or installing a 'DeTect' or similar radar tracking system to monitor bird movements and institute temporary shut-downs as and when required.
- Committing this project for inclusion in a Birds & Wind Energy Specialist Group (BAWESG)/FitzPatrick Institute research programme, including exploration of the use of remote-controlled gliders to map slope soaring potential of ridges targeted for wind energy development, and the long long-term behavioural and demographic impacts of wind energy developments on Verreaux's Eagle populations.
- Steps should be taken to ensure that Verreaux's Eagle's primary prey (i.e. Rock Hyrax), does not become more abundant as a result of the wind farm construction, by ensuring that

excavated rocks are removed from site, and any animal carcasses found on site should be promptly removed.

4.2.21 Bat Management

Objectives: To aid in the conservation of bat resources and promote the enhancement and good management of such features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to management of bat species.

Due to the presence of specific features that are known to increase bat activity in the WEF site some areas classified as no-go areas were identified. It is therefore, recommended at this stage that all no-go areas should not be considered for turbine installation. The presence of sensitive species using the area intensively increases the risk of significant negative impacts produced by the development and turbines placed in areas of medium sensitivity may be subject to management actions if high levels of mortality are observed during operational phase in order to minimise any collision risk still impending.

The following recommendations are proposed to reduce the potential collision risk and potential negative impacts from the proposed wind development on the bat community:

Measures

- Adequate training should be provided to all the construction personnel. Everybody working in the area should be aware of the sensitive areas, be alert to the possible presence of bats, especially when working close to potential and/or confirmed roosts (per example abandoned buildings);
- The construction works should be supervised, according to the plan to be detailed before construction, by a visiting bat specialist, in order to further identify any conflict situations between the construction works and bats, and readily take actions to minimise any identified impacts.
- Minimise areas of construction as far as possible.
- If any building, trees, or any structure with potential to provide bat roosting, needs to be demolished or removed, then a visit should be conducted, prior to the commencement of the works, by a specialist to verify the presence/absence of bats.
- In the case that any confirmed or potential bat roost needs to be affected (e.g. utilisation conversion, demolition, recuperation) a bat specialist should confirm bat occupancy and define the necessary measures to be implemented to minimise the impact if necessary;
- No chemical spills or any other material dumps should be allowed within the intervention area, with special focus on areas nearby riparian vegetation or drainage lines. All the maintenance of vehicles must be carried out in specially designated areas to prevent any type of pollution to the residual site.
- Use turbines which maximise the ground clearance as much as possible, and minimise the tip height (i.e. the distance between the ground and the blade tip at its highest point). The lowest tip should not encroach any lower than 30m above ground, in order to reduce the risk of bat mortalities from reaching the specified estimated threshold limits of 44.3 bats per annum.

4.2.22 Visual Management

Objectives: To ensure that appropriate and efficient measures are put in place on site in order to mitigate visual impacts to an acceptable level.

Targets: To ensure compliance with the local authority by laws, independent specialist recommendations and any other statutory requirements relating to Visual Management.

Measures:

The use of fewer, larger turbines, as opposed to a high number of smaller turbines as planned is also considered to lower the overall visual impact of the project.

General housekeeping

- All construction areas must be kept in a neat and orderly condition at all times.
- Appropriate maintenance of wind turbines should continue throughout the operational phase of the project to ensure a tidy appearance.
- Any areas for material storage and other potentially intrusive activities must be screened from view as far as possible.
- An efficient removal system of waste and rubble must be ensured during the construction phase.
- All operational infrastructure should be actively maintained to avoid degradation.

Development footprint

- The development footprint and disturbed areas associated with the construction phase of the project should be kept as small as possible, with as little indigenous vegetation being cleared as possible with specific mention of thicket areas and tall trees which provide increased screening opportunities.
- Ancillary buildings, laydown areas and substations should be placed within low visibility areas and the heights and footprint areas of these structure should be kept as low/ small as possible.
- Construction boundaries should be clearly demarcated to minimise areas of surface disturbance.
- Direct loss of or damage to valuable natural visual resources such as the various drainage lines in the area should be actively avoided, with specific mention of erosion, stream bank damage and disturbance to riparian vegetation.
- As far as possible, existing roads are to be utilised for construction and maintenance purpose, to limit cumulative impacts from roads and traffic, as well as to limit the extent of the vegetation cleared for the purpose of the project.
- The height of any temporary structures such as soil stockpiles should be kept as low as possible.

Infrastructure placement

- Where infrastructure is sited within view of visually sensitive areas, it must be, as far as possible, placed as far away as possible or within lower-lying areas where it may be screened by topography (keeping in mind that WTG placement is also dependent on the local wind regime and other technical considerations). Where full screening of infrastructure components is not possible, siting should take advantage of partial screening opportunities wherever possible.
- As far as possible, surface infrastructure should be placed in areas that have already been disturbed.
- Any new roads are to follow the contours of the landforms in order to make it less visually prominent and to reduce the need for cut and fill activities. Siting of roads should avoid steep side slopes which may contribute towards erosion.

Infrastructure appearance

- The use of permanent signage should be minimised and visually unobtrusive.
- It should be noted that mitigation on infrastructure colour is limited, as this aspect is regulated by the CAA.

Screening

- It must be ensured that existing vegetation is retained as far as possible during the construction and operational phases of the project to act as visual screens with particular reference to existing tall trees and larger shrubs, including stream bank and riparian vegetation. Natural vegetation should be incorporated into the concurrent site rehabilitation especially in line of sight from sensitive receptors.
- Where required, as outlined in the discussion of certain KOPs, the addition of indigenous vegetation will be required to assist in screening of WTGs from sensitive receptors.
- Where possible, contractor's camps and laydown areas should be placed within areas that are already disturbed. Local topography can also be used to position such temporary facilities within areas of low visibility.

Erosion

- Erosion, which may lead to high levels of visual contrast and further detract from the visual environment, must be prevented throughout the lifetime of the project by means of putting soil stabilisation measures in place where required and through concurrent rehabilitation.

Dust

- During the construction phase all dirt and access roads, as well as other areas cleared of vegetation for construction purposes will require effective dust suppression such as regular watering.
- Access roads must be suitably maintained to limit erosion and dust pollution.
- Vehicle speed on unpaved roads must be reduced to limit dust creation.

Lighting

- If possible and if approved by CAA, the use of audio-visual warning systems and radar technology is to be implanted to avoid the use of red flashing aircraft lighting, which will significantly reduce the night time visual impact of the project. These mitigation measures have not been implemented in South Africa before, but various WEFs have been approved without it. Where this is not possible, the number of red aircraft light should be reduced to the minimum number required.
- Night lighting of construction sites/camps, as well as the new substation should be minimised within requirements of safety and efficiency.
- As far as possible, construction activities should be restricted to daylight hours, in order to limit the need to bright floodlighting and the potential for skyglow and to avoid the use of additional night-time lighting for security purposes.
- Outdoor lighting in the vicinity of the proposed substation must be strictly controlled.
- The use of high light masts and high pole top security lighting should be avoided along the periphery of the proposed substation. Any high lighting masts should be covered to reduce glow.
- Up-lighting of structures must be avoided, with lighting installed at downward angles that provide precisely directed illumination beyond the immediate surroundings of the infrastructure, thereby minimising the light spill and trespass.
- Care should be taken when selecting luminaries to ensure that appropriate units are chosen and that their location will reduce spill light and glare to a minimum.
- Minimum wattage light fixtures should be used, with the minimum intensity necessary to accomplish the light's purpose.
- The use of low-pressure sodium lamps, yellow LED lighting, or an equivalent reduces skyglow and wildlife impacts (BLM, 2013).

Rehabilitation

- Concurrent/ progressive rehabilitation of temporary cleared areas, including reshaping and revegetation, must be implemented as soon as possible.
- Upon completion of construction, the project area should be left in a condition that protects the soil surface against erosion and instability.
- The WTGs should be completely removed after the life of the project has been completed, unless they are to be replaced by a new generation of turbines.
- Indigenous and locally occurring plant species selected for use in re-vegetation should be selected taken quick growth rates into consideration in order to cover bare areas and prevent soil erosion.
- Upon decommissioning, it is important that vegetation be reinstated to blend with the surrounding natural environment.

4.2.23 Topsoil Management

Objectives: To ensure that appropriate and efficient measures are put in place on site in order to manage topsoil storage.

Targets: To ensure compliance with the local authority by laws, independent specialist recommendations and any other statutory requirements relating to Topsoil Management.

Measures

- Topsoil can only be stripped from areas as indicated below:
 - Any area which is to be used for temporary storage of materials.
 - Areas which could be polluted by any aspect of the construction activity.
 - Areas designated for the dumping / stockpiling of soil.
 - or as instructed by the Customer's Representative or ECO.
- Where topsoil stripping forms part of the contract requirement the Contractor will store the excavated topsoil in a windrow or stockpile which shall be discernibly separate from wind rows or stockpiles of any other excavated materials.
- Stripping of topsoil will be undertaken in such a manner as to minimize erosion by wind or runoff.
- Topsoil shall not be disturbed more than is absolutely necessary.
- Topsoil stripping will only take place as the area becomes necessary for works to commence.
- Topsoil will not be contaminated with anything that might impair its plant-support capacity (e.g. aggregate, cement, concrete, fuels, litter, oils, domestic and industrial waste).
- Topsoil stockpiles will not be situated such that they obstruct natural water pathways.
- Stockpiles will not exceed 2m in height.
- Stockpiles will be kept clear of weeds and alien vegetation growth by regular weeding.
- After the completion of the backfilling, re-contouring and erosion control works, the Contractor shall spread the topsoil evenly at uniform depth over the areas from which it was removed, where this is a requirement of the contract specifications.

4.2.24 Agricultural Management

Objectives: To ensure that appropriate and efficient measures are put in place on site in order to manage agriculture on site

Targets: To ensure compliance with the local authority by laws, independent specialist recommendations and any other statutory requirements relating to agricultural management

Measures:

The development will have minor negative impacts on the current farming activities as well as on possible future farming developments. Contributing factors in this regard are, inter alia:

- Avoiding of sensitive areas, if applicable (i.e. wetlands, slopes and existing soil conservation works such as contours), in order to prevent the degradation thereof. In the survey area only steep slopes seems to be a sensitive area where soil erosion can take place if used.
- Proper planning of road layout so that roads follow the contours as far as possible or where contours are crossed, proper structures be developed and implemented that will ensure proper functioning of the existing contours. These actions will prevent unnecessary soil erosion. From the layout provided most roads seem to be correctly laid out between east-west turbines lines but some steep slopes are intersected between some of the generally north-south roads that are linking the east-west turbine lines.
- Conservation of the topsoil during construction and the proper rehabilitation of the construction sites after construction.
- Protection of the vegetation and veld by means of the construction of proper service roads and the proper maintenance thereof over time.
- The construction of the project infrastructure should be synchronised, as far as possible with the seasonal pattern of farming activities in order to minimize the possible disturbance of the latter. Farmers should be consulted to make sure which time of the year will be best suited for them.

4.3 OPERATIONAL PHASE IMPACTS

4.3.1 Hazardous Material (Fuels, Oils and Others) Management

Objective: To minimise any hazardous fuel and oil material from causing environmental damage through the use, storage and/or handling of such hazardous material during the operational phase

Targets: To ensure compliance with all legal requirements, including local authority by laws and other statutory requirements relating to hazardous materials.

Measures:

- Fuel may be stored on site in an area which was been approved by an Engineer and the ECO.
- The Contractor shall ensure that all liquid fuels (petrol and diesel) are stored in tanks with lids, which are firmly shut and/or in bowsers.
- The tanks or bowsers are required to be located on smooth impermeable surfaces (concrete or plastic) with an earth bund.
- The impermeable lining shall extend to the crest of the bund and the volume of the bund will be 130% of the total of the storage tanks and/or bowsers located on the site.
- The bunded area is required to be sheltered from the rain.
- Provisions shall be made for refuelling at the fuel storage area, by protecting the open soil with bunding.
- If fuel will be dispensed from 200 litre drums, only empty clean drums will be able to be stored on the bare ground.
- All empty dirty drums must be stored on a bunded area.
- Should the use of a 200l drum be required, proper dispensing mechanisms are required to be used and the drum will not be allowed to be tipped in order to dispense the fuel.
- The dispensing mechanism for the fuel drums will be stored in a waterproof container when it is not in use.
- The Contractor will be required to prevent unauthorised access to the fuel storage area.
- No smoking will be allowed within the vicinity of the fuel storage areas.
- The Contractor must ensure that adequate fire-fighting equipment is readily available at the fuel storage area.
- Where reasonably practical the plant shall be refuelled at the fuel storage area or at the workshop as applicable. If it is not possible then the surface under the refuelling area must be bunded with plastic and/or wooden pallets.
- The Contractor is required to ensure that absorbent materials are readily available in the vicinity of the refuelling areas to absorb and/or breakdown and where possible be designed to encapsulate minor hydrocarbon spills.
- This absorbent material must be able to absorb a minimum spill of 200l of hydrocarbons.
- The Contractor must obtain the Engineer's and ECO's approval for any refuelling or maintenance activities.
- All hazardous material containers are required to be inspected regularly to ensure that no leaks occur.
- Damaged solar panels are classified as hazardous waste and should be stored in a covered, impermeable area. These panels should be returned to the supplier for repairs or recycling,

or supplied to a licensed recycling facility or licensed hazardous waste disposal facility where no recycling or re-use is possible.

- The storage of general waste in excess of 100m³ and/ or the storage of hazardous waste in excess of 80m³, excluding the storage of waste in lagoons or the temporary storage (i.e. less than 90 days) of such waste, requires the applicant to comply with GN No. 926 of 29 November 2013: National Norms and Standards for the Storage of Waste.

4.3.2 Socio-economic Management:

Objective: To maximise impacts on employment in the area during the construction phase.

Targets: To ensure that employment for local people is ensured during the construction phase.

Measures:

Development of infrastructure to generate clean, renewable energy.

Should the project be approved the proponent should:

- Implement a skills development and training programme aimed at maximizing the number of employment opportunities for local community members.
- Maximise opportunities for local content, procurement and community shareholding.

4.3.3 Storm water and Erosion Management

Objectives: To ensure that erosion and storm water are controlled and managed.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to management of storm water and erosion.

Measures

- Compilation and implementation of the Stormwater Management Plan.
- An erosion management plan must be implemented for monitoring and rehabilitating erosion events associated with the facility. Appropriate erosion mitigation must form part of this plan to prevent and reduce risk of any potential erosion.
- Monitoring of the site be carried out, both during and after construction, to identify potential impacts on the natural systems as a result of altered flow patterns. It is proposed that features on site be monitored after large storm events.
- The natural drainage lines, diversion channel and dam walls should be monitored for signs of erosion and scouring which may be brought about by alterations to the natural hydrological characteristics of the site in the post development scenario. Increased sediment loads entering the dams should also be monitored for in the post development scenario. In addition, the discharge points from the laydown and substation areas, as well as the areas under and around the PV panels should be monitored for signs of concentrated flows and erosion.
- The road network should be monitored regularly to determine areas where stormwater may be concentrated or diverted which may lead to erosion. In addition, the crossing points at the drainage features should be monitored for signs of erosion.

- Should signs of erosion and alterations to the natural flow patterns be identified, a suitably qualified engineer should be appointed to design appropriate interventions to address the issues as they arise.
- The various protective measures that were installed during the construction phase must be properly maintained, e.g. the vegetation of road verges and cut faces must be inspected and maintained on a regular basis.

4.3.4 Natural Vegetation Management

Objectives: To aid in the conservation of floral habitat, floral biodiversity and protected floral species within the subject property as well as to maximise the use of indigenous landscaping and promote the enhancement and good management of natural environmental features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to natural environment management.

Measures:

- Mitigation measures would mainly involve restoration of areas that may be disturbed during construction that would not be required during the operational phase. Along the roads, ongoing monitoring and repair of soil-erosion would be necessary.
- Of some concern is the presence of exotic prickly pear cactus (*Opuntia ficus-indica*) on the site. The spiny form of this species (as found on the wind-farm footprint) has been declared a Category 1 weed in terms of the Alien and Invasive Species Regulations (AIS), National Environmental Management: Biodiversity Act (Act No 10 of 2004). It should be destroyed where encountered and extreme caution should be exercised to prevent the spread of this invasive species.

4.3.5 Heritage (including Archaeological) Resource Management

Objectives: To aid in the conservation of heritage (including archaeological) resources and promote the enhancement and good management of such features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to management of such resources.

Measures:

Graves

- In the event of any human remains or unknown grave being encountered, the material must immediately be protected and work must cease at the location of the find. The archaeological specialist must be contacted to determine the process to be followed (usually site inspection to determine context and possible age, forensic details). ECPHRA must be informed. Depending on the findings/circumstances, an application can be made to exhume/rebury the remains
- If the remains are older than 60 years, a permit would be required from SAHRA to exhume any human remains.

Built Environment

- Inhabited settlements and farms are excluded from development except where access existing roads are used

4.3.6 Aquatic and Fresh Water Management

Objectives: To aid in the conservation of Aquatic and Fresh water ecosystems and promote the enhancement and good management of such features on site.

Targets: To ensure compliance with the statutory requirements relating to management of natural freshwater resources.

Measures:

- Any disturbed areas should be rehabilitated and monitored on an ongoing basis to ensure that these areas do not become subject to erosion or invasive alien plant growth.
- Stormwater run-off infrastructure must be maintained to mitigate both the flow and water quality impacts of any stormwater leaving the WEF site.
- No stormwater runoff must be allowed to discharge directly into the watercourses. The runoff should rather be dissipated over a broad area covered by natural vegetation or managed using appropriate channels and swales when located within steep embankments.
- Should any erosion features develop, they must be stabilised as soon as possible.

4.3.7 Faunal Management

Objectives: To aid in the conservation of faunal and avifaunal resources and promote the enhancement and good management of such features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to management of fauna and avifauna respectively.

Faunal Mitigation Measures:

- No chemical spills or any other material dumps should be conducted within the WEF implementation area, with special focus in areas nearby riparian vegetation or drainage lines. All the maintenance of vehicles must be carried out in specially designated areas to prevent any type of pollution on the area.
- The use of electrified fencing around the WEF should be limited. No electrified fencing should be placed near the bottom of the fence where burrowing animals could be subject to electrocution. All holes dug by burrowing animals under fences should be left undisturbed as it allows movement for other fauna species.
- Maintenance staff should be encouraged to keep noise and other disturbances to a minimum.
- The use of any pesticide within the wind energy facility area should be prohibited. This will provide for general protection of fauna in the area, as well as prevent water quality from deteriorating.
- Lighting of the wind farm in the operational phase (for example, security lights) should be kept to a minimum.

4.3.8 Avifaunal Management

Objectives: To aid in the conservation of faunal and avifaunal resources and promote the enhancement and good management of such features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to management of fauna and avifauna respectively.

Measures:

Collisions with Wind Turbines

- Develop and implement a 24-month post-construction bird activity monitoring program that mirrors the pre-construction monitoring surveys completed by Arcus and is in line with the applicable South African post-construction monitoring guidelines. This program must include thorough and ongoing nest searches and nest monitoring; Conduct frequent and regular review of operational phase monitoring data (activity and carcass) and results by an avifaunal specialist. This review should also establish the requirement for continued monitoring studies (activity and carcass) throughout the operational and decommissioning phases of the development.
- Develop and implement a carcass search programme for birds as a minimum during the first two years of operation followed by year 5, 10, 15, 20 and 25, in line with the applicable South African monitoring guidelines.
- The above reviews should strive to identify sensitive locations at the development including turbines and areas of increased collisions with power lines that may require additional mitigation. If unacceptable impacts are observed (in the opinion of the bird specialist after consultation with BLSA, relevant stakeholders and an independent review), the specialist should conduct a literature review specific to the impact (e.g. collision and/or electrocution) and provide updated and relevant mitigation options to be implemented. Mitigations that may need to be implemented (and should be considered in the project's financial planning) include:
 - Onsite and off-site habitat management. A habitat management plan which aims to prevent an influx/increase in preferred prey items in the turbine area due to the construction and operation activities, while improving raptor habitat and promoting prey availability away from the site. Using deterrent devices (e.g. visual and noise deterrents) Deterrent and/or shutdown systems e.g. Automatic bird detectors (e.g. automated camera based monitoring systems – McClure et. al. 2018) if commercially available; or Radar Assisted Shutdown on Demand (RASOD) to reduce collision risk. Identify options to modify turbine operation (e.g. temporary curtailment or shut-down on demand) to reduce collision risk if absolutely necessary and other methods have not had the desired results.
 - Implementing a carcass management plan on the WEF site, to remove any dead livestock as soon as possible, to reduce the likelihood of attracting vultures to the WEF site.

Collisions with Wind Turbines

- Construction of electrical infrastructure must consider avifaunal sensitivity zones and avoid areas of higher sensitivities where possible.
- Place new power lines on the WEF site underground where possible.
- Place new overhead power lines adjacent to existing power lines or linear infrastructure (e.g. roads and fence lines). Where new lines are placed next to existing lines, the pylons of the new line should be 'staggered' so that they do not line up with the pylons of the existing line as far as possible.
- Attach appropriate marking devices [Bird Flight Diverters (BFDs)] on all spans of all new overhead power lines to increase visibility.
- All pylons associated with overhead power lines must be of a bird-friendly design that incorporates suitable perches to reduce the probability of electrocutions occurring.
- Develop and implement a carcass search programme for birds during at least the first two years of operation, in line with the South African monitoring guidelines (Jenkins et al. 2015). This program must include monitoring of overhead power lines, including the new grid connection line.
- A threshold of zero Verreaux's Eagle and Martial Eagle fatalities associated with the turbines should be adopted. Should it be reasonably determined that one or more fatalities of these species can be attributed to turbine collision additional mitigation measures such as radar assisted shut-down-on-demand, blade painting (or any future appropriate mitigation measures that may be available at the time) must be implemented.
- Until such time as these additional mitigation measures are implemented, an observer with handheld radio must be positioned under the turbine during daytime operation, and the turbine shutdown if, and for the duration of, any are eagles observed flying in close proximity to the turbine.
- Only once additional mitigation measures are implemented can the operation of the turbine responsible be resumed without an observer.

Disturbance and Displacement

- A site specific Operational Environmental Management Plan (OEMP) must be implemented, which gives appropriate and detailed description of how operational and maintenance activities must be conducted to reduce unnecessary disturbance. All contractors are to adhere to the OEMP and should apply good environmental practice during all operations.
- The on-site WEF manager (or a suitably appointed Environmental Manager) must be trained by an avifaunal specialist to identify the potential priority species and Red Data species as well as the signs that indicate possibly breeding by these species. If a priority species or Red Data species is found to be breeding (e.g. a nest site is located) on the operational Wind Farm, the nest/breeding site must not be disturbed and an avifaunal specialist must be contacted for further instruction.
- Operational phase bird monitoring, in line with applicable guidelines, must be implemented and must include monitoring of all raptor nest sites for breeding success.
- No turbines should be placed in no-go areas to be identified through pre-construction monitoring, while associated infrastructure should be avoided where possible in these areas.

Turbines should be set back 300 m from rivers and 280 m from drainage lines and large alien stands of trees (possible roost sites), and wherever possible turbines should avoid wide open grass plains (preferred foraging areas). Placement may be within the 300 m in patches of denser ground cover unattractive to SGH, as an alternative to use of open <50cm ground cover that they prefer.

Disruption of Local Bird Movement Patterns

- Lighting on turbines to be of an intermittent and coloured nature rather than constant white light to reduce the possible impact on the movement patterns of nocturnal migratory species.

4.3.9 Bat Management

Objectives: To aid in the conservation of bat resources and promote the enhancement and good management of such features on site.

Targets: To ensure compliance with the local authority by laws, and any other statutory requirements relating to management of bat species.

Measures:

Due to the presence of specific features that are known to increase bat activity in the WEF site some areas classified as no-go areas were identified. It is therefore, recommended at this stage that all no-go areas should not be considered for turbine installation. The presence of sensitive species using the area intensively increases the risk of significant negative impacts produced by the development and turbines placed in areas of medium sensitivity may be subject to management actions if high levels of mortality are observed during operational phase in order to minimise any collision risk still impending.

Operational phase

Considering that species of high collision risk were confirmed using the area within the rotor swept area, some recommendations are made to mitigate the risk involved for those populations. Since activity levels at rotor level are considered to be medium, no curtailment measures are required to be proposed at this stage. However, if during the operation phase, high levels of mortality are identified this should be evaluated by a designated bat specialist as soon as possible. Subsequent mitigation measures, adjusted to the risk situation identified, should be then proposed and implemented.

At this stage, recommendation during operational phase are:

- If turbines are to be lit at night, lighting should be kept to a minimum.
- Lighting of wind energy facility (for example security lights) should be kept to a minimum and should be directed downwards (with the exception of aviation security lighting).
- Ensure the implementation of a post-construction monitoring programme (operation phase) to survey bat communities on the wind energy facility and the impacts resulting from the installed infrastructure, according to the latest guidelines and must be continued for at least the first two years of operations. This must include fatality monitoring (carcass searches) and estimates, and is to commence as soon as the wind turbines are erected.
- The results of the operational phase monitoring programme must be taken into account for the implementation of further mitigation measures, if necessary.

The monitoring programme should have a minimum duration of 2 years, start as soon as the wind energy facility becomes operational and be revised upon completion. It should include both the continuation of the assessment of bat communities in the site, complementing the information gathered during the pre-construction phase and allowing determination of any exclusion effects on the bat community. The operational phase monitoring programme should include carcass searches and the determination of correction factors (observer's efficiency and carcass removal) in order to accurately determine the impact of the wind turbine on bats and to determine any potential critical area and/or wind turbines. This will inform adjusted or further mitigation measures, if necessary, tailored to the site specifics. These mitigation measures must be evaluated on a case-by-case scenario.

A rigorous and well-planned monitoring programme is considered to be one of the most effective measures to validate the potential impacts identified and to verify the effectiveness of the mitigation measures proposed. It will provide important insights into the impacts of the wind energy facility at an early stage, thereby informing any necessary adjustments to what has previously been proposed. It will also allow for verifying if the mitigation measures are being effective or if they should be adjusted or interrupted and other more effective measures implemented. Mitigation of bat impacts on wind energy facilities should be site specific and embrace an evolutionary process throughout the development life (Hundt 2012).

The continuation of the monitoring programme will contribute to: increased knowledge about bat communities in and around the Modderfontein WEF area and verification of the potential impacts identified during the pre-construction phase especially those concerning bat fatality caused by wind turbines. Although bat fatality may occur, based on pre-construction results, this is expected to affect mostly common and widespread species. However, if impacts identified in the subsequent phases of the project are more severe than expected additional mitigation measures may be evaluated, particularly if mortality occurs in levels that compromise the local population's viability. Nonetheless such measures should only be implemented if necessary and they should be carefully planned in order to find the best trade off in reduction of the collision risk and minimise the loss in revenue resulting from mitigation.

4.3.10 Visual Management:

Objectives: To ensure that appropriate and efficient measures are put in place on site in order to mitigate visual impacts to an acceptable level.

Targets: To ensure compliance with the local authority by laws, independent specialist recommendations and any other statutory requirements relating to Visual Management.

Measures:

- Continued erosion control and management of dust by the ECO.
- On-going erosion control monitoring by the ECO.
- On-going light spillage control.

External review of the implementation of the mitigations by a suitably qualified visual practitioner is recommended at the following time periods:

- Monitoring for soil erosion should be undertaken on a bi-annual basis for a year following the completion of closure phase.
- Once De-commissioning phase has been completed, to ensure the effective rehabilitation / redevelopment of the site to a visually acceptable form.

4.3.11 Noise Pollution Management

Objectives: To minimise any potential noise impacts related to the operations on site.

Targets: To ensure compliance with all legal requirements, including the local authority by laws and any other statutory requirements relating to noise impacts.

Measures:

- Operational noise measurements should be collected over at least 48 hours during the operational phase (winter period) to ensure that noise levels are less than 45 dBA. The acoustician measuring noise levels can advise whether further measurements are required.
- 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.

Special conditions that should be included in the Environmental Authorization

- The potential noise impact must again be evaluated should the layout be changed where any wind turbines are located closer than 1,000m from a confirmed NSD.
- The developer must measure ambient sound levels over at least a five-night period during the winter months to allow analysis of the data. The data must be used to develop ambient sound levels versus wind speed curves.
- The developer must ensure that no receptor is subjected to total noise levels exceeding 45 dBA at night due to the development of the wind energy facility.

- Operational noise measurements should be collected over at least 48 hours during the operational phase (winter period) to ensure that noise levels are less than 45 dBA (considering the pre-construction ambient sound level measurements). The acoustician measuring noise levels can advise whether further measurements are required.
- 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.

4.3.12 Emergency Management

Objectives: To ensure that an appropriate and efficient response is triggered in the event of an emergency situation arising. This should include incidents such as medical, fire, security and environmental disaster scenarios on the site.

Targets: To ensure compliance with the local authority by laws and any other statutory requirements relating to emergency response.

Measures:

- An Emergency Response Plan must be designed and implemented in conjunction with the local authority and the local emergency services.

5 DECOMMISSIONING IMPACTS

Please note, that the Decommissioning Impacts are similar to those of the construction impacts because decommissioning will entail the same type of activities. Therefore, these have not been reproduced in this Section. Please kindly refer Section 4.2 for the Decommissioning Impacts.

Further decommissioning activities would be required to applied for in a separate Environmental Permitting Process as per the requirements of the Competent Authority.

