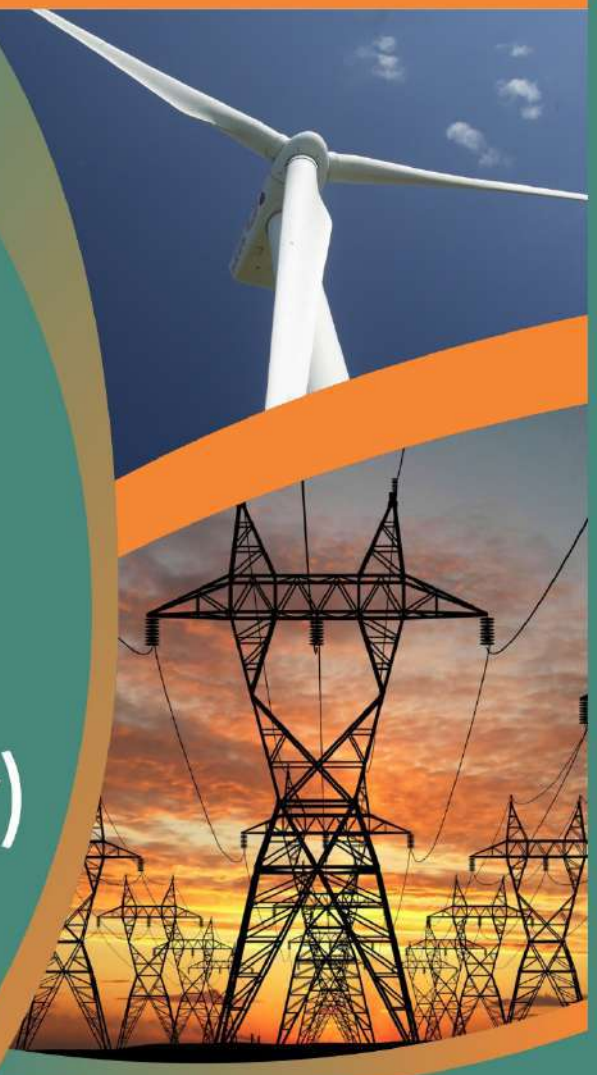
BASIC ASSESSMENT REPORT

Basic Assessment for the Proposed Construction and Operation of Electrical Grid Infrastructure to support the Sutherland, Sutherland 2 and Rietrug Wind Energy Facilities (WEFs), Northern and Western Cape Provinces

APPENDIX F: ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)



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1 INTRODUCTION

As part of the 2016 Electricity Grid Infrastructure (EGI) Strategic Environmental Assessment (SEA), a generic Environmental Management Programme (EMPr) was also compiled for the development and expansion of (a) overhead electricity transmission and distribution infrastructure; and (b) substation infrastructure for the transmission and distribution of electricity. On 2 March 2018, these two Generic EMPrs were gazetted in Government Gazette 41473, Government Notices 162 and 163, for public comment for a period of 45 days. On 22 March 2019, these two Generic EMPrs were gazetted for implementation in Government Gazette 42323, Government Notice 435.

Since the Generic EMPrs have been gazetted and are applicable to the proposed project, the following has been undertaken:

- The Generic EMPrs have been used as a baseline for the proposed project;
- Section 1 of Part B of the gazetted Generic EMPrs contains a pre-approved template with aspects that are common to the development of substation infrastructure and overhead transmission and distribution infrastructure. This section will be completed by the contractor, with each completed page signed and dated by the holder of the Environmental Authorisation (EA) prior to commencement of the activity. This section will not be submitted to the National Department of Environment, Forestry and Fisheries (DEFF) as it has already been pre-approved gazetted. To allow Interested and Affected Parties (I&APs) access to the pre-approved EMPr template for consideration through the decision-making process, the template was released with the Draft BA Report. It is included in Appendix A of this EMPr.
- Section 2 of Part B of the gazetted Generic EMPrs has been completed to include site specific information, a preliminary infrastructure layout and development footprint site map, and a declaration that the Applicant will comply with the pre-approved template provided in Part B: Section 1 of the gazetted EMPrs. This will be submitted to the DEFF for review and decision-making and has been included in Section 4 (site specific information), Section 5 (preliminary infrastructure layout) and Section 6 (declaration of the Applicant) of this EMPr.
- Part C of the gazetted Generic EMPr has been compiled and included in Section 7 of this EMPr. It includes site specific impact management outcomes and impact management actions that are not included in the pre-approved generic EMPr. It is hereby submitted to the DEFF together with the Final BAR, for consideration of, and decision on, the Application for EA. This section has been prepared by an Environmental Assessment Practitioner (EAP), with input from relevant specialists. The details and expertise of the EAP are provided in Section 1.1 and Section 4 of this EMPr, with a Curriculum Vitae included in Appendix B of this EMPr.

Apart from the two generic EMPRs which were gazetted as noted above, this section of the EMPr is a supplement to the gazetted EMPr and provides site specific mitigation measures identified in the specialist studies contained in Appendix D of the Final BA Report. In some

instances, the impact management outcomes listed in the generic EMPr are also listed in this project specific EMPr (Section 7) because they are more detailed.

This EMPr is being submitted to the DEFF as part of the Application for EA for the proposed construction of electrical grid infrastructure to the support the proposed and authorised Rietrug, Sutherland and Sutherland 2 Wind Energy Facilities (WEFs), near Sutherland within the Karoo Hoogland and Laingsburg Local Municipalities, within Northern Cape and Western Cape Provinces, respectively. The Project Applicant is South Africa Mainstream Renewable Power Developments (PTY) Ltd (hereinafter referred to as Mainstream).

This EMPr was made available to I&APs, stakeholders and Organs of State, as part of the Draft BA Report for a 30-day review period. Comments received from stakeholders during this afore-mentioned review period were incorporated into this EMPr, where applicable.

1.1 AUTHORS OF THE EMPr

This EMPr has been compiled by the EAPs (Minnelise Levendal and Rohaida Abed) and the various specialists on the team (as indicated in Table 1). A Declaration of Independence signed by the EAP (Minnelise Levendal) is included in Appendix G of the Final BA Report. Curriculum Vitae of the EAP (Minnelise Levendal) is included in Appendix B of this EMPr.

Minnelise has more than 15 years of experience in environmental assessment and management, and is a senior EAP in the EMS group of the CSIR. She has a Master's degree in Botany from the University of Stellenbosch. She is a registered Professional Natural Scientist (Registration Number: 117078) with the South African Council for Natural Scientific Professions (SACNASP). Minnelise has experience in the management and integration of various types of environmental assessments in South Africa for various sectors, including renewable energy and industry. Minnelise has undertaken several Environmental Assessments for wind farms and solar PV farms (i.e. EIAs, BAs, Amendment and Appeal Processes) in the Northern Cape, Western Cape and Eastern Cape. Minnelise is currently the project leader for the Amendment processes for the adjacent Sutherland, Sutherland 2, and Rietrug WEFs, which received positive Environmental Authorisations in November 2016.

Rohaida Abed is an EAP in the CSIR Environmental Management Services team based in Durban. She has 9 years of experience in the Environmental Management field, and has been involved in various transport infrastructure related projects as an Environmental Control Officer, which included monitoring compliance with Environmental Authorizations and Environmental Management Plans. She has also been conducting Environmental Assessments relating to Port infrastructure, Bulk Liquid Storage facilities and renewable energy in the capacity of Project Manager. She is also part of a team undertaking a SEA for the development of a phased Gas Pipeline and expansion of Electricity Grid Infrastructure in South Africa, for the National Department of Environmental Affairs (now operating as the DEFF), DOE, DPE, iGas, Transnet and Eskom. She is a registered Professional Natural Scientist (400247/14) with the SACNASP.

Table 1: The BA Management Team

Name	Organisation	Role/ Specialist Study
EAPs		
Paul Lochner	CSIR	Technical Advisor and Quality Assurance (EAPSA) Certified
Minnelise Levendal	CSIR	Project Leader (*Pr. Sci. Nat.*)
Rohaida Abed	CSIR	Project Manager (*Pr. Sci. Nat.*)
Specialists		
Simon Todd	3Foxes Biodiversity Solutions	Terrestrial Ecology Impact Assessment
Antonia Belcher and Dana Grobler	BlueScience (Pty) Ltd	Aquatic Ecology (Freshwater) Impact Assessment
Scott Masson	SRK Consulting	Visual Impact Assessment
Dr. Jayson Orton and Dr. John Almond	ASHA Consulting (Pty) Ltd and Natura Viva cc	Heritage Impact Assessment (Palaeontology, Archaeology and Cultural Landscape)
Chris van Rooyen and Albert Froneman	Chris van Rooyen Consulting	Avifauna Impact Assessment
Johann Lanz	Private Consultant	Agricultural Impact Assessment

1.2 ENVIRONMENTAL SENSITIVITIES

Table 2 provides a description of the environmental features and sensitive areas that were identified by the specialists for consideration in the layout and location of the proposed Electrical Grid Infrastructure project (refer to the specialist studies in Appendix D of the Final BA Report for more details on the environmental sensitivities identified). The relevant and significant environmental features and no-go areas that were identified in the specialist studies have been mapped and included in Appendix C of this EMPr. Based on this and the findings of the specialist studies, a combined environmental sensitivity map overlain with the project layout has also been produced, and included in Appendix D of this EMPr. These maps show the relevant environmental features and sensitivities found on site (in terms of terrestrial, aquatic, visual, heritage and avifaunal features).