6 IMPLEMENTATION OF THE EMPr

6.1 ROLES AND RESPONSIBILITIES

- (a) Environmental register - an environmental register must be provided by the Principal Agent and kept on-site at all times as well as being freely accessible to all project team members. The register will provide a record of all actual environmental incidents that occur as a result of the onsite activity. This may include information related to such aspects as spillages, dust generation and complaints from adjacent neighbours and any other environmental incidents. It must also contain information relating to action taken/mitigation measures employed. Any party on-site may complete the register; however, it is envisaged that the Principal Agent, Contractor and ECO will be the main contributors. The Principal Agent must ensure that the Contractor implements recommendations made by the ECO within an agreed and reasonable time frame.
- (b) Environmental Control Officer (“ECO”) – the ECO must be appointed prior to commencement of operations. The ECO will advise the Principal Agent and Contractor of any environmental related issues during the construction and bulk landscaping phases of the development. The role of the ECO is defined more fully in Annexure E:
- a) The responsibilities of the ECO will include *monitoring* of compliance with the EMPr by the Contractor.
 - b) The ECO has the authority to recommend the cessation of works or any portion of construction related activity to the Principal Agent. This will be triggered if in his/her opinion the activity has caused or will imminently cause significant damage and/or harm to the environment or is in contravention of the relevant environmental legislation/permits/authorisations applicable to the site and/or activity/ies.
 - c) If the Contractor fails to show adequate consideration to the EMPr or the recommendations of the ECO, then the ECO may recommend to the Principal Agent, that the Contractor’s representative or any employee/s responsible for not showing adequate consideration to the EMPr are removed from the site. Alternatively, the ECO may recommend that all work on site be suspended until the matter is remedied. All costs will be carried by the Contractor.
 - d) Should modifications to this document be required, these must be agreed to by all parties concerned.
- (c) The Client – the client is responsible for employing the Principal Agent, Contractor and Engineer for the duration of the construction contract. They in turn will employ the ECO. The client will also ensure, as a signatory to the EMPr, that the Principal Agent and Contractor fulfil their obligations in terms of this EMPr.
- (d) The Principal Agent – the Principal Agent is appointed by the client and is responsible to the client for ensuring that the construction contract is carried out to completion on time, in budget and that the Contractor fulfils their obligations in terms of the EMPr. The Principal Agent and ECO are expected to develop a close working relationship and to communicate frequently. The Principal Agent must be recognised as the senior authority on site and all

communications and instructions between the ECO and the Contractor must occur via the Principal Agent. The Principal Agent is also responsible for deducting environmental penalties from the Contractor. The Principal Agent must ensure that the Contractor has a copy of this EMPr and all approved Method Statements and that the Contractor is familiar with the relevant documentation.

- (e) The Contractor – the Contractor will adhere to the conditions of this EMPr and ensure that all of its sub-Contractors, employees, suppliers, agents and so forth, for whom the Contractor is fully responsible for their actions on site, are fully aware of this EMPr, its requirements and the consequences of any breach of the requirements of this EMPr. The Contractor is fully responsible for *implementing* the EMPr. The Contractor will ensure that works on site are conducted in an environmentally responsible manner and in accordance with the requirements of this EMPr.
- (f) Council Representative – will be an appropriately qualified environmental officer of the City of Cape Town Municipality. This representative will monitor compliance of this EMPr by the client through the ECO.
- (g) Problematic Issues – should problematic issues arise, as identified by the ECO, the ECO has the authority to call a special meeting with the Principal Agent to address and rectify the matter.

6.2 FREQUENCY OF VISITS BY THE ECO

- a) The ECO is required to be on site daily for the duration of the Project, unless the determined otherwise by the ECO, taking into consideration the performance and compliance of the Contractor on site and with the EMPr respectively.
- b) The ECO should conduct on going Basic Environmental Awareness Training sessions with the Contractor, his staff and sub-contractors prior to any work taking place. The Contractors are required to provide a facility and interpreter (if required).
- c) An initial meeting with the ECO, local authority representative, Principal Agent and Contractor must be held to familiarise each of the parties with each other, the site, the EMPr and to confirm communication methods.
- d) The frequency of subsequent meetings and ECO visits must be agreed, depending on the performance of the Contractor. If required, the Principal Agent may introduce some form of penalty system if compliance with the EMPr proves problematic.
- e) A brief summary of the findings and any recommendations made by the ECO per visit should be emailed to all parties including the Principal Agent and Contractor. This report should also include photographs for additional information.

6.3 DOCUMENTED PROCEDURES

Method Statements (a template for these purposes is appended to this EMPr in Annexure B) will be required for activities that may result in significant impacts according to the ECO.

These must address the following aspects:

- What – a brief description of the work to be undertaken
- How – a detailed description of the process of work, methods and materials
- Where – a description of the location of the work (if applicable)
- When – the sequencing of actions with commencement and completion date estimates

All Method Statements (MS) must be in place at least 5 working days prior to the relevant construction activities taking place and must be approved by the ECO and Principal Agent prior to being implemented.

The following MS must as a minimum be made available to address the following construction related impacts:

- Erosion Management;
- Waste Management;
- Traffic Management; and
- Road Management and construction

6.4 HANDLING OF COMPLAINTS RELATED TO THE PROJECT

All forms of complaint must be forwarded to the site Principal Agent and ECO in writing. These must be entered into the environmental register and all responses and actions taken to address these must also be recorded. All issues raised must be addressed. It is important that the complainant feels that their concerns have been listened to and that appropriate action (within reason) has been taken to address these.

6.5 CONDUCT OF EMPLOYEES ON SITE

The following restrictions will be placed on all staff operating on the site in general:

- Adherence to relevant health and safety standards and municipal by laws
- Use of appropriate Personal Protective Equipment (PPE) at all times
- No alcohol or illegal substance use may occur on site
- No illegal disposal of rubble;
- No littering of the site or surrounding areas;
- No collection of firewood;
- No interference with any fauna or flora;
- No use of toilet facilities other than the chemical toilets provided on site;
- No lighting of open fires; and
- No burning of any waste on site.

6.6 MATTERS PERTAINING TO NON-CONFORMANCE ON SITE

“Non-conformances” would occur when there are deviations from any of the construction requirements of this EMPr. This may also include non-compliance with the relevant environmental regulations.

The Contractor is responsible for reporting non-conformance with the EMPr, to the ECO. The applicant and Contractor, in consultation with the ECO must, thereafter, undertake the following activities:

- Investigate and identify the cause of non-conformance;
- Report matters of non-conformance to the local municipality (within a suitable timeframe, dependant on the severity of the incident);
- Implement suitable corrective action as well as prevent recurrence of the problem.
- Assign responsibility for corrective and preventative action.
- Any corrective action taken to eliminate the cause/s of non-conformance shall be appropriate to the magnitude of the problems and commensurate with the environmental impact encountered.

Records

The Contractor must maintain and update the environmental register at all times regarding non-conformance issues. The record shall specifically contain and list the instances of non-conformances found in the EMPr, the date of their occurrence, date of corrective action, and date of completion of preventive action. In addition, matters of non-conformance and corrective action must be included within the audit reports. Records must be are legible, identifiable, protected and easily retrieved for review.

Fine and Penalties relating to non-conformance/contraventions

The Contractor must comply with the environmental requirements of the construction phase requirements of this EMPr on an on-going basis and any failure on his part to do so will entitle the ECO and Principal Agent to impose a fine subject to the details set out below. Money from fines/penalties will be managed and allocated at the discretion of the Principal Agent.

1) Spot fines

Spot fines will be issued per incident in addition to any remedial costs incurred as a result of non-conformance with the EMPr, at the discretion of the Principal Agent and ECO. The ECO may *recommend* the imposition of fines and penalties but the Principal Agent will be responsible for imposing such fines or penalties against the account of the Contractor. Fines may be imposed on the Contractor for contraventions of the EMPr by individuals or operators employed by the Contractor and/or any sub-Contractors. The Principal Agent will inform the Contractor of the EMPr contravention and the amount of the fine. These monies will be recovered by the Principal Agent from the Contractor.

Failure by the Contractor to pay fines imposed by the Principal Agent within 14 days of the fine being imposed may result in a “Stop Works” order being issued by the Principal Agent until the matter is resolved. Any costs incurred as a result of the “Stop Works” order will be for the account of the Contractor.

The following spot fines are recommended for contraventions (plus any rehabilitation costs if applicable):

- a) Any individual/s littering on site: R50 on first offence and R250 on further offences.
- b) Any individual/s burning waste on site: R250 on first offence and R1 000 on further offences.
- c) Any individual/s dumping waste on site: R250 on first offence and R1 000 on further offences.
- d) Any violation of a Method Statement: R250 for first offence and R1 500 on further offences.
- e) Any individual causing avoidable disturbance to fauna and flora on site: R250 on first offence and R1 000 on further offences.

2) Penalty fines

Penalty fines will be implemented where the Contractor repeatedly fails to comply with the specifications of this EMPr the Contractor will be liable to pay a penalty fine over and above any other contractual consequence.

The following penalty fines (per repeat offence) are recommended for transgressions:

- a) Ongoing littering on site: R2 500 plus any rehabilitation costs, if applicable.
- b) Ongoing dumping of any waste on site: R10 000 plus any rehabilitation costs, if applicable.
- c) Ongoing burning of any waste on site: R10 000 plus any rehabilitation costs, if applicable.
- d) Ongoing transgression of a Method Statement: R10 000 plus any rehabilitation costs, if applicable.
- e) Ongoing disturbance to Fauna and Flora on site: R5 000 plus any rehabilitation costs, if applicable.

3) Other fines

- a) Any individual/s causing damage to identified sensitive natural areas: R5 000 plus any rehabilitation costs.
- b) Any individual/s causing damage to identified sensitive heritage areas: R5 000 plus any rehabilitation costs.
- c) Any individual/s causing irreparable damage to the environment: R10 000.
- d) Injuring or killing of any wildlife: R5 000 plus any rehabilitation costs, if applicable.

The above recommended fines are applicable and relevant to the construction phase of this EMPr and as such do not exempt the client from other legal obligations such as *Section 24(h)* National Environmental Management Second Amendment Act, Act No. 107 of 1998, which states that it is “an offence for any person to contravene conditions applicable to any environmental authorization granted for a listed activity. A person convicted of an offence is liable to a fine not exceeding R5 million or to imprisonment for a period not exceeding ten years, or to both such fine and such imprisonment”.

An Environmental Management Programme constitutes a *Condition* applicable to an *Environmental Authorisation* and any transgression would thus trigger *Section 24(h)* of the above-mentioned Act. The exact penalty and fines will be decided on, subsequent to consultation with Competent Authority and the local municipality.

All staff working on-site must be made aware of the penalties and fines associated with non-conformance. The Principal Agent will be responsible for ensuring that the penalty system is maintained and enforced. Should disputes arise between the Client, Engineer, Contractor or ECO with respect to the above then the matter will be referred to arbitration.

Should you require any further information, please do not hesitate to contact the undersigned.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'Johann Kilian', with a small dot at the end of the signature.

JOHANN KILIAN

Pr.Sci.Nat Earth Science 400050/17

ANNEXURE A - GLOSSARY

ANNEXURE A
GLOSSARY

TERMS USED IN THIS EMP

"Acceptable exposure" means the exposure of the maximum permissible concentration of a substance to the environment that will have a minimal negative effect on health or the environment.

"Agenda 21" means the document by that name adopted at the United Nations Conference of Environment and Development held in Rio de Janeiro, Brazil in June 1992.

"Agreement", for the purpose of NEMA EIA Regulations GNR 982 regulation 1(3) and (4) (of 2014) means the Agreement as contemplated in section 50A (2) of the Act;

"Agri-industrial" means an undertaking involving the beneficiation of agricultural produce.

"Alternatives", in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to –

- (a) the property on which, or location where, the activity is proposed to be undertaken;
- (b) the type of activity to be undertaken;
- (c) the design or layout of the activity;
- (d) the technology to be used in the activity; or
- (e) the operational aspects of the activity;

And includes the option of not implementing the activity.

"Applicant", means a person who has submitted or who intends to submit an application.

"Application" in terms of the NEMA EIA Regulations GNR 982 (2014) means an application for an –

- (a) Environmental authorisation in terms of Chapter 4 of these Regulations;
- (b) Amendment to an environmental authorisation in terms of Chapter 5 of these Regulations;
- (c) Amendment to an EMPr in terms of Chapter 5 of these Regulations; or
- (d) Amendment of a closure plan in terms of Chapter 5 of these Regulations;

"Aquifer" means a geological formation which has structures or textures that hold water or permit appreciable water movement through them

"Aquatic critical biodiversity areas", means linkages between catchment, important rivers and sensitive estuaries whose safeguarding is critically required in order to meet biodiversity pattern and process thresholds and are spatially defined as part of a bioregional plan or systematic biodiversity plan, available on the South African National Biodiversity Institute's BGIS website (<http://bgis.sanbi.org/WCBF14project.asp>);

"Associated structures, infrastructure and earthworks" means any structures, infrastructure or earthworks, including borrow pits, that is necessary for the functioning of a facility activity;

"Basic assessment report" means a report contemplated in NEMA EIA Regulations GNR 982 regulation 19 (of 2014);

"Best practicable environmental option" means the Option that provides the most benefit or causes the least damage to the environment as a whole at a cost acceptable to society in the long term as well as in the short term

"Biodiversity", this means the variety of life in an area, including the number of different species, the genetic wealth within each species, and the natural areas where they are found.

"Bioregional plan" means the bioregional plan contemplated in Chapter 3 of the National Environment Management Biodiversity Act, 2004 (Act No. 10 of 2004);

"Borehole" includes a well, excavation or any artificially constructed or improved underground cavity which can be used for the purpose of—

- (a) intercepting, collecting or storing water in or removing water from an aquifer;
- (b) observing and collecting data and information on water in an aquifer; or
- (c) recharging an aquifer;

"Buffer area" means, unless specifically defined, an area extending 10 kilometres from the proclaimed boundary of a world heritage site or national park and 5 kilometres from the proclaimed boundary of a nature reserve, respectively, or that defined as such for a biosphere;

"Building and demolition waste" means waste, excluding hazardous waste, produced during the construction, alteration, repair or demolition of any structure, and includes rubble, earth, rock and wood displaced during that construction, alteration, repair or demolition.

"Business waste" means waste that emanates from premises that are used wholly or mainly for commercial, retail, wholesale, entertainment or government administration purposes.

"By-product" means a substance that is produced as part of a process that is primarily intended to produce another substance or product and that has the characteristics of an equivalent virgin product or material.

"Canal" means an open structure that is lined or reinforced, for the conveying of a liquid or that serves as an artificial watercourse.

"Catchment" in relation to a watercourse or watercourses or part of a watercourse, means the area from which any rainfall will drain into the watercourse or watercourses or part of a watercourse, through surface flow to a common point or common points.

"Channel" means an excavated hollow bed for running water or an artificial underwater depression to make a water body navigable in a natural watercourse, river or the sea.

"Clean production" means the continuous application of integrated preventative environmental strategies to processes, products and services to increase overall efficiency and to reduce the impact of such processes, procedures and services on health and the environment.

The term **'client'** means the owner of the asset to be procured or project product, and representative of the end users of the asset.

"Closure plan" means a plan contemplated in NEMA EIA Regulations GNR 982 regulation 19 (of 2014);

"Coastal activities", means coastal activities listed or specified in terms of Chapter 5 of the National Environmental Management Act, which takes place in the coastal zone.

"Coastal management" includes-

- a) The regulation, management, protection, conservation and rehabilitation of the coastal environment.
- b) The regulations and management of the use and development of the coastal zone and coastal resources
- c) Monitoring and enforcing compliance with laws and policies that regulate human activities within the coastal zone
- d) Planning in connection with the activities referred to in paragraph (a), (b) and (c).

“Coastal management objective”, means a clearly defined objective established by a coastal management programme for a specific area within the coastal zone which coastal management must be directed at achieving.

“Coastal management programme”, means the national or a provincial or municipal coastal management programme established in terms of Chapter of the NEM: ICMA, 2008.

“Coastal planning scheme”, means a scheme that-

- a) Reserves defined areas within the coastal zone to be used exclusively or mainly for specified purposes, and
- b) Prohibits or restricts any use of these areas in conflict with the terms of the scheme.

“Coastal protected area” means a protected area that is suited wholly or partially within the coastal zone and that is managed by, or on behalf of, an organ of state, but excludes any part of such a protected area that has been exercised from the coastal zone in terms of section 22 of the NEM: ICMA, 2008.

“Coastal protected zone”, means the coastal protection zone contemplated in section 17 of the NEM: ICMA, 2008.

“Coastal public property”, means public property referred to in section 7 of the NEM: ICMA, 2008.

“Coastal resources”, means any part-

- a) Of the cultural heritage of the Republic within the coastal zone, including shell middens and traditional fish traps, or
- b) The coastal environment that is of actual or potential benefit to humans.

“Coastal set-back line” means a line determined by the MEC in accordance with section 25 of the NEM: ICMA, 2008 in order to demarcate an area within which development will be prohibited or controlled in order to achieve the objects of this Act or coastal management objectives.

“Coastal waters” means –

- a) Means waters that form part of the internal waters or territorial waters of the Republic referred to in sections 3 and 4 of the Maritime Zone Act, 1994 (Act No 15 of 1994) respectively and
- b) Subject to section 26 of the NEM: ICMA, any estuary.

“Coastal wetland” means-

- a) Any wetland in the coastal zone; and
- b) Includes-
 - i. Land adjacent to coastal waters that is regularly or potentially inundated by water, salt marshes, mangrove areas, inter-tidal sand and mud flats, marshes and minor coastal streams regardless of whether they are of saline, freshwater or brackish nature; and
 - ii. The water, the subsoil and substrata beneath and bed and banks of any such wetland.

“Coastal zone” means the area comprising coastal public property, the coastal protection zone, coastal access land and coastal protected areas, the seashore, coastal waters and the exclusive economic zone and includes any aspects of the environment on, in under and above such area.

"Commence" means the start of any physical activity, including site preparation or any other activity on the site in furtherance of a waste management activity, but does not include any activity required for investigation or feasibility study purposes as long as such investigation or feasibility study does not constitute a waste management activity.

"Commercially confidential information" means commercial information the disclosure of which would prejudice to an unreasonable degree the commercial interests of the holder provided that details of emission levels and waste products must not be considered to be commercially confidential notwithstanding any provision of this Act or any other law.

"Community" means any group of persons or a part of such a group who share common interests and who regard themselves as a community.

"Competent authority", means the authority who in terms of the provisions of the NEMA and the EIA Regulations GNR 982 (of 2014) is identified as the authority who must consider and decide on an application in respect of a Specific listed activity.

Note: the "competent authority" in terms of an application for environmental authorisation for an Activity listed in listing notice 1, 2 or 3, is not necessarily the same authority as the "licensing Authority" in terms of the NEMA:WA or NEM: AQA.

"Concentration of animals" means the keeping of animals in a confined space or structure, including a feedlot, where they are fed in order to prepare them for slaughter or to produce products such as milk or eggs.

"Conservation" in relation to a water resource means the efficient use and saving of water, achieved through measures such as water saving devices, water-efficient processes, water demand management and water rationing.

"Constitution" means the Constitution of the Republic of South Africa 1996 (Act No. 108 of 1996).

"Construction" means the building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity but excludes any modification, alteration or expansion of such a facility, structure or infrastructure and excluding the reconstruction of the same facility in the same location, with the same capacity and footprint.

The term **'Contractor'** means an organisation that contracts with a Principal to carry out the work under the contract, including construction and related services, to deliver an asset or construction product.

The term **'consultant'** means a professional person or organisation that contracts with a customer to provide design, management or other services.

"Container" means a disposable or re-usable vessel in which waste is placed for the purposes of storing, accumulating, handling, transporting, treating or disposing of that waste, and includes bins, bin-liners and skips.

"Contaminated" means the presence in or under any land, site, buildings or structures of a substance or micro-organism above the concentration that is normally present in or under that land, which substance or micro-organism directly or indirectly affects or may affect the quality of soil or the environment adversely.

"Cultural significance", this means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance.

"Cumulative impact", in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities;

"Dam" when used in the Listing Notice 1 GNR 983 and Listing Notice 2 GNR 984 Regulations means any barrier dam and any other form of impoundment used for the storage of water.

"Dangerous goods" means goods containing any of the substances as contemplated in South African National Standard No. 10234, supplement 2008 1.00: designated "List of classification and labelling of chemicals in accordance with the Globally Harmonized System (GHS)" published by Standards South Africa, and where the presence of such goods, regardless of quantity, in a blend or mixture, causes such blend or mixture to have one or more of the characteristics listed in the Hazard Statements in section 4.2.3, namely physical hazards, health hazards or environmental hazards;

"Days" means calendar days. Note: when a period of days must in terms of these regulations be reckoned from or after a particular Day, that period must be reckoned as from the start of the day following that particular day to the end of the last day of the period, but if the last day of the period falls on a Saturday, Sunday or public holiday, that period must be extended to the end of the next day which is not a Saturday, Sunday or public holiday. The period of 15 December to 2 January must be excluded.

In the reckoning of days, where a timeframe is affected by the 15 December to 2 January period, the timeframe must be extended by the number of days falling within the 15 December to 2 January period. Where a timeframe is affected by one or more public holidays, the timeframe must be extended by the number of public holiday days falling within that timeframe.

"Decommissioning" means to take out of active service permanently or dismantle partly or wholly, or closure of a facility to the extent that it cannot be readily re-commissioned.

"Department", means the Western Cape department of environmental affairs and development planning;

"Derelict land" means abandoned land or property where the lawful/legal land use right has not been exercised during the preceding ten-year period.

The term **'design'** means the process (and product) of converting a brief into design details ready for documentation, including concept design and design development, and then documentation or detailing of the technical and other requirements for the project in a written form that details the project product sufficiently for it to be constructed or otherwise provided.

"Development" means the building, erection, construction or establishment of a facility, structure of infrastructure, including associated earthworks or borrow pits, that is necessary for the undertaking of a listed or specified activity, including any associated post development monitoring, but excludes any modification, alteration or expansion of such a facility, structure of infrastructure, including associated earthworks or borrow pits, and excluding the redevelopment of the same facility in the same location, with the same capacity and footprint;

"Development footprint", means any evidence of its physical alteration as a result of the undertaking of any activity;

"Development setback" means a setback line defined or adopted by the competent authority;

"Disposal" means the burial, deposit, discharge, abandoning, dumping, placing or release of any waste into, or onto, any land.

"Domestic waste" means waste, excluding hazardous waste, that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreation purposes.

"Dumping at sea" means-

- a) Any deliberate disposal into the sea of any waste or material other than operational waste from a vessel, aircraft, platform or other man-made structure at sea.
- b) Any deliberate disposal into the seas of a vessel, aircraft, platform or other man-made structure at sea.
- c) Any storage of any waste or other material on or in the seabed, its subsoil or substrate
- d) Any abandonment or topping at site of a platform or other structure at sea for the sole purpose of deliberate disposal but "dumping at sea" does not include-
 - i. The lawful disposal at sea through sea out-fall pipelines of any waste or other material generated in land
 - ii. The lawful depositing of any substance or placing or abandoning of anything in the sea for a purpose other than mere disposal of it, or
 - iii. Disposing of or storing in the sea any tailings or other materials from the bed or subsoil of coastal waters generated by the lawful exploration, exploitation and associated off-shore processing of mineral resources from the bed, subsoil or substrata of the sea.

"Dynamic coastal processes" means all natural processes continually reshaping the shoreline and near shore seabed and includes-

- a) Wind action
- b) Wave action
- c) Currents
- d) Tidal action
- e) River flows

"DWA", the Department of Water Affairs. This Department is the custodian of South Africa's water resources. It is primarily responsible for the formulation and implementation of policy governing this [sector](#). It also has override responsibility for water services provided by local government.

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

"Effluent" means-

- a) Any liquid discharge into the coastal environment as waste and includes any substance dissolved or suspended in the liquid; or
- b) Liquid which is a different temperature from the body of water into which it is being discharged.

"Environment", the surroundings (biophysical, social and economic) within which humans exist and that are made up of:

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

"Environmental assessment practitioner" (EAP), means the individual responsible for planning, management and coordination of environmental impact assessments, strategic environmental assessments, environmental management programmes or any other appropriate environmental instrument introduced through the NEMA EIA Regulations GNR 982 – as defined in section 1 of the Act.

Note: if exemption from the appointment of an EAP has been applied for, the applicant must perform the tasks required of an EAP, as indicated in this guideline.

“Environmental audit report” means a report contemplated in NEMA EIA Regulations GNR 982 regulation 34 (of 2014);

“Environmental authorisation”, means the authorisation by a competent authority of a listed activity or specified activity in terms of this act, and includes a similar authorisation contemplated in a specific environmental management act.

“Environmental Impact”, the direct effect of human activities and natural events on the components of the environment.

“Environmental Impact Assessment” (EIA), means a systematic process of identifying, assessing and reporting environmental impacts associated with an activity and includes basic assessment and S&EIR;

“Environmental Impact Assessment Report” (EIR) means a report contemplated in NEMA EIA Regulations GNR 982 regulation 23 (of 2014);

“Environmental Management Programme” (EMPr), a document that contains recommendations for the control or management of the potential significant impacts of operations on the environment and recommendations to contain or mitigate actual impacts – as contemplated in NEMA EIA Regulations GNR 982 regulation 19 and regulation 23 (of 2014).

The term **‘environmental opportunity’** means a potential for beneficial environmental impacts (such as an improvement in air or water quality through environmentally friendly technology alternatives).

The term **‘environmental risk’** means a potential for adverse environmental impacts (such as pollution of a water source during construction activities).

“Environmentally sound management” means the taking of all practicable steps to ensure that waste is managed in a manner that will protect health and the environment.

“Estuarine functional zone” means the area in and around an estuary which includes the open water area, estuarine habitat (such as sand and mudflats, rock and plant communities) and the surrounding floodplain area, as defined by the area below the 5m topographical contour (referenced from the indicative mean sea level);

“Estuary” means a body of surface water-

- a) That is part of a water course that is permanently or periodically open to the sea;
- b) In which a rise and fall of the water level as result if the tides are measurable at spring tides when the water course is open to the sea;
- c) In respect of which the salinity is measurably higher as a result if the influence of the sea.

“Expansion” means the modification, extension, alteration or upgrading of a facility, structure or infrastructure at which an activity takes place in such a manner that the capacity of the facility or the footprint of the activity is increased.

“Export” means to take or send waste from the Republic to another country or territory.

"Extended producer responsibility measures" means measures that extend a person's financial or physical responsibility for a product to the post-consumer stage of the product, and includes—

- (a) waste minimisation programmes;
- (b) financial arrangements for any fund that has been established to promote the reduction, re-use, recycling and recovery of waste;
- (c) awareness programmes to inform the public of the impacts of waste emanating from the product on health and the environment; and
- (d) any other measures to reduce the potential impact of the product on health and the environment

"Fatal Flaw": generally, this is regarded as an impact associated with an activity on a site that is of such a negative or detrimental nature that even with mitigation measures, cannot be mitigated to acceptable levels and it is therefore not considered as implementable by the relevant independent specialist or EAP.

"Feasible", Acceptable, capable of being used or implemented successfully, without unacceptably damaging the environment. Hydrogeological study: The study of ground water.

"Financial year" means a period commencing on 1 April of any year and ending on 31 March of the following year.

"Forum" refers to the National Environmental Advisory Forum.

"Gauteng Agricultural Potential Atlas" means the Gauteng Agricultural Potential Atlas, which can be obtained from the Gauteng Provincial Department responsible for environmental affairs;

"Gauteng Conservation Plan" means a systematic conservation planning tool delineating biodiversity priority areas representative of biodiversity pattern, process and species of special concern, which areas have been identified in three broad categories; namely, Critical Biodiversity Areas (CBAs), Ecological Support Areas (ESAs) and Protected Areas;

"Gauteng Protected Area Expansion Strategy" means a framework for protected area expansion in Gauteng, setting out key strategies for protected area expansion and identifying spatial priorities and protected area targets and is aligned to the National Protected Area Expansion Strategy as it identifies finer scaled provincial priorities based on regional and local conservation imperatives;

"Gazette", when used in relation to—

- (a) the Minister, means the Government Gazette; and
- (b) the MEC, means the Provincial Gazette of the province concerned.

"General waste" means waste that does not pose an immediate hazard or threat to health or to the environment, and includes—

- (a) domestic waste;
- (b) building and demolition waste;
- (c) business waste; and
- (d) inert waste;

"Government waterwork" means a waterwork owned or controlled by the Minister and includes the land on which it is situated.

"Hazard" means a source of or exposure to danger.

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

"Holder of waste" means any person who imports, generates, stores, accumulates, transports, processes, treats, or exports waste or disposes of waste.

"High-risk activity" means an undertaking, including processes involving substances that present a likelihood of harm to health or the environment.

"High water mark" means the highest line reached by coastal waters but excluding the line reached as a result of-

- a) Exceptional or abnormal floods or storms that occur no more than one in ten years or
- b) An estuary being closed to the sea

"Import" means any entry into the Republic other than entry for transit.

"Important Bird and Biodiversity Areas (IBA)" means areas/sites that hold significant numbers of globally and/or regionally threatened species (Categories A1 and C1); sites that are known or thought to hold a significant component of a group of species whose breeding distributions define an Endemic Bird Area (EBA) (Category A2); sites that are known or thought to hold a significant component of a group of species whose distributions are largely or wholly confined to one biome (Category A3);

"Incineration" means any method, technique or process to convert waste to flue gases and residues by means of oxidation.

"Independent", in relation to an EAP, a specialist or the person responsible for the preparation of an environmental audit report, means –

- (a) That such EAP, specialist or person has no business, financial, personal or other interest in the activity or application in respect of which that EAP, specialist or person is appointed in terms of the NEMA EIA Regulations GNR 982 (2014); or
- (b) That there are no circumstances that may compromise the objectivity of that EAP, specialist or person in performing such work; excluding –
 - i. Normal remuneration for a specialist permanently employed by the EAP; or
 - ii. Fair remuneration for work performed in connection with that activity, application or environmental audit;

"Indigenous vegetation" refers to vegetation consisting of indigenous plant species occurring naturally in an area, regardless the level of alien infestation and where the topsoil has not been lawfully disturbed during the preceding ten years.

"Industrial complex" means an area used or zoned for bulk storage, manufacturing, processing or packaging purposes.

"Industry" includes commercial activities, commercial agricultural activities, mining activities and the operation of power stations.

"Inert waste" means waste that—

- (a) does not undergo any significant physical, chemical or biological transformation after disposal;
- (b) does not burn, react physically or chemically biodegrade or otherwise adversely affect any other matter or environment with which it may come into contact; and
- (c) does not impact negatively on the environment, because of its pollutant content and because the toxicity of its leachate is insignificant;

"In stream habitat" includes the physical structure of a watercourse and the associated vegetation in relation to the bed of the watercourse.

"Interested and affected party" (I&AP), for the purposes of chapter 5 of the NEMA and in relation to the assessment of the environmental impact of a listed activity or related activity, means an interested and affected party contemplated in section 24(4)(a)(v), and which includes-

- (a) any person, group of persons or organisation interested in or affected by such operation or activity; and
- (b) any organ of state that may have jurisdiction over any aspect of the operation or activity.

"International environmental instrument" means any international agreement declaration, resolution, convention or protocol which relates to the management of the environment.

"Large stock unit" means domesticated units including but not limited to cattle and horses, as well as game, including but not limited to antelope and buck with an average adult male live weight of 100 kilograms or more.

"Life cycle assessment" means a process where the potential environmental effects or impacts of a product or service throughout the life of that product or service are being evaluated.

"Linear activity" means an activity that is arranged in or extending along one or more properties and which affects the environment or any aspect of the environment along the course of the activity, and includes railways, roads, canals, channels, funiculars, pipelines, conveyor belts, cableways, powerlines, fences, runways, aircraft landing strips, and telecommunication lines;

"Littoral active zone" means any land forming part of or adjacent to the seashore that is-

- a) unstable and dynamic as a result of natural processes, and
- b) characterised by dunes, beaches, sand bars and other landforms composed of unconsolidated sand, pebble or other such material which is either un-vegetated or only partially vegetated

"Low water mark" means the lowest line in which coastal waters recede during spring tides.

"Maintenance" means actions performed to keep a structure or system functioning or in service on the same location, capacity and footprint;

"Maintenance management plan" means a management plan for maintenance purposes defined or adopted by the competent authority;

The term **'management'** means the planning and interactive controlling of human and material resources to achieve time, cost, quality, performance, functional and scope requirements. It involves the anticipation of changes due to changing circumstances and the making of other changes to minimise adverse effects.

"Marina" means a constructed waterway that is normally associated with residential or commercial use and that could include mooring facilities.

"Marine Living Resource Act" means the Marine Living Resources Act, 1998 (Act No. 18 of 1998).

“MEC” means the Member of the Executive Council to whom the Premier has assigned the performance in the province of the functions entrusted to a MEC by or under such a provision.

“Minimisation”, when used in relation to waste, means the avoidance of the amount and toxicity of waste that is generated and, in the event where waste is generated, the reduction of the amount and toxicity of waste that is disposed of.

“Minimum information requirements” means the minimum information requirements contemplated in section 24(5)(bA)(viiiA), if any are applicable at the time of the application;

“Mitigation” means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible;

“Mixed use”, with regard to an activity, means the presence of two or more types of land use in an area.

“National Appeal Regulations” means the national appeal regulations published in terms of section 43(4) and 44 of the Act;

“National department” means a department of State within the national sphere of government.

“National Environmental Management Act” (NEMA), means the National Environmental Management Act, 1998 (Act No. 107 of 1998); To provide for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote cooperative governance and procedures for co-ordinating environmental functions exercised by organs of state; to provide for certain aspects of the administration and enforcement of other environmental management laws; and to provide for matters connected therewith.

“National Protected Area Expansion Strategy (NPAES)” means South Africa’s national strategy for expansion of the protected area network, led by the Department of Environmental Affairs and developed in collaboration with national and provincial conservation authorities. The NPAES sets targets for protected area expansion, provides maps of the most important areas for protected area expansion, and makes recommendations on mechanisms for protected area expansion. Focus areas for protected area expansion are identified in the NPAES. They are large, intact, unfragmented areas of high importance for land-based protected area expansion, suitable for the creation or expansion of large protected areas.

“NEM: AQA”, National Environmental Management: Air Quality Act (39 of 2004). The NEM: AQA’s serves to protect the environment by providing reasonable measures for the protection and improvement of the quality of air; the prevention of air pollution and ecological degradation; and securing ecologically sustainable development while promoting economic and social development.

“NEM: BA”, National Environmental Management: Biodiversity Act (10 of 2004). This Act serves to provide for the management and conservation of biological diversity within an area and of the components of such biological diversity. This Acts objective is to preserve species and ecosystems irrespective of whether or not they are situated in protected areas.

“NEM: ICM”, National Environmental Management: Integrated Coastal Management Act (24 of 2008). This act applies to the coastal zone of South Africa and is intended to preserve, protect, extend and improve the status of coastal public property as being held in trust by the State on behalf of all South Africans, including future generations.

“NEM: PAA”, National Environmental Management: Protected Areas Act (57 of 2003). This Act is intended to protect and conserve ecologically viable areas representative of South Africa’s biological diversity and its natural landscapes and seascapes. This includes the identification and classification of various types of protected areas to give effect to this intention and underpinning this intention is the stated objective of creating a national system of protected areas in South Africa as part of a strategy to manage and conserve its biodiversity. These protected areas are to fall on state owned land, privately owned land and communally owned land.

“NEM: WA”, National Environmental Management: Waste Act (59 of 2008). The NEM:WA serves to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development; to provide for institutional arrangements and planning matters; to provide for national norms and standards for regulating the management of waste by all spheres of government; to provide for specific waste management measures; to provide for the licensing and control of waste management activities; to provide for the remediation of contaminated land; to provide for the national waste information system; to provide for compliance and enforcement; and to provide for matters connected therewith.

“NEMA EIA regulations”, mean the environmental impact assessment regulations promulgated in terms of the national environmental management act, 1998 (act no. 107 of 1998) (“NEMA”) 12.

“No-go option” means the option of not implementing the activity.

“Non-substantive”, in relation to the amendment or substitution of a regulation, notice, strategy, licence, approval, or provision thereof, includes—

- (a) any clerical mistake, unintentional error or omission;
- (b) the correction of any miscalculated figure; and
- (c) the correction of any incorrect description of any person, thing, property or waste management activity;

“Ocean-based activity” means an activity in the territorial waters of the Republic of South Africa;

“Organ of state”, means -

- (a) any department of state or administration in the national, provincial or local sphere of government; or
- (b) any other functionary or institution –
 - i. Exercising a power or performing a function in terms of the constitution or a provincial constitution; or
 - ii. Exercising a public power or performing a public function in terms of any legislation but does not include a court or a judicial officer.

Note: examples of organs of state include: municipalities (both the district and local municipality), Heritage western cape, CapeNature, the department of water affairs, etc.

“Person” includes a natural person, a juristic person, an unincorporated body, an association, an organ of state and the Minister.

“Phased activities” means an activity that is developed in phases over time on the same or adjacent properties to create a single or linked entity through interconnected internal vehicular or pedestrian circulation, sharing of infrastructure, or the continuum of design, style or concept by the same proponent or his or her successors.

“Plan of study for environmental impact assessment” means a study contemplated in NEMA EIA Regulations GNR 982 regulation 22 (of 2014) which forms part of a scoping report and sets out how an environmental impact assessment will be conducted;

“Pollution”, means any change in the environment caused by-

- i. Substances
- ii. Radioactive or other wastes; or
- iii. Noise, odours, dust or heat.

Emitted from any activity, including the storage to treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where the change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems or on material useful to people, or will have an effect in the future.

“Previous NEMA notices” as contemplated in these transitional arrangements means the previous notices published in terms of section 24(2) and NEMA (Government Notices R. 386 and R. 387 in the Government Gazette of 21 April 2006, as amended, or Government Notice No. R 544, 545 and 546 in the Government Gazette of 18 June 2010, as amended);

“Previous NEMA regulations” means the environmental impact assessment regulations published in terms of: · sections 26 and 28 of the ECA, by government notice no. R. 1183 of 5 September 1997; or · NEMA, by government notice no. R. 385 in the government gazette of 21 April 2006.

The term **‘procurement’** means the collection of activities performed by and for an agency to acquire services and products, including assets, beginning with the identification/detailing of service requirements and concluding with the acceptance (and where applicable, disposal) of the services and products.

The term **‘project’** means an undertaking with a defined beginning and objective by which completion is identified. Project delivery may be completed using one contract or a number of contracts

“Proponent” means a person intending to submit an application for environmental authorisation and is referred to as an applicant once such application for environmental authorisation has been submitted;

“Protection” in relation to a water resource, means -

- (a) maintenance of the quality of the water resource to the extent that the water resource may be used in an ecologically sustainable way;
- (b) prevention of the degradation of the water resource; and
- (c) the rehabilitation of the water resource

“Protected area” means those protected areas contemplated in section 9 of the NEMPAA and the core area of a biosphere reserve and shall include their buffers;

“Public participation process”, means a process by which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to, an application.

“Receipt” means receipt on the date indicated –

- (a) On a receipt form if the application of document was hand delivered or sent via registered mail;
- (b) In an automated or computer generated acknowledgment of receipt;
- (c) On an acknowledgment in writing from the competent authority as the date of receipt if the application or document was sent via ordinary mail; or
- (d) On an automated or computer generated proof of transmission in the case of a facsimile message;

“Recovery” means the controlled extraction of a material or the retrieval of energy from waste to produce a product.

“Recycle” means a process where waste is reclaimed for further use, which process involves the separation of waste from a waste stream for further use and the processing of that separated material as a product or raw material.

“Red Flags”: generally, this is terminology used to bring to attention, at the early stages of assessment, a potentially serious issue that needs to be assessed in greater detail and that may have undesirable impacts, even with mitigation. This can however, only be determined on detailed assessment, but serves as a good guide to the professional team and EAP and applicant early on in the process to inform further design on site.

“Registered environmental assessment practitioner or registered EAP” means an environmental assessment practitioner registered with an appointed registration authority contemplated in section 24H of the Act;

“Registered interested and affected parties” in relation to an application, means an interested and affected party whose name is recorded in the register opened for that application in terms of NEMA EIA Regulations GNR 982 regulation 42 (of 2014);

- a) all persons who, as a consequence of the public participation process conducted in respect of an application have submitted written comments or attended meetings with the applicant or EAP;
- b) all persons who, after completion of the public participation process, have requested the applicant or the EAP managing the application, in writing, for their names to be placed on the register; and
- c) all organs of state which have jurisdiction in respect of the activity to which the application relates.

Note: to be registered as an interested and affected party the persons referred to in (a) and (b) above must provide their names, contact details and addresses to the EAP managing the application process.

Registered I&APs must ensure that they notify the EAP if their contact details and/or address changes during the application process.

A registered I&AP is entitled to comment, in writing, on all written submissions made to the department by the applicant or the EAP, provided that comments are submitted within the specified timeframes and the I&AP discloses any direct business, financial, personal or other interest which that party may have in the approval or refusal of the application.

“Reserve” means the quantity and quality of water required -

(a) to satisfy basic human needs by securing basic water supply, as prescribed under the Water Services Act. 1) 97 (Act No, 108 of 1997) for people who are now or who will, in the reasonably near future be—

- (i) relying upon;
- (ii) taking water from; or
- (iii) being supplied from, the relevant water resource; and

(b) to protect aquatic ecosystems in order to secure ecologically sustainable development and use of the relevant water resource.

“Resource quality” means the quality of all the aspects of a water resource including-

- (a) the quality, pattern, timing, water level and assurance of instream flow;
- (b) the water quality, including the physical, chemical and biological characteristics of the water;
- (c) the character and condition of the instream and riparian habitat; and
- (d) the characteristics, condition and distribution of the aquatic biota.

“Responsible authority” in relation to a specific power or duty in respect of water uses means-

- (a) it that power or duty has been assigned by the Minister to a catchment management agency that catchment management agency; or
- (b) it that power or duty has not so been assigned the Minister.

“Re-use” means to utilise articles from the waste stream again for a similar or different purpose without changing the form or properties of the articles.

“Riparian habitat” includes the physical structure and associated vegetation of the areas associated with a watercourse which are commonly characterised by alluvial soils, and which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of Species with a composition and physical structure distinct from those of adjacent land areas.

“Route determination” means the process of planning and designing a new route;

“SANS 1089:1999” The Petroleum Industry: Storage and distribution of petroleum products in above-ground bulk installations.

“Scoping report” means a report contemplated in NEMA EIA Regulations GNR 982 regulation 21 (of 2014);

“S&EIR” means the scoping and environmental impact reporting process contemplated in NEMA EIA Regulations GNR 982 regulation 21 to regulation 24 (of 2014);

“Sea” means all marine waters, including-

- a) The high seas
- b) All marine waters under the jurisdiction of any state, and
- c) The bed, subsoil and substrata beneath those waters, but does not include estuaries.

“Seashore” subject to section 26 of the NEM: ICMA, 2008, means the area between the low water mark and the high water mark.

The term **‘service provider’** means a Contractor, sub-Contractor, supplier, consultant (including an agency) and sub-consultant (contracting with a consultant), and their service providers, that contract with a customer to carry out assets construction, provide other products (including goods) and/or provide services.

“Significant impact” means an impact that may have a notable effect on one or more aspects of the environment or may result in non-compliance with accepted environmental quality standards, thresholds or targets and is determined through rating the positive and negative effects of an impact on the environment based on criteria such as duration, magnitude, intensity and probability of occurrence;

“Site or areas listed in terms of an International Convention” means any area and its buffer, unless specifically defined, of 5 kilometres extending from its listed boundary, listed in terms of an international convention but does not include world heritage sites, and shall include but not be limited to the Ramsar Convention on Wetlands (Ramsar, Iran, 1971);

“Small stock unit” means domesticated units, including sheep, goats and pigs, as well as game, including but not limited to antelope and buck with an average adult male live weight of less than 100 kilograms.

“Specialist” means a person that is generally recognised within the scientific community as having the capability of undertaking, in conformance with generally recognised scientific principles, specialist studies or preparing specialist reports, including due diligence studies and socio-economic studies;

“State department”, means any department or administration in the national or provincial sphere of Government exercising functions that involve the management of the environment or that administer a law relating to a matter affecting the environment.

Note: examples of state departments include: the department of water affairs, department of agriculture, etc. Whilst all state departments are organs of state, not all organs of state are state departments (e.g. Municipalities are organs of state, but not state departments).

“State land” means land which vests in the national or a provincial government, and includes land below the high water mark and the Admiralty Reserve but excludes land belonging to a local authority.

“Storage” means the accumulation of waste in a manner that does not constitute treatment or disposal of that waste.

The term **‘sub-Contractor’** means an organisation that contracts with a Contractor as the customer to carry out construction and related services, and/or provide other products.

The term **‘supplier’** means an organisation that contracts with a Contractor/Principal to supply a product and/or service.

“Sustainable development” means the integration of social, economic and environmental factors into planning, implementation and decision-making so as to ensure that development serves present and future generations.

“Systematic biodiversity plan” is a plan that identifies important areas for biodiversity conservation, taking into account biodiversity patterns (i.e. the principle of representation) and the ecological and evolutionary processes that sustain them (i.e. the principle of persistence). A systematic biodiversity plan must set quantitative targets/thresholds for aquatic and terrestrial biodiversity features in order to conserve a representative sample of biodiversity pattern and ecological processes;

“the Act” means the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended;

- Any reference in the associated regulations to an environmental assessment practitioner will, from a date to be determined by the Minister by notice in the Gazette, be deemed to be a reference to a registered environmental assessment practitioner, as defined.

“Throughput capacity” means the design capacity or maximum capable capacity of a facility, structures or infrastructure, whichever is greater;

"Transit" means the continuous passage from one border of the Republic to another such border without storage other than temporary storage incidental to transport.

"Treatment" means any method, technique or process that is designed to—

- (a) change the physical, biological or chemical character or composition of a waste; or
- (b) remove, separate, concentrate or recover a hazardous or toxic component of a waste; or
- (c) destroy or reduce the toxicity of a waste, in order to minimise the impact of the waste on the environment prior to further use or disposal:

"Undeveloped" means that no facilities, structures or infrastructure have been effected upon the land or property during the preceding 10 years.

"Unit" in relation to a quantity standard for determining throughput of facilities or infrastructure for the slaughter of animals, has the meaning assigned to it in Regulations promulgated in terms of the Meat Safety Act, 2000 (Act No. of 40 of 2000).

"Urban areas" means areas situated within the urban edge (as defined or adopted by the competent authority), or in instances where no urban edge or boundary has been defined or adopted, it refers to areas situated within the edge of built-up areas.

"Vacant" means not occupied for the purpose of its lawful land use during the preceding ten-year period.

"Virgin soil" means land not cultivated for the preceding 10 years.

"Waste" means any substance, whether or not that substance can be reduced, re-used, recycled and recovered—

- (a) that is surplus, unwanted, rejected, discarded, abandoned or disposed of;
- (b) which the generator has no further use of for the purposes of production;
- (c) that must be treated or disposed of; or
- (d) that is identified as a waste by the Minister by notice in the Gazette, and includes waste generated by the mining, medical or other sector, but—
 - (i) a by-product is not considered waste; and
 - (ii) any portion of waste, once re-used, recycled and recovered, ceases to be waste;

"Waste disposal facility" means any site or premise used for the accumulation of waste with the purpose of disposing of that waste at that site or on that premise.

"Waste management activity" means any activity listed in Schedule 1 or 40 published by notice in the Gazette under section 19, and includes—

- (a) the importation and exportation of waste;
- (b) the generation of waste, including the undertaking of any activity or process that is likely to result in the generation of waste;
- (c) the accumulation and storage of waste;
- (d) the collection and handling of waste;
- (e) the reduction, re-use, recycling and recovery of waste;
- (f) the trading in waste;
- (g) the transportation of waste;
- (h) the transfer of waste; 50
- (i) the treatment of waste; and
- (j) the disposal of waste;

"Waste management services" means waste collection, treatment, recycling and disposal services.

"Waste minimisation programme" means a programme that is intended to promote the reduced generation and disposal of waste.

"Waste transfer facility" means a facility that is used to accumulate and temporarily store waste before it is transported to a recycling, treatment or waste disposal facility.

"Waste treatment facility" means any site that is used to accumulate waste for the purpose of storage, recovery, treatment, reprocessing, recycling or sorting of that waste.

"Watercourse" means-

(a) a river or spring;

(b) a natural channel in which water flows regularly or intermittently;

(c) a wetland lake or dam into which, or from which, water flows; and

(d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the National Water Act, 1998 (Act No. 36 of 1998); and

A reference to a watercourse includes, where relevant, its bed and banks;

"Water management area" is an area established as a management unit in the national water resource strategy within which a catchment management agency will conduct the protection use development, conservation, management and control of water resources.

"Water management institution" means a catchment management agency, a water user association, a body responsible for international water management or any person who fulfils the functions of a water management institution in terms of this Act.

"Water resource" includes a watercourse, surface water, estuary, or aquifer.

"Waterwork" includes any borehole, structure, earthwork or equipment installed or used for or in connection with Water use.

"Wetland" means land which is transitional between terrestrial and aquatic systems, where the water table is usually at or near the surface, or the land is periodically covered with shallow water and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

ANNEXURE B – METHOD STATEMENT

ANNEXURE B

METHOD STATEMENT

TYPICAL BASELINE INFORMATION TABLE RELATING TO CONSTRUCTION WORKS

Describe in detail <i>what</i> work is to be undertaken?
Describe in detail <i>where</i> on the site the works are to be undertaken and the <i>extent</i>?
<i>When</i> the works will start and the anticipated finishing date of these works?
<i>How</i> are the works to be undertaken?
Typical Plant and Machinery to be used
Materials to be stored on Site

METHOD STATEMENT TABLE

PROJECT NAME				
IMPACT SOURCE(S)				
RECEPTOR(S)				
OBJECTIVE				
RISKS				
Impacts of Camp Site on Surrounding Site				
NOTES:				
ROLE	NAME	COMPANY	DATE	SIGNATURE
CLIENT				
PRINCIPAL AGENT				
CONTRACTOR				
ENGINEER				
ECO				

Signature of this Method Statement represents a **binding agreement** to the Method Statement and associated Construction EMP by all site Contractors and sub-Contractors involved in the work for which the Method Statement is submitted.

DECLARATIONS OF RESPONSIBILITY ROLES ON PROJECT

ROLE	NAME	COMPANY	DATE	SIGNATURE
CLIENT				
PRINCIPAL AGENT				
CONTRACTOR				
ENGINEER				
ECO				

DECLARATIONS OF UNDERSTANDING BY PARTIES

CLIENT

I understand the contents of the method statement document and associated construction EMP as well as the legal obligations in terms of ensuring that the Project Team comply with this Method Statement and associated Construction EMP.

_____ (Print name)

_____ (Signed) Dated: _____

CONTRACTOR

I understand the contents of the method statement document and the scope of the works required of me. I further understand that the method statement may be amended on application to the signatories of this declaration, and that the Environmental Control Officer will audit my compliance with the contents of this method statement.

_____ (Print name)

_____ (signed) Dated: _____

ENVIRONMENTAL CONTROL OFFICER (ECO)

The work described in this Method Statement document, if carried out according to the methodology described, is satisfactorily mitigated to prevent avoidable environmental harm.

_____ (Print Name)

_____ (Signed) Dated: _____

PRINCIPAL AGENT

The work described in this Method Statement document, if carried out according to the methodology described, is satisfactorily mitigated to prevent avoidable environmental harm.

_____ (Print name)

_____ (Signed) Dated: _____

ANNEXURE C - RELEVANT PERMITS

ANNEXURE C

RELEVANT PERMITS

**No other permits are currently required for this Project.
Any permits if required at a later stage will be inserted here.**

ANNEXURE D - DESIGN AND PLANNING

ANNEXURE D
DESIGN AND PLANNING

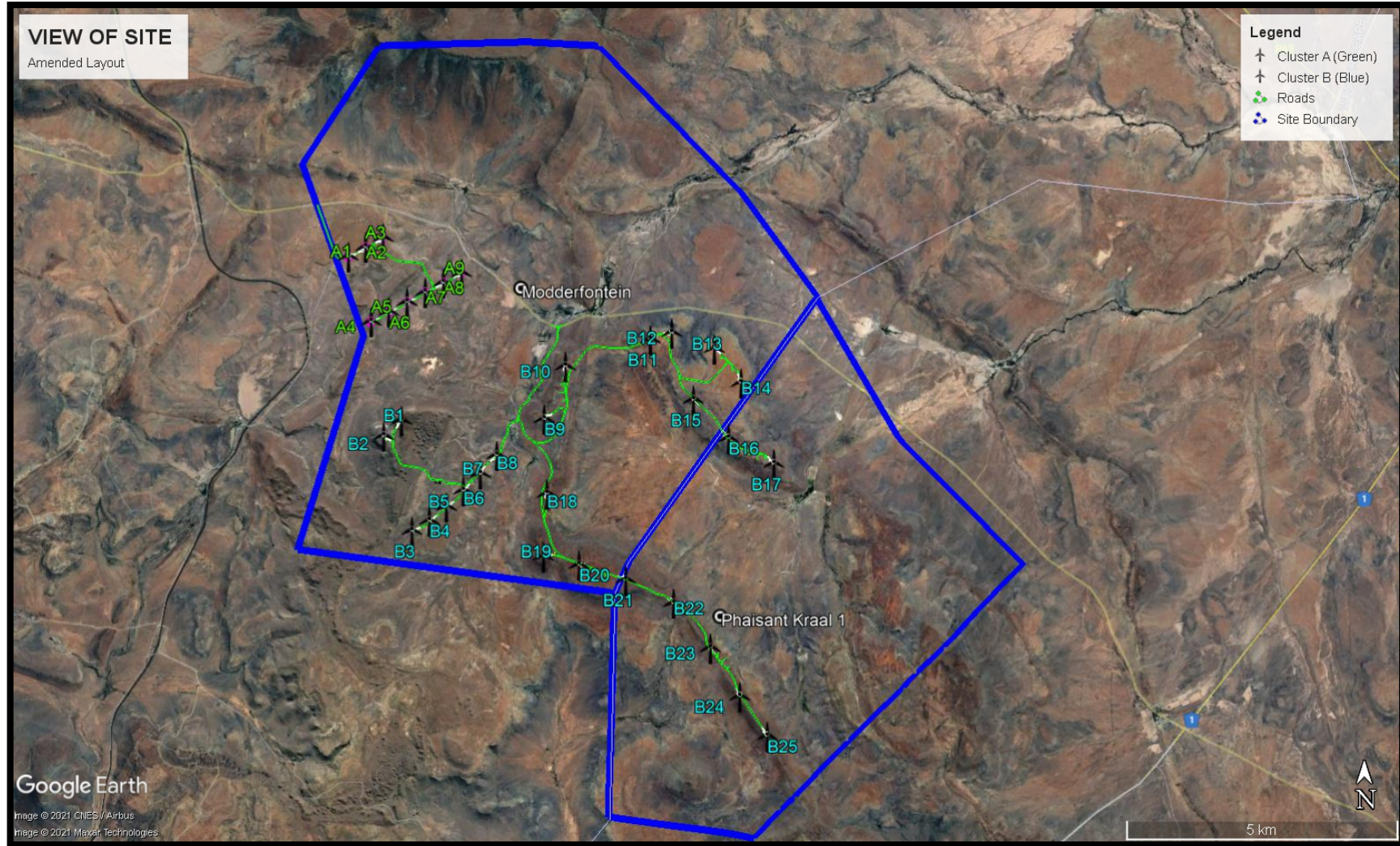


Figure 4: The proposed amended layout for the Modderfontein WEF indicating the two separate turbine clusters: Cluster A, the 50.4MW cluster, and Cluster B, the 140MW cluster.

ANNEXURE E – ROLES AND RESPONSIBILITIES OF THE ECO

ANNEXURE E

Detailed copy of the recommended Roles and Responsibilities of the ECO

DUTIES OF THE ECO

1. The identification of potential environmental impacts, prior to the onset of the project.
2. Ensuring that the EMP conditions are adhered to at all times and taking action (via the engineer) where the specifications are not being followed.
3. Ensuring that environmental impacts are kept to a minimum.
4. Reviewing and approving method statements in consultation with the Principal Agent.
5. Advising the engineer and Contractor on environmental issues and assisting in developing environmentally responsible solutions to problems.
6. Reporting to the client and Principal Agent on a regular basis and advising of any environmental impacts.
7. Attending site meetings (when necessary) and giving a report back on the environmental issues at these meetings and other meetings that may be called regarding environmental matters.
8. Inspecting the site and surrounding areas regularly.
9. Establishing and monitoring an ongoing environmental awareness program in conjunction with the Contractor.
10. Requesting the removal of person(s) and/or equipment not complying with the specifications.
11. Keeping both a written and photographic record of progress on site from an environmental perspective, and an ad hoc record of all incidents or events on site with environmental ramifications. These records should be dated and accurately catalogued.
12. Undertaking continual internal review of the EMP and submitting a report at the end of the project.
13. Submitting all written instructions and verbal requests to the Contractor via the engineer.

ANNEXURE F – PLANT RESCUE AND PROTECTION PLAN

ANNEXURE F

Plant Rescue and Protection Plan.

MODDERFONTEIN WIND ENERGY FACILITY

PLANT RESCUE AND PROTECTION PLAN

July 2021

PURPOSE

The purpose of the plant rescue and protection plan is to implement avoidance and mitigation measures to reduce the impact of the development of the Modderfontein Wind Energy Facility on listed and protected plant species and their habitats.

BACKGROUND & IDENTIFICATION OF SPECIES OF CONSERVATION CONCERN

The ToPS (Threatened and Protected Species) regulations provide for the regulation of activities which may directly or indirectly impact threatened and protected species. Such species are identified under NEMBA as well as by the National Red Data List of Plants. At a provincial level, the Northern Cape Nature Conservation Act (2009) also provides lists of species which are protected within the province. Species listed under the National Red Data List of Plants as well as those protected under the provincial legislation must be specified on permit applications required for site clearing.

MITIGATION & AVOIDANCE OPTIONS

Where listed plant species fall within the development footprint and avoidance is not possible, then it may be possible to translocate the affected individuals outside of the development footprint. However, not all species are suitable for translocation as only certain types of plants are able to survive the disturbance. Suitable candidates for translocation include most geophytes and succulents. Although there are exceptions, the majority of woody species do not survive translocation well.

RESCUE AND PROTECTION PLAN

Preconstruction

- Identification of all listed species which may occur within the site.

A walk-through survey to locate and identify all listed and protected species which fall within the development footprint has already been conducted and contains a full list of localities where listed species occur and the number of affected individuals in each instance. These results should be used to inform any final minor adjustments to the layout, as well as direct preconstruction search and rescue at the site. However, before construction commences at the site, the following actions should be taken:

- Search and rescue operation of all listed species within the development footprint that cannot be avoided. Affected individuals should be translocated to a similar habitat outside of the development footprint and marked for monitoring purposes.

Construction

- ECO to monitor vegetation clearing at the site. Any deviations from the plans that may be required should first be checked for listed species by the ECO and any listed species present which are able to survive translocation should be translocated to a safe site.
- Any listed species observed within the development footprint that were missed during the preconstruction plant sweeps should be translocated to a safe site.
- Many listed species are also sought after for traditional medicine or by collectors and so the ECO should ensure that all staff attend environmental induction training in which the legal and conservation aspects of harvesting plants from the wild are discussed.
- The ECO should monitor construction activities in sensitive habitats such as near rivers and wetlands carefully to ensure that impacts to these areas are minimized.

Operation

- Access to the site should be strictly controlled and all personnel entering or leaving the site should be required to sign in and out with the security officers.
- The collecting of plants or their parts should be strictly forbidden and signs stating so should be placed at the entrance gates to the site.

IDENTIFICATION OF LISTED SPECIES

In this section, the listed species known to occur in the area based on the site visit and previous studies according to the SANBI SIBIS database.

According to the SIBIS database 330 species are known from the quarter degree squares 3123CA, CB, CC and CD, which are located proximal to the site. Four species are not listed as Least Concern, which are provided below in Table 1.

Table 1. Listed species known from the vicinity of the Modderfontein Wind Energy facility.

Family	Species	Status
AMARYLLIDACEAE	<i>Boophone disticha</i>	Declining
ASPHODELACEAE	<i>Aloe broomii</i> var. <i>tarkaensis</i>	Rare
OXALIDACEAE	<i>Oxalis crispula</i>	DDD
MESEMBRYANTHEMACEAE	<i>Delosperma neethlingiae</i>	DDT

PROVINCIALY PROTECTED SPECIES

Apart from the species listed under the South African Red Data list of Plants, a number of genera are listed in their entirety as protected by the Northern Cape Nature Conservation Act of 2009. Of particular relevance to the current site, are the species within the following families and genera:

Schedule 1: Specially Protected Flora

- Family GERANIACEAE - *Pelargonium* spp. all species

Schedule 2 Protected Flora

- *Amaryllidaceae* – All species
- *Apiaceae* – All Species
- *Apocynaceae* – All Species
- *Asphodelaceae* – All species except *Aloe ferox*
- *Iridaceae* – All species
- *Mesembryanthemaceae* – All species
- *Capparaceae* - *Boscia* spp. Sheperd's trees, all species
- *Androcymbium* spp. - All species
- *Crassulaceae* - All species except those listed in Schedule 1
- *Euphorbiaceae* - *Euphorbia* spp. All species
- *Oxalidaceae* - *Oxalis* spp All species
- *Portulacaceae* - *Anacampseros* spp. All species

Species observed at the site include *Boophone disticha* and *Aloe broomii* which were common as well as other species such as *Stomatium peersii* and *Haworthia arachnoidea* which were occasional. A full list of protected species encountered in the area of the site is provided below. Not all species are active throughout the year and the extensive nature of the site means that not all protected species present may have been observed to date. Therefore, the ECO on duty during the construction phase of the development should ensure that no other protected species are within the development footprint.

Table 1. List of protected species observed during previous preconstruction surveys on the Modderfontein WEF site and/or neighbouring properties.