Table 2: Environmental Features and Sensitive Areas that were identified by the Specialists

Specialist Study	Key Environmental Features and Sensitive Areas
Terrestrial Ecology Impact Assessment (Appendix D.1 of the BA Report)	▪ The plains are generally considered to represent low sensitivity areas with a relatively low abundance of species of conservation concern; ▪ The main areas of sensitivity along the power line route would be the numerous drainage lines that the power line must traverse as well as several areas of steep slopes that the line must negotiate. However, given that the span between pylons can usually be extended quite far in rugged terrain, the overall footprint within these more sensitive areas can be reduced to a low level; and ▪ There are some short sections of the power line route within the Western Cape that are Critical Biodiversity Areas (CBA 1) associated with watercourses. Within the Northern Cape, a large part of the route is either CBA 1 or CBA 2. Development within CBAs can have negative impacts on biodiversity pattern and process and is generally considered undesirable. The footprint within the CBAs would however be low and the ecological functioning of the CBAs would not be compromised by the development. Overall, the impact of the development on CBAs and broad-scale ecological processes would be low and no major impacts on ecological processes would occur.
Aquatic Ecology (Freshwater) Impact Assessment (Appendix D.2 of the BA Report)	▪ The Riet, Vanwyks and Juk and Ouberg Rivers were the three main rivers, along with their associated tributaries and their applicable riparian zones, identified within the investigation area. ▪ The study area is located largely within Upstream Freshwater Ecosystem Priority Areas (FEPA) Rivers that should not be impacted on such that they would result in degradation of more ecologically important downstream FEPA Rivers. There are several instream wetland areas within the channels of the larger watercourses that have been mapped as artificial FEPA Wetlands of which only two are located near the proposed works. A natural depression is the only mapped natural FEPA Wetland located in the wider study area but is at least 500 m south of the proposed line in the upper Riet River. ▪ The only aquatic CBA crossed by the proposed transmission line is on the Vanwyks River downstream of the Western Cape Border. This river reach is considered of high ecological importance in terms its unique habitat and linked to terrestrial habitat and vegetation. The remainder of the watercourses are mapped as aquatic Ecological Support Areas (ESAs). Most of the terrestrial areas adjacent to the watercourses in the area are mapped as Other Natural Areas. ▪ Within the Northern Cape CBA, most of the study area is mapped as a CBA, becoming an ESA within the eastern portion of the study area in the Northern Cape. ▪ The recommended ecological condition of the aquatic features within the study area are that they should be maintained in their current ecological condition and should not be allowed to degrade further. The recommended buffer areas as a development setback from the aquatic features to ensure these aquatic ecosystems are not impacted by the proposed activities are listed below: ▪ Smaller streams and drainage lines, together with their seeps: at least 50 m from the centre of these streams or the delineated wetland edge (whichever is the furthest); ▪ The larger rivers within the valley floor, together with their valley bottom wetlands: at least 100 m, measured from the top of the bank of the river channels or the delineated wetland edge (whichever is the furthest), and 32 m for all other drainage lines; ▪ The vernal pool and other wetland areas: at least 50 m, measured from the top of bank of the river channels or the delineated wetland edge; ▪ A buffer of at least 32 m between the delineated aquatic ecosystems to the north of the substation footprint and the substation should be maintained; and ▪ For all project related components within the site, any aquatic features of high sensitivity (wetland areas and vernal pools) within the immediate area should be demarcated by the appointed Environmental Control Officer (ECO) prior to commencement of the construction activities and treated as no-go areas during the construction phase.

Specialist Study	Key Environmental Features and Sensitive Areas
Visual Impact Assessment (Appendix D.3 of the BA Report)	▪ The power line passes within 1 km of the Waterval farmstead, within 320 m of the farm buildings on Farm Rheebokkenfontein (4/1) and within 600 m of the farmstead on Farm Rheebokkenfontein (4/2). On the plain below the escarpment, the Komsberg will be a backdrop to the proposed power line for many of the views from farmsteads - the power line is unlikely to be exposed/silhouetted above the skyline for most of the visual receptors on the plain. ▪ Potential (additional) receptors have been identified within 5 km of the 400 kV connection point to the existing 400 kV power line. However, the proposed 400 kV power line is likely to be visually screened by topography or visually absorbed by the existing power line. ▪ Motorists using the secondary (gravel) road between Sutherland and Merweville are more than 20 km from the proposed 132 kV power line. The scenic Rooiberg Pass is further than 10 km from the proposed 132 kV power line. The secondary road from Houdenbeck farmstead to the N1 passes within 100 m of the proposed 132 kV power line as the power line approaches the proposed substation. This road is likely to only be used sporadically by farmers. The proposed 400 kV power line will traverse this road.
Heritage (Palaeontology, Archaeology and Cultural Landscape) (Appendix D.4 of the BA Report)	**Palaeontology:** ▪ The PIA explains that most of the fossil occurrences found during the specialist site visit were found to be of limited palaeontological value and lie well away from the proposed electrical infrastructure footprint and do not warrant mitigation. ▪ However, only one highly-sensitive "no-go" area was identified within the study area, however it lies outside of the proposed development footprint. This specifically includes an extensive surface scatter of petrified wood blocks, some of which are well-preserved, and occasional bone fragments, which was found on Farm Hamel Kraal 16 on either side of a farm track. This fossil scatter is located approximately 500 m southwest of the 132 kV power line route. A 30 m wide peripheral buffer zone is required around the fossil scatter. ▪ No significant fossil remains were recorded at the proposed Major Transmission Substation (MTS) site. ▪ The overall palaeontological sensitivity of the Electrical Grid Infrastructure study area is rated as low. ▪ A partially embedded, articulated post-cranial skeleton of a large tetrapod was also found on the Beeren Valley Farm 150, and it is of heritage conservation significance; however, it will not be impacted on by the proposed project, as it lies outside of the project footprint. **Archaeology:** ▪ The Heritage Impact Assessment explains that significant archaeological sites (especially the two ruined complexes found around waypoints 498 and 614, as described below) should be identified on project maps and regarded as no-go zones with buffers of at least 30 m around all associated features. ▪ The exception to the 30 m buffer is the service road diversion which is routed within 20 m of a rock art site (at waypoint 492); however, the service road uses an existing farm track. ▪ There are a number of archaeological sites, as shown below. The relevant waypoints to be avoided with buffers of at least 30 m around all associated features are noted below (from west to east). Note that this list only includes those sites located within 500 m of the footprint area: ○ **Waypoint 524** includes a small stone structure in a small, steep-sided river valley. Almost certainly a shepherd's hut. The Heritage Impact Assessment notes that it is more intact than many other historical finds. This point does not lie within the proposed power line alignment. ○ **Waypoint 546** is a pre-colonial kraal complex with numerous enclosures and stone-walled features (about 27 or 29 in total) scattered around and on top of a low rocky outcrop. A few Stone Age artefacts were found as well as a number of fragments of ostrich eggshell. A few recent items (liquor bottle and

Specialist Study	Key Environmental Features and Sensitive Areas
	a shoe fragment) testify to more recent use of the area. It should be noted that waypoints 528 to 553 inclusive were all at this kraal complex but waypoint 546 is taken as an approximately central location for the site. This complex does not lie along the proposed power line alignment but, importantly, is bisected by one of the farm access roads in the area. This road (passing through the kraal complex) may not be widened towards the east and should preferably not be widened at all. ○ **Waypoint 51** includes a historical circular kraal with associated glass and ceramics recorded by Hart et al. (2010). It was given Grade IIIA (on WC system) by them. ○ **Waypoint 614** is part of a single historical farm complex, comprising 2.5 x 2 m. It is a small, rectangular stone one-roomed house of beautifully dressed blocks. It has a door facing east, a window facing west and a small 'muurkas' (more of a shelf) in each end wall. There is a cleared area around the house with stones pushed loosely to the edge. There are various loose piles of stones or 'features' around the edge of the cleared area. ○ **Waypoint 498** includes a small one-roomed stone house complex with a pitched roof and four rooms (roofs all missing) added to it on the west and south. Two of the rooms on the west have curved walls – an extremely unusual feature. Also, two paved surfaces on the north and east sides of the house. Main house has had roof trusses and metal roof sheets added in more recent times (perhaps early-mid-20th century) to allow the structure to continue to be used. Internal plaster was probably also added at this time but is peeling off. Unworked / minimally worked wooden beams used on roofs of added rooms. It is notable that there is no dump in the vicinity of the house and outbuildings. However, there are many fragments of glass, ceramics and metal (including many car parts) scattered in low density over the general area. Much of this material is mid-20th century in age but there is definitely some 19th century material. A fragment of a cobalt blue bottle has "Cape Town" embossed on it. There are also many stone-dressing flakes in the area and many of the blocks in the structures are dressed stones. ○ **Waypoint 492** includes a geometric rock art site with eight finger-painted vertical stripes applied to three different 'canvases' (small faces on a very irregular surface) which is within 20 m of the service track. No associated artefacts were seen and no proper rock shelter exists. The site overlooks a river valley. Vehicles and activity must be confined to the existing roads, preferably with no widening. ○ **Waypoint 1785** includes a dolomite slab with a historical engraving featuring a circle with dots in it, a "Q" and an "H". Age presumed to be historical. Although not a site of high significance, the engraving should be avoided (the lines may span over the site). No pylon should be placed within 30 m of the site and it should be fenced with a 30 m buffer during the construction phase.
Avifauna Impact Assessment (Appendix D.5 of the BA Report)	▪ **No-go areas:** These are areas in close proximity to known active Verreaux's Eagle and Jackal Buzzard nests, where the construction of the proposed power line and associated infrastructure will constitute a disturbance risk. No such areas will be impacted by the proposed alignment. ▪ **High sensitivity:** Included are areas within 300 m of small waterbodies, and within 500 m of large waterbodies (both artificial dams and natural pans), where the proposed power line will constitute a collision risk. These areas should ideally be avoided, or if this is not possible, there should be adequate mitigation implemented to reduce the risks materially (see Section 7 of the Avifauna Impact Assessment in Appendix D.5) for a discussion of proposed mitigation measures). Red Data species that could be impacted through collisions with the proposed power line due to being attracted to the surface water include Greater Flamingo, Black Stork and raptors such as Martial Eagle and Verreaux's Eagle. Many non-Red Data power line sensitive species could also be attracted to surface water and be at risk of collisions e.g. various species of raptors, ducks, herons, grebes and waders. Ephemeral drainage lines and their immediate environments are also included in this category. When these ephemeral drainage lines contain water, they serve as flyways for waterbirds, and may temporarily attract Red Data species such as Black Stork, while standing pools of water could attract raptors for purposes of drinking and bathing, e.g. Red Data Martial Eagle and Verreaux's Eagle as well as non-Red Data raptors. These areas should likewise ideally be avoided, or if this is not possible, there should be adequate mitigation implemented to

Specialist Study	Key Environmental Features and Sensitive Areas
	reduce the risks materially, e.g. marking with anti-collision devices. ▪ **Medium sensitivity:** The entire study area can be classified as medium-sensitive. The area is largely untransformed, and the natural habitat supports a number of Red Data power line sensitive species, notably Ludwig's Bustard and Karoo Korhaan. Ludwig's Bustard in particular is known to be highly susceptible to power line collisions.
Agricultural Impact Assessment (Appendix D.6 of the BA Report)	▪ The entire study area has extremely low agricultural potential and therefore very low agricultural sensitivity to development and consequent loss of agricultural land use. ▪ Agricultural potential and conditions are also very uniform across the site, and the choice of placement of facility infrastructure therefore has negligible influence on the significance of agricultural impacts. ▪ From an agricultural point of view, no parts of the site need to be avoided by the proposed development and no buffers are required.

1.3 IMPACTS IDENTIFIED DURING THE BA PROCESS

Based on the specialist studies (as shown in Table 2, and included in Appendix D of the Final BA Report), the following main direct potential impacts, as indicated in Table 3, have been identified and appropriate management and mitigation measures included within the EMPr (where required) as per the recommendations made in the specialist studies to ensure the potential impacts are suitably addressed and managed during all phases of the project.

Table 3: Impacts Identified in the BA

KEY IMPACT	IMPACTS IDENTIFIED
Terrestrial Ecology	**Construction Phase:** ▪ Habitat loss and impact on plant Species of Conservation Concern as a result of clearing of vegetation; ▪ Impact on fauna due to habitat loss and disturbance, as a result of increased levels of noise, pollution, disturbance and human presence; and ▪ Habitat loss within Critical Biodiversity Areas as a result of clearing of vegetation and construction phase disturbance. **Operational Phase:** ▪ Impact on fauna as a result of operational phase activities; and ▪ Increased soil erosion during operations due to construction phase disturbance (following the completion of the construction phase), as well as maintenance activities. **Decommissioning Phase:** ▪ Impact on fauna as a result of increased levels of noise, pollution, disturbance and human presence during decommissioning activities; ▪ Increased soil erosion due to decommissioning disturbance; and ▪ Increased alien plant invasion due to decommissioning phase disturbance.
Aquatic Ecology (Freshwater)	**Construction Phase:** ▪ Disturbance and loss of aquatic habitat as a result of construction activities in or adjacent to aquatic features for the substation, transmission line and service road construction; and ▪ Invasive alien plant growth in riparian zones and potential for erosion of watercourses due to the disturbance of aquatic habitat and modification of runoff characteristics. **Operational Phase:** ▪ Impact on fauna as a result of operational phase activities; ▪ Increased soil erosion during operations due to construction phase disturbance (following the completion of the construction phase), as well as maintenance activities; ▪ Altered sense of place and visual intrusion from the proposed MTS; and ▪ Altered sense of place and visual intrusion from the proposed 400 kV line. **Decommissioning Phase:** ▪ Disturbance and loss of aquatic habitat as a result of decommissioning activities in or adjacent to aquatic features for the substation, transmission line and service road construction; ▪ Modification to flow and water quality due to the proposed activities in or adjacent to aquatic ecosystems; and ▪ Invasive alien plant growth and potential for erosion of watercourses due to the disturbance of aquatic vegetation.
Visual	**Construction Phase:** ▪ Potential visual intrusion of construction activities on existing views of sensitive visual receptors in the surrounding landscape. ▪ Altered sense of place and visual intrusion during the proposed construction and

KEY IMPACT	IMPACTS IDENTIFIED
	decommissioning of the MTS as a result of earthworks, resultant scarring and construction activities (including clearing of vegetation and dust); and ▪ Altered sense of place and visual intrusion during the proposed construction and decommissioning of the 400 kV power line as a result of earthworks, resultant scarring and construction activities (including clearing of vegetation and dust). **Operational Phase:** ▪ Potential landscape impact of the proposed electrical infrastructure on a rural agricultural landscape with a strong sense of remoteness and potential for scenic views; and ▪ Potential visual intrusion of the proposed electrical infrastructure on the views of sensitive visual receptors. **Decommissioning Phase:** ▪ Potential visual intrusion of decommissioning activities on existing views of sensitive visual receptors; ▪ Altered sense of place and visual intrusion during the proposed construction and decommissioning of the MTS as a result of earthworks, resultant scarring and construction activities (including clearing of vegetation and dust); and ▪ Altered sense of place and visual intrusion during the proposed construction and decommissioning of the 400 kV power line as a result of earthworks, resultant scarring and construction activities (including clearing of vegetation and dust).
Heritage (Archaeology and Cultural Landscape)	**Construction Phase, Operational and Decommissioning Phase** ▪ Destruction of archaeological remains; ▪ Destruction of palaeontological material; and ▪ Alteration of the cultural and natural landscape.
Heritage (Palaeontology)	**Construction Phase:** ▪ Disturbance, damage or destruction of scientifically important fossils at or beneath the ground surface as a result of surface clearance and excavations for the proposed electrical infrastructure.
Avifauna Impact Assessment	**Construction Phase:** ▪ Displacement of priority avifauna due to disturbance associated with the construction of the proposed power lines, service road and transmission substation; and ▪ Displacement of priority avifauna due to habitat transformation associated with the construction of the transmission substation. **Operational Phase:** ▪ Mortality of priority avifauna due to collisions with the earth wire of the proposed 132 kV and 400 kV power lines; and ▪ Electrocution of priority avifauna in the transmission substation yard. **Decommissioning Phase:** ▪ Displacement of Red Data avifauna due to disturbance associated with the decommissioning activities.
Agricultural Impact Assessment	**Construction Phase:** ▪ Soil erosion and degradation as a result of land surface disturbance including vegetation removal, vehicle passage and excavation during construction activities. **Decommissioning Phase:** ▪ Displacement of Red Data avifauna due to disturbance associated with the decommissioning activities.

2 APPROACH TO PREPARING THE EMPr

2.1 COMPLIANCE WITH RELEVANT LEGISLATION

As noted in the Gazetted EMPrs noted above (dated March 2019), the NEMA requires that an EMPr be submitted where a BA or EIA is being undertaken for an Application for EA. The content of an EMPr must either contain the information set out in Appendix 4 of the 2014 NEMA EIA Regulations (as amended) promulgated in Government Gazette 40772 and GN R326 on 7 April 2017, or must be a generic EMPr relevant to an application as identified and gazetted by the Minister in a government notice. As noted above, two generic EMPrs for the development of overhead electricity transmission and distribution infrastructure, as well as substation infrastructure for the transmission and distribution of electricity were gazetted in March 2019. It is therefore understood that these gazetted EMPrs must be applied by all parties involved in the EA Process. This EMPr therefore subscribes to the requirements of the gazetted EMPrs (Gazette 42323, Government Notice 435).

2.2 STRUCTURE AND CONTENTS OF THE EMPr

This Site Specific EMPr includes the following:

- Section 4: Site specific information;
- Section 5: Preliminary infrastructure layout and development footprint site map;
- Section 6: Declaration that the Applicant will comply with the pre-approved template provided in Part B: Section 1 of the gazetted EMPrs (which are included in Appendix A of this EMPr); and
- Section 7: Site-Specific EMPr as required by Part C of the gazetted EMPrs.

The Site-Specific EMPr follows the same template as that of Part B – Section 1 of the gazetted EMPrs, as recommended. Where applicable, each section of the Site-Specific EMPr is divided into the following four phases of the project cycle:

- Design Phase;
- Construction Phase;
- Operational Phase; and
- Decommissioning Phase.

The overall goal for environmental management for the proposed Electrical Grid Infrastructure project is to construct and operate the project in a manner that:

- Minimises the ecological footprint of the project on the local environment;
- Minimises impacts on fauna, flora and freshwater ecosystems;
- Facilitates harmonious co-existence between the project and other land uses in the area; and
- Contributes to the environmental baseline and understanding of environmental impacts of electrical grid infrastructure in a South African context.

3 ROLES AND RESPONSIBILITIES

The generic roles and responsibilities required for key role players are those of the:

- Developer's Project Manager (DPM);
- Developer Site Supervisor (DSS);
- Environmental Control Officer (ECO);
- Developer's Environmental Officer (DEO);
- Contractor; and
- Contractor's Environmental Officer (CEO).

The definitions of the roles and responsibilities are noted the in the gazetted EMPrs.

4 SITE SPECIFIC INFORMATION

4.1 CONTACT DETAILS AND DESCRIPTION OF THE PROJECT

4.1.1 Details of the Applicant

Name of Applicant	South Africa Mainstream Renewable Power Developments (Pty) Ltd
Name of Applicant Representative	Eugene Marais
Telephone Number:	021 657 4073
Fax Number:	021 671 5665
Postal Address:	P.O. Box 45063, Claremont, 7735
Physical Address:	4th Floor Mariendahl House, Newlands on Main, Cnr Main Road and Campground, Claremont 7708, Cape Town

4.1.2 Details and Expertise of the EAP

Company of the EAP	Council for Scientific and Industrial Research (CSIR)
Name of EAP	Minnelise Levendal
Telephone Number:	021 888 2495 or 021 888 2661
Fax Number:	021 888 2693
Email Address:	MLevendal@csir.co.za
Expertise of the EAP (Curriculum Vitae included):	**Qualifications:** ▪ M.Sc. (Botany), Stellenbosch University ▪ B.Sc. (Hons.) (Botany), University of the Western Cape ▪ B.Sc. (Education), University of the Western Cape **Experience:** ▪ Minnelise has more than 15 years of experience in environmental assessment and management. **Professional Registration and Affiliations:** ▪ Registered Professional Natural Scientist with the South African Council for Natural Scientific Professions (Registration Number: 117078). ▪ International Association for Impact Assessment, South African Affiliate. **Curriculum Vitae of Minnelise Levendal is included in Appendix B of this EMPr.**

4.1.3 Project Name

Project Name	Basic Assessment for the proposed construction and operation of Electrical Grid Infrastructure to support the Sutherland, Sutherland 2 and Rietrug Wind Energy Facilities (WEFs), Northern and Western Cape Provinces.

4.1.4 Description of the Project

Mainstream appointed an EAP in 2010 to undertake an Environmental Impact Assessment (EIA) for the proposed construction and operation of the Sutherland Renewable Energy Facility

(REF), consisting of a Solar Energy Facility and a WEF, with a collective generation capacity (i.e. for wind and solar) of 747 MW to 1137 MW. The EIA was undertaken in terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) and the NEMA EIA Regulations promulgated on 21 April 2006, in Government Notice (GN) R385, R386, and R387. Subsequent to the completion of the EIA Process, Mainstream accordingly received Environmental Authorisation on 22 February 2012 (DEA Reference Number: 12/12/20/1782), from the National Department of Environmental Affairs (DEA) to construct and operate the proposed Sutherland REF. Following this, a non-substantive amendment process (to amend certain project details, the details of the Applicant, and to extend the validity period of the EA) was undertaken and an amended EA, dated 6 October 2015 (DEA Reference Number: 12/12/20/1782/AM1), was issued to Mainstream.