Family	Species
<i>Amaryllidaceae</i>	<i>Boophone disticha</i>
<i>Asphodelaceae</i>	<i>Aloe broomii</i>
<i>Mesembryanthemaceae</i>	<i>Stomatium peersii</i>
<i>Asphodelaceae</i>	<i>Haworthia arachnoidea</i>
<i>Apocynaceae</i>	<i>Pachypodium succulentum</i>
<i>Iridaceae</i>	<i>Babiana sp. cf hypogea</i>
<i>Crassulaceae</i>	<i>Adromischus maculatus</i>
<i>Geraniaceae</i>	<i>Pelargonium abrotanifolium</i>
<i>Geraniaceae</i>	<i>Pelargonium ramosissimum</i>
<i>Asphodelaceae</i>	<i>Trachyandra acocksii</i>
<i>Portulacaceae</i>	<i>Anacampseros filamentosa</i>

MONITORING & REPORTING REQUIREMENTS

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

- Monitoring during construction by the ECO to ensure that listed species and sensitive habitats are avoided. All incidents should be recorded along with the remedial measures implemented.
- Post construction monitoring of plants translocated during search and rescue should be done to evaluate the success of the intervention. Monitoring for a year post-transplant should be sufficient to gauge success.
- Operational phase compliance monitoring of any incidents and transgressions.

ANNEXURE G – INTEGRATED WASTE MANAGEMENT APPROACH

ANNEXURE G

Integrated Waste Management Approach.

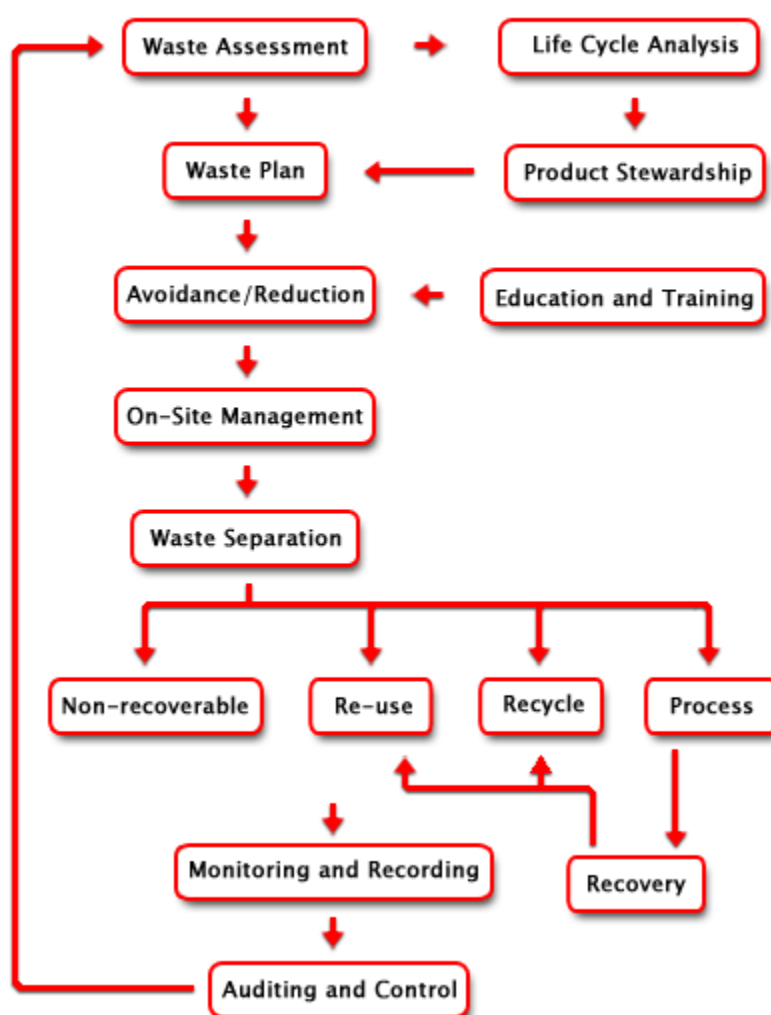
MODDERFONTEIN WIND ENERGY FACILITY

GUIDELINE FOR INTEGRATED MANAGEMENT OF CONSTRUCTION WASTE

July 2021

Waste is broadly defined by the Department of Water Affairs in 1994 as: 'an undesirable or superfluous by-product, emission, residue or remainder of any process or activity'. An integrated approach to waste management on site is needed. Such an approach is illustrated in the figure below.

The Integrated Waste Management Approach to Waste



Source: <http://www.enviroserv.co.za/pages/content.asp?SectionId=496>

1. Waste Assessment

A detailed waste assessment is necessary to understand the waste types and volumes being produced. In order to achieve this, construction practices must be measured and analysed.

2. Waste Plan

A waste plan must be developed to provide appropriate solutions for managing the entire waste stream on site. The objective of the plan should be to reduce the volumes of waste to disposal and thereby to reduce the cost of management of the waste stream without compromising environmental standards. The plan should include recovery, reuse and recycle recommendations.

Construction Waste Management is the practice of reducing the actual waste that goes to the landfill site. Waste reduction is best met by recycling, and construction wastes offer several opportunities in this regard. In fact, 80% of the wastes found in construction waste piles are recyclable in some form or another. Wood, concrete, bricks, metals, glass and even paint offer several options for recycling.

There are three basic steps for construction waste management, i.e. Reduce, Reuse, and Recycle.

Reduce is the prevention of the waste from arising and optimising material usage. Waste avoidance and waste reduction can be achieved through improved education and training - by improving efficiencies and by making staff environmentally aware.

Reuse is using existing materials instead of throwing these away. Reusing does not mean that it needs to be reused on the same construction site. Selling or donating waste materials to a third party is one option of construction waste management.

Recycle is somewhat limited since it only allows for those items that can be used onsite. The most important step for recycling of construction waste is on-site separation. Initially, this will take additional effort and training of construction personnel. Targets should be set for the levels of recycling. Once separation habits are established, on-site separation can be done at little or no additional cost.

3. What to Recycle

Before recycling construction waste, identify who will accept it. This is important in designating type of waste to separate, and in making arrangements for drop-off or delivery of materials. Materials that can be recycled include:

- » Cardboard and Paper
- » Wood
- » Metals
- » Plastics
- » Glass
- » Paints, Stains, Solvents and Sealants
- » Oil

4. Materials Separation

Successful recycling requires good clean uniform collections of single waste types. This is most effectively achieved by separating the waste streams close to source rather than at the landfill site. Containers for material recycling must be set up on site and clearly labelled. Construction personnel must be trained in material sorting policy, and bins must be monitored periodically to prevent waste mixing as a result of construction employees throwing rubbish into the bins. Some materials will require bins or storage that protect these from rain. Other bins may be locked to prevent tampering.

5. Recycling and Waste Minimisation Guidelines

» Wood

- Optimise building dimensions to correspond to standard wood dimensions in order to reduce the need for cutting.
- Store wood on level blocking under cover to minimize warping, twisting and waste.

» Metals

- During construction, separate metals for recycling, including copper piping, wire, aluminium, iron and steel, nails and fasteners, galvanized roofing. It is critical to keep lead out of landfills because it could leach into groundwater.

» Cardboard and Paper

- Avoid excessively packaged materials and supplies. However, be sure packaging is adequate to prevent damage and waste.
- As far as possible, use recyclable packaging.
- Separate cardboard waste, bundle, and store in a dry place.
- Minimise the number of blueprints and reproductions necessary during the design and construction process.

» Plastic

- Avoid excessively packaged materials and supplies. However, be sure packaging is adequate to prevent damage and waste.
- As far as possible, use recyclable packaging.

Since more than 60 different types of plastic resins exist, the Plastics Federation of South Africa has adopted a voluntary number coding system for each category of plastics to aid in their sorting by material type for recycling (Bruyns et al, 2002). The most common resin types are itemised in Table 1.

Table 1: Identification System for Plastic

Id Number	Plastic Resin Type
1	PET (polyethylene terephthalate)
2	HDPE (high-density polyethylene)
3	PVC (polyvinyl chloride) or V (vinyl)
4	LDPE (low-density polyethylene)
5	PP (polypropylene)
6	PS (polystyrene)
7	Other (laminates, etc.)

» *Paints, Stains, Solvents and Sealants*

- Unused materials should be taken to a hazardous waste collection facility.

6. On-site Management

Good supervision of the waste management programme on site is critical to success. Management of the entire on-site program is critical to ensure smooth operations.

7. Auditing and Control

The success of the waste plan is determined by measuring criteria such as waste volumes, cost recovery from recycling, cost of disposal. Recorded data can indicate the effect of training and education, or the need for education. It will provide trends and benchmarks for setting goals and standards. It will provide clear evidence of the success or otherwise of the plan. Finally, good record keeping and control, becomes a continuous waste assessment process, allowing the waste plan to be improved and adjusted as required.

8. Useful contacts:

<http://www.transpaco.co.za/page5.htm>

Transpaco, a manufacturing and distribution company operating extensively in the plastics and packaging industries, conducts plastic reclamation and recycling.

<http://www.jclenterprises.co.za/>

JCL Enterprises for plastic sales of quality recycled plastic materials as well as the recycling of plastic.

<http://www.rosefoundation.org.za/>

The Rose Foundation specialises in the collection and recycling of used motor (engine) oil.

Information Sources:

<http://www.greenbuilder.com/sourcebook/ConstructionWaste.html#Guidelines>

<http://www.enviroserv.co.za/pages/Content.asp?SectionID=587>

<http://www.enviroserv.co.za/pages/content.asp?SectionId=496>

Programme for the Implementation of the National Waste Management Strategy. DEAT, May 2000

Residential Construction Waste Management Demonstration and Evaluation. Prepared for U.S. Environmental Protection Agency by NAHB Research Center, May 2, 1995

ANNEXURE H – FOSSIL CHANCE FINDS PROCEDURE

ANNEXURE H

Fossil Chance Finds Procedure.

APPENDIX H. CHANCE FOSSIL FINDS PROCEDURE: Modderfontein WEF on farms Modderfontein 228 and Phaisant Kraal 1 near Victoria West	
Province & region:	Western Cape (Central Karoo District) & Northern Cape (Pixley Ka-Seme District)
Responsible Heritage Management Agencies	HERITAGE WESTERN CAPE. Protea Assurance Building, Green Market Square, Cape Town 8000. Private Bag X9067, Cape Town 8001. Tel: 021 483 9598. E-mail: ceoheritage@westerncape.gov.za SAHRA: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Phone: +27 (0)21 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za
Rock unit(s)	Teekloof Formation (Lower Beaufort Group), Late Caenozoic alluvium.
Potential fossils	Fossil skulls, postcrania of tetrapods, amphibians, fish as well as rare petrified wood, vertebrate and invertebrate burrows within bedrocks. Mammalian bones, teeth & horn cores, freshwater molluscs, calcretised trace fossils & rhizoliths and plant material in alluvium.
ECO protocol	1. Once alerted to fossil occurrence(s): alert site foreman, stop work in area immediately (<i>N.B.</i> safety first!), safeguard site with security tape / fence / sand bags if necessary.
	2. Record key data while fossil remains are still <i>in situ</i> : <ul style="list-style-type: none"> • Accurate geographic location – describe and mark on site map / 1: 50 000 map / satellite image / aerial photo • Context – describe position of fossils within stratigraphy (rock layering), depth below surface • Photograph fossil(s) <i>in situ</i> with scale, from different angles, including images showing context (<i>e.g.</i> rock layering)
	3. If feasible to leave fossils <i>in situ</i> : <ul style="list-style-type: none"> • Alert Heritage Resources Agency and project palaeontologist (if any) who will advise on any necessary mitigation • Ensure fossil site remains safeguarded until clearance is given by the Heritage Resources Agency for work to resume
	3. If <i>not</i> feasible to leave fossils <i>in situ</i> (emergency procedure only): <ul style="list-style-type: none"> • <i>Carefully</i> remove fossils, as far as possible still enclosed within the original sedimentary matrix (<i>e.g.</i> entire block of fossiliferous rock) • Photograph fossils against a plain, level background, with scale • Carefully wrap fossils in several layers of newspaper / tissue paper / plastic bags • Safeguard fossils together with locality and collection data (including collector and date) in a box in a safe place for examination by a palaeontologist • Alert Heritage Resources Agency and project palaeontologist (if any) who will advise on any necessary mitigation
	4. If required by Heritage Resources Agency, ensure that a suitably-qualified specialist palaeontologist is appointed as soon as possible by the developer.
5. Implement any further mitigation measures proposed by the palaeontologist and Heritage Resources Agency	
Specialist palaeontologist	Record, describe and judiciously sample fossil remains together with relevant contextual data (stratigraphy / sedimentology / taphonomy). Ensure that fossils are curated in an approved repository (<i>e.g.</i> museum / university / Council for Geoscience collection) together with full collection data. Submit Palaeontological Mitigation report to Heritage Resources Agency. Adhere to best international practice for palaeontological fieldwork and Heritage Resources Agency minimum standards.

ANNEXURE I – CV OF THE EAP

ANNEXURE I

The EAP's CV

Curriculum Vitae for Johann Georg Kilian

Date of Birth: 25/02/1989
I.D. Number: 8902255013087
Tel: 021 701 5228; Fax: 086 558 1213; Mobile: 081 266 7709
E-mail:
johann@terramanzi.co.za
Website: www.terramanzi.co.za

INTRODUCTION

Johann is an environmental consultant with more than 7 years of experience in the environmental management industry. Johann is registered with SACNASP as a Professional Natural Scientist in the field of Earth Science. Johann holds a BSc in Earth Science as well as a BSc (Hons) in Geology from the University of Stellenbosch, and is a senior member of the Environmental Services Team at Terramanzi Group (Pty) Ltd.

FORMAL EDUCATION

UNIVERSITY OF STELLENBOSCH (BSc Hons –Geology)

UNIVERSITY OF CAPE TOWN (BSc – Earth Science)

PROFESSIONAL AND INDUSTRY AFFILIATIONS

- **South African Council for Natural Scientific Professions (SACNASP)**
 - Registered Professional Natural Scientist
 - Pr. Sci. Nat.* Earth Science Reg. No. 400050/17
 - Specialising in waterborne pollution.

ABBREVIATED WORK EXPERIENCE

JULY 2021 TO PRESENT

Senior Environmental Consultant and team leader of the EIA Team of Terramanzi Group, a specialist environmental consulting firm with expertise in a number of environmental fields and offering accredited, experienced, personalized and professional services to Clients.

JANUARY 2018 TO JULY 2021

Director and Freshwater Specialist at Bio-Consulting

- ▶ Freshwater Specialist.
- ▶ Stormwater Treatment Designs.
- ▶ Freshwater Impact Assessments.
- ▶ Water Use License Applications.
- ▶ DWS Risk Matrix.
- ▶ IWWMP Development
- ▶ Water Quality Management Plans

JANUARY 2014 TO DECEMBER 2017

Earth Scientist and Senior Environmental Manager – Guillaume Nel Environmental Consultants (GNEC)

- ▶ Freshwater Specialist.
- ▶ Stormwater Treatment Designs.
- ▶ Mining Applications for various Borrow Pits.
- ▶ Freshwater Impact Assessments.
- ▶ Water Use License Applications.
- ▶ Stakeholder engagement.
- ▶ Public Participation Process.
- ▶ S24G Reports.
- ▶ Rehabilitation Reports
- ▶ Various monitoring reports.
- ▶ River Maintenance Management Plans.
- ▶ Sustainable Drainage Systems Design Reports.
- ▶ Environmental Impact Assessment and Mitigation and optimisation of impacts.
- ▶ Environmental management plans/programmes.
- ▶ Environmental auditing reports
- ▶ Monitoring and evaluation of impacts

MAY 2012 TO AUGUST 2012

Geological Mapping and research (Anglogold Ashanti)

Curriculum Vitae for Evan David Milborrow

Date of Birth: 02/04/1993
I.D. Number: 9304025107084
Tel: 021 701 5228; Fax: 086 558 1213; Mobile: 074 180 2104
E-mail: evan@terramanzi.co.za
Website: www.terramanzi.co.za

INTRODUCTION

Evan is a Junior Environmental Consultant and training Environmental Assessment Practitioner (EAP) undergoing his internship with the Terramanzi Team under Monique Sham, Evan holds a BSc (hon) degree in Chemistry and Biochemistry, and a Master's degree in Molecular and Cellular Biology, specialising in Plant Genetics and Bioinformatics from the University of Cape Town (UCT).

FORMAL EDUCATION

UNIVERSITY OF CAPE TOWN (MSc – Molecular and Cellular Biology)

- Completed **Molecular and Cellular Biology** Master's degree (cum laude without corrections) in the Nicci Illing Evolutionary Development Lab, University of Cape Town, 2018.

UNIVERSITY OF CAPE TOWN (BSc Hons – Chemistry and Biochemistry)

- Completed **Chemistry and Biochemistry** Honours (cum laude), First in class, in the Nicci Illing Evolutionary Development Lab, University of Cape Town. 2014

UNIVERSITY OF CAPE TOWN (BSc – Chemistry and Biochemistry)

- Completed **Chemistry and Biochemistry** degree (cum laude) in the Molecular and Cell Biology Department, University of Cape Town. 2013

PROFESSIONAL AND INDUSTRY AFFILIATIONS

- **Currently not associated with any professional bodies.**

ABBREVIATED WORK EXPERIENCE

FEBRUARY 2021 TO PRESENT

Intern/Junior Consultant of Terramanzi Group, a specialist environmental consulting firm with expertise in a number of environmental fields and offering accredited, experienced, personalized and professional services to Clients.

FEBRUARY TO MARCH 2020 AND 2021

Fieldwork assistant at the Endangered Wildlife Trust, conducting river health assessments and amphibian research on Table Mountain, Cape Town.

SEPTEMBER 2018 TO DECEMBER 2019

Route, marshal and trail team manager for Energy Events, an ultra-trail running and adventure sport events company.

JUNE 2015 TO NOVEMBER 2016

Project Coordinator for the University of Cape Town, running the Third Year BSc research project and mini dissertation course for the Nicola Illing Evolutionary Development Lab.

Environmental Management:

- Basic Assessment for a Wind Energy Facility, Noblesfontein (2021, Ongoing)
- Part Two Amendment for a Wind Energy Facility, Wolseley (2021, Ongoing)
- Part One Amendment for a Residential Dwelling, Scarborough (2021, Ongoing)

Environmental Control Officer:

- Val de Vie Evergreen – Evergreen Lifestyle Villages, Paarl (2021-Present)

ANNEXURE J – ENVIRONMENTAL AUTHORISATION

ANNEXURE J

Environmental Authorisation (once available)

The Draft Basic Assessment Report has been submitted to the Competent Authority for review and has been made available for Public Comment.

(29 July 2021)

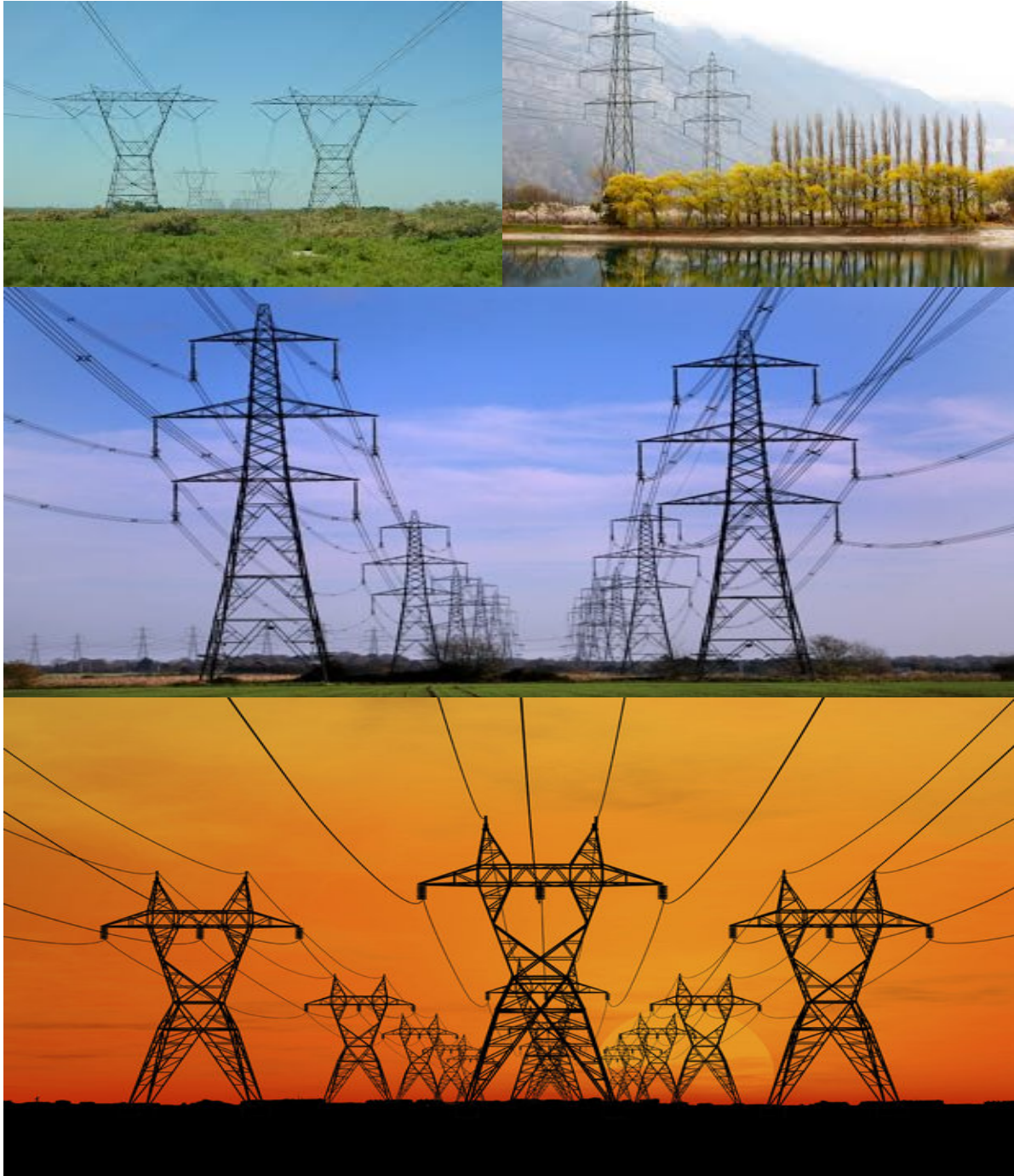
As such no decision has yet been made regarding EA.

ANNEXURE K – GENERIC EMPR FOR OHPL

ANNEXURE K

***DFFE Generic EMPr for Overhead Electricity
Transmission and Distribution Infrastructure***

APPENDIX 1
GENERIC ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) FOR THE
DEVELOPMENT AND EXPANSION FOR OVERHEAD ELECTRICITY
TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

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INTRODUCTION

1. Background

The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) requires that an environmental management programme (EMPr) be submitted where an environmental impact assessment (EIA) has been identified as the environmental instrument to be utilised as the basis for a decision on an application for environmental authorisation (EA). The content of an EMPr must either contain the information set out in Appendix 4 of the Environmental Impact Assessment Regulations, 2014, as amended, (EIA Regulations) or must be a generic EMPr relevant to an application as identified and gazetted by the Minister in a government notice. Once the Minister has identified, through a government notice, that a generic EMPr is relevant to an application for EA, that generic EMPr must be applied by all parties involved in the EA process, including, but not limited to, the applicant and the competent authority (CA).

2. Purpose

This document constitutes a generic EMPr relevant to applications for the development or expansion of overhead electricity transmission and distribution infrastructure, and all listed and specified activities necessary for the realisation of such infrastructure.

3. Objective

The objective of this generic EMPr is to prescribe and pre-approve generally accepted impact management outcomes and impact management actions, which can commonly and repeatedly be used for the avoidance, management and mitigation of impacts and risks associated with the development or expansion of overhead electricity transmission and distribution infrastructure. The use of a generic EMPr is intended to reduce the need to prepare and review individual EMPrs for applications of a similar nature.

4. Scope

The scope of this generic EMPr applies to the development or expansion of overhead electricity transmission and distribution infrastructure requiring EA in terms of NEMA, i.e. with a capacity of 33 kilovolts or more. This generic EMPr applies to activities requiring EA, mainly activity 11 and 47 of the Environmental Impact Assessment Regulations Listing Notice 1 of 2014, as amended, and activity 9 of the Environmental Impact Assessment Regulations Listing Notice 2 of 2014, as amended, and all associated listed or specified activities necessary for the realisation of such infrastructure.

5. Structure of this document

This document is structured in three parts with an Appendix as indicated in the table below:

Part	Section	Heading	Content
A		Provides general guidance and information and is not legally binding	Definitions, acronyms, roles & responsibilities and documentation and reporting.
B	1	Pre-approved generic EMPr template	<p>Contains generally accepted impact management outcomes and impact management actions required for the avoidance, management and mitigation of impacts and risks associated with the development or expansion of overhead electricity transmission and distribution infrastructure, which are presented in the form of a template that has been pre-approved.</p> <p>The template in this section is to be completed by the contractor, with each completed page signed and dated by the holder of the EA prior to commencement of the activity.</p> <p>Where an impact management outcome is not relevant, the words “not applicable” can be inserted in the template under the “responsible persons” column.</p> <p>Once completed and signed, the template represents the EMPr for the activity approved by the CA and is legally binding. The template is not required to be submitted to the CA as once the generic EMPr is gazetted for implementation, it has been approved by the CA.</p> <p>To allow interested and affected parties access to the pre-approved EMPr template for consideration through the decision-making process, the EAP on behalf of the applicant /proponent must make the hard copy of this EMPr available at a public location and where the applicant has a website, the EMPr should also be made available on such publicly accessible website.</p>
	2	Site specific information	Contains preliminary infrastructure layout and a declaration that the applicant/holder of the EA will comply with the pre-approved generic EMPr

Part	Section	Heading	Content
			<p>template contained in <u>Part B: Section 1</u>, and understands that the impact management outcomes and impact management actions are legally binding. The preliminary infrastructure layout must be finalized to inform the final EMPr that is to be submitted with the basic assessment report (BAR) or environmental impact assessment report (EIAR), ensuring that all impact management outcomes and actions have been either pre-approved or approved in terms of <u>Part C</u>.</p> <p>This section must be submitted to the CA together with the final BAR or EIAR. The information submitted to the CA will be considered to be incomplete should a signed copy of <u>Part B: section 2</u> not be submitted. Once approved, this Section forms part of the EMPr for the development and is legally binding.</p>
C		Site specific sensitivities/ attributes	<p>If any specific environmental sensitivities/ attributes are present on the site which require site specific impact management outcomes and impact management actions, not included in the pre-approved generic EMPr, to manage impacts, these specific impact management outcomes and impact management actions must be included in this section. These specific environmental attributes must be referenced spatially and impact management outcomes and impact management actions must be provided. These specific impact management outcomes and impact management actions must be presented in the format of the pre-approved EMPr template (<u>Part B: section 1</u>)</p> <p>This section will not be required should the site contain no specific environmental sensitivities or attributes. However, if <u>Part C</u> is applicable to the site, it is required to be submitted together with the BAR or EIAR, for consideration of, and decision on, the application for EA. The information in this section must be prepared by an EAP, and must contain his/her name and expertise including a curriculum vitae. Once approved, Part C forms part of the EMPr for the site and is legally binding.</p>

Part	Section	Heading	Content
			This section applies only to additional impact management outcomes and impact management actions that are necessary for the avoidance, management and mitigation of impacts and risks associated with the specific development or expansion and which are not already included in <u>Part B: section 1</u> .
	Appendix 1		Contains the method statements to be prepared prior to commencement of the activity. The method statements are not required to be submitted to the competent authority.

6. Completion of part B: section 1: the pre-approved generic EMPr template

The template is to be completed prior to commencement of the activity, by providing the following information for each environmental impact management action:

- For implementation
 - a 'responsible person',
 - a method for implementation,
 - a timeframe for implementation
- For monitoring
 - a responsible person
 - frequency
 - evidence of compliance.

The completed template must be signed and dated by the holder of the EA prior to commencement of the activity. The method statements prepared and agreed to by the holder of the EA must be appended to the template as Appendix 1. Each method statement must be signed and dated on each page by the holder of the EA. This template, once signed and dated, is legally binding. The holder of the EA will remain responsible for its implementation.

7. Amendments of the impact management outcomes and impact management actions

Once the activity has commenced, a holder of an EA may make amendments to the impact management outcomes and impact management actions in the following manner:

- Amendment of the impact management outcomes: in line with the process contemplated in regulation 37 of the EIA Regulations; and
- Amendment of the impact management actions: in line with the process contemplated in regulation 36 of the EIA Regulations.

8. Documents to be submitted as part of part B: section 2 site specific information and declaration

Part B: Section 2 has three distinct sub-sections. The first and third sub-sections are in a template format. Sub-section two requires a map to be produced.

Sub-section 1 contains the project name, the applicant's name and contact details, the site information, which includes coordinates of the corridor in which the proposed overhead electricity transmission and distribution infrastructure is proposed as well as the 21-digit Surveyor General code of each cadastral land parcel and, where available, the farm name.

Sub-section 2 is to be prepared by an EAP and must contain his/her name and expertise including a curriculum vitae. This sub-section must include a map of the site sensitivity overlaid with the preliminary infrastructure layout using the national web based environmental screening tool, when available for compulsory use at: <https://screening.environment.gov.za/screeningtool>. The sensitivity map shall identify the nature of each sensitive feature e.g. raptor nest, threatened plant species, archaeological site, etc. Sensitivity maps must identify features both within the planned working area and any known sensitive features in the surrounding landscape within 50m from the development footprint. The overhead transmission and distribution profile must be illustrated at an appropriate resolution to enable fine scale interrogation. It is recommended that <20 km of overhead transmission and distribution length is illustrated per page in A3 landscape format. Where considered appropriate, photographs of sensitive features in the context of tower positions must be used.

Sub-section 3 is the declaration that the applicant/proponent or holder of the EA in the case of a change of ownership must complete, which confirms that the applicant/EA holder will comply with the pre-approved generic EMPr template in Section 1 and understands that the impact management outcomes and actions are legally binding.

(a) Amendments to Part B: Section 2 – site specific information and declaration

Should the EA be transferred, Part B: Section 2 must be completed by the new applicant/proponent and submitted with the application for an amendment of the EA in terms of Regulations 29 or 31 of the EIA Regulations, whichever applies. The information submitted as part of such an application for an amendment to an EA will be considered to be incomplete should a signed copy of Part B: Section 2 not be submitted. Once approved, Part B: Section 2 forms part of the EMPr for the development and the EMPr becomes legally binding to the new EA holder.