Mainstream wishes to potentially bid these projects in a tender round of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). However, the maximum generation capacity that can currently be bid for a WEF is 140 MW. Therefore, in February 2016, Mainstream appointed the Council for Scientific and Industrial Research (CSIR) to submit applications to the National DEA for two further substantive amendments of the original EA (dated 22 February 2012) and the amended EA (dated 6 October 2015). The first amendment (i.e. Amendment 1) was undertaken to split the existing EA into three separate projects so that each WEF has a generation capacity of 140 MW. The three split WEFs are referred to as the Sutherland WEF; Sutherland 2 WEF; and Rietrug WEF. The CSIR accordingly submitted the Application for EA Amendment (i.e. Amendment 1) to the National DEA on 20 April 2016, as well as three separate Amendment Reports for each WEF in July 2016 for consideration and decision-making in terms of Regulation 33 of the 2014 NEMA EIA Regulations. On 10 November 2016, the National DEA accordingly granted separate EAs for the Sutherland, Sutherland 2, and Rietrug WEFs (DEA Reference Numbers: 12/12/20/1782/2; 12/12/20/1782/3; and 12/12/20/1782/1). These EAs replace the original EA (dated 22 February 2012) and the amended EA (dated 6 October 2015). The second amendment (i.e. Amendment 2) is to apply to change the turbine rotor diameter and hub height of the split and authorised WEFs. The Amendment 2 projects are referred to as the Sutherland WEF – Amendment 2; Sutherland 2 WEF – Amendment 2; and Rietrug WEF – Amendment 2. The CSIR completed and submitted three separate Applications for Amendment to the EAs in February 2017 for the WEFs and submitted the final reports to the DEA for decision-making in May 2017. On 25 August 2017, the National DEA accordingly granted separate EAs for the Sutherland, Sutherland 2, and Rietrug WEFs (DEA Reference Numbers: 12/12/20/1782/2/AM2; 12/12/20/1782/3/AM2; and 12/12/20/1782/1/AM2). Mainstream now wishes to further amend the turbine specifications and the details of the holder of the EAs. The CSIR submitted separate applications for this amendment to the DEFF in August 2019. The Amendment 2 Processes are separate and do not fall within the scope of this Application for EA.

Linked to the above, Mainstream also proposed to construct electrical infrastructure (in order to support each of the abovementioned separately authorised WEFs). In terms of NEMA and the 2014 NEMA EIA Regulations promulgated on 8 December 2014 and as amended on 7 April 2017 in GN R326, R327, R325 and R324, a Basic Assessment (BA) Process was undertaken for the construction of the proposed Electrical Grid Infrastructure in order to connect the proposed Sutherland WEF; Sutherland 2 WEF; and Rietrug WEF to the National Grid. The BA Process was undertaken by the CSIR in 2017, whereby separate Applications for EA were lodged for each of

the following Electrical Grid Infrastructure projects requiring a BA Process. In February 2018, the DEA issued EAs for these three BA Projects:

- Sutherland WEF – Electrical Grid Infrastructure (DEA Reference Number: 14/12/16/3/3/1/1816);
- Sutherland 2 WEF – Electrical Grid Infrastructure (DEA Reference Number: 14/12/16/3/3/1/1814/AM1); and
- Rietrug WEF – Electrical Grid Infrastructure (DEA Reference Number: 14/12/16/3/3/1/1815).

In the above BAs, the supporting electrical infrastructure for each WEF consisted of an on-site substation, laydown area, Operations and Maintenance (O&M) Building, a 132 kV distribution line, a service road, and the connection to a proposed third party substation. The following two alternatives of the distribution line routing to each of the proposed third party substations were assessed as part of the BA Processes:

- Alternative 1 of the grid connection was to route to the proposed 132 kV Suurplaat on-site substation (referred to as the proposed collector hub), located on the Farm Hartebeeste Fontein in the Northern Cape.
- Alternative 2 of the grid connection was to route to the proposed 400 kV Eskom Main Transmission Substation (also known as the proposed Eskom Nuwerust Substation), located on Farm Hamelkraal in the Western Cape.

The actual proposed third party and Eskom substations were not included within the scope of the BA Processes. Alternative 1 was the preferred alternative and thus was approved in the EA in February 2018. However, Alternative 2 of the grid connection routing was also assessed in the BA Processes, was deemed acceptable, and it did not present any environmental fatal flaws. Both Alternative 1 and Alternative 2 were deemed as a technically feasible option to enable the evacuation of the electricity generated by the abovementioned WEFs into the National Grid.

Mainstream now wishes to undertake a separate BA Process in order to connect the abovementioned WEFs to the National Grid. Mainstream is therefore proposing the development of a 132 kV power line, a Major Transmission Substation (MTS), a 400 kV power line, and associated service roads within the Renewable Energy Development Zone (REDZ): 2 Komsberg and Central Power Corridor. The 132 kV power line routing proposed as part of this current BA Process has been previously assessed as "Alternative 2" of the above BA Processes (DEA Reference Numbers: 14/12/16/3/3/1/1816; 14/12/16/3/3/1/1815; and 14/12/16/3/3/1/1814/AM1).

The reason for this is purely based on technical considerations since neither of the two routing options that were assessed as part of the previous BA Process have environmental fatal flaws. The REIPPPP requires that a project has a feasible grid connection. The Suurplaat WEF is owned by a third party, who will construct the substation that will enable the connection of the Mainstream projects to the third party substation (considered as part of Alternative 1 above). However, both the third party developer and Mainstream will submit a bid in the next REIPPPP. Should the Suurplaat project not win, and Mainstream's project(s) do, then

Mainstream will not have a feasible grid connection since the third party substation will not be constructed. Mainstream therefore needs to submit a feasible grid option (i.e. the current routing and connection to the grid) as part of their bid. The project location is shown in Figure 1.

The following project components have been proposed as part of this current BA Process:

- Major Transmission Substation (400 m x 400 m);
- Overhead 132 kV power line extending approximately 41 km in length from the authorised on-site substation to the proposed MTS (this line has been assessed as part of a previous BA Process and referred to in the reports as "Alternative 2");
- Overhead 400 kV power line extending approximately 4 km in length from the proposed MTS connecting to an existing Eskom line; and
- Service roads (jeep tracks) constructed below the power lines, with a small 1.7 km deviation to avoid a heritage feature.

Mainstream has appointed the CSIR to undertake the BA Process in order to determine the biophysical, social and economic impacts associated with undertaking the proposed activity.

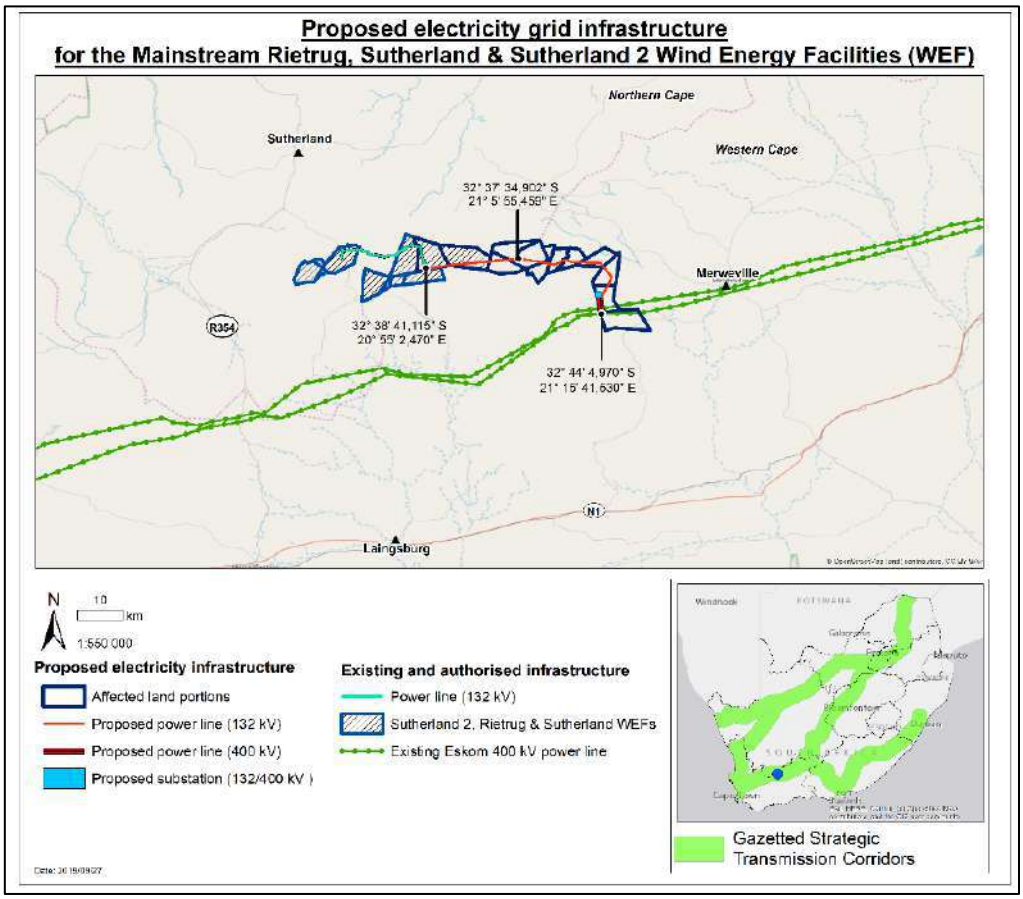

Figure 1: Locality map indicating the proposed Electrical Grid Infrastructure, including co-ordinate points. Note that existing and authorised components are also illustrated on this map.