PART A – GENERAL INFORMATION

1. DEFINITIONS

In this EMPr any word or expression to which a meaning has been assigned in the NEMA or EIA Regulations has that meaning, and unless the context requires otherwise –

"clearing" means the clearing and removal of vegetation, whether partially or in whole, including trees and shrubs, as specified;

"construction camp" is the area designated for key construction infrastructure and services, including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management;

"contractor" - The Contractor has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract, are in line with the Environmental Management Programme and that Method Statements are implemented as described.

"hazardous substance" is a substance governed by the Hazardous Substances Act, 1973 (Act No. 15 of 1973) as well as the Hazardous Chemical and Substances Regulations, 1995;

"method statement" means a written submission by the Contractor to the Project Manager in response to this EMPr or a request by the Project Manager and ECO. The method statement must set out the equipment, materials, labour and method(s) the Contractor proposes using to carry out an activity identified by the Project Manager when requesting the Method Statement. This must be done in such detail that the Project Manager and ECO is able to assess whether the Contractor's proposal is in accordance with this specification and/or will produce results in accordance with this specification;

The method statement must cover applicable details with regard to:

- (i) Construction procedures;
- (ii) Plant, materials and equipment to be used;
- (iii) Transporting the equipment to and from site;
- (iv) How the plant/ material/ equipment will be moved while on site;
- (v) How and where the plant/ material/ equipment will be stored;
- (vi) The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- (vii) Timing and location of activities;
- (viii) Compliance/ non-compliance; and
- (ix) Any other information deemed necessary by the Project Manager.

"slope" means the inclination of a surface expressed as one unit of rise or fall for so many horizontal units;

“**solid waste**” means all solid waste, including construction debris, hazardous waste, excess cement/ concrete, wrapping materials, timber, cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers);

“**spoil**” means excavated material which is unsuitable for use as material in the construction works or is material which is surplus to the requirements of the construction works;

“**topsoil**” means a varying depth (up to 300 mm) of the soil profile irrespective of the fertility, appearance, structure, agricultural potential, fertility and composition of the soil; and

“**works**” means the works to be executed in terms of the Contract

2. ACRONYMS and ABBREVIATIONS

CA	Competent Authority
cEO	Contractors Environmental Officer
dEO	Developer Environmental Officer
DPM	Developer Project Manager
DSS	Developer Site Supervisor
EAR	Environmental Audit Report
ECA	Environmental Conservation Act No. 73 of 1989
ECO	Environmental Control Officer
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
ERAP	Emergency Response Action Plan
EMPr	Environmental Management Programme Report
EAP	Environmental Assessment Practitioner
FPA	Fire Protection Agency
HCS	Hazardous chemical Substance
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEMWA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
MSDS	Material Safety Data Sheet
RI&AP's	Registered interested and affected parties

3. ROLES AND RESPONSIBILITIES FOR ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) IMPLEMENTATION

The effective implementation of this generic EMPr is dependent on established and clear roles, responsibilities and reporting lines within an institutional framework. This section of the EMPr gives guidance to the various environmental roles and reporting lines, however, project specific requirements will ultimately determine the need for the appointment of specific person(s) to undertake specific roles and or responsibilities. As such, it must be noted that in the event that no specific person, for example, an environmental control officer (ECO) is appointed, the holder of the EA remains responsible for ensuring that the duties indicated in this document for action by the ECO are undertaken.

Table 1: Guide to roles and responsibilities for implementation of an EMPr

Responsible Person (s)	Role and Responsibilities
Developer's Project Manager (DPM)	<p><u>Role</u></p> <p>The Project Developer is accountable for ensuring compliance with the EMPr and any conditions of approval from the competent authority (CA). Where required, an environmental control officer (ECO) must be contracted by the Project Developer to objectively monitor the implementation of the EMPr according to relevant environmental legislation, and the conditions of the environmental authorisation (EA). The Project Developer is further responsible for providing and giving mandate to enable the ECO to perform responsibilities, and he must ensure that the ECO is integrated as part of the project team while remaining independent.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Be fully conversant with the conditions of the EA; - Ensure that all stipulations within the EMPr are communicated and adhered to by the Developer and its Contractor(s); - Issuing of site instructions to the Contractor for corrective actions required; - Monitor the implementation of the EMPr throughout the project by means of site inspections and meetings. Overall management of the project and EMPr implementation; and - Ensure that periodic environmental performance audits are undertaken on the project implementation.
Developer Site Supervisor (DSS)	<p><u>Role</u></p> <p>The DSS reports directly to the DPM, oversees site works, liaises with the contractor(s) and the ECO. The DSS</p>

Responsible Person (s)	Role and Responsibilities
	<p>is responsible for the day to day implementation of the EMPr and for ensuring the compliance of all contractors with the conditions and requirements stipulated in the EMPr.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Ensure that all contractors identify a contractor's Environmental Officer (cEO); - Must be fully conversant with the conditions of the EA. Oversees site works, liaison with Contractor, DPM and ECO; - Must ensure that all landowners have the relevant contact details of the site staff, ECO and cEO; - Issuing of site instructions to the Contractor for corrective actions required; - Will issue all non-compliances to contractors; and - Ratify the Monthly Environmental Report.
Environmental Control Officer (ECO)	<p><u>Role</u></p> <p>The ECO should have appropriate training and experience in the implementation of environmental management specifications. The primary role of the ECO is to act as an independent quality controller and monitoring agent regarding all environmental concerns and associated environmental impacts. In this respect, the ECO is to conduct periodic site inspections, attend regular site meetings, pre-empt problems and suggest mitigation and be available to advise on incidental issues that arise. The ECO is also required to conduct compliance audits, verifying the monitoring reports submitted by the cEO. The ECO provides feedback to the DSS and Project Manager regarding all environmental matters. The Contractor, cEO and dEO are answerable to the Environmental Control Officer for non-compliance with the Performance Specifications as set out in the EA and EMPr.</p> <p>The ECO provides feedback to the DSS and Project Manager, who in turn reports back to the Contractor and potential and Registered Interested & Affected Parties' (RI&AP's), as required. Issues of non-compliance raised by the ECO must be taken up by the Project Manager, and resolved with the Contractor as per the conditions of his contract. Decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e. those that are deemed to be a variation, not allowed for in the Performance Specification) must be endorsed by the Project Manager. The ECO must also, as specified by the EA, report to the relevant CA as and when required.</p> <p><u>Responsibilities</u></p>

Responsible Person (s)	Role and Responsibilities
	<p>The responsibilities of the ECO will include the following:</p> <ul style="list-style-type: none"> - Be aware of the findings and conclusions of all EA related to the development; - Be familiar with the recommendations and mitigation measures of this EMPr; - Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them; - Undertake regular and comprehensive site inspections / audits of the construction site according to the generic EMPr and applicable licenses in order to monitor compliance as required; - Educate the construction team about the management measures contained in the EMPr and environmental licenses; - Compilation and administration of an environmental monitoring plan to ensure that the environmental management measures are implemented and are effective; - Monitoring the performance of the Contractors and ensuring compliance with the EMPr and associated Method Statements; - In consultation with the Developer Site Supervisor order the removal of person(s) and/or equipment which are in contravention of the specifications of the EMPr and/or environmental licenses; - Liaison between the DPM, Contractors, authorities and other lead stakeholders on all environmental concerns; - Compile a regular environmental audit report highlighting any non-compliance issues as well as satisfactory or exceptional compliance with the EMPr; - Validating the regular site inspection reports, which are to be prepared by the contractor Environmental Officer (cEO); - Checking the cEO's record of environmental incidents (spills, impacts, legal transgressions etc) as well as corrective and preventive actions taken; - Checking the cEO's public complaints register in which all complaints are recorded, as well as action taken; - Assisting in the resolution of conflicts; - Facilitate training for all personnel on the site – this may range from carrying out the training, to reviewing the training programmes of the Contractor; - In case of non-compliances, the ECO must first communicate this to the Senior Site Supervisor, who has the power to ensure this matter is addressed. Should no action or insufficient action be taken, the ECO may report this matter to the authorities as non-compliance; - Maintenance, update and review of the EMPr; - Communication of all modifications to the EMPr to the relevant stakeholders.
developer Environmental Officer	<u>Role</u>

Responsible Person (s)	Role and Responsibilities
(dEO)	<p>The dEOs will report to the Project Manager and are responsible for implementation of the EMPr, environmental monitoring and reporting, providing environmental input to the Project Manager and Contractor's Manager, liaising with contractors and the landowners as well as a range of environmental coordination responsibilities.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Be fully conversant with the EMPr; - Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures; - Ensure that all stipulations within the EMPr are communicated and adhered to by the Employees, Contractor(s) ; - Confine the development site to the demarcated area; - Conduct environmental internal audits with regards to EMPr and authorisation compliance (on cEO); - Assist the contractors in addressing environmental challenges on site; - Assist in incident management; - Reporting environmental incidents to developer and ensuring that corrective action is taken, and lessons learnt shared; - Assist the contractor in investigating environmental incidents and compile investigation reports; - Follow-up on pre-warnings, defects, non-conformance reports; - Measure and communicate environmental performance to the Contractor; - Conduct environmental awareness training on site together with ECO and cEO; - Ensure that the necessary legal permits and / or licenses are in place and up to date; - Acting as Developer's Environmental Representative on site and work together with the ECO and contractor;
Contractor	<p><u>Role</u></p> <p>The Contractor appoints the cEO and has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract are in line with the EMPr and that Method Statements are implemented as described. External contractors must ensure compliance with this EMPr while performing the onsite activities as per their contract with the Project Developer. The contractors are required, where</p>

Responsible Person (s)	Role and Responsibilities
	<p>specified, to provide Method Statements setting out in detail how the impact management actions contained in the EMPr will be implemented during the development or expansion for overhead electricity transmission and distribution infrastructure activities.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - project delivery and quality control for the development services as per appointment; - employ a suitably qualified person to monitor and report to the Project Developer's appointed person on the daily activities on-site during the construction period; - ensure that safe, environmentally acceptable working methods and practices are implemented and that equipment is properly operated and maintained, to facilitate proper access and enable any operation to be carried out safely; - attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones; - ensure that contractors' staff repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in EMPr, to the satisfaction of the ECO.
contractor Environmental Officer (cEO)	<p><u>Role</u></p> <p>Each Contractor affected by the EMPr should appoint a cEO, who is responsible for the on-site implementation of the EMPr (or relevant sections of the EMPr). The Contractor's representative can be the site agent; site engineer; a dedicated environmental officer; or an independent consultant. The Contractor must ensure that the Contractor's Representative is suitably qualified to perform the necessary tasks and is appointed at a level such that she/he can interact effectively with other site Contractors, labourers, the Environmental Control Officer and the public. As a minimum the cEO shall meet the following criteria:</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Be on site throughout the duration of the project and be dedicated to the project; - Ensure all their staff are aware of the environmental requirements, conditions and constraints with respect to all of their activities on site; - Implementing the environmental conditions, guidelines and requirements as stipulated within the EA,

Responsible Person (s)	Role and Responsibilities
	<p>EMPr and Method Statements;</p> <ul style="list-style-type: none"> - Attend the Environmental Site Meeting; - Undertaking corrective actions where non-compliances are registered within the stipulated timeframes; - Report back formally on the completion of corrective actions; - Assist the ECO in maintaining all the site documentation; - Prepare the site inspection reports and corrective action reports for submission to the ECO; - Assist the ECO with the preparing of the monthly report; and - Where more than one Contractor is undertaking work on site, each company appointed as a Contractor will appoint a cEO representing that company.

4. ENVIRONMENTAL DOCUMENTATION REPORTING AND COMPLIANCE

To ensure accountable and demonstrated implementation of the EMPr, a number of reporting systems, documentation controls and compliance mechanisms must be in place for all overhead electricity transmission and distribution infrastructure projects as a minimum requirement.

4.1 Document control/Filing system

The holder of the EA is solely responsible for the upkeep and management of the EMPr file. At a minimum, all documentation detailed below will be stored in the EMPr file. A hard copy of all documentation shall be filed, while an electronic copy may be kept where relevant. A duplicate file will be maintained in the office of the DSS (where applicable). This duplicate file must remain current and up-to-date. The filing system must be updated and relevant documents added as required. The EMPr file must be made available at all times on request by the CA or other relevant authorities. The EMPr file will form part of any environmental audits undertaken as prescribed in the EIA Regulations.

4.2 Documentation to be available

At the outset of the project the following preliminary list of documents shall be placed in the filing system and be accessible at all times:

- Full copy of the signed EA from the CA in terms of NEMA, granting approval for the development or expansion;
- Copy of the generic and site specific EMPr as well as any amendments thereof;
- Copy of declaration of implementing generic EMPr and subsequent approval of site specific EMPr and amendments thereof;
- All method statements;
- Completed environmental checklists;
- Minutes and attendance register of environmental site meetings;
- An up-to-date environmental incident log;
- A copy of all instructions or directives issued;
- A copy of all corrective actions signed off. The corrective actions must be filed in such a way that a clear reference is made to the non-compliance record;
- Complaints register.

4.3 Weekly Environmental Checklist

The ECOs are required to complete a Weekly Environmental Checklist, the format of which is to be agreed prior to commencement of the activity. The ECOs are required to sign and date the checklist, retain a copy in the EMPr file and submit a copy of the completed checklist to the DSS on a weekly basis.

The checklists will form the basis for the Monthly Environmental Reports. Copies of all completed checklists will be attached as Annexures to the Environmental Audit Report as required in terms of the EIA Regulations.

4.4 Environmental site meetings

Minutes of the environmental site meetings shall be kept. The minutes must include an attendance register and will be attached to the Monthly Report that is distributed to attendees. Each set of minutes must clearly record "Matters for Attention" that will be reviewed at the next meeting.

4.5 Required Method Statements

The method statement will be done in such detail that the ECOs are enabled to assess whether the contractor's proposal is in accordance with the EMPr.

The method statement must cover applicable details with regard to:

- development procedures;
- materials and equipment to be used;
- getting the equipment to and from site;
- how the equipment/ material will be moved while on site;
- how and where material will be stored;
- the containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- timing and location of activities;
- compliance/ non-compliance with the EMPr; and
- any other information deemed necessary by the ECOs.

Unless indicated otherwise by the Project Manager, the Contractor shall provide the following method statements to the Project Manager no less than 14 days prior to the commencement date of the activity:

- Site establishment – Camps, Lay-down or storage areas, satellite camps, infrastructure;
- Batch plants;
- Workshop or plant servicing;
- Handling, transport and storage of Hazardous Chemical Substance's;
- Vegetation management – Protected, clearing, aliens, felling;
- Access management – Roads, gates, crossings etc.;
- Fire plan;
- Waste management – transport, storage, segregation, classification, disposal (all waste streams);
- Social interaction – complaints management, compensation claims, access to properties etc.;
- Water – use (source, abstraction and disposal), access and all related information, crossings and mitigation;
- Emergency preparedness – Spills, training, other environmental emergencies;
- Dust and noise management methodologies;
- Fauna interaction and risk management – only if the risk was identified – wildlife interaction especially on game farms; and
- Heritage and palaeontology management.

The ECOs shall monitor and ensure that the contractors perform in accordance with these method statements. Completed and agreed method statements between the holder of the EA and the contractor shall be captured in Appendix 1.

4.6 Environmental Incident Log (Diary)

The ECOs are required to maintain an up-to-date and current Environmental Incident Log (environmental diary). The Environmental Incident Log is a means to record all environmental incidents and/or all non-compliance notice would not be issued. An environmental incident is defined as:

- Any deviation from the listed impact management actions (listed in this EMPr) that may be addressed immediately by the ECOs. (For example a contractor's staff member littering or a drip tray that has not been emptied);
- Any environmental impact resulting from an action or activity by a contractor in contravention of the environmental stipulations and guidelines listed in the EMPr which as a single event would have a minor impact but which if cumulative and continuous would have a significant effect (for example no toilet paper available in the ablutions for an afternoon); and
- General environmental information such as road kills or injured wildlife.

The ECOs are to record all environmental incidents in the Environmental Incident Log. All incidents regardless of severity must be reported to the Developer. The Log is to be kept in the EMPr file and at a minimum the following will be recorded for each environmental incident:

- The date and time of the incident;
- Description of the incident;
- The name of the Contractor responsible;
- The incident must be listed as significant or minor;
- If the incident is listed as significant, a non-compliance notice must be issued, and recorded in the log;
- Remedial or corrective action taken to mitigate the incident; and
- Record of repeat minor offences by the same contractor or staff member.

The Environmental Incident Log will be captured in the EAR.

4.7 Non-compliance

A non-compliance notice will be issued to the responsible contractor by the ECOs via the DSS or Project Manager. The non-compliance notice will be issued in writing; a copy filed in the EMPr file and will at a minimum include the following:

- Time and date of the non-compliance;
 - Name of the contractor responsible;
 - Nature and description of the non-compliance;
 - Recommended / required corrective action; and
 - Date by which the corrective action to be completed.
- The contractors shall act immediately when a notice of non-compliance is received and correct whatever is the cause for the issuing of the notice. Complaints

received regarding activities on the development site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and action taken. The ECO should be made aware of any complaints. Any non-compliance with the agreed procedures of the EMPr is a transgression of the various statutes and laws that define the manner by which the environment is managed. Failure to redress the cause shall be reported to the relevant CA for them to deal with the transgression, as it deems fit. The contractor is deemed not to have complied with the EMPr if, inter alia, There is a deviation from the environmental conditions, impact management outcomes and impact management actions , as approved in generic and site specific EMPr as relevant as set out in the EMPr, which deviation has, or may cause, an environmental impact.

4.8 Corrective action records

For each non-compliance notice issued, a documented corrective action must be recorded. On receiving a non-compliance notice from the DSS, the contractor's cEO will ensure that the corrective actions required take place within the stipulated timeframe. On completion of the corrective action the cEO is to issue a Corrective Action Report in writing to the ECOs. If satisfied that the corrective action has been completed, the ECOs are to sign-off on the Corrective Action Report, and attach the report to the non-compliance notice in the EMPr file. A corrective action is considered complete once the report has signed off by the ECOs.

4.9 Photographic record

A digital photographic record will be kept. The photographic record will be used to show before, during and post rehabilitation evidence of the project as well used in cases of damages claims if they arise. Each image must be dated and a brief description note attached.

The Contractor shall:

1. Allow the ECOs access to take photographs of all areas, activities and actions.

The ECOs shall keep an electronic database of photographic records which will include:

1. Pictures of all areas designated as work areas, camp areas, development sites and storage areas taken before these areas are set up;
2. All bunding and fencing;
3. Road conditions and road verges;
4. Condition of all farm fences;
5. Topsoil storage areas;
6. All areas to be cordoned off during construction;
7. Waste management sites;
8. Ablution facilities (inside and out);
9. Any non-conformances deemed to be "significant";
10. All completed corrective actions for non-compliances;
11. All required signage;
12. Photographic recordings of incidents;
13. All areas before, during and post rehabilitation; and
14. Include relevant photographs in the Final Environmental Audit Report.

4.10 Complaints register

The ECOs shall keep a current and up-to-date complaints register. The complaints register is to be a record of all complaints received from communities, stakeholders and individuals. The Complaints Record shall:

1. Record the name and contact details of the complainant;
2. Record the time and date of the complaint;
3. Contain a detailed description of the complaint;
4. Where relevant and appropriate, contain photographic evidence of the complaint or damage (ECOs to take relevant photographs); and
5. Contain a copy of the ECOs written response to each complaint received and keep a record of any further correspondence with the complainant. The ECO's written response will include a description of any corrective action to be taken and must be signed by the Contractor, ECO and affected party. Where a damage claim is issued by the complainant, the ECOs shall respond as described in **(section 4.11)** below.

4.11 Claims for damages

In the event that a Claim for Damages is submitted by a community, landowner or individual, the ECOs shall:

1. Record the full detail of the complaint as described in **(section 4.10)** above;
2. The DPM will evaluate the claim and associated damage and submit the evaluation to the Senior Site Representative for approval;
3. Following consideration by the DPM, the claim is to be resolved and settled immediately, or the reason for not accepting the claim communicated in writing to the claimant. Should the claimant not accept this, the ECO shall, in writing report the incident to the Developer's negotiator and legal department; and
4. A formal record of the response by the ECOs to the claimant as well as the rectification of the method of making payments not amount will be recorded in the EMPr file.

4.12 Interactions with affected parties

Open, transparent and good relations with affected landowners, communities and regional staff are an essential aspect to the successful management and mitigation of environmental impacts.

The ECOs shall:

1. Ensure that all queries, complaints and claims are dealt within an agreed timeframe;
2. Ensure that any or all agreements are documented, signed by all parties and a record of the agreement kept in the EMPr file;
3. Ensure that a complaints telephone numbers are made available to all landowners and affected parties; and
4. Ensure that contact with affected parties is courteous at all times;

4.13 Environmental audits

Internal environmental audits of the activity and implementation of the EMPr must be undertaken. The findings and outcomes must be included in the EMPr file and be submitted to the CA at intervals as indicated in the EA.

An Environmental Audit Report must be prepared monthly. The report will be tabled as the key point on the agenda of the Environmental Site Meeting. The Report is submitted for acceptance at the meeting and the final report will be circulated to the Project Manager and filed in the EMPr file. At a frequency determined by the EA, the ECOs shall submit the monthly reports to the CA. At a minimum the monthly report is to cover the following:

- Weekly Environmental Checklists;
- Deviations and non-compliances with the checklists;
- Non-compliances issued;
- Completed and reported corrective actions;
- Environmental Monitoring;
- General environmental findings and actions; and
- Minutes of the Bi-monthly Environmental Site Meetings.

4.14 Final environmental audits

On final completion of the rehabilitation and/or requirements of the EA a final EAR is to be prepared and submitted to the CA. The EAR must comply with Appendix 7 of the EIA Regulations.

PART B: SECTION 1: Pre-approved generic EMPr template

5. IMPACT MANAGEMENT OUTCOMES AND IMPACT MANAGEMENT ACTIONS

This section provides a pre-approved generic EMPr template with aspects that are common to the development of overhead electricity transmission and distribution infrastructure. There is a list of aspects identified for the development or expansion of overhead electricity transmission and distribution infrastructure, and for each aspect a set of prescribed impact management outcomes and associated impact management actions have been identified. Holders of EAs are responsible to ensure the implementation of these outcomes and actions for all projects as a minimum requirement, in order to mitigate the impact of such aspects identified for the development or expansion of overhead electricity transmission and distribution infrastructure.

The template provided below is to be completed by providing the information under each heading for each environmental impact management action.

The completed template must be signed and dated on each page by both the contractor and the holder of the EA prior to commencement of the activity. The method statements prepared and agreed to by the holder of the EA must be appended to the template as Appendix 1. Each method statement must also be duly signed and dated on each page by the contractor and the holder of the EA. This template, once signed and dated, is legally binding. The holder of the EA will remain responsible for its implementation.

5.1 Environmental awareness training

Impact management outcome: All onsite staff are aware and understands the individual responsibilities in terms of this EMPr.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All staff must receive environmental awareness training prior to commencement of the activities; - The Contractor must allow for sufficient sessions to train all personnel with no more than 20 personnel attending each course; - Refresher environmental awareness training is available as and when required; - All staff are aware of the conditions and controls linked to the EA and within the EMPr and made aware of their individual roles and responsibilities in achieving compliance with the EA and EMPr; - The Contractor must erect and maintain information posters at key locations on site, and the posters must include the following information as a minimum: <ul style="list-style-type: none"> a) Safety notifications; and b) No littering. - Environmental awareness training must include as a minimum the following: <ul style="list-style-type: none"> a) Description of significant environmental impacts, actual or potential, related to their work activities; b) Mitigation measures to be implemented when carrying out specific activities; c) Emergency preparedness and response 						

<p>procedures;</p> <p>d) Emergency procedures;</p> <p>e) Procedures to be followed when working near or within sensitive areas;</p> <p>f) Wastewater management procedures;</p> <p>g) Water usage and conservation;</p> <p>h) Solid waste management procedures;</p> <p>i) Sanitation procedures;</p> <p>j) Fire prevention; and</p> <p>k) Disease prevention.</p> <p>– A record of all environmental awareness training courses undertaken as part of the EMP must be available;</p> <p>– Educate workers on the dangers of open and/or unattended fires;</p> <p>– A staff attendance register of all staff to have received environmental awareness training must be available.</p> <p>– Course material must be available and presented in appropriate languages that all staff can understand.</p>						
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5.2 Site Establishment development



Impact management outcome: Impacts on the environment are minimised during site establishment and the development footprint are kept to demarcated development area.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - A method statement must be provided by the contractor prior to any onsite activity that includes the layout of the construction camp in the form of a plan showing the location of key infrastructure and services (where applicable), including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous materials storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management; - Location of camps must be within approved area to ensure that the site does not impact on sensitive areas identified in the environmental assessment or site walk through; - Sites must be located where possible on previously disturbed areas; - The camp must be fenced in accordance with Section 5.5: Fencing and gate installation; and - The use of existing accommodation for contractor staff, where possible, is encouraged. 						

5.3 Access restricted areas

Impact management outcome: Access to restricted areas prevented.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Identification of access restricted areas is to be informed by the environmental assessment, site walk through and any additional areas identified during development; - Erect, demarcate and maintain a temporary barrier with clear signage around the perimeter of any access restricted area, colour coding could be used if appropriate; and - Unauthorised access and development related activity inside access restricted areas is prohibited. 						

5.4 Access roads

Impact management outcome: Minimise impact to the environment through the planned and restricted movement of vehicles on site.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Access to the servitude and tower positions must be negotiated with the relevant landowner and must fall within the assessed and authorised area; - An access agreement must be formalised and signed by the DPM, Contractor and landowner before commencing with the activities; 						

<ul style="list-style-type: none"> - The access roads to tower positions must be signposted after access has been negotiated and before the commencement of the activities; - All private roads used for access to the servitude must be maintained and upon completion of the works, be left in at least the original condition - All contractors must be made aware of all these access routes. - Any access route deviation from that in the written agreement must be closed and re-vegetated immediately, at the contractor's expense; - Maximum use of both existing servitudes and existing roads must be made to minimize further disturbance through the development of new roads; - In circumstances where private roads must be used, the condition of the said roads must be recorded in accordance with section 4.9: photographic record; prior to use and the condition thereof agreed by the landowner, the DPM, and the contractor; - Access roads in flattish areas must follow fence lines and tree belts to avoid fragmentation of vegetated areas or croplands - Access roads must only be developed on pre-planned and approved roads. 						
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5.5 Fencing and Gate installation

Impact management outcome: Minimise impact to the environment and ensure safe and controlled access to the site through the erection of fencing and gates where required.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Use existing gates provided to gain access to all parts of the area authorised for development, where possible; - Existing and new gates to be recorded and documented in accordance with section 4.9: photographic record; - All gates must be fitted with locks and be kept locked at all times during the development phase, unless otherwise agreed with the landowner; - At points where the line crosses a fence in which there is no suitable gate within the extent of the line servitude, on the instruction of the DPM, a gate must be installed at the approval of the landowner; - Care must be taken that the gates must be so erected that there is a gap of no more than 100 mm between the bottom of the gate and the ground; - Where gates are installed in jackal proof fencing, a suitable reinforced concrete sill must be provided beneath the gate; - Original tension must be maintained in the fence wires; - All gates installed in electrified fencing must be re-electrified; - All demarcation fencing and barriers must be maintained in good working order for the duration of overhead transmission and distribution electricity infrastructure development activities; - Fencing must be erected around the camp, batching plants, hazardous storage areas, and all designated access 						

<p>restricted areas, where appropriate and would not cause harm to the sensitive flora;</p> <ul style="list-style-type: none"> - Any temporary fencing to restrict the movement of life-stock must only be erected with the permission of the land owner. - All fencing must be developed of high quality material bearing the SABS mark; - The use of razor wire as fencing must be avoided; - Fenced areas with gate access must remain locked after hours, during weekends and on holidays if staff is away from site. Site security will be required at all times; - On completion of the development phase all temporary fences are to be removed; - The contractor must ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but rather removed completely. 						
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5.6 Water Supply Management

<p>Impact management outcome: Undertake responsible water usage.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All abstraction points or bore holes must be registered with the DWS and suitable water meters installed to ensure that the abstracted volumes are measured on a daily basis; - The Contractor must ensure the following: <ul style="list-style-type: none"> a. The vehicle abstracting water from a river does not enter 						

<p>or cross it and does not operate from within the river;</p> <p>b. No damage occurs to the river bed or banks and that the abstraction of water does not entail stream diversion activities; and</p> <p>c. All reasonable measures to limit pollution or sedimentation of the downstream watercourse are implemented.</p> <p>– Ensure water conservation is being practiced by:</p> <p>a. Minimising water use during cleaning of equipment;</p> <p>b. Undertaking regular audits of water systems; and</p> <p>c. Including a discussion on water usage and conservation during environmental awareness training.</p> <p>d. The use of grey water is encouraged.</p>						
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5.7 Storm and waste water management

Impact management outcome: Impacts to the environment caused by storm water and wastewater discharges during construction are avoided.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>– Runoff from the cement/ concrete batching areas must be strictly controlled, and contaminated water must be collected, stored and either treated or disposed of off-site, at a location approved by the project manager;</p> <p>– All spillage of oil onto concrete surfaces must be controlled by the use of an approved absorbent material and the used absorbent material disposed of at an appropriate waste disposal facility;</p> <p>– Natural storm water runoff not contaminated during the</p>						

<p>development and clean water can be discharged directly to watercourses and water bodies, subject to the Project Manager's approval and support by the ECO;</p> <ul style="list-style-type: none"> – Water that has been contaminated with suspended solids, such as soils and silt, may be released into watercourses or water bodies only once all suspended solids have been removed from the water by settling out these solids in settlement ponds. The release of settled water back into the environment must be subject to the Project Manager's approval and support by the ECO. 						
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5.8 Solid and hazardous waste management

Impact management outcome: Waste is appropriately stored, handled and safely disposed of at a recognised waste facility.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – All measures regarding waste management must be undertaken using an integrated waste management approach; – Sufficient, covered waste collection bins (scavenger and weatherproof) must be provided; – A suitably positioned and clearly demarcated waste collection site must be identified and provided; – The waste collection site must be maintained in a clean and orderly manner; 						

<ul style="list-style-type: none"> - Waste must be segregated into separate bins and clearly marked for each waste type for recycling and safe disposal; - Staff must be trained in waste segregation; - Bins must be emptied regularly; - General waste produced onsite must be disposed of at registered waste disposal sites/ recycling company; - Hazardous waste must be disposed of at a registered waste disposal site; - Certificates of safe disposal for general, hazardous and recycled waste must be maintained. 						
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5.9 Protection of watercourses and estuaries