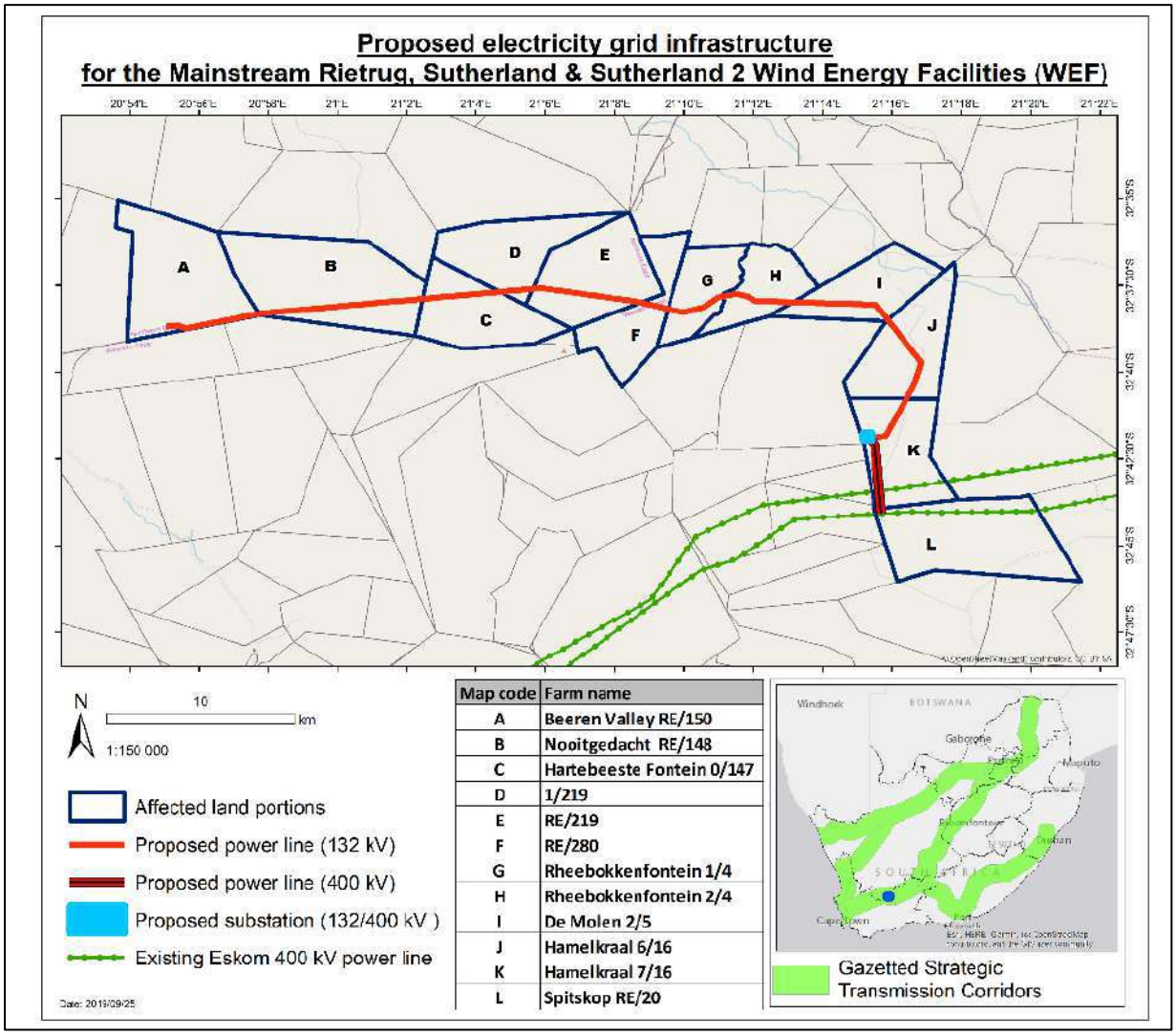

Figure 2: Map indicating the proposed Electrical Grid Infrastructure and the affected farm portions

A summary of the key components of the proposed project is described below. It is important to note at the outset that the exact specifications of the proposed project components will be determined during the detailed engineering phase.

The affected farm portions are shown in Figure 2. The proposed project will be situated on land that is owned by third parties. It is anticipated that the properties on which the proposed project will be constructed will be leased from the landowners. Table 4 below provides the approximate details of the proposed Electrical Grid Infrastructure Project.

Table 4: Specifications of the proposed Electrical Grid Infrastructure Project

Project Component	Project Specifications
Power Line extending from the authorised on-site Sutherland WEF substation to the proposed MTS	
Capacity	132 kV
Length	41 km
Details of the Power Line	Overhead with concrete foundations and steel tower structures (i.e. pylons). Monopole pylon structures will be adopted for the proposed power line. The line will consist of self-supporting monopoles and guyed monopoles. The towers will all have a maximum height of 32 m. Lattice type structures will only be considered and implemented where required and necessary due to the topography within the region or to comply with Eskom Standards.
Proposed MTS	
Dimensions	400 m X 400 m (160 000 m^2)
Laydown Area	100 m X 100 m (10 000 m^2)
O&M Building	120 m X 120 m (14 400 m^2)
Power Line extending from the proposed MTS to the Eskom Power Line	
Capacity	400 kV
Length	4 km
Details of the Power Line	Overhead with concrete foundations and steel tower structures (i.e. pylons). Monopole pylon structures will be adopted for the proposed power line. The line will consist of self-supporting monopoles and guyed monopoles. The towers of the 400 kV power line can have a height that ranges from 26 m to 48 m depending on the type of tower. Lattice type structures will only be considered and implemented where required and necessary due to the topography within the region or to comply with Eskom Standards.
Service Roads/Jeep Track	
Design	Gravel
Width	4 m to 6 m
Length	Note that the service road will be constructed below the power lines but will deviate in a small section to avoid a heritage feature. The length of the deviation is 1.7 km. The total length of the service roads is 47 km.
Site Access	In terms of access, the proposed project site can be accessed by a secondary road off the R354 and via secondary gravel roads and a network of farm tracks. The site can also be accessed via public road OG07 towards the east and District Road DR02256 towards the north.

Overall, this project will provide the necessary electrical infrastructure to support the proposed Sutherland, Sutherland 2 and Rietrug WEFs.

The proposed project can be divided into the following three main phases:

- Construction Phase;
- Operational Phase; and
- Decommissioning Phase.

Each activity undertaken as part of the above phases may have environmental impacts and has therefore been assessed by the specialist studies (Appendix D of the BA Report).

It is proposed that the local municipality will provide services in terms of water, waste removal, sewage and electricity for the construction phase of the proposed project. However, should the municipality not have adequate capacity available for the handling of waste and sewage, and the provision of water; then the Applicant will make use of private contractors to

ensure that the services are provided. The Applicant will also ensure that adequate waste disposal measures are implemented by obtaining waste disposal dockets of waste and sewage that is removed from site. It is important to note that for the operational phase, requirements for water, sewage management and waste disposal do not apply.

The construction phase will take place subsequent to the issuing of an EA from the DEFF and a successful BID in terms of the REIPPPP (i.e. the issuing of a Power Purchase Agreement (PPA) from the Department of Minerals and Energy (previously operating as the Department of Energy (DOE)). The construction phase is expected to extend 12 to 14 months.

The main activities that will form part of the construction phase are:

- Removal of vegetation for the proposed infrastructure;
- Excavations for infrastructure and associated infrastructure;
- Establishment of a laydown area for equipment;
- Stockpiling of topsoil and cleared vegetation;
- Transportation of material and equipment to site, and personnel to and from site; and
- Construction of the 132 kV distribution line and additional infrastructure.

The following main activities will occur during the operational phase:

- The transmission of electricity generated from the proposed Sutherland WEF to the proposed MTS followed by transmission to the National Grid via a 400 kV power line; and
- Maintenance of the power line servitude including the gravel service road, as well as maintenance of the MTS.

In the event of decommissioning, the main aim would be to return the land to its original, pre-construction condition. Should the unlikely need for decommissioning arise, the decommissioning procedures will be undertaken in line with the EMPr and the site will be rehabilitated and returned to its pre-construction state. Possible decommissioning activities will include removing the infrastructure, and covering the concrete footings with soil to a depth sufficient for the re-growth of natural vegetation. Any other supporting infrastructure no longer in use will be removed from the site and either disposed of at a registered disposal facility or recycled if possible.

It should be noted that a detailed project description (based on the conceptual design) is provided in Section A (4) of the Final BA Report.

4.1.5 Project Location

The proposed project will take place on the following farms:

NUMBER	FARM NAME	FARM NUMBER	PORTION NAME	PORTION NUMBER	LATITUDE	LONGITUDE
1	Beeren Valley Farm 150	150	REMAINDER	0	32° 37' 13,346" S	20° 55' 23,654" E
2	Nooitgedacht Farm 148	148	REMAINDER	0	32° 37' 23,311" S	20° 59' 40,082" E
3	Hartbeesfontein Farm 147	147	REMAINDER	0	32° 38' 18,687" S	21° 4' 2,025" E
4	Farm 219	219	1	1	32° 37' 12,865" S	21° 7' 26,644" E
5	Farm 219	219	REMAINDER	0	32° 36' 27,170" S	21° 5' 0,830" E
6	Farm 280	280	REMAINDER	0	32° 38' 19,390" S	21° 8' 38,809" E
7	Rheebokkfontein Farm 4	4	1	1	32° 37' 37,437" S	21° 10' 29,708" E
8	Rheebokkfontein Farm 4	4	2	2	32° 37' 33,828" S	21° 12' 15,455" E
9	Farm De Molen 5	5	5	5	32° 37' 35,035" S	21° 15' 19,497" E
10	Farm Hamelkraal 16	16	6	6	32° 39' 18,292" S	21° 16' 28,351" E
11	Farm Hamelkraal 16	16	7	7	32° 42' 16,266" S	21° 16' 15,319" E
12	Spitskop Farm 20	20	REMAINDER	0	32° 44' 49,308" S	21° 18' 21,052" E

Co-ordinates at regular points along the proposed power line, service road deviation and MTS are provided in Appendix A of the Final BA Report.

4.1.6 Preliminary Technical Specification of the Overhead Power Lines

The information provided below is based on conceptual design. Detailed design will only be available should Mainstream reach preferred bidder status.

Length	**132 kV Power Line**: 41 km **400 kV Power Line**: 4 km
Tower Parameters - 400 kV Power Line	
Number and Types of Towers	Monopole pylon structures, self-supporting monopoles, guyed monopoles, or lattice type structures.
Tower Spacing (mean and maximum)	To be confirmed once project reaches preferred bidder status, thereafter amendments will be communicated to the CA.
Tower Height (lowest, mean and height)	Range: 26 m to 48 m
Conductor Attachment Height (mean)	To be confirmed once project reaches preferred bidder status, thereafter amendments will be communicated to the CA.
Minimum Ground Clearance	To be confirmed once project reaches preferred bidder status, thereafter amendments will be communicated to the CA.
Tower Parameters - 132 kV Power Line	
Number and Types of Towers	Monopole pylon structures, self-supporting monopoles, guyed monopoles, or lattice type structures.
Tower Spacing (mean and maximum)	To be confirmed once project reaches preferred bidder status, thereafter amendments will be communicated to the CA.
Tower Height (lowest, mean and height)	Maximum: 32 m
Conductor Attachment Height (mean)	To be confirmed once project reaches preferred bidder status, thereafter amendments will be communicated to the CA.
Minimum Ground Clearance	To be confirmed once project reaches preferred bidder status, thereafter amendments will be communicated to the CA.

5 LAYOUT AND DEVELOPMENT FOOTPRINT SITE MAP

This section includes maps of combined features and sensitivities, as well as the preliminary infrastructure layout. The feature and sensitivity map was prepared based on specialist feedback and existing databases. At this stage, combined sensitivities and feature maps have been provided and included in this section. Individual feature and sensitivity maps are included in the specialist studies (Appendix D of the Final BA Report). Individual feature maps for each specialist theme, where relevant, are also included in Appendix A of the Final BA Report.