<p>Impact management outcome: Pollution and contamination of the watercourse environment and or estuary erosion are prevented.</p>						
<p>Impact Management Actions</p>	<p>Implementation</p>			<p>Monitoring</p>		
	<p>Responsible person</p>	<p>Method of implementation</p>	<p>Timeframe for implementation</p>	<p>Responsible person</p>	<p>Frequency</p>	<p>Evidence of compliance</p>
<ul style="list-style-type: none"> - All watercourses must be protected from direct or indirect spills of pollutants such as solid waste, sewage, cement, oils, fuels, chemicals, aggregate tailings, wash and contaminated water or organic material resulting from the Contractor's activities; - In the event of a spill, prompt action must be taken to clear the polluted or affected areas; - Where possible, no development equipment must traverse any seasonal or permanent wetland - No return flow into the estuaries must be allowed and no disturbance of the Estuarine Functional Zone should occur; 						

<ul style="list-style-type: none"> - Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to tower position is available; - There must not be any impact on the long term morphological dynamics of watercourses or estuaries; - Existing crossing points must be favored over the creation of new crossings (including temporary access) - When working in or near any watercourse or estuary, the following environmental controls and consideration must be taken: <ul style="list-style-type: none"> a) Water levels during the period of construction; No altering of the bed, banks, course or characteristics of a watercourse b) During the execution of the works, appropriate measures to prevent pollution and contamination of the riparian environment must be implemented e.g. including ensuring that construction equipment is well maintained; c) Where earthwork is being undertaken in close proximity to any watercourse, slopes must be stabilised using suitable materials, i.e. sandbags or geotextile fabric, to prevent sand and rock from entering the channel; and d) Appropriate rehabilitation and re-vegetation measures for the watercourse banks must be implemented timeously. In this regard, the banks should be appropriately and incrementally stabilised as soon as development allows. 						
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5.10 Vegetation clearing

Impact management outcome: Vegetation clearing is restricted to the authorised development footprint of the proposed infrastructure.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>General:</p> <ul style="list-style-type: none"> - Indigenous vegetation which does not interfere with the development must be left undisturbed; - Protected or endangered species may occur on or near the development site. Special care should be taken not to damage such species; - Search, rescue and replanting of all protected and endangered species likely to be damaged during project development must be identified by the relevant specialist and completed prior to any development or clearing; - Permits for removal must be obtained from the Department of Agriculture, Forestry and Fisheries prior to the cutting or clearing of the affected species, and they must be filed; - The Environmental Audit Report must confirm that all identified species have been rescued and replanted and that the location of replanting is compliant with conditions of approvals; - Trees felled due to construction must be documented and form part of the Environmental Audit Report; - Rivers and watercourses must be kept clear of felled trees, vegetation cuttings and debris; - Only a registered pest control operator may apply herbicides on a commercial basis and commercial application must be carried out under the supervision of a registered pest control operator, supervision of a registered 						

<p>pest control operator or is appropriately trained;</p> <ul style="list-style-type: none"> - A daily register must be kept of all relevant details of herbicide usage; - No herbicides must be used in estuaries; - All protected species and sensitive vegetation not removed must be clearly marked and such areas fenced off in accordance to Section 5.3: Access restricted areas. <p>Servitude:</p> <ul style="list-style-type: none"> - Vegetation that does not grow high enough to cause interference with overhead transmission and distribution infrastructures, or cause a fire hazard to any plantation, must not be cut or trimmed unless it is growing in the road access area, and then only at the discretion of the Project Manager; - Where clearing for access purposes is essential, the maximum width to be cleared within the servitude must be in accordance to distance as agreed between the land owner and the EA holder - Alien invasive vegetation must be removed according to a plan (in line with relevant municipal and provincial procedures, guidelines and recommendations) and disposed of at a recognised waste disposal facility; - Vegetation must be trimmed where it is likely to intrude on the minimum vegetation clearance distance (MVCD) or will intrude on this distance before the next scheduled clearance. MVCD is determined from SANS 10280; - Debris resulting from clearing and pruning must be disposed of at a recognised waste disposal facility, unless the landowners wish to retain the cut vegetation; - In the case of the development of new overhead transmission and distribution infrastructures, a one metre "trace-line" must be cut through the vegetation for stringing 						
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purposes only and no vehicle access must be cleared along the "trace-line". Alternative methods of stringing which limit impact to the environment must always be considered.						
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5.11 Protection of fauna

Impact management outcome: Minimise disturbance to fauna.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - No interference with livestock must occur without the landowner's written consent and with the landowner or a person representing the landowner being present; - The breeding sites of raptors and other wild birds species must be taken into consideration during the planning of the development programme; - Breeding sites must be kept intact and disturbance to breeding birds must be avoided. Special care must be taken where nestlings or fledglings are present; - Nesting sites on existing parallel lines must be documented; - Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds; - Bird guards and diverters must be installed on the new line as per the recommendations of the specialist; - No poaching must be tolerated under any circumstances. All animal dens in close proximity to the works areas must be marked as Access restricted areas; - No deliberate or intentional killing of fauna is allowed; 						

<ul style="list-style-type: none"> - In areas where snakes are abundant, snake deterrents to be deployed on the pylons to prevent snakes climbing up, being electrocuted and causing power outages; and - No Threatened or Protected species (ToPs) and/or protected fauna as listed according NEMBA (Act No. 10 of 2004) and relevant provincial ordinances may be removed and/or relocated without appropriate authorisations/permits. 						
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5.12 Protection of heritage resources

Impact management outcome: Minimise impact to heritage resources.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Identify, demarcate and prevent impact to all known sensitive heritage features on site in accordance with the No-Go procedure in Section 5.3: Access restricted areas; - Carry out general monitoring of excavations for potential fossils, artefacts and material of heritage importance; - All work must cease immediately, if any human remains and/or other archaeological, palaeontological and historical material are uncovered. Such material, if exposed, must be reported to the nearest museum, archaeologist/palaeontologist (or the South African Police Services), so that a systematic and professional investigation can be undertaken. Sufficient time must be allowed to 						

remove/collect such material before development recommences.						
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5.13 Safety of the public

Impact management outcome: All precautions are taken to minimise the risk of injury, harm or complaints.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Identify fire hazards, demarcate and restrict public access to these areas as well as notify the local authority of any potential threats e.g. large brush stockpiles, fuels etc.; - All unattended open excavations must be adequately fenced or demarcated; - Adequate protective measures must be implemented to prevent unauthorised access to and climbing of partly constructed towers and protective scaffolding; - Ensure structures vulnerable to high winds are secured; - Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged. 						

5.14 Sanitation

Impact management outcome: Clean and well maintained toilet facilities are available to all staff in an effort to minimise the risk of disease and impact to the environment.

Impact Management Actions	Implementation	Monitoring
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	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Mobile chemical toilets are installed onsite if no other ablution facilities are available; - The use of ablution facilities and or mobile toilets must be used at all times and no indiscriminate use of the veld for the purposes of ablutions must be permitted under any circumstances; - Where mobile chemical toilets are required, the following must be ensured: <ul style="list-style-type: none"> a) Toilets are located no closer than 100 m to any watercourse or water body; b) Toilets are secured to the ground to prevent them from toppling due to wind or any other cause; c) No spillage occurs when the toilets are cleaned or emptied and the contents are managed in accordance with the EMPr; d) Toilets have an external closing mechanism and are closed and secured from the outside when not in use to prevent toilet paper from being blown out; e) Toilets are emptied before long weekends and workers holidays, and must be locked after working hours; f) Toilets are serviced regularly and the ECO must inspect toilets to ensure compliance to health standards; - A copy of the waste disposal certificates must be maintained. 						

5.15 Prevention of disease



Impact Management outcome: All necessary precautions linked to the spread of disease are taken.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Undertake environmentally-friendly pest control in the camp area; - Ensure that the workforce is sensitised to the effects of sexually transmitted diseases, especially HIV AIDS; - The Contractor must ensure that information posters on AIDS are displayed in the Contractor Camp area; - Information and education relating to sexually transmitted diseases to be made available to both construction workers and local community, where applicable; - Free condoms must be made available to all staff on site at central points; - Medical support must be made available; - Provide access to Voluntary HIV Testing and Counselling Services. 						

5.16 Emergency procedures

Impact management outcome: Emergency procedures are in place to enable a rapid and effective response to all types of environmental emergencies.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the proposed project; - The Emergency Plan must deal with accidents, potential spillages and fires in line with relevant legislation; - All staff must be made aware of emergency procedures as part of environmental awareness training; - The relevant local authority must be made aware of a fire as soon as it starts; - In the event of emergency necessary mitigation measures to contain the spill or leak must be implemented (see Hazardous Substances section 5.17). 						

5.17 Hazardous substances

Impact management outcome: Safe storage, handling, use and disposal of hazardous substances.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives 						

<p>substituted where possible;</p> <ul style="list-style-type: none"> - All hazardous substances must be stored in suitable containers as defined in the Method Statement; - Containers must be clearly marked to indicate contents, quantities and safety requirements; - All storage areas must be bunded. The bunded area must be of sufficient capacity to contain a spill / leak from the stored containers; - Bunded areas to be suitably lined with a SABS approved liner; - An Alphabetical Hazardous Chemical Substance (HCS) control sheet must be drawn up and kept up to date on a continuous basis; - All hazardous chemicals that will be used on site must have Material Safety Data Sheets (MSDS); - All employees working with HCS must be trained in the safe use of the substance and according to the safety data sheet; - Employees handling hazardous substances / materials must be aware of the potential impacts and follow appropriate safety measures. Appropriate personal protective equipment must be made available; - The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowsers; - The tanks/ bowsers must be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining must extend to the crest of the bund and the volume inside the bund must be 130% of the total capacity of all the storage tanks/ bowsers (110% statutory requirement plus an allowance for rainfall); 						
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<ul style="list-style-type: none"> - The floor of the bund must be sloped, draining to an oil separator; - Provision must be made for refueling at the storage area by protecting the soil with an impermeable groundcover. Where dispensing equipment is used, a drip tray must be used to ensure small spills are contained; - All empty externally dirty drums must be stored on a drip tray or within a bunded area; - No unauthorised access into the hazardous substances storage areas must be permitted; - No smoking must be allowed within the vicinity of the hazardous storage areas; - Adequate fire-fighting equipment must be made available at all hazardous storage areas; - Where refueling away from the dedicated refueling station is required, a mobile refueling unit must be used. Appropriate ground protection such as drip trays must be used; - An appropriately sized spill kit kept onsite relevant to the scale of the activity/s involving the use of hazardous substance must be available at all times; - The responsible operator must have the required training to make use of the spill kit in emergency situations; - An appropriate number of spill kits must be available and must be located in all areas where activities are being undertaken; - In the event of a spill, contaminated soil must be collected in containers and stored in a central location and disposed of according to the National Environmental Management: Waste Act 59 of 2008. Refer to Section 5.7 for procedures concerning storm and waste water management and 5.8 for solid and hazardous waste management. 						
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5.18 Workshop, equipment maintenance and storage

Impact management outcome: Soil, surface water and groundwater contamination is minimised.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Where possible and practical all maintenance of vehicles and equipment must take place in the workshop area; - During servicing of vehicles or equipment, especially where emergency repairs are effected outside the workshop area, a suitable drip tray must be used to prevent spills onto the soil. The relevant local authority must be made aware of a fire as soon as it starts; - Leaking equipment must be repaired immediately or be removed from site to facilitate repair; - Workshop areas must be monitored for oil and fuel spills; - Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place must be available; - The workshop area must have a bunded concrete slab that is sloped to facilitate runoff into a collection sump or suitable oil / water separator where maintenance work on vehicles and equipment can be performed; - Water drainage from the workshop must be contained and managed in accordance Section 5.7: storm and waste water management. 						

5.19 Batching plants

Impact management outcome: Minimise spillages and contamination of soil, surface water and groundwater.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Concrete mixing must be carried out on an impermeable surface; - Batching plants areas must be fitted with a containment facility for the collection of cement laden water. - Dirty water from the batching plant must be contained to prevent soil and groundwater contamination - Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains; - A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted; - Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility; - Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site; - Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to Section 5.20: Dust emissions) 						

<ul style="list-style-type: none"> - Any excess sand, stone and cement must be removed or reused from site on completion of construction period and disposed at a registered disposal facility; - Temporary fencing must be erected around batching plants in accordance with Section 5.5: Fencing and gate installation. 						
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5.20 Dust emissions

Impact management outcome: Dust prevention measures are applied to minimise the generation of dust.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO; - Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces must be re-vegetated or stabilised as soon as is practically possible; - Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present; - During high wind conditions, the ECO must evaluate the situation and make recommendations as to whether dust-damping measures are adequate, or whether working will cease altogether until the wind speed drops to an 						

<p>acceptable level;</p> <ul style="list-style-type: none"> - Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind; - Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of the ECO; - Vehicle speeds must not exceed 40 km/h along dust roads or 20 km/h when traversing unconsolidated and non-vegetated areas; - Straw stabilisation must be applied at a rate of one bale/10 m² and harrowed into the top 100 mm of top material, for all completed earthworks; - For significant areas of excavation or exposed ground, dust suppression measures must be used to minimise the spread of dust. 						
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5.21 Blasting

Impact management outcome: Impact to the environment is minimised through a safe blasting practice.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Any blasting activity must be conducted by a suitably licensed blasting contractor; and - Notification of surrounding landowners, emergency services site personnel of blasting activity 24 hours prior to such 						

activity taking place on Site.						
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5.22 Noise

Impact Management outcome: Unnecessary noise is prevented by ensuring that noise from construction activities is mitigated.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - The Contractor must keep noise level within acceptable limits, Restrict the use of sound amplification equipment for communication and emergency only; - All vehicles and machinery must be fitted with appropriate silencing technology and must be properly maintained; - Any complaints received by the Contractor regarding noise must be recorded and communicated. Where possible or applicable, provide transport to and from the site on a daily basis for construction workers; - Develop a Code of Conduct for the construction phase in terms of behaviour of construction staff. Operating hours as determined by the environmental authorisation are adhered to during the development phase. Where not defined, it must be ensured that development activities must still meet the impact management outcome related to noise management. 						

5.23 Fire prevention

Impact management outcome: Prevention of uncontrollable fires.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Designate smoking areas where the fire hazard could be regarded as insignificant; - Firefighting equipment must be available on all vehicles located on site; - The local Fire Protection Agency (FPA) must be informed of construction activities; - Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site; - Two way swop of contact details between ECO and FPA. 						

5.24 Stockpiling and stockpile areas

Impact management outcome: Erosion and sedimentation as a result of stockpiling are reduced.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All material that is excavated during the project development phase (either during piling (if required) or earthworks) must be stored appropriately on site in order to minimise impacts to watercourses, watercourses and water bodies; - All stockpiled material must be maintained and kept clear of weeds and alien vegetation growth by undertaking regular weeding and control methods; - Topsoil stockpiles must not exceed 2 m in height; - During periods of strong winds and heavy rain, the stockpiles must be covered with appropriate material (e.g. cloth, tarpaulin etc.); - Where possible, sandbags (or similar) must be placed at the bases of the stockpiled material in order to prevent erosion of the material. 						

5.25 Finalising tower positions

Impact management outcome: No environmental degradation occurs as a result of the survey and pegging operations.

Impact Management Actions	Implementation			Monitoring		
	Responsible	Method of	Timeframe for	Responsible	Frequency	Evidence of

	person	implementation	implementation	person		compliance
<ul style="list-style-type: none"> - No vegetation clearing must occur during survey and pegging operations; - No new access roads must be developed to facilitate access for survey and pegging purposes; - Project manager, botanical specialist and contractor to agree on final tower positions based on survey within assessed and approved areas; - The surveyor is to demarcate (peg) access roads/tracks in consultation with ECO. No deviations will be allowed without the prior written consent from the ECO. 						

5.26 Excavation and Installation of foundations

Impact management outcome: No environmental degradation occurs as a result of excavation or installation of foundations.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All excess spoil generated during foundation excavation must be disposed of in an appropriate manner and at a recognised disposal site, if not used for backfilling purposes; - Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes; - Management of equipment for excavation purposes must be undertaken in accordance with Section 5.18: Workshop equipment maintenance and storage; and - Hazardous substances spills from equipment must be 						

<p>managed in accordance with Section 5.17: Hazardous substances.</p> <ul style="list-style-type: none"> – Batching of cement to be undertaken in accordance with Section 5.19 : Batching plants; – Residual cement must be disposed of in accordance with Section 5.8: Solid and hazardous waste management. 						
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5.27 Assembly and erecting towers

<p>Impact management outcome: No environmental degradation occurs as a result of assembly and erecting of towers.</p>						
<p>Impact Management Actions</p>	<p>Implementation</p>			<p>Monitoring</p>		
	<p>Responsible person</p>	<p>Method of implementation</p>	<p>Timeframe for implementation</p>	<p>Responsible person</p>	<p>Frequency</p>	<p>Evidence of compliance</p>
<ul style="list-style-type: none"> – Prior to erection, assembled towers and tower sections must be stored on elevated surface (suggest wooden blocks) to minimise damage to the underlying vegetation; – In sensitive areas, tower assembly must take place off-site or away from sensitive positions; – The crane used for tower assembly must be operated in a manner which minimises impact to the environment; – The number of crane trips to each site must be minimised; – Wheeled cranes must be utilised in preference to tracked cranes; – Consideration must be given to erecting towers by helicopter or by hand where it is warranted to limit the extent 						

<p>of environmental impact;</p> <ul style="list-style-type: none"> - Access to tower positions to be undertaken in accordance with access requirements in specified in Section 8.4: Access Roads; - Vegetation clearance to be undertaken in accordance with general vegetation clearance requirements specified in Section 8.10: Vegetation clearing; - No levelling at tower sites must be permitted unless approved by the Development Project Manager or Developer Site Supervisor; - Topsoil must be removed separately from subsoil material and stored for later use during rehabilitation of such tower sites; - Topsoil must be stored in heaps not higher than 1m to prevent destruction of the seed bank within the topsoil; - Excavated slopes must be no greater than 1:3, but where this is unavoidable, appropriate measures must be undertaken to stabilise the slopes; - Fly rock from blasting activity must be minimised and any pieces greater than 150 mm falling beyond the Working Area, must be collected and removed; - Only existing disturbed areas are utilised as spoil areas; - Drainage is provided to control groundwater exit gradient with the spill areas such that migration of fines is kept to a minimum; - Surface water runoff is appropriately channeled through or around spoil areas; - During backfilling operations, care must be taken not to dump the topsoil at the bottom of the foundation and then put spoil on top of that; - The surface of the spoil is appropriately rehabilitated in 						
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<p>accordance with the requirements specified in Section 5.29: Landscaping and rehabilitation;</p> <ul style="list-style-type: none"> - The retained topsoil must be spread evenly over areas to be rehabilitated and suitably compacted to effect re-vegetation of such areas to prevent erosion as soon as construction activities on the site is complete. Spreading of topsoil must not be undertaken at the beginning of the dry season. 						
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5.28 Stringing

<p>Impact management outcome: No environmental degradation occurs as a result of stringing.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Where possible, previously disturbed areas must be used for the siting of winch and tensioner stations. In all other instances, the siting of the winch and tensioner must avoid Access restricted areas and other sensitive areas; - The winch and tensioner station must be equipped with drip trays in order to contain any fuel, hydraulic fuel or oil spills and leaks; - Refueling of the winch and tensioner stations must be undertaken in accordance with Section 5.17: Hazardous substances; 						

<ul style="list-style-type: none"> - In the case of the development of overhead transmission and distribution infrastructure, a one metre "trace-line" may be cut through the vegetation for stringing purposes only and no vehicle access must be cleared along "trace-lines". Vegetation clearing must be undertaken by hand, using chainsaws and hand held implements, with vegetation being cut off at ground level. No tracked or wheeled mechanised equipment must be used; - Alternative methods of stringing which limit impact to the environment must always be considered e.g. by hand or by using a helicopter; - Where the stringing operation crosses a public or private road or railway line, the necessary scaffolding/ protection measures must be installed to facilitate access. If, for any reason, such access has to be closed for any period(s) during development, the persons affected must be given reasonable notice, in writing; - No services (electrical distribution lines, telephone lines, roads, railways lines, pipelines fences etc.) must be damaged because of stringing operations. Where disruption to services is unavoidable, persons affected must be given reasonable notice, in writing; - Where stringing operations cross cultivated land, damage to crops is restricted to the minimum required to conduct stringing operations, and reasonable notice (10 work days minimum), in writing, must be provided to the landowner; - Necessary scaffolding protection measures must be installed to prevent damage to the structures supporting certain high value agricultural areas such as vineyards, orchards, nurseries. 						
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5.29 Socio-economic

Impact management outcome: Socio-economic development is enhanced.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Develop and implement communication strategies to facilitate public participation; - Develop and implement a collaborative and constructive approach to conflict resolution as part of the external stakeholder engagement process; - Sustain continuous communication and liaison with neighboring owners and residents - Create work and training opportunities for local stakeholders; and - Where feasible, no workers, with the exception of security personnel, must be permitted to stay over-night on the site. This would reduce the risk to local farmers. 						

5.30 Temporary closure of site

Impact management outcome: Minimise the risk of environmental impact during periods of site closure greater than five days.

Impact Management Actions	Implementation	Monitoring
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	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Bunds must be emptied (where applicable) and need to be undertaken in accordance with the impact management actions included in sections 5.17: management of hazardous substances and 5.18 workshop, equipment maintenance and storage; - Hazardous storage areas must be well ventilated; - Fire extinguishers must be serviced and accessible. Service records to be filed and audited at last service; - Emergency and contact details displayed must be displayed; - Security personnel must be briefed and have the facilities to contact or be contacted by relevant management and emergency personnel; - Night hazards such as reflectors, lighting, traffic signage etc. must have been checked; - Fire hazards identified and the local authority must have been notified of any potential threats e.g. large brush stockpiles, fuels etc.; - Structures vulnerable to high winds must be secured; - Wind and dust mitigation must be implemented; - Cement and materials stores must have been secured; - Toilets must have been emptied and secured; - Refuse bins must have been emptied and secured; - Drip trays must have been emptied and secured. 						

5.31 Landscaping and rehabilitation

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Impact management outcome: Areas disturbed during the development phase are returned to a state that approximates the original condition.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All areas disturbed by construction activities must be subject to landscaping and rehabilitation; All spoil and waste must be disposed to a registered waste site and certificates of disposal provided; - All slopes must be assessed for contouring, and to contour only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983 - All slopes must be assessed for terracing, and to terrace only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983; - Berms that have been created must have a slope of 1:4 and be replanted with indigenous species and grasses that approximates the original condition; - Where new access roads have crossed cultivated farmlands, that lands must be rehabilitated by ripping which must be agreed to by the holder of the EA and the landowners; - Rehabilitation of tower sites and access roads outside of farmland; - Indigenous species must be used for with species and/grasses to where it compliments or approximates the original condition; - Stockpiled topsoil must be used for rehabilitation (refer to 						

<p>Section 5.24: Stockpiling and stockpiled areas);</p> <ul style="list-style-type: none"> - Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion; - Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed; - Subsoil must be ripped before topsoil is placed; - The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment; - Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled ; - Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; - Spoil can be used for backfilling or landscaping as long as it is covered by a minimum of 150 mm of topsoil. - Where required, re-vegetation including hydro-seeding can be enhanced using a vegetation seed mixture as described below. A mixture of seed can be used provided the mixture is carefully selected to ensure the following: <ul style="list-style-type: none"> a) Annual and perennial plants are chosen; b) Pioneer species are included; c) Species chosen must be indigenous to the area with the seeds used coming from the area; d) Root systems must have a binding effect on the soil; e) The final product must not cause an ecological imbalance in the area 						
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6 ACCESS TO THE GENERIC EMPr

Once completed and signed, to allow the public access to the generic EMPr, the holder of the EA must make the EMPr available to the public in accordance with the requirements of regulation 26(h) of the EIA Regulations.

PART B: SECTION 2

7 SITE SPECIFIC INFORMATION AND DECLARATION

7.1 Sub-section 1: contact details and description of the project

7.1.1 Details of the applicant:

Name of applicant:

Tel No:

Fax No:

Postal Address:

Physical Address:

7.1.2 Details and expertise of the EAP:

Name of applicant:

Tel No:

Fax No:

E-mail address:

Expertise of the EAP (Curriculum Vitae included):

7.1.3 Project name:

7.1.4 Description of the project:

7.1.5 Project location:

NO	FARM NAME(if applicable)	FARM NUMBER(if applicable)	PORTION NAME	PORTION NUMBER	LATITUDE	LONGITUDE

7.1.6 Preliminary technical specification of the overhead transmission and distribution:

- Length
- Tower parameters
 - Number and types of towers
 - Tower spacing (mean and maximum)
 - Tower height (lowest, mean and height)
 - Conductor attachment height (mean)
 - Minimum ground clearance

7.2 Sub-section 2: Development footprint site map

This sub-section must include a map of the site sensitivity overlaid with the preliminary infrastructure layout. The sensitivity map must be prepared from the national web based environmental screening tool, when available for compulsory use at: <https://screening.environment.gov.za/screeningtool>. The sensitivity map shall identify the nature of each sensitive feature e.g. raptor nest, threatened plant species, archaeological site, etc. Sensitivity maps shall identify features both within the planned working area and any known sensitive features in the surrounding landscape. The overhead transmission and distribution profile shall be illustrated at an appropriate resolution to enable fine scale interrogation. It is recommended that <20 km of overhead transmission and distribution length is illustrated per page in A3 landscape format. Where considered appropriate, photographs of sensitive features in the context of tower positions shall be used.

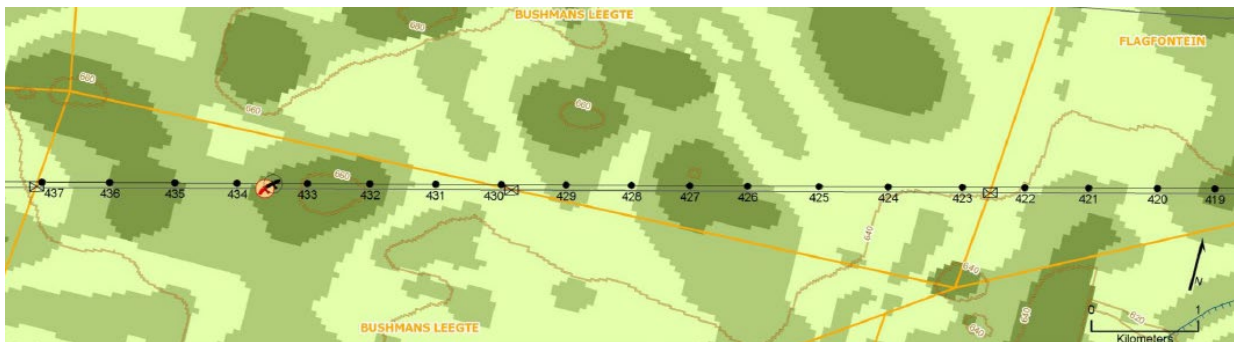


Figure 1: Example of an environmental sensitivity map in the context of a final overhead transmission and distribution profile

7.3 Sub-section 3: Declaration

The proponent/applicant or holder of the EA affirms that he/she will abide and comply with the prescribed impact management outcomes and impact management actions as stipulated in part B: section 1 of the generic EMPr and have the understanding that the impact management outcomes and impact management actions are legally binding. The proponent/applicant or holder of the EA affirms that he/she will provide written notice to the CA 14 days prior to the date on which the activity will commence of commencement of construction to facilitate compliance inspections.

Signature Proponent/applicant/ holder of EA

Date:

7.4 Sub-section 4: amendments to site specific information (Part B; section 2)

Should the EA be transferred to a new holder, Part B: Section 2 must be completed by the new holder and submitted with the application for an amendment of the EA in terms of Regulations 29 or 31 of the EIA Regulations, whichever applies. The information submitted for an amendment to an environmental authorisation will be considered to be incomplete should a signed copy of Part B: Section 2 not be submitted. Once approved, Part B: Section 2 forms part of the EMPr for the development and the EMPr becomes legally binding to the new EA holder.

PART C

8 SITE SPECIFIC ENVIRONMENTAL ATTRIBUTES

If any specific environmental sensitivities/attributes are present on the site which require more specific impact management outcomes and impact management actions, not included in the pre-approved generic EMPr template, to manage impacts, those impact management outcomes and actions must be included in this section. These specific management controls must be referenced spatially, and must include impact management outcomes and impact management actions. The management controls including impact management outcomes and impact management actions must be presented in the format of the pre-approved generic EMPr template. This applies only to additional impact management outcomes and impact management actions that are necessary.

If Part C is applicable to the development as authorised in the EA, it is required to be submitted to the CA together with the BAR or EIAR, for consideration of, and decision on, the application for EA. The information in this section must be prepared by an EAP and the name and expertise of the EAP, including the curriculum vitae are to be included. Once approved, Part C forms part of the EMPr for the site and is legally binding.

This section will **not be required** should the site contain no specific environmental sensitivities or attributes.

APPENDIX 1: METHOD STATEMENTS

To be prepared by the contractor prior to commencement of the activity. The method statements are **not required** to be submitted to the CA.

ANNEXURE L – GENERIC EMPR FOR SUBSTATION

ANNEXURE L

***DFFE Generic EMPr for the Development and
Expansion of Substation Infrastructure for the
Transmission and Distribution of Electricity***

GENERIC ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) FOR THE DEVELOPMENT AND EXPANSION OF SUBSTATION INFRASTRUCTURE FOR THE TRANSMISSION AND DISTRIBUTION OF ELECTRICITY





environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

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INTRODUCTION

1. Background

The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) requires that an environmental management programme (EMPr) be submitted where an environmental impact assessment (EIA) has been identified as the environmental instrument to be utilised as the basis for a decision on an application for environmental authorisation (EA). The content of an EMPr must either contain the information set out in Appendix 4 of the Environmental Impact Assessment Regulations, 2014, as amended (EIA Regulations) or must be a generic EMPr relevant to an application as identified and gazetted by the Minister in a government notice. Once the Minister has identified, through a government notice that a generic EMPr is relevant to an application for EA, that generic EMPr must be applied by all parties involved in the EA process, including but not limited to the applicant and the competent authority (CA).

2. Purpose

This document constitutes a generic EMPr relevant to applications for the development or expansion of substation infrastructure for the transmission and distribution of electricity, and all listed and specified activities necessary for the realisation of such infrastructure.

3. Objective

The objective of this generic EMPr is to prescribe and pre-approve generally accepted impact management outcomes and impact management actions, which can commonly and repeatedly be used for the avoidance, management and mitigation of impacts and risks associated with the development or expansion of substation infrastructure for the transmission and distribution of electricity. The use of a generic EMPr is intended to reduce the need to prepare and review individual EMPrs for applications of a similar nature.

4. Scope

The scope of this generic EMPr applies to the development or expansion of substation infrastructure for the transmission and distribution of electricity requiring EA in terms of NEMA. This generic EMPr applies to activities requiring EA, mainly activity 11 and 47 of the Environmental Impact Assessment Regulations Listing Notice 1 of 2014, as amended, and activity 9 of the Environmental Impact Assessment Regulations Listing Notice 2 of 2014, as amended, and all associated listed or specified activities necessary for the realization of such infrastructure.

5. Structure of this document

This document is structured in three parts with an Appendix as indicated in the table below:

Part	Section	Heading	Content
A		Provides general guidance and information and is not legally binding	Definitions, acronyms, roles & responsibilities and documentation and reporting.
B	1	Pre-approved generic EMPr template	<p>Contains generally accepted impact management outcomes and impact management actions required for the avoidance, management and mitigation of impacts and risks associated with the development or expansion of substation infrastructure for the transmission and distribution of electricity, which are presented in the form of a template that has been pre-approved.</p> <p>The template in this section is to be completed by the contractor, with each completed page signed and dated by the holder of the EA prior to commencement of the activity.</p> <p>Where an impact management outcome is not relevant, the words "not applicable" can be inserted in the template under the "responsible persons" column.</p> <p>Once completed and signed, the template represents the EMPr for the activity approved by the CA and is legally binding. The template is not required to be submitted to the CA as once the generic EMPr is gazetted for implementation, it has been approved by the CA.</p> <p>To allow interested and affected parties access to the pre-approved EMPr template for consideration through the decision-making process, the EAP on behalf of the applicant /proponent must make the hard copy of this EMPr available at a public location and where the applicant has a website, the EMPr should also be made available on such publicly accessible website.</p>
	2	Site specific information	Contains preliminary infrastructure layout and a declaration that the applicant/holder of the EA

Part	Section	Heading	Content
			<p>will comply with the pre-approved generic EMPr template contained in <u>Part B: Section 1</u>, and understands that the impact management outcomes and impact management actions are legally binding. The preliminary infrastructure layout must be finalized to inform the final EMPr that is to be submitted with the basic assessment report (BAR) or environmental impact assessment report (EIAR), ensuring that all impact management outcomes and impact management actions have been either pre-approved or approved in terms of <u>Part C</u>.</p> <p>This section must be submitted to the CA together with the final BAR or EIAR. The information submitted to the CA will be considered to be incomplete should a signed copy of <u>Part B: section 2</u> not be submitted. Once approved, this Section forms part of the EMPr for the development and is legally binding.</p>
C		Site specific sensitivities/ attributes	<p>If any specific environmental sensitivities/ attributes are present on the site which require site specific impact management outcomes and impact management actions, not included in the pre-approved generic EMPr, to manage impacts, these specific impact management outcomes and impact management actions must be included in this section. These specific environmental attributes must be referenced spatially and impact management outcomes and impact management actions must be provided. These specific impact management outcomes and impact management actions must be presented in the format of the pre-approved EMPr template (<u>Part B: section 1</u>)</p> <p>This section will not be required should the site contain no specific environmental sensitivities or attributes. However, if <u>Part C</u> is applicable to the site, it is required to be submitted together with the BAR or EIAR, for consideration of, and decision on, the application for EA. The</p>

Part	Section	Heading	Content
			<p>information in this section must be prepared by an EAP and must contain his/her name and expertise including a curriculum vitae. Once approved, Part C forms part of the EMPr for the site and is legally binding.</p> <p>This section applies only to additional impact management outcomes and impact management actions that are necessary for the avoidance, management and mitigation of impacts and risks associated with the specific development or expansion and which are not already included in <u>Part B: section 1</u>.</p>
		Appendix 1	Contains the method statements to be prepared prior to commencement of the activity. The method statements are not required to be submitted to the competent authority.

6. Completion of part B: section 1: the pre-approved generic EMPr template

The template is to be completed prior to commencement of the activity, by providing the following information for each environmental impact management action:

- For implementation
 - a 'responsible person',
 - a method for implementation,
 - a timeframe for implementation
- For monitoring
 - a responsible person
 - frequency
 - evidence of compliance.

The completed template must be signed and dated by the holder of the EA prior to commencement of the activity. The method statements prepared and agreed to by the holder of the EA must be appended to the template as Appendix 1. Each method statement must be signed and dated on each page by the holder of the EA. This template once signed and dated is legally binding. The holder of the EA will remain responsible for its implementation.

7. Amendments of the impact management outcomes and impact management actions

Once the activity has commenced, a holder of an EA may make amendments to the impact management outcomes and impact management actions in the following manner:

- Amendment of the impact management outcomes: in line with the process contemplated in Regulation 37 of the EIA Regulations; and
- Amendment of the impact management actions: in line with the process contemplated in Regulation 36 of the EIA Regulations.

8. Documents to be submitted as part of part B: section 2 site specific information and declaration

Part B: Section 2 has three distinct sub-sections. The first and third sub-sections are in a template format. Sub-section two requires a map to be produced.

Sub-section 1 contains the project name, the applicant's name and contact details, the site information, which includes coordinates of the property or farm in which the proposed substation infrastructure is proposed as well as the 21-digit Surveyor General code of each cadastral land parcel and, where available, the farm name.

Sub-section 2 is to be prepared by an EAP and must contain his/her name and expertise including a curriculum vitae. This sub-section must include a map of the site sensitivity overlaid with the preliminary infrastructure layout using the national web based environmental screening tool, when available for compulsory use at: <https://screening.environment.gov.za/screeningtool>. The sensitivity map shall identify the nature of each sensitive feature e.g. threatened plant species, archaeological site, etc. Sensitivity maps shall identify features both within the planned working area and any known sensitive features and within 50 m from the development footprint.

Sub-section 3 is the declaration that the applicant (s)/proponent (s) or holder of the EA in the case of a change of ownership must complete which confirms that the applicant/EA holder will comply with the pre-approved 'generic EMPr' template in Section 1 and understands that the impact management outcomes and impact management actions are legally binding.

(a) Amendments to Part B: Section 2 – site specific information and declaration

Should the EA be transferred, Part B: Section 2 must be completed by the new applicant/proponent and submitted with the application for an amendment of the EA in terms of regulations 29 or 31 of the EIA Regulations, whichever applies. The information submitted as part of such an application for an amendment to an EA will be considered to be incomplete should a signed copy of Part B: Section 2 not be submitted. Once approved, Part B: Section 2 forms part of the EMPr for the development and the EMPr becomes legally binding to the new EA holder.

PART A – GENERAL INFORMATION

1. DEFINITIONS

In this EMPr any word or expression to which a meaning has been assigned in the NEMA or EIA Regulations has that meaning, and unless the context requires otherwise –

"clearing" means the clearing and removal of vegetation, whether partially or in whole, including trees and shrubs, as specified;

"construction camp" is the area designated for key construction infrastructure and services, including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management;

"contractor" - The Contractor has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract, are in line with the Environmental Management Programme and that Method Statements are implemented as described.

"hazardous substance" is a substance governed by the Hazardous Substances Act, 1973 (Act No. 15 of 1973) as well as the Hazardous Chemical and Substances Regulations, 1995;

"method statement" means a written submission by the Contractor to the Project Manager in response to this EMPr or a request by the Project Manager and ECO. The method statement must set out the equipment, materials, labour and method(s) the Contractor proposes using to carry out an activity identified by the Project Manager when requesting the Method Statement. This must be done in such detail that the Project Manager and ECO is able to assess whether the Contractor's proposal is in accordance with this specification and/or will produce results in accordance with this specification;

The method statement must cover as a minimum applicable details with regard to:

- (i) Construction procedures;
- (ii) Plant, materials and equipment to be used;
- (iii) Transporting the equipment to and from site;
- (iv) How the plant/ material/ equipment will be moved while on site;
- (v) How and where the plant/ material/ equipment will be stored;
- (vi) The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- (vii) Timing and location of activities;
- (viii) Compliance/ non-compliance; and
- (ix) Any other information deemed necessary by the Project Manager.

“**slope**” means the inclination of a surface expressed as one unit of rise or fall for so many horizontal units;

“**solid waste**” means all solid waste, including construction debris, hazardous waste, excess cement/ concrete, wrapping materials, timber, cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers);

“**spoil**” means excavated material which is unsuitable for use as material in the construction works or is material which is surplus to the requirements of the construction works;

“**topsoil**” means a varying depth (up to 300 mm) of the soil profile irrespective of the fertility, appearance, structure, agricultural potential, fertility and composition of the soil;

“**works**” means the works to be executed in terms of the Contract

2. ACRONYMS and ABBREVIATIONS

CA	Competent Authority
cEO	Contractors Environmental Officer
dEO	Developer Environmental Officer
DPM	Developer Project Manager
DSS	Developer Site Supervisor
EAR	Environmental Audit Report
ECA	Environmental Conservation Act No. 73 of 1989
ECO	Environmental Control Officer
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
ERAP	Emergency Response Action Plan
EMPr	Environmental Management Programme Report
EAP	Environmental Assessment Practitioner
FPA	Fire Protection Agency
HCS	Hazardous chemical Substance
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act ,2004 (Act No. 10 of 2004)
NEMWA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
MSDS	Material Safety Data Sheet
RI&AP's	Registered Interested and affected parties

3. ROLES AND RESPONSIBILITIES FOR ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) IMPLEMENTATION

The effective implementation of this generic EMPr is dependent on established and clear roles, responsibilities and reporting lines within an institutional framework. This section of the EMPr gives guidance to the various environmental roles and reporting lines, however, project specific requirements will ultimately determine the need for the appointment of specific person(s) to undertake specific roles and or responsibilities. As such, it must be noted that in the event that no specific person, for example, an environmental control officer (ECO) is appointed, the holder of the EA remains responsible for ensuring that the duties indicated in this document for action by the ECO are undertaken.

Table 1: Guide to roles and responsibilities for implementation of an EMPr

Responsible Person(s)	Role and Responsibilities
Developer's Project Manager (DPM)	<p><u>Role</u></p> <p>The Project Developer is accountable for ensuring compliance with the EMPr and any conditions of approval from the competent authority (CA). Where required, an environmental control officer (ECO) must be contracted by the Project Developer to objectively monitor the implementation of the EMPr according to relevant environmental legislation, and the conditions of the environmental authorisation (EA). The Project Developer is further responsible for providing and giving mandate to enable the ECO to perform responsibilities, and he must ensure that the ECO is integrated as part of the project team while remaining independent.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Be fully conversant with the conditions of the EA; - Ensure that all stipulations within the EMPr are communicated and adhered to by the Developer and its Contractor(s); - Issuing of site instructions to the Contractor for corrective actions required; - Monitor the implementation of the EMPr throughout the project by means of site inspections and meetings. Overall management of the project and EMPr implementation; and - Ensure that periodic environmental performance audits are undertaken on the project implementation.

Responsible Person(s)	Role and Responsibilities
Developer Site Supervisor (DSS)	<p><u>Role</u> The DSS reports directly to the DPM, oversees site works, liaises with the contractor(s) and the ECO. The DSS is responsible for the day to day implementation of the EMPr and for ensuring the compliance of all contractors with the conditions and requirements stipulated in the EMPr.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Ensure that all contractors identify a contractor's Environmental Officer (cEO); - Must be fully conversant with the conditions of the EA. Oversees site works, liaison with Contractor, DPM and ECO; - Must ensure that all landowners have the relevant contact details of the site staff, ECO and cEO; - Issuing of site instructions to the Contractor for corrective actions required; - Will issue all non-compliances to contractors; and - Ratify the Monthly Environmental Report.
Environmental Control Officer (ECO)	<p><u>Role</u> The ECO should have appropriate training and experience in the implementation of environmental management specifications. The primary role of the ECO is to act as an independent quality controller and monitoring agent regarding all environmental concerns and associated environmental impacts. In this respect, the ECO is to conduct periodic site inspections, attend regular site meetings, pre-empt problems and suggest mitigation and be available to advise on incidental issues that arise. The ECO is also required to conduct compliance audits, verifying the monitoring reports submitted by the cEO. The ECO provides feedback to the DSS and Project Manager regarding all environmental matters. The Contractor, cEO and dEO are answerable to the Environmental Control Officer for non-compliance with the Performance Specifications as set out in the EA and EMPr.</p> <p>The ECO provides feedback to the DSS and Project Manager, who in turn reports back to the Contractor and potential and Registered Interested & Affected Parties' (RI&AP's), as required. Issues of non-compliance raised by the ECO must be taken up by the Project Manager, and resolved with the Contractor as per the conditions of his contract. Decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e. those that are deemed to be a</p>

Responsible Person(s)	Role and Responsibilities
	<p>variation, not allowed for in the Performance Specification) must be endorsed by the Project Manager. The ECO must also, as specified by the EA, report to the relevant CA as and when required.</p> <p><u>Responsibilities</u></p> <p>The responsibilities of the ECO will include the following:</p> <ul style="list-style-type: none"> - Be aware of the findings and conclusions of all EA related to the development; - Be familiar with the recommendations and mitigation measures of this EMPr; - Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them; - Undertake regular and comprehensive site inspections / audits of the construction site according to the generic EMPr and applicable licenses in order to monitor compliance as required; - Educate the construction team about the management measures contained in the EMPr and environmental licenses; - Compilation and administration of an environmental monitoring plan to ensure that the environmental management measures are implemented and are effective; - Monitoring the performance of the Contractors and ensuring compliance with the EMPr and associated Method Statements; - In consultation with the Developer Site Supervisor order the removal of person(s) and/or equipment which are in contravention of the specifications of the EMPr and/or environmental licenses; - Liaison between the DPM, Contractors, authorities and other lead stakeholders on all environmental concerns; - Compile a regular environmental audit report highlighting any non-compliance issues as well as satisfactory or exceptional compliance with the EMPr; - Validating the regular site inspection reports, which are to be prepared by the contractor Environmental Officer (cEO); - Checking the cEO's record of environmental incidents (spills, impacts, legal transgressions etc.) as well as corrective and preventive actions taken; - Checking the cEO's public complaints register in which all complaints are recorded, as well as action taken;

Responsible Person(s)	Role and Responsibilities
	<ul style="list-style-type: none"> - Assisting in the resolution of conflicts; - Facilitate training for all personnel on the site – this may range from carrying out the training, to reviewing the training programmes of the Contractor; - In case of non-compliances, the ECO must first communicate this to the Senior Site Supervisor, who has the power to ensure this matter is addressed. Should no action or insufficient action be taken, the ECO may report this matter to the authorities as non-compliance; - Maintenance, update and review of the EMPr; - Communication of all modifications to the EMPr to the relevant stakeholders.
<p>developer Environmental Officer (dEO)</p>	<p><u>Role</u></p> <p>The dEOs will report to the Project Manager and are responsible for implementation of the EMPr, environmental monitoring and reporting, providing environmental input to the Project Manager and Contractor’s Manager, liaising with contractors and the landowners as well as a range of environmental coordination responsibilities.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Be fully conversant with the EMPr; - Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures; - Ensure that all stipulations within the EMPr are communicated and adhered to by the Employees, Contractor(s) ; - Confine the development site to the demarcated area; - Conduct environmental internal audits with regards to EMPr and authorisation compliance (on cEO); - Assist the contractors in addressing environmental challenges on site; - Assist in incident management: - Reporting environmental incidents to developer and ensuring that corrective action is taken, and lessons learnt shared; - Assist the contractor in investigating environmental incidents and compile investigation reports; - Follow-up on pre-warnings, defects, non-conformance reports;

Responsible Person(s)	Role and Responsibilities
	<ul style="list-style-type: none"> - Measure and communicate environmental performance to the Contractor; - Conduct environmental awareness training on site together with ECO and cEO; - Ensure that the necessary legal permits and / or licenses are in place and up to date; - Acting as Developer's Environmental Representative on site and work together with the ECO and contractor;
Contractor	<p><u>Role</u></p> <p>The Contractor appoints the cEO and has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract are in line with the EMPr and that Method Statements are implemented as described. External contractors must ensure compliance with this EMPr while performing the onsite activities as per their contract with the Project Developer. The contractors are required, where specified, to provide Method Statements setting out in detail how the impact management actions contained in the EMPr will be implemented during the development or expansion of substation infrastructure for the transmission and distribution of electricity activities.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - project delivery and quality control for the development services as per appointment; - employ a suitably qualified person to monitor and report to the Project Developer's appointed person on the daily activities on-site during the construction period; - ensure that safe, environmentally acceptable working methods and practices are implemented and that equipment is properly operated and maintained, to facilitate proper access and enable any operation to be carried out safely; - attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones; - ensure that contractors' staff repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in EMPr, to the satisfaction of the ECO.

Responsible Person(s)	Role and Responsibilities
contractor Environmental Officer (cEO)	<p><u>Role</u></p> <p>Each Contractor affected by the EMPr should appoint a cEO, who is responsible for the on-site implementation of the EMPr (or relevant sections of the EMPr). The Contractor's representative can be the site agent; site engineer; a dedicated environmental officer; or an independent consultant. The Contractor must ensure that the Contractor's Representative is suitably qualified to perform the necessary tasks and is appointed at a level such that she/he can interact effectively with other site Contractors, labourers, the Environmental Control Officer and the public. As a minimum the cEO shall meet the following criteria:</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Be on site throughout the duration of the project and be dedicated to the project; - Ensure all their staff are aware of the environmental requirements, conditions and constraints with respect to all of their activities on site; - Implementing the environmental conditions, guidelines and requirements as stipulated within the EA, EMPr and Method Statements; - Attend the Environmental Site Meeting; - Undertaking corrective actions where non-compliances are registered within the stipulated timeframes; - Report back formally on the completion of corrective actions; - Assist the ECO in maintaining all the site documentation; - Prepare the site inspection reports and corrective action reports for submission to the ECO; - Assist the ECO with the preparing of the monthly report; and - Where more than one Contractor is undertaking work on site, each company appointed as a Contractor will appoint a cEO representing that company.

4. ENVIRONMENTAL DOCUMENTATION REPORTING AND COMPLIANCE

To ensure accountable and demonstrated implementation of the EMPr, a number of reporting systems, documentation controls and compliance mechanisms must be in place for all substation infrastructure projects as a minimum requirement.

4.1 Document control/Filing system

The holder of the EA is solely responsible for the upkeep and management of the EMPr file. As a minimum, all documentation detailed below will be stored in the EMPr file. A hard copy of all documentation shall be filed, while an electronic copy may be kept where relevant. A duplicate file will be maintained in the office of the DSS (where applicable). This duplicate file must remain current and up-to-date. The filing system must be updated and relevant documents added as required. The EMPr file must be made available at all times on request by the CA or other relevant authorities. The EMPr file will form part of any environmental audits undertaken as prescribed in the EIA Regulations.

4.2 Documentation to be available

At the outset of the project the following preliminary list of documents shall be placed in the filing system and be accessible at all times:

- Full copy of the signed EA from the CA in terms of NEMA, granting approval for the development or expansion;
- Copy of the generic and site specific EMPr as well as any amendments thereof;
- Copy of declaration of implementing generic EMPr and subsequent approval of site specific EMPr and amendments thereof;
- All method statements;
- Completed environmental checklists;
- Minutes and attendance register of environmental site meetings;
- An up-to-date environmental incident log;
- A copy of all instructions or directives issued;
- A copy of all corrective actions signed off. The corrective actions must be filed in such a way that a clear reference is made to the non-compliance record;
- Complaints register.

4.3 Weekly Environmental Checklist

The ECOs are required to complete a Weekly Environmental Checklist, the format of which is to be agreed prior to commencement of the activity. The ECOs are required to sign and date the checklist, retain a copy in the EMPr file and submit a copy of the completed checklist to the DSS on a weekly basis.

The checklists will form the basis for the Monthly Environmental Reports. Copies of all completed checklists will be attached as Annexures to the Environmental Audit Report as required in terms of the EIA Regulations.

4.4 Environmental site meetings

Minutes of the environmental site meetings shall be kept. The minutes must include an attendance register and will be attached to the Monthly Report that is distributed to attendees. Each set of minutes must clearly record "Matters for Attention" that will be reviewed at the next meeting.

4.5 Required Method Statements

The method statement will be done in such detail that the ECOs are enabled to assess whether the contractor's proposal is in accordance with the EMPr.

The method statement must cover applicable details with regard to:

- development procedures;
- materials and equipment to be used;
- getting the equipment to and from site;
- how the equipment/ material will be moved while on site;
- how and where material will be stored;
- the containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- timing and location of activities;
- compliance/ non-compliance with the EMPr; and
- any other information deemed necessary by the ECOs.

Unless indicated otherwise by the Project Manager, the Contractor shall provide the following method statements to the Project Manager no less than 14 days prior to the commencement date of the activity:

- Site establishment – Camps, Lay-down or storage areas, satellite camps, infrastructure;
- Batch plants;
- Workshop or plant servicing;
- Handling, transport and storage of Hazardous Chemical Substance's;
- Vegetation management – Protected, clearing, aliens, felling;
- Access management – Roads, gates, crossings etc.;
- Fire plan;
- Waste management – transport, storage, segregation, classification, disposal (all waste streams);
- Social interaction – complaints management, compensation claims, access to properties etc.;
- Water – use (source, abstraction and disposal), access and all related information, crossings and mitigation;
- Emergency preparedness – Spills, training, other environmental emergencies;
- Dust and noise management methodologies;
- Fauna interaction and risk management – only if the risk was identified – wildlife interaction especially on game farms; and
- Heritage and palaeontology management.

The ECOs shall monitor and ensure that the contractors perform in accordance with these method statements. Completed and agreed method statements between the holder of the EA and the contractor shall be captured in Appendix 1.

4.6 Environmental Incident Log (Diary)

The ECOs are required to maintain an up-to-date and current Environmental Incident Log (environmental diary). The Environmental Incident Log is a means to record all environmental incidents and/or all non-compliance notice would not be issued. An environmental incident is defined as:

- Any deviation from the listed impact management actions (listed in this EMPr) that may be addressed immediately by the ECOs. (For example a contractor's staff member littering or a drip tray that has not been emptied);
- Any environmental impact resulting from an action or activity by a contractor in contravention of the environmental stipulations and guidelines listed in the EMPr which as a single event would have a minor impact but which if cumulative and continuous would have a significant effect (for example no toilet paper available in the ablutions for an afternoon); and
- General environmental information such as road kills or injured wildlife.

The ECOs are to record all environmental incidents in the Environmental Incident Log. All incidents regardless of severity must be reported to the Developer. The Log is to be kept in the EMPr file and at a minimum the following will be recorded for each environmental incident:

- The date and time of the incident;
- Description of the incident;
- The name of the Contractor responsible;
- The incident must be listed as significant or minor;
- If the incident is listed as significant, a non-compliance notice must be issued, and recorded in the log;
- Remedial or corrective action taken to mitigate the incident; and
- Record of repeat minor offences by the same contractor or staff member.

The Environmental Incident Log will be captured in the EAR.

4.7 Non-compliance

A non-compliance notice will be issued to the responsible contractor by the ECOs via the DSS or Project Manager. The non-compliance notice will be issued in writing; a copy filed in the EMPr file and will at a minimum include the following:

- Time and date of the non-compliance;
- Name of the contractor responsible;
- Nature and description of the non-compliance;
- Recommended / required corrective action; and
- Date by which the corrective action to be completed.
- The contractors shall act immediately when a notice of non-compliance is received and correct whatever is the cause for the issuing of the notice.

Complaints received regarding activities on the development site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and action taken. The ECO should be made aware of any complaints. Any non-compliance with the agreed procedures of the EMPr is a transgression of the various statutes and laws that define the manner by which the environment is managed. Failure to redress the cause shall be reported to the relevant CA for them to deal with the transgression, as it deems fit. The contractor is deemed not to have complied with the EMPr if, inter alia, There is a deviation from the environmental conditions, impact management outcomes and impact management actions activities, as approved in generic and site specific EMPr as relevant as set out in the EMPr, which deviation has, or may cause, an environmental impact.

4.8 Corrective action records

For each non-compliance notice issued, a documented corrective action must be recorded. On receiving a non-compliance notice from the DSS, the contractor's cEO will ensure that the corrective actions required take place within the stipulated timeframe. On completion of the corrective action the cEO is to issue a Corrective Action Report in writing to the ECOs. If satisfied that the corrective action has been completed, the ECOs are to sign-off on the Corrective Action Report, and attach the report to the non-compliance notice in the EMPr file. A corrective action is considered complete once the report has signed off by the ECOs.

4.9 Photographic record

A digital photographic record will be kept. The photographic record will be used to show before, during and post rehabilitation evidence of the project as well used in cases of damages claims if they arise. Each image must be dated and a brief description note attached.

The Contractor shall:

1. Allow the ECOs access to take photographs of all areas, activities and actions.

The ECOs shall keep an electronic database of photographic records which will include:

1. Pictures of all areas designated as work areas, camp areas, development sites and storage areas taken before these areas are set up;
2. All bunding and fencing;
3. Road conditions and road verges;
4. Condition of all farm fences;
5. Topsoil storage areas;
6. All areas to be cordoned off during construction;
7. Waste management sites;
8. Ablution facilities (inside and out);
9. Any non-conformances deemed to be "significant";
10. All completed corrective actions for non-compliances;
11. All required signage;
12. Photographic recordings of incidents;
13. All areas before, during and post rehabilitation; and

14. Include relevant photographs in the Final Environmental Audit Report.

4.10 Complaints register

The ECOs shall keep a current and up-to-date complaints register. The complaints register is to be a record of all complaints received from communities, stakeholders and individuals. The Complaints Record shall:

1. Record the name and contact details of the complainant;
2. Record the time and date of the complaint;
3. Contain a detailed description of the complaint;
4. Where relevant and appropriate, contain photographic evidence of the complaint or damage (ECOs to take relevant photographs); and
5. Contain a copy of the ECOs written response to each complaint received and keep a record of any further correspondence with the complainant. The ECO's written response will include a description of any corrective action to be taken and must be signed by the Contractor, ECO and affected party. Where a damage claim is issued by the complainant, the ECOs shall respond as described in **(section 4.11)** below.

4.11 Claims for damages

In the event that a Claim for Damages is submitted by a community, landowner or individual, the ECOs shall:

1. Record the full detail of the complaint as described in **(section 4.10)** above;
2. The DPM will evaluate the claim and associated damage and submit the evaluation to the Senior Site Representative for approval;
3. Following consideration by the DPM, the claim is to be resolved and settled immediately, or the reason for not accepting the claim communicated in writing to the claimant. Should the claimant not accept this, the ECO shall, in writing report the incident to the Developer's negotiator and legal department; and
4. A formal record of the response by the ECOs to the claimant as well as the rectification of the method of making payments not amount will be recorded in the EMPr file.

4.12 Interactions with affected parties

Open, transparent and good relations with affected landowners, communities and regional staff are an essential aspect to the successful management and mitigation of environmental impacts.

The ECOs shall:

1. Ensure that all queries, complaints and claims are dealt within an agreed timeframe;
2. Ensure that any or all agreements are documented, signed by all parties and a record of the agreement kept in the EMPr file;
3. Ensure that a complaints telephone numbers are made available to all landowners and affected parties; and

4. Ensure that contact with affected parties is courteous at all times;

4.13 Environmental audits

Internal environmental audits of the activity and implementation of the EMPr must be undertaken. The findings and outcomes included in the EMPr file and submitted to the CA at intervals as indicated in the EA.

The ECOs must prepare a monthly EAR. The report will be tabled as the key point on the agenda of the Environmental Site Meeting. The Report is submitted for acceptance at the meeting and the final report will be circulated to the Project Manager and filed in the EMPr file. At a frequency determined by the EA, the ECOs shall submit the monthly reports to the CA. At a minimum the monthly report is to cover the following:

- Weekly Environmental Checklists;
- Deviations and non-compliances with the checklists;
- Non-compliances issued;
- Completed and reported corrective actions;
- Environmental Monitoring;
- General environmental findings and actions; and
- Minutes of the Bi-monthly Environmental Site Meetings.

4.14 Final environmental audits

On final completion of the rehabilitation and/or requirements of the EA a final EAR is to be prepared and submitted to the CA. The EAR must comply with Appendix 7 of the EIA Regulations.

PART B: SECTION 1: Pre-approved generic EMPr template

5. IMPACT MANAGEMENT OUTCOMES AND IMPACT MANAGEMENT ACTIONS

This section provides a pre-approved generic EMPr template with aspects that are common to the development of substation infrastructure for the transmission and distribution of electricity. There is a list of aspects identified for the development or expansion of substation infrastructure for the transmission and distribution of electricity, and for each aspect a set of prescribed impact management outcomes and associated impact management actions have been identified. Holders of EAs are responsible to ensure the implementation of these outcomes and actions for all projects as a minimum requirement, in order to mitigate the impact of such aspects identified for the development or expansion of substation infrastructure for the transmission and distribution of electricity.

The template provided below is to be completed by providing the information under each heading for each environmental impact management action.

The completed template must be signed and dated on each page by both the contractor and the holder of the EA prior to commencement of the activity. The method statements prepared and agreed to by the holder of the EA must be appended to the template as Appendix 1. Each method statement must also be duly signed and dated on each page by the contractor and the holder of the EA. This template, once signed and dated, is legally binding. The holder of the EA will remain responsible for its implementation.

5.1 Environmental awareness training

Impact management outcome: All onsite staff are aware and understands the individual responsibilities in terms of this EMPr.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All staff must receive environmental awareness training prior to commencement of the activities; - The Contractor must allow for sufficient sessions to train all personnel with no more than 20 personnel attending each course; - Refresher environmental awareness training is available as and when required; - All staff are aware of the conditions and controls linked to the EA and within the EMPr and made aware of their individual roles and responsibilities in achieving compliance with the EA and EMPr; - The Contractor must erect and maintain information posters at key locations on site, and the posters must include the following information as a minimum: <ul style="list-style-type: none"> a) Safety notifications; and b) No littering. - Environmental awareness training must include as a minimum the following: <ul style="list-style-type: none"> a) Description of significant environmental impacts, actual or potential, related to their work activities; b) Mitigation measures to be implemented when carrying out specific activities; 						

<ul style="list-style-type: none"> c) Emergency preparedness and response procedures; d) Emergency procedures; e) Procedures to be followed when working near or within sensitive areas; f) Wastewater management procedures; g) Water usage and conservation; h) Solid waste management procedures; i) Sanitation procedures; j) Fire prevention; and k) Disease prevention. <ul style="list-style-type: none"> – A record of all environmental awareness training courses undertaken as part of the EMPr must be available; – Educate workers on the dangers of open and/or unattended fires; – A staff attendance register of all staff to have received environmental awareness training must be available. – Course material must be available and presented in appropriate languages that all staff can understand. 						
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5.2 Site Establishment development

Impact management outcome: Impacts on the environment are minimised during site establishment and the development footprint are kept to demarcated

development area.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - A method statement must be provided by the contractor prior to any onsite activity that includes the layout of the construction camp in the form of a plan showing the location of key infrastructure and services (where applicable), including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous materials storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management; - Location of camps must be within approved area to ensure that the site does not impact on sensitive areas identified in the environmental assessment or site walk through; - Sites must be located where possible on previously disturbed areas; - The camp must be fenced in accordance with Section 5.5: Fencing and gate installation; and - The use of existing accommodation for contractor staff, where possible, is encouraged. 						