6 APPLICANT 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:

2019/10/01

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7 SITE SPECIFIC EMPR

7.1 TERRESTRIAL ECOLOGY

Impact Management Outcome: Avoid or minimize impacts on terrestrial ecology, including protected plant species, by maintaining a small project footprint.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
DESIGN PHASE						
Ensure that the design of the power line takes the sensitivity mapping of the ecological specialist into account to avoid and reduce impacts on Species and habitats of Conservation Concern, most particularly the larger drainage systems along the power line route, which are potential habitat of the Riverine Rabbit.	Project developer and appointed ecology specialist	▪ Ensure that this is taken into consideration during the planning and design phase. ▪ Pre-construction walk-through of the final power line route, with micro-siting of the final pylon positions where necessary.	During design cycle and before construction commences	Project developer and appointed ecology specialist	During design cycle and before construction commences.	The design of the power line signed off by the appointed avifaunal specialist.
CONSTRUCTION PHASE						
Undertake a pre-construction walk-through of the proposed MTS site, power line route and access road footprints to identify protected species and obtain information to inform a pre-construction search and rescue operation.	Project developer and appointed ecology specialist	▪ Undertake a pre-construction walk-through of substation, power line route and access road footprints to identify protected species and obtain information to inform a pre-construction Search and Rescue operation.	Before construction commences	Project developer and appointed ecology specialist	Before construction commences.	Record and findings of pre-construction walk-through is in place.
Obtain relevant permits from the Department of Agriculture, Forestry and Fisheries (DAFF), Northern Cape Department of Environment, Forestry and Fisheries (DEFF), DENC and CapeNature		▪ Obtain clearing and translocation permits from the relevant authorities.				Relevant permits from authorities in

Impact Management Outcome: Avoid or minimize impacts on terrestrial ecology, including protected plant species, by maintaining a small project footprint.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
prior to any construction activities at the site.						place. Report any non-compliance.
Affected individuals of selected (i.e. those that are of high conservation value or which have a high probability of surviving translocation) protected species which cannot be avoided should be translocated to a safe area on the site prior to construction. This does not include woody species that cannot be translocated and where these are protected by DAFF a permit for their destruction would be required.		▪ ECO to monitor construction to ensure that: ▪ Vegetation is cleared only within essential areas. ▪ Erosion risk is maintained at an acceptable level through flow regulation structures where appropriate and the maintenance of plant cover wherever possible.				
Erosion control measures should be implemented in areas where slopes have been disturbed.		▪ Maintain the erosion risk at an acceptable level through the installation of flow regulation structures where appropriate and the maintenance of plant cover wherever possible.	During the construction phase	ECO	Monthly	Record via photographs
Revegetation of cleared areas or monitoring to ensure that recovery is taking place.						
Concurrent rehabilitation and alien plant clearing must be undertaken where necessary.						
Any fauna encountered during construction should be removed to safety, or allowed to passively vacate the area.	ECO or other suitably qualified person	▪ ECO to monitor site clearing and staff activities on-site. ▪ Weekly and monthly reporting of activities, offences and remedial actions.	During construction when site clearing is taking place	ECO and Subcontractor	Daily	Weekly and monthly reporting of activities, offences and remedial actions.
All night-lighting should use low-UV type lights (such as most LEDs), which do not attract insects. The lights should also be of types which are directed downward and do not result in large	ECO or other suitably qualified	▪ ECO to monitor site clearing and staff activities on-site.	During construction when site clearing is taking place	ECO and Subcontractor	Daily	Report and record any non-

Impact Management Outcome: Avoid or minimize impacts on terrestrial ecology, including protected plant species, by maintaining a small project footprint.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
amounts of light pollution.	person	▪ Weekly and monthly reporting of activities, offences and remedial actions.				compliance via site audits and inspections.
OPERATIONAL PHASE						
Vegetation control where required should be by manual clearing and herbicides should not be used except to control alien plants in the prescribed manner. Annual monitoring for alien plant species - with follow up clearing as needed – or as per the frequency stated in the alien invasive management plan to be developed for the final project development corridor. Annual site inspection for erosion or water flow regulation problems – with follow up remedial action where problems are identified.	Management	▪ Annual surveys for erosion at the substation site and along the power line for erosion and alien species presence. ▪ Follow-up remedial action where required to address problems identified. ▪ Records of problems and actions taken.	During the operational phase	Management	Annual monitoring Annual or more frequent control actions.	Annual monitoring plans in place and audited.
DECOMMISSIONING PHASE						
Annual post-decommissioning monitoring for alien plant species - with follow up clearing as needed – or as per the frequency stated in the alien invasive management plan for the development. Annual post-decommissioning site inspection for erosion or water flow regulation problems – with follow up remedial action where problems are identified.	Management	▪ Annual post-decommissioning site inspection for erosion or water flow regulation problems – with follow up remedial action where problems are identified. ▪ Follow-up remedial action where required to address problems identified. ▪ Records of problems and actions taken.	During the decommissioning phase	Management	Annual monitoring for at least 5 years after decommissioning. Annual or more frequent control actions for at least 5 years after decommissioning	Annual monitoring plans are in place and audited.

7.2 AQUATIC ECOLOGY AND FRESHWATER ECOSYSTEMS

Impact Management Outcome: Avoid or reduce impacts to aquatic ecology by avoiding or reducing disturbance to aquatic habitat.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
DESIGN PHASE						
▪ Ensure final layout of transmission line and substation avoids watercourses and recommended buffers as far as possible; utilisation should be made of existing disturbed areas and access roads; ▪ A stormwater management plan should be compiled for the compacted surfaces within the site by the project engineer with input from the freshwater specialist. The plan should aim to reduce the intensity of runoff particularly on the steeper slopes and reduce the intensity of the discharge into the adjacent drainage lines. Where necessary measures to dissipate flow intensity or protect erosion should be included in the plan. Adjacent to wetland areas, the plan should encourage infiltration rather than runoff and should prevent the impedance of surface or sub-surface flows. The plan should also mitigate any contaminated runoff from the construction and operation activities from being discharged into any of the aquatic features within the site; ▪ Adequate and erosion mitigation measures should be incorporated into designs; ▪ For any new infrastructure placed within the watercourses: o The structure should not impede or concentrate the flow in the watercourse. o The structure should also be placed at the base level of the channel and be orientated in line with the channel. o The laydown area(s) with construction camp(s) must be regularly inspected, and waste (including building rubble) removed following the completion of work or an activity associated with the disturbance within the aquatic feature.	Project Developer	▪ Ensure that this is taken into consideration during the planning and design phase.	During the design cycle and before construction commences	ECO	Once-off prior to construction.	Documentary proof of recommended designs in place as well as minutes of meetings.

Impact Management Outcome: Avoid or reduce impacts to aquatic ecology by avoiding or reducing disturbance to aquatic habitat.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
○ Water consumption requirements for the site for the construction must be via an authorised water supply.						
CONSTRUCTION PHASE						
▪ For all project related components within the site, any aquatic features of high sensitivity (wetland areas and vernal pools) within the immediate area should be demarcated by the appointed ECO prior to commencement of the construction activities and treated as no-go areas during the construction phase. ▪ Any activities that require construction within the delineated aquatic features and the recommended buffers should be described in method statements that are approved by the ECO. ▪ Rehabilitation of any the disturbed areas within the aquatic features and the recommended buffer areas should be undertaken immediately following completion of the disturbance activity according to rehabilitation measures as included in a method statement for that specific activity as described above; ▪ Ablution facilities should not be placed within 50 m of any of the aquatic features delineated within the site; ▪ Liquid dispensing receptacles (e.g. lubricants, diesel, shutter oil etc.) must have drip trays beneath them/beneath the nozzle fixtures. Material safety data sheets (MSDS) must be available on site (if required) where products are stored, so that in the event of an incident, the correct action can be taken. Depending on the types of materials stored on site during the maintenance activities, suitable product recovery materials (such as Spillsorb or Drizit products) must be readily available. Vehicles should ideally be washed at their storage yard as opposed to on site. ▪ All relevant authorities, including the Directorate: Pollution and Chemicals Management of DEA&DP will be informed of any event resulting in the spill or leak of hydrocarbons (e.g. petrol, diesel or oil) or any other hazardous substances into the soil	Proponent, Contractor and ECO	▪ Monitoring that no-go areas are adhered to should be undertaken on an ongoing basis for the duration of the construction phase. ▪ Ongoing monitoring of implementation of method statements and rehabilitation measures should be undertaken in the construction phase. ▪ Weekly monitoring of basic water quality constituents (Dissolved oxygen, electrical conductivity, suspended solids, and pH) should be undertaken upstream and downstream of sites where construction activities will need to take place within aquatic features. This should be accompanied with ongoing visual inspections. ▪ Report any spill or leak of hydrocarbons to the relevant authorities, including DEA&DP.	Ongoing during construction	Proponent, Contractor and ECO	Weekly	Carry out inspections and record and report any non-compliance.

Impact Management Outcome: Avoid or reduce impacts to aquatic ecology by avoiding or reducing disturbance to aquatic habitat.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
and or water courses. ▪ Proper waste management should be undertaken within the site with facilities provided for the on-site disposal of waste and the removal of stored waste to the nearest registered solid waste disposal facility						
OPERATIONAL PHASE						
Ongoing control of invasive alien plants within the site should be undertaken according to an approved plan. The plan should make use of alien clearing methods as provided by the Working for Water Programme. Monitoring and control measures should take place at least biannually for the first 3 years of the project. Invasive alien plant material that has been cleared should be removed from the riparian zones and not left on the riverbanks or burnt within the riparian zone and buffer area. Ongoing monitoring of the structures, in particular prior to the rainfall period, should be undertaken to ensure that the integrity of the structures is intact and that they are not block with sediment or debris. Ongoing monitoring post large rainfall events should also be undertaken to identify and address any erosion occurring within the watercourses.	Proponent/ contractor	▪ Ongoing monitoring of invasive alien plants within the site should be undertaken according to an approved plan. ▪ Once the construction activities have ceased, the frequency of the monitoring can be reduced.	Ongoing during operation Monitoring and control measures should take place at least biannually for the first 3 years of the project.	Proponent/ contractor	Weekly	Invasive alien monitoring plan in place and audited.
DECOMMISSIONING PHASE						
For all project related components within the site, the aquatic features of high sensitivity within the immediate area should be demarcated by the appointed ECO prior to commencement of the decommissioning activities and treated as no-go areas during the decommissioning phase.	Project Developer, Contractor and ECO	▪ Monitoring that no-go areas are adhered to should be undertaken on an ongoing basis for the duration of the decommission phase. ▪ Ongoing monitoring of implementation of method statements and rehabilitation measures should be undertaken in the	Ongoing during decommissioning	Proponent, Contractor and ECO	Daily	Carry out inspections and record and report any non-compliance.