5.3 Access restricted areas

Impact management outcome: Access to restricted areas prevented.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Identification of access restricted areas is to be informed by the environmental assessment, site walk through and any additional areas identified during development; - Erect, demarcate and maintain a temporary barrier with clear signage around the perimeter of any access restricted area, colour coding could be used if appropriate; and - Unauthorised access and development related activity inside access restricted areas is prohibited. 						

5.4 Access roads

Impact management outcome: Minimise impact to the environment through the planned and restricted movement of vehicles on site.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - An access agreement must be formalised and signed by the DPM, Contractor and landowner before commencing with the activities; - All private roads used for access to the servitude must be maintained and upon completion of the works, be left in at least the original condition - All contractors must be made aware of all these access routes. 						

<ul style="list-style-type: none"> - Any access route deviation from that in the written agreement must be closed and re-vegetated immediately, at the contractor's expense; - Maximum use of both existing servitudes and existing roads must be made to minimize further disturbance through the development of new roads; - In circumstances where private roads must be used, the condition of the said roads must be recorded in accordance with section 4.9: photographic record; prior to use and the condition thereof agreed by the landowner, the DPM, and the contractor; - Access roads in flattish areas must follow fence lines and tree belts to avoid fragmentation of vegetated areas or croplands - Access roads must only be developed on a pre-planned and approved roads. 						
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5.5 Fencing and Gate installation

<p>Impact management outcome: Minimise impact to the environment and ensure safe and controlled access to the site through the erection of fencing and gates where required.</p>		
<p>Impact Management Actions</p>	<p>Implementation</p>	<p>Monitoring</p>

	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Use existing gates provided to gain access to all parts of the area authorised for development, where possible; - Existing and new gates to be recorded and documented in accordance with section 4.9: photographic record; - All gates must be fitted with locks and be kept locked at all times during the development phase, unless otherwise agreed with the landowner; - At points where the line crosses a fence in which there is no suitable gate within the extent of the line servitude, on the instruction of the DPM, a gate must be installed at the approval of the landowner; - Care must be taken that the gates must be so erected that there is a gap of no more than 100 mm between the bottom of the gate and the ground; - Where gates are installed in jackal proof fencing, a suitable reinforced concrete sill must be provided beneath the gate; - Original tension must be maintained in the fence wires; - All gates installed in electrified fencing must be re-electrified; - All demarcation fencing and barriers must be maintained in good working order for the duration of the development activities; - Fencing must be erected around the camp, batching plants, hazardous storage areas, and all designated access restricted areas, where applicable; - Any temporary fencing to restrict the movement of life-stock must only be erected with the permission of the land owner. - All fencing must be developed of high quality material bearing the SABS mark; 						

<ul style="list-style-type: none"> - The use of razor wire as fencing must be avoided; - Fenced areas with gate access must remain locked after hours, during weekends and on holidays if staff is away from site. Site security will be required at all times; - On completion of the development phase all temporary fences are to be removed; - The contractor must ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but rather removed completely. 						
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5.6 Water Supply Management

Impact management outcome: Undertake responsible water usage.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All abstraction points or bore holes must be registered with the DWS and suitable water meters installed to ensure that the abstracted volumes are measured on a daily basis; - The Contractor must ensure the following: <ul style="list-style-type: none"> a. The vehicle abstracting water from a river does not enter or cross it and does not operate from within the river; b. No damage occurs to the river bed or banks and that the abstraction of water does not entail stream diversion activities; and c. All reasonable measures to limit pollution or sedimentation of the downstream watercourse are 						

<p>implemented.</p> <ul style="list-style-type: none"> - Ensure water conservation is being practiced by: <ul style="list-style-type: none"> a. Minimising water use during cleaning of equipment; b. Undertaking regular audits of water systems; and c. Including a discussion on water usage and conservation during environmental awareness training. d. The use of grey water is encouraged. 						
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5.7 Storm and waste water management

Impact management outcome: Impacts to the environment caused by storm water and wastewater discharges during construction are avoided.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Runoff from the cement/ concrete batching areas must be strictly controlled, and contaminated water must be collected, stored and either treated or disposed of off-site, at a location approved by the project manager; - All spillage of oil onto concrete surfaces must be controlled by the use of an approved absorbent material and the used absorbent material disposed of at an appropriate waste disposal facility; - Natural storm water runoff not contaminated during the development and clean water can be discharged directly to watercourses and water bodies, subject to the Project Manager's approval and support by the ECO; - Water that has been contaminated with suspended solids, 						

<p>such as soils and silt, may be released into watercourses or water bodies only once all suspended solids have been removed from the water by settling out these solids in settlement ponds. The release of settled water back into the environment must be subject to the Project Manager's approval and support by the ECO.</p>						
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5.8 Solid and hazardous waste management

Impact management outcome: Wastes are appropriately stored, handled and safely disposed of at a recognised waste facility.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All measures regarding waste management must be undertaken using an integrated waste management approach; - Sufficient, covered waste collection bins (scavenger and weatherproof) must be provided; - A suitably positioned and clearly demarcated waste collection site must be identified and provided; - The waste collection site must be maintained in a clean and orderly manner; - Waste must be segregated into separate bins and clearly marked for each waste type for recycling and safe disposal; - Staff must be trained in waste segregation; - Bins must be emptied regularly; 						

<ul style="list-style-type: none"> - General waste produced onsite must be disposed of at registered waste disposal sites/ recycling company; - Hazardous waste must be disposed of at a registered waste disposal site; - Certificates of safe disposal for general, hazardous and recycled waste must be maintained. 						
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5.9 Protection of watercourses and estuaries

Impact management outcome: Pollution and contamination of the watercourse environment and or estuary erosion are prevented.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All watercourses must be protected from direct or indirect spills of pollutants such as solid waste, sewage, cement, oils, fuels, chemicals, aggregate tailings, wash and contaminated water or organic material resulting from the Contractor's activities; - In the event of a spill, prompt action must be taken to clear the polluted or affected areas; - Where possible, no development equipment must traverse any seasonal or permanent wetland - No return flow into the estuaries must be allowed and no disturbance of the Estuarine functional Zone should occur; - Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to tower position is available; 						

<ul style="list-style-type: none"> - There must not be any impact on the long term morphological dynamics of watercourses or estuaries; - Existing crossing points must be favored over the creation of new crossings (including temporary access) - When working in or near any watercourse or estuary, the following environmental controls and consideration must be taken: <ul style="list-style-type: none"> a) Water levels during the period of construction; No altering of the bed, banks, course or characteristics of a watercourse b) During the execution of the works, appropriate measures to prevent pollution and contamination of the riparian environment must be implemented e.g. including ensuring that construction equipment is well maintained; c) Where earthwork is being undertaken in close proximity to any watercourse, slopes must be stabilised using suitable materials, i.e. sandbags or geotextile fabric, to prevent sand and rock from entering the channel; and d) Appropriate rehabilitation and re-vegetation measures for the watercourse banks must be implemented timeously. In this regard, the banks should be appropriately and incrementally stabilised as soon as development allows. 						
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5.10 Vegetation clearing

<p>Impact management outcome: Vegetation clearing is restricted to the authorised development footprint of the proposed infrastructure.</p>		
<p>Impact Management Actions</p>	<p>Implementation</p>	<p>Monitoring</p>

	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>General:</p> <ul style="list-style-type: none"> - Indigenous vegetation which does not interfere with the development must be left undisturbed; - Protected or endangered species may occur on or near the development site. Special care should be taken not to damage such species; - Search, rescue and replanting of all protected and endangered species likely to be damaged during project development must be identified by the relevant specialist and completed prior to any development or clearing; - Permits for removal must be obtained from the relevant CA prior to the cutting or clearing of the affected species, and they must be filed; - The Environmental Audit Report must confirm that all identified species have been rescued and replanted and that the location of replanting is compliant with conditions of approvals; - Trees felled due to construction must be documented and form part of the Environmental Audit Report; - Rivers and watercourses must be kept clear of felled trees, vegetation cuttings and debris; - Only a registered pest control operator may apply herbicides on a commercial basis and commercial application must be carried out under the supervision of a registered pest control operator, supervision of a registered pest control operator or is appropriately trained; - A daily register must be kept of all relevant details of 						

<p>herbicide usage;</p> <ul style="list-style-type: none"> - No herbicides must be used in estuaries; - All protected species and sensitive vegetation not removed must be clearly marked and such areas fenced off in accordance to Section 5.3: Access restricted areas. <p>Alien invasive vegetation must be removed and disposed of at a licensed waste management facility.</p>						
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5.11 Protection of fauna

Impact management outcome: Disturbance to fauna is minimised.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - No interference with livestock must occur without the landowner's written consent and with the landowner or a person representing the landowner being present; - The breeding sites of raptors and other wild birds species must be taken into consideration during the planning of the development programme; - Breeding sites must be kept intact and disturbance to breeding birds must be avoided. Special care must be taken where nestlings or fledglings are present; - Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds; - No poaching must be tolerated under any circumstances. 						

<p>All animal dens in close proximity to the works areas must be marked as Access restricted areas;</p> <ul style="list-style-type: none"> - No deliberate or intentional killing of fauna is allowed; - In areas where snakes are abundant, snake deterrents to be deployed on the pylons to prevent snakes climbing up, being electrocuted and causing power outages; and - No Threatened or Protected species (ToPs) and/or protected fauna as listed according NEMBA (Act No. 10 of 2004) and relevant provincial ordinances may be removed and/or relocated without appropriate authorisations/permits. 						
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5.12 Protection of heritage resources

Impact management outcome: Impact to heritage resources is minimised.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Identify, demarcate and prevent impact to all known sensitive heritage features on site in accordance with the No-Go procedure in Section 5.3: Access restricted areas; - Carry out general monitoring of excavations for potential fossils, artefacts and material of heritage importance; - All work must cease immediately, if any human remains and/or other archaeological, palaeontological and historical material are uncovered. Such material, if exposed, must be reported to the nearest museum, archaeologist/palaeontologist (or the South African Police Services), so that 						

a systematic and professional investigation can be undertaken. Sufficient time must be allowed to remove/collect such material before development recommences.						
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5.13 Safety of the public

Impact management outcome: All precautions are taken to minimise the risk of injury, harm or complaints.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Identify fire hazards, demarcate and restrict public access to these areas as well as notify the local authority of any potential threats e.g. large brush stockpiles, fuels etc.; - All unattended open excavations must be adequately fenced or demarcated; - Adequate protective measures must be implemented to prevent unauthorised access to and climbing of partly constructed towers and protective scaffolding; - Ensure structures vulnerable to high winds are secured; - Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged. 						

5.14 Sanitation

Impact management outcome: Clean and well maintained toilet facilities are available to all staff in an effort to minimise the risk of disease and impact to the environment.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Mobile chemical toilets are installed onsite if no other ablution facilities are available; - The use of ablution facilities and or mobile toilets must be used at all times and no indiscriminate use of the veld for the purposes of ablutions must be permitted under any circumstances; - Where mobile chemical toilets are required, the following must be ensured: <ul style="list-style-type: none"> a) Toilets are located no closer than 100 m to any watercourse or water body; b) Toilets are secured to the ground to prevent them from toppling due to wind or any other cause; c) No spillage occurs when the toilets are cleaned or emptied and the contents are managed in accordance with the EMPr; d) Toilets have an external closing mechanism and are closed and secured from the outside when not in use to prevent toilet paper from being blown out; e) Toilets are emptied before long weekends and workers holidays, and must be locked after working hours; f) Toilets are serviced regularly and the ECO must inspect toilets to ensure compliance to health standards; - A copy of the waste disposal certificates must be maintained. 						

5.15 Prevention of disease

Impact Management outcome: All necessary precautions linked to the spread of disease are taken.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Undertake environmentally-friendly pest control in the camp area; - Ensure that the workforce is sensitised to the effects of sexually transmitted diseases, especially HIV AIDS; - The Contractor must ensure that information posters on AIDS are displayed in the Contractor Camp area; - Information and education relating to sexually transmitted diseases to be made available to both construction workers and local community, where applicable; - Free condoms must be made available to all staff on site at central points; - Medical support must be made available; - Provide access to Voluntary HIV Testing and Counselling Services. 						

5.16 Emergency procedures

Impact management outcome: Emergency procedures are in place to enable a rapid and effective response to all types of environmental emergencies.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the proposed project; - The Emergency Plan must deal with accidents, potential spillages and fires in line with relevant legislation; - All staff must be made aware of emergency procedures as part of environmental awareness training; - The relevant local authority must be made aware of a fire as soon as it starts; - In the event of emergency necessary mitigation measures to contain the spill or leak must be implemented (see Hazardous Substances section 5.17). 						

5.17 Hazardous substances

Impact management outcome: Safe storage, handling, use and disposal of hazardous substances.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives 						

<p>substituted where possible;</p> <ul style="list-style-type: none"> - All hazardous substances must be stored in suitable containers as defined in the Method Statement; - Containers must be clearly marked to indicate contents, quantities and safety requirements; - All storage areas must be bunded. The bunded area must be of sufficient capacity to contain a spill / leak from the stored containers; - Bunded areas to be suitably lined with a SABS approved liner; - An Alphabetical Hazardous Chemical Substance (HCS) control sheet must be drawn up and kept up to date on a continuous basis; - All hazardous chemicals that will be used on site must have Material Safety Data Sheets (MSDS); - All employees working with HCS must be trained in the safe use of the substance and according to the safety data sheet; - Employees handling hazardous substances / materials must be aware of the potential impacts and follow appropriate safety measures. Appropriate personal protective equipment must be made available; - The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowsers; - The tanks/ bowsers must be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining must extend to the crest of the bund and the volume inside the bund must be 130% of the total capacity of all the storage tanks/ bowsers (110% statutory requirement plus an allowance for rainfall); 						
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<ul style="list-style-type: none"> - The floor of the bund must be sloped, draining to an oil separator; - Provision must be made for refueling at the storage area by protecting the soil with an impermeable groundcover. Where dispensing equipment is used, a drip tray must be used to ensure small spills are contained; - All empty externally dirty drums must be stored on a drip tray or within a bunded area; - No unauthorised access into the hazardous substances storage areas must be permitted; - No smoking must be allowed within the vicinity of the hazardous storage areas; - Adequate fire-fighting equipment must be made available at all hazardous storage areas; - Where refueling away from the dedicated refueling station is required, a mobile refueling unit must be used. Appropriate ground protection such as drip trays must be used; - An appropriately sized spill kit kept onsite relevant to the scale of the activity/s involving the use of hazardous substance must be available at all times; - The responsible operator must have the required training to make use of the spill kit in emergency situations; - An appropriate number of spill kits must be available and must be located in all areas where activities are being undertaken; - In the event of a spill, contaminated soil must be collected in containers and stored in a central location and disposed of according to the National Environmental Management: Waste Act 59 of 2008. Refer to Section 5.7 for procedures concerning storm and waste water management and 5.8 for solid and hazardous waste management. 						
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5.18 Workshop, equipment maintenance and storage

Impact management outcome: Soil, surface water and groundwater contamination is minimised.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Where possible and practical all maintenance of vehicles and equipment must take place in the workshop area; - During servicing of vehicles or equipment, especially where emergency repairs are effected outside the workshop area, a suitable drip tray must be used to prevent spills onto the soil. The relevant local authority must be made aware of a fire as soon as it starts; - Leaking equipment must be repaired immediately or be removed from site to facilitate repair; - Workshop areas must be monitored for oil and fuel spills; - Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place must be available; - The workshop area must have a bunded concrete slab that is sloped to facilitate runoff into a collection sump or suitable oil / water separator where maintenance work on vehicles and equipment can be performed; - Water drainage from the workshop must be contained and managed in accordance Section 5.7: Storm and waste water management. 						

5.19 Batching plants

Impact management outcome: Minimise spillages and contamination of soil, surface water and groundwater.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Concrete mixing must be carried out on an impermeable surface; - Batching plants areas must be fitted with a containment facility for the collection of cement laden water. - Dirty water from the batching plant must be contained to prevent soil and groundwater contamination - Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains; - A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted; - Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility; - Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site; - Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to Section 5.20: Dust emissions) - Any excess sand, stone and cement must be removed or 						

<p>reused from site on completion of construction period and disposed at a registered disposal facility;</p> <ul style="list-style-type: none"> Temporary fencing must be erected around batching plants in accordance with Section 5.5: Fencing and gate installation. 						
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5.20 Dust emissions

Impact management outcome: Dust prevention measures are applied to minimise the generation of dust.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO; Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces must be re-vegetated or stabilised as soon as is practically possible; Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present; During high wind conditions, the ECO must evaluate the situation and make recommendations as to whether dust-damping measures are adequate, or whether working will cease altogether until the wind speed drops to an acceptable level; Where possible, soil stockpiles must be located in sheltered 						

<p>areas where they are not exposed to the erosive effects of the wind;</p> <ul style="list-style-type: none"> - Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of the ECO; - Vehicle speeds must not exceed 40 km/h along dust roads or 20 km/h when traversing unconsolidated and non-vegetated areas; - Straw stabilisation must be applied at a rate of one bale/10 m² and harrowed into the top 100 mm of top material, for all completed earthworks; - For significant areas of excavation or exposed ground, dust suppression measures must be used to minimise the spread of dust. 						
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5.21 Blasting

<p>Impact management outcome: Impact to the environment is minimised through a safe blasting practice.</p>						
<p>Impact Management Actions</p>	<p>Implementation</p>			<p>Monitoring</p>		
	<p>Responsible person</p>	<p>Method of implementation</p>	<p>Timeframe for implementation</p>	<p>Responsible person</p>	<p>Frequency</p>	<p>Evidence of compliance</p>
<ul style="list-style-type: none"> - Any blasting activity must be conducted by a suitably licensed blasting contractor; and - Notification of surrounding landowners, emergency services site personnel of blasting activity 24 hours prior to such activity taking place on Site. 						

5.22 Noise

Impact Management outcome: Prevent unnecessary noise to the environment by ensuring that noise from development activity is mitigated.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - The Contractor must keep noise level within acceptable limits, Restrict the use of sound amplification equipment for communication and emergency only; - All vehicles and machinery must be fitted with appropriate silencing technology and must be properly maintained; - Any complaints received by the Contractor regarding noise must be recorded and communicated. Where possible or applicable, provide transport to and from the site on a daily basis for construction workers; - Develop a Code of Conduct for the construction phase in terms of behaviour of construction staff. Operating hours as determined by the environmental authorisation are adhered to during the development phase. Where not defined, it must be ensured that development activities must still meet the impact management outcome related to noise management. 						

5.23 Fire prevention

Impact management outcome: Prevention of uncontrollable fires.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Designate smoking areas where the fire hazard could be regarded as insignificant; - Firefighting equipment must be available on all vehicles located on site; - The local Fire Protection Agency (FPA) must be informed of construction activities; - Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site; - Two way swop of contact details between ECO and FPA. 						

5.24 Stockpiling and stockpile areas

Impact management outcome: Reduce erosion and sedimentation as a result of stockpiling.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All material that is excavated during the project development phase (either during piling (if required) or earthworks) must be stored appropriately on site in order to minimise impacts to watercourses, watercourses and water bodies; - All stockpiled material must be maintained and kept clear of weeds and alien vegetation growth by undertaking regular weeding and control methods; - Topsoil stockpiles must not exceed 2 m in height; - During periods of strong winds and heavy rain, the stockpiles must be covered with appropriate material (e.g. cloth, tarpaulin etc.); - Where possible, sandbags (or similar) must be placed at the bases of the stockpiled material in order to prevent erosion of the material. 						

5.25 Civil works

Impact management outcome: Impact to the environment minimised during civil works to create the substation terrace.

Impact Management Actions	Implementation			Monitoring		
	Responsible	Method of	Timeframe for	Responsible	Frequency	Evidence of

	person	implementation	implementation	person		compliance
<ul style="list-style-type: none"> - Where terracing is required, topsoil must be collected and retained for the purpose of re-use later to rehabilitate disturbed areas not covered by yard stone; - Areas to be rehabilitated include terrace embankments and areas outside the high voltage yards; - Where required, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled; - These areas can be stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; - Rehabilitation of the disturbed areas must be managed in accordance with Section 5.35: Landscaping and rehabilitation; - All excess spoil generated during terracing activities must be disposed of in an appropriate manner and at a recognised landfill site; and - Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes. 						

5.26 Excavation of foundation, cable trenching and drainage systems



Impact management outcome: No environmental degradation occurs as a result of excavation of foundation, cable trenching and drainage systems.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All excess spoil generated during foundation excavation must be disposed of in an appropriate manner and at a licensed landfill site, if not used for backfilling purposes; - Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes; - Management of equipment for excavation purposes must be undertaken in accordance with Section 5.18: Workshop, equipment maintenance and storage; and - Hazardous substances spills from equipment must be managed in accordance with Section 5.17: Hazardous substances. 						

5.27 Installation of foundations, cable trenching and drainage systems

Impact management outcome: No environmental degradation occurs during the installation of foundation, cable trenching and drainage system.

Impact Management Actions	Implementation	Monitoring
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	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Batching of cement to be undertaken in accordance with Section 5.19: Batching plants; and – Residual solid waste must be disposed of in accordance with Section 5.8: Solid waste and hazardous management. 						

5.28 Installation of equipment (circuit breakers, current Transformers, Isolators, Insulators, surge arresters, voltage transformers, earth switches)

Impact management outcome: No environmental degradation occurs as a result of installation of equipment.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Management of dust must be conducted in accordance with Section 5.20: Dust emissions; – Management of equipment used for installation must be conducted in accordance with Section 5.18: Workshop, equipment maintenance and storage; – Management hazardous substances and any associated spills must be conducted in accordance with Section 5.17: Hazardous substances; and – Residual solid waste must be recycled or disposed of in accordance with Section 5.8: Solid waste and hazardous management. 						

5.29 Steelwork Assembly and Erection

Impact management outcome: No environmental degradation occurs as a result of steelwork assembly and erection.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - During assembly, care must be taken to ensure that no wasted/unused materials are left on site e.g. bolts and nuts - Emergency repairs due to breakages of equipment must be managed in accordance with Section 5. 18: Workshop, equipment maintenance and storage and Section 5.16: Emergency procedures. 						

5.30 Cabling and Stringing

Impact management outcome: No environmental degradation occurs as a result of stringing.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance

<ul style="list-style-type: none"> - Residual solid waste (off cuts etc.) shall be recycled or disposed of in accordance with Section 6.8: Solid waste and hazardous Management; - Management of equipment used for installation shall be conducted in accordance with Section 5.18: Workshop, equipment maintenance and storage; - Management hazardous substances and any associated spills shall be conducted in accordance with Section 5.17: Hazardous substances. 						
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5.31 Testing and Commissioning (all equipment testing, earthing system, system integration)

Impact management outcome: No environmental degradation occurs as a result of Testing and Commissioning.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Residual solid waste must be recycled or disposed of in accordance with Section 5.8: Solid waste and hazardous management. 						

5.32 Socio-economic

Impact management outcome: enhanced socio-economic development.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Develop and implement communication strategies to facilitate public participation; - Develop and implement a collaborative and constructive approach to conflict resolution as part of the external stakeholder engagement process; - Sustain continuous communication and liaison with neighboring owners and residents - Create work and training opportunities for local stakeholders; and - Where feasible, no workers, with the exception of security personnel, must be permitted to stay over-night on the site. This would reduce the risk to local farmers. 						

5.33 Temporary closure of site

<p>Impact management outcome: Minimise the risk of environmental impact during periods of site closure greater than five days.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance

	person	implementation	implementation	person		compliance
<ul style="list-style-type: none"> - Bunds must be emptied (where applicable) and need to be undertaken in accordance with the impact management actions included in sections 5.17: Hazardous substances and 5.18: Workshop, equipment maintenance and storage; - Hazardous storage areas must be well ventilated; - Fire extinguishers must be serviced and accessible. Service records to be filed and audited at last service; - Emergency and contact details displayed must be displayed; - Security personnel must be briefed and have the facilities to contact or be contacted by relevant management and emergency personnel; - Night hazards such as reflectors, lighting, traffic signage etc. must have been checked; - Fire hazards identified and the local authority must have been notified of any potential threats e.g. large brush stockpiles, fuels etc.; - Structures vulnerable to high winds must be secured; - Wind and dust mitigation must be implemented; - Cement and materials stores must have been secured; - Toilets must have been emptied and secured; - Refuse bins must have been emptied and secured; - Drip trays must have been emptied and secured. 						

5.34 Dismantling of old equipment

Impact management outcome: Impact to the environment to be minimised during the dismantling, storage and disposal of old equipment commissioning.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All old equipment removed during the project must be stored in such a way as to prevent pollution of the environment; - Oil containing equipment must be stored to prevent leaking or be stored on drip trays; - All scrap steel must be stacked neatly and any disused and broken insulators must be stored in containers; - Once material has been scrapped and the contract has been placed for removal, the disposal Contractor must ensure that any equipment containing pollution causing substances is dismantled and transported in such a way as to prevent spillage and pollution of the environment; - The Contractor must also be equipped to contain and clean up any pollution causing spills; and - Disposal of unusable material must be at a licensed waste disposal site. 						

5.35 Landscaping and rehabilitation

Impact management outcome: Areas disturbed during the development phase are returned to a state that approximates the original condition.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All areas disturbed by construction activities must be subject to landscaping and rehabilitation; All spoil and waste must be disposed of to a registered waste site; - All slopes must be assessed for contouring, and to contour only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983 - All slopes must be assessed for terracing, and to terrace only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983; - Berms that have been created must have a slope of 1:4 and be replanted with indigenous species and grasses that approximates the original condition; - Where new access roads have crossed cultivated farmlands, that lands must be rehabilitated by ripping which must be agreed to by the holder of the EA and the landowners; - Rehabilitation of access roads outside of farmland; - Indigenous species must be used for with species and/grasses to where it compliments or approximates the original condition; - Stockpiled topsoil must be used for rehabilitation (refer to Section 5.24: Stockpiling and stockpiled areas); - Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion; - Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed; - Subsoil must be ripped before topsoil is placed; 						

<ul style="list-style-type: none"> - The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment; - Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled; - Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; - Spoil can be used for backfilling or landscaping as long as it is covered by a minimum of 150 mm of topsoil. - Where required, re-vegetation including hydro-seeding can be enhanced using a vegetation seed mixture as described below. A mixture of seed can be used provided the mixture is carefully selected to ensure the following: <ul style="list-style-type: none"> a) Annual and perennial plants are chosen; b) Pioneer species are included; c) Species chosen must be indigenous to the area with the seeds used coming from the area; d) Root systems must have a binding effect on the soil; e) The final product must not cause an ecological imbalance in the area 						
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6 ACCESS TO THE GENERIC EMPr

Once completed and signed, to allow the public access to the generic EMPr, the holder of the EA must make the EMPr available to the public in accordance with the requirements of Regulation 26(h) of the EIA Regulations.

PART B: SECTION 2

7 SITE SPECIFIC INFORMATION AND DECLARATION

7.1 Sub-section 1: contact details and description of the project

7.1.1 Details of the applicant:

Name of applicant:

Tel No:

Fax No:

Postal Address:

Physical Address:

7.1.2 Details and expertise of the EAP:

Name of applicant:

Tel No:

Fax No:

E-mail address:

Expertise of the EAP (Curriculum Vitae included):

7.1.3 Project name:

7.1.4 Description of the project:

7.1.5 Project location:

NO	FARM NAME(if applicable)	FARM NUMBER(if applicable)	PORTION NAME	PORTION NUMBER	LATITUDE	LONGITUDE

7.2 Sub-section 2: Development footprint site map

This sub-section must include a map of the site sensitivity overlaid with the preliminary infrastructure layout. The sensitivity map must be prepared from the national web based environmental screening tool, when available for compulsory use at: <https://screening.environment.gov.zg/screeningtool>. The sensitivity map shall identify the nature of each sensitive feature e.g. threatened plant species, archaeological site, etc. Sensitivity maps shall identify features both within the planned working area and any known sensitive features within 50 m from the development footprint.

7.3 Sub-section 3: Declaration

The proponent/applicant or holder of the EA affirms that he/she will abide and comply with the prescribed impact management outcomes and impact management actions as stipulated in part B: section 1 of the generic EMPr and have the understanding that the impact management outcomes and impact management actions are legally binding. The proponent/applicant or holder of the EA affirms that he/she will provide written notice to the CA 14 day prior to the date on which the activity will commence of commencement of construction to facilitate compliance inspections.

Signature Proponent/applicant/ holder of EA

Date:

7.4 Sub-section 4: amendments to site specific information (Part B; section 2)

Should the EA be transferred to a new holder, Part B: Section 2 must be completed by the new holder and submitted with the application for an amendment of the EA in terms of Regulations 29 or 31 of the EIA Regulations, whichever applies. The information submitted for an amendment to an environmental authorisation will be considered to be incomplete should a signed copy of Part B: Section 2 not be submitted. Once approved, Part B: Section 2 forms part of the EMPr for the development and the EMPr becomes legally binding to the new EA holder.

PART C

8 SITE SPECIFIC ENVIRONMENTAL ATTRIBUTES

If any specific environmental sensitivities/attributes are present on the site which require more specific impact management outcomes and actions, not included in the pre-approved generic EMPr template, to manage impacts, those impact management outcomes and impact management actions must be included in this section. These specific management controls must be referenced spatially, and must include impact management outcomes and impact management actions. The management controls including impact management outcomes and impact management actions must be presented in the format of the pre-approved generic EMPr template. This applies only to additional impact management outcomes and impact management actions that are necessary.

If Part C is applicable to the development as authorised in the EA, it is required to be submitted to the CA together with the BAR or EIAR, for consideration of, and decision on, the application for EA. The information in this section must be prepared by an EAP and the name and expertise of the EAP, including the curriculum vitae are to be included. Once approved, Part C forms part of the EMPr for the site and is legally binding.

This section will **not be required** should the site contain no specific environmental sensitivities or attributes.

APPENDIX 1: METHOD STATEMENTS

To be prepared by the contractor prior to commencement of the activity. The method statements are **not required** to be submitted to the CA.