Impact Management Outcome: Avoid or reduce impacts to aquatic ecology by avoiding or reducing disturbance to aquatic habitat.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
		decommission phase. ▪ Ongoing monitoring of invasive alien plants within the site should be undertaken according to an approved plan				
Any activities that require decommissioning activities within the delineated aquatic features and the recommended buffers should be described in method statements that are approved by the ECO.	Contractor	▪ Ensure that this is considered and included in the Method Statement to be compiled by the contractor.	Throughout the decommissioning phase	ECO	Weekly	Carry out inspections and record and report any non-compliance.
Rehabilitation of any the disturbed areas within the aquatic features and the recommended buffer areas should be undertaken immediately following completion of the disturbance activity according to rehabilitation measures as included in a method statement for that specific activity.	Contractor	▪ Ensure implementation with the Rehabilitation Plan. Topsoil stockpile areas must be monitored.	Throughout the decommissioning phase	ECO	Weekly	Carry out inspections and record and report any non-compliance.
Control of invasive alien plants within the site should be undertaken according to the approved plan.	Contractor	▪ Ensure implementation with the Alien Plant Management Plan.	Throughout the decommissioning phase	ECO	Weekly	Carry out inspections and record and report any non-compliance.

7.3 VISUAL FEATURES

Impact Management Outcome: Reduce visual intrusion of project activities throughout the life cycle and prevent unnecessary visual clutter.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
DESIGN PHASE						
Ensure plans are in place to minimise fire hazards and dust generation.	Project Developer and Contractor	▪ Compile plans to reduce the risk of fire hazards and dust generation (i.e. Fire Hazard and Dust Generation Plan)	To be undertaken during the design phase, ready for implementation prior to the construction phase	ECO	Once-off	Documentary proof of plans that have been compiled.
Ensure plans are in place to rehabilitate temporary cleared areas as soon as possible.	Project Developer and Specialist	▪ Appoint a necessary specialist to compile a rehabilitation plan for the construction phase	To be undertaken during the design phase, ready for implementation prior to the construction phase	ECO	Once-off	Documentary proof of the plan that have been compiled.
Ensure plans are in place to control and minimise erosion risks.	Project Developer and Contractor	▪ Compile plans to reduce the risk of erosion (i.e. Erosion Management Plan)	To be undertaken during the design phase, ready for implementation prior to the construction phase	ECO	Once-off	Documentary proof of plans that have been compiled.
Power Line: ▪ Locate pylons away from farmstead buildings and beyond the direct line of sight from these buildings as far as possible. ▪ Locate pylons the maximum distance from watercourses as possible. ▪ Install lattice structures (as the preferred pylon structure) as far as possible. ▪ Do not illuminate pylons. ▪ Rehabilitate areas affected by scarring and put measures in place to prevent erosion.	Project Developer	▪ Ensure that this recommendation is considered during the engineering design. Hold discussions with the engineering team in this regard.	To be undertaken during the design phase, ready for implementation prior to the construction phase	ECO	Once-off	Documentary proof of recommended designs in place as well as minutes of meetings.

Impact Management Outcome: Reduce visual intrusion of project activities throughout the life cycle and prevent unnecessary visual clutter.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
▪ (In discussion with the avifauna specialist) reduce the number of bird flappers / balls along the power line route. **Substation:** ▪ Be sensitive towards the use of glass or material with a high reflectivity, which may cause glare and increase visual impacts. ▪ Use low-impact fencing of appropriate colour, such as diamond wire-mesh fencing which is less visually intrusive when viewed from a distance. Palisade fencing and other solid fence structures should be avoided. ▪ Design buildings to be similar to the vernacular of the surrounding farmstead buildings. ▪ Consider using excess excavated material to construct a low (< 1 m) vegetated berm around the substation site to screen the bulk of the substation.						
If the proposed project is the only development along the proposed route then lattice type towers are preferred from a visual impact perspective where not in contradiction with other specialist input. However, this is not an essential mitigation measure but its implementation will reduce the visibility of the development.	Project Developer	▪ Ensure that this recommendation is considered during the engineering design. Hold discussions with the engineering team in this regard.	To be undertaken during the design phase, ready for implementation prior to the construction phase	ECO	Once-off	Documentary proof of recommended designs in place as well as minutes of meetings.
Structure style (e.g. power line pylons/towers) should be the same as for other similar developments along the same route where possible (taking into consideration other specialist recommendations and specifications).	Project Developer	▪ Ensure that this recommendation is considered during the engineering design. Hold discussions with the engineering team in this regard.	To be undertaken during the design phase, ready for implementation prior to the construction phase	ECO	Once-off	Documentary proof of recommended designs in place as well as minutes of meetings.

Impact Management Outcome: Reduce visual intrusion of project activities throughout the life cycle and prevent unnecessary visual clutter.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
CONSTRUCTION PHASE						
Parking areas should be demarcated and strictly controlled so that vehicles are limited to specific areas only.	Contractor	▪ Carry out visual inspections to ensure the construction parking area is demarcated clearly, and to ensure strict control over the parking of construction vehicles and access routes in order to restrict activities to within demarcated areas.	Throughout the construction phase	ECO	Weekly	Report and record any non-compliance via site audits and inspections.
Where possible construction camps and laydown areas should be located (where sensitive visual receptors are least likely to be affected): ▪ In low visibility areas (e.g. avoid ridgelines and open plains); ▪ Previously disturbed areas (e.g. clearings created by farmers for other purposes which are no longer being used); and/or ▪ Areas near derelict farmsteads (taking into consideration the findings of the Heritage Impact Assessment as well as other assessments that may be relevant), particularly where existing trees can be used to screen these areas from views.	Contractor	▪ Ensure that this is taken into consideration for the siting of the proposed construction site camp and laydown area.	Throughout the construction phase	ECO	Weekly	Carry out visual inspections to ensure the construction camp and laydown area are demarcated clearly, and to ensure strict control over the boundary of the site camp and laydown area in order to restrict activities to within demarcated areas. Record findings of visual inspections and take photographs as required.
Night time construction should be avoided where possible (however some construction work on electrical components may need to occur after dark).	Contractor and Project Developer	▪ Construction operation times to be monitored and managed (as well as included in the tender contract).	Throughout the construction phase	ECO	Weekly	Report and record any non-compliance via site audits and inspections.
Night lighting of the construction sites should be minimised within requirements of safety and efficiency.	Contractor and Project Developer	▪ Complaints about night lights should be investigated and documented in a register.	Throughout the construction phase	ECO	Weekly	Report and record any non-compliance via site audits and inspections.

Impact Management Outcome: Reduce visual intrusion of project activities throughout the life cycle and prevent unnecessary visual clutter.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
Particular care should be taken to avoid erosion scarring and damage along the ridge down the escarpment	Contractor and Project Developer	▪ Implement the Erosion Management Plan	Throughout the construction phase	ECO	Weekly	Carry out site visits and inspections of the ridge down the escarpment during the proposed construction activities. Record and report any non-compliance.
Maintain good housekeeping on site to avoid litter and minimize waste. Keep all activities, material and machinery contained within an area that is as small as possible.	Contractor	▪ Inform construction personnel on housekeeping requirements, and ensure the site is cleaned at the end of each day.	Throughout the construction phase	ECO	Weekly	Carry out inspections and record and report any non-compliance.
Limit and phase vegetation clearance and the footprint of construction activities to what is absolutely essential. Monitor construction sites for strict adherence to demarcated boundaries and minimise areas of vegetation, ground and surface disturbance. Existing clearings should be used where possible and where required. Consolidate the footprint of the construction camp to a functional minimum. Screen the yard with materials that blend into the surrounding area.	Contractor	▪ Undertake visual inspections to verify that this is being implemented.	Throughout the construction phase	ECO	Weekly	Carry out inspections and record and report any non-compliance.
Monitor that existing roads will be used for access as far as possible and that construction of new access roads is minimised. If new roads are required, then avoid clearing natural vegetation to facilitate access to the final pylon positions. If access across natural vegetation is required, then prune/remove large shrubs rather than clearing vegetation completely.	Contractor	▪ Undertake visual inspections to verify that this is being implemented.	Throughout the construction phase	ECO	Weekly	Carry out inspections and record and report any non-compliance.
Monitor that topsoil from the site is stripped, stockpiled, and stabilised before excavating earth for the proposed construction.	Contractor	▪ Ensure implementation with the Rehabilitation Plan. Topsoil stockpile areas must be monitored.	Throughout the construction phase	ECO	Weekly	Carry out inspections and record and report any non-compliance.
Monitor that vegetation material from vegetation removal is mulched and spread over fresh soil disturbances to aid in the rehabilitation	Contractor	▪ Ensure implementation with the Rehabilitation	Throughout the construction phase	ECO	Weekly	Carry out inspections and record and report any

Impact Management Outcome: Reduce visual intrusion of project activities throughout the life cycle and prevent unnecessary visual clutter.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
process.		Plan.				non-compliance.
Rehabilitate disturbed areas incrementally and as soon as possible, not necessarily waiting until completion of the Construction Phase.	Contractor	▪ Ensure implementation with the Rehabilitation Plan.	Throughout the construction phase	ECO	Weekly	Carry out inspections and record and report any non-compliance.
Avoid excavation, handling and transport of materials which may generate dust under high wind conditions.	Contractor and Project Developer	▪ Implement the Dust Control Plan	Throughout the construction phase	ECO	Weekly	Carry out inspections and record and report any non-compliance.
Monitor adherence to the following: ▪ lighting plan; ▪ rehabilitation plan (i.e. where cleared areas are rehabilitated as soon as possible); ▪ erosion control plan; and ▪ dust and fire control plans.	Contractor and Project Developer	▪ Implement the various plans	Throughout the construction phase	ECO	Weekly	Carry out inspections and record and report any non-compliance.
DECOMMISSIONING PHASE						
▪ Disturbed and transformed areas should be contoured to approximate naturally occurring slopes to avoid lines and forms that will contrast with the existing landscapes. ▪ Edges of re-vegetated areas should be feathered to reduce form and line contrasts with surrounding undisturbed landscape.	Contractor and Project Developer	▪ Conduct visual inspections to ensure that landscaping is following the rehabilitation plan.	Throughout the decommissioning phase	ECO	Weekly	Carry out inspections and record and report any non-compliance.
Where possible decommissioning camps and laydown areas should be located (where sensitive visual receptors are least likely to be affected): ▪ In low visibility areas (e.g. avoid ridgelines and open plains); ▪ Previously disturbed areas (e.g. clearings created by farmers for other purposes which are no longer being used); and/or ▪ Areas near derelict farmsteads (taking into consideration the findings of the Heritage Impact Assessment as well as other assessments that may be relevant), particularly where existing	Contractor	▪ Ensure that this is taken into consideration for the siting of the proposed decommissioning site camp and laydown area.	Throughout the decommissioning phase	ECO	Weekly	Carry out visual inspections to ensure the camp and laydown area are demarcated clearly, and to ensure strict control over the boundary of the site camp and laydown area in order to restrict activities to within demarcated areas. Record findings of visual

Impact Management Outcome: Reduce visual intrusion of project activities throughout the life cycle and prevent unnecessary visual clutter.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
trees can be used to screen these areas from views.						inspections and take photographs as required.
Stockpiled topsoil should be reapplied to disturbed areas and these areas should be re-vegetated using a mix of indigenous species in such a way that the areas will form as little contrast in form, line, colour and texture with the surrounding undisturbed landscape.	Contractor	▪ Ensure implementation with the Rehabilitation Plan. Topsoil stockpile areas must be monitored.	Throughout the decommissioning phase	ECO	Weekly	Carry out inspections and record and report any non-compliance.
Night lighting of decommissioning sites should be minimised within requirements of safety and efficiency.	Contractor and Project Developer	▪ Complaints about night lights should be investigated and documented in a register.	Throughout the decommissioning phase	ECO	Weekly	Report and record any non-compliance via site audits and inspections.
Working at night should be avoided where possible.	Contractor and Project Developer	▪ Decommissioning operation times to be monitored and managed (as well as included in the tender contract).	Throughout the decommissioning phase	ECO	Weekly	Report and record any non-compliance via site audits and inspections.
Maintain good housekeeping on site to avoid litter and minimize waste. Keep all activities, material and machinery contained within an area that is as small as possible.	Contractor	▪ Inform construction personnel on housekeeping requirements, and ensure the site is cleaned at the end of each day.	Throughout the decommissioning phase	ECO	Weekly	Carry out inspections and record and report any non-compliance.
Limit and phase vegetation clearance and the footprint of decommissioning activities to what is absolutely essential. Monitor sites for strict adherence to demarcated boundaries and minimise areas of vegetation, ground and surface disturbance. Existing clearings should be used where possible and where required. Consolidate the footprint of the decommissioning camp to a functional minimum. Screen the yard with materials that blend into the surrounding area.	Contractor	▪ Undertake visual inspections to verify that this is being implemented.	Throughout the decommissioning phase	ECO	Weekly	Carry out inspections and record and report any non-compliance.
Monitor that existing roads will be used for access as far as possible.	Contractor	▪ Undertake visual inspections to verify that this is being implemented.	Throughout the decommissioning phase	ECO	Weekly	Carry out inspections and record and report any non-compliance.

Impact Management Outcome: Reduce visual intrusion of project activities throughout the life cycle and prevent unnecessary visual clutter.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
Monitor that topsoil from the site is stripped, stockpiled, and stabilised before excavating earth.	Contractor	▪ Ensure implementation with the Rehabilitation Plan. Topsoil stockpile areas must be monitored.	Throughout the decommissioning phase	ECO	Weekly	Carry out inspections and record and report any non-compliance.
Monitor that vegetation material from vegetation removal is mulched and spread over fresh soil disturbances to aid in the rehabilitation process.	Contractor	▪ Ensure implementation with the Rehabilitation Plan.	Throughout the decommissioning phase	ECO	Weekly	Carry out inspections and record and report any non-compliance.
Rehabilitate disturbed areas incrementally and as soon as possible, not necessarily waiting until completion of the Decommissioning Phase.	Contractor	▪ Ensure implementation with the Rehabilitation Plan.	Throughout the decommissioning phase	ECO	Weekly	Carry out inspections and record and report any non-compliance.
Avoid excavation, handling and transport of materials which may generate dust under high wind conditions.	Contractor and Project Developer	▪ Implement the Dust Control Plan	Throughout the decommissioning phase	ECO	Weekly	Carry out inspections and record and report any non-compliance.
Monitor adherence to the following: ▪ Monitor adherence to lighting plan. ▪ Monitor adherence to rehabilitation plan (i.e. where cleared areas are rehabilitated as soon as possible). ▪ Monitor adherence to erosion control plan. ▪ Monitor adherence to dust and fire control plans.	Contractor and Project Developer	▪ Implement the various plans	Throughout the decommissioning phase	ECO	Weekly	Carry out inspections and record and report any non-compliance.

7.4 HERITAGE: ARCHAEOLOGY, PALAEONTOLOGY AND CULTURAL LANDSCAPE

Impact Management Outcome: To minimise the impact on and risk to heritage features.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
DESIGN PHASE						
Ensure that all areas not already surveyed are examined by an archaeologist in order to identify any areas or sites that should be protected or mitigated prior to commencement of development. Note that this requirement pertains to unsurveyed parts of the proposed route as well as to any alterations made after completion of this report.	Project Developer	▪ Project Developer to appoint a suitably qualified archaeologist to survey areas that were not surveyed during the BA Process and will be impacted on by the proposed infrastructure.	During the design phase, prior to the commencement of construction	ECO	Once-off	Archaeologist appointed, survey completed and report compiled.
A walk-down must be conducted by a qualified archaeologist and palaeontologist before construction commences. Reports detailing the results of the walk-down will be submitted to SAHRA for comment	Project Developer	▪ Project Developer to appoint a qualified archaeologist and palaeontologist to do a pre-construction walk-down.	During the design phase, prior to the commencement of construction	ECO	Once-off	Archaeologist and palaeontologist appointed, report compiled and submitted to SAHRA.
Significant palaeontological and archaeological sites (refer to the list below, as well as mapping in the specialist assessment (Appendix D.4 of the BA Report)) must be identified on project maps and regarded as no-go zones with buffers of at least 30 m around all associated features. There are two buffer exceptions. One is the rock art site (waypoint 492 in Western Cape) which is within 20 m of the service track, while the other is the kraal complex (waypoint 546 in Northern Cape) that has an existing farm road passing through it. In both instances, vehicles and activity must be confined to the existing roads, preferably with no widening. The relevant waypoints to be avoided with buffers of at least 30 m around all associated features are as follows (from west to east): 524, 546, Site 51, 614 (whole complex included), 498 (whole complex included), 492 and 1785. Note that this list includes only those sites located within 500 m of the footprint area.	Project Developer	▪ Project Developer ensure that these palaeontological and archaeological sites are avoided and marked as no-go areas on maps when planning the pylon sites and associated infrastructure. This must be considered during the design phase. ▪ Project developer to ensure that a buffer of 30 m is applied to the uranium anomalies mapped on the farms	To be undertaken during the design phase, ready for implementation prior to the construction phase	ECO	Once-off	Documentary proof of recommended designs in place as well as minutes of meetings.

Impact Management Outcome: To minimise the impact on and risk to heritage features.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
The uranium anomalies as shown in Figure 18 mapped on the farms Gunstfontein151 and Beeren Valley 150 of the Palaeontological Impact Assessment (PIA, Appendix D.4) will be protected by a 30 m radius buffer zone. Location 535 on Farm Beeren Valley will be protected with a 30 m buffer zone radius. This site comprises an articulated partial postcranial skeleton of a large tetrapod embedded in grey-green overbank mudrock. This specimen is conservation worthy. The farm road passing through the kraal complex at waypoint 546 (Northern Cape) may not be widened towards the east and should preferably not be widened at all;		Gunstfontein151 and Beeren Valley 150. ▪ Project developer to ensure that a buffer of 30 m is applied to location 535 of the PIA as this contains an articulated partial postcranial skeleton which is conservation worthy. ▪ Project Developer ensure that road passing through the kraal complex at waypoint 546 may not be widened towards the east and should prefably not be widened at all.				
CONSTRUCTION AND DECOMMISSIONING PHASES						
The ECO should be aware of the potential for fossils to be uncovered during excavations. Excavations (>1 m deep) and all surface clearance should be monitored by the ECO during construction and if any fossils are uncovered they should be protected *in situ* and immediately reported to a palaeontologist in order to plan a way forward. It is understood that the ECO would not be able to watch the excavation team full time, but as many holes as possible should be examined along with their spoil heaps.	Project Developer	▪ Ensure that the ECO receives adequate training from a professional specialist to be able to identify fossils during excavations. ▪ A Chance Fossil Finds Procedure is recommended.	During the construction phase (and as applicable during the decommissioning phase)	ECO	During excavation work during the construction phase (and as applicable during the decommissioning phase)	Undertake inspections and record all findings and document the inspection process.
If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA.	Project Developer	▪ Ensure that the ECO receives adequate training from a professional specialist to be able to identify archaeological sites or remains and fossils during excavations.	During the construction phase (and as applicable during the decommissioning phase)	ECO	During excavation work during the construction phase (and as applicable during the decommissioning phase)	Undertake inspections and record all findings and document the inspection process.

Impact Management Outcome: To minimise the impact on and risk to heritage features.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. Adhere to section 51 (1) of the NHRA.		▪ Ensure that the ECO and construction workers are adequately trained and sensitized to potential graves to be discovered.				
The engraving at waypoint 1785 in Western Cape should be fenced off during construction with a 30 m buffer but fencing of the other identified sites listed above is not necessary since, with the exception of the rock art site, none are very close to the route. The rock art is not easily discernible by a non-specialist and it is better not to draw attention to it. However, no entry signs should be placed at regular intervals around the two historical complexes in Western Cape.	Project Developer	▪ Ensure that the site is fenced off and no-entry signs are placed at the two historical complexes.	During the construction and decommissioning phases	ECO	Weekly	Carry out inspections and record and report any non-compliance.
These no-go sites should be examined periodically by the ECO during the construction and decommissioning phases to ensure that they are being respected.	Project Developer	▪ Ensure that contractors and staff are constantly made aware to stay away from no-go areas.	During the construction and decommissioning phases	ECO	Weekly	Carry out inspections and record and report any non-compliance.
Should heritage resources be uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA.	Project Developer	▪ A Phase 2 rescue operation may be required subject to permits issued by SAHRA. ▪ Ensure that the site is fenced off. ▪ Ensure the immediate appointed of a professional archaeologist or palaeontologist, depending the nature of the finds.	During the construction and decommissioning phases.	ECO	During excavation work during the construction phase (and as applicable during the decommissioning phase)	Undertake inspections and record all findings and document the inspection process. Appointed of a professional archaeologist or palaeontolo-gist, depending the nature of the finds.

Impact Management Outcome: To minimise the impact on and risk to heritage features.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
Monitoring reports must be submitted to the SAHRIS application by the ECO or appointed heritage specialist after the construction phase has occurred with regards to sites 546, 524 and Site 51 to ensure that the recommended buffer zones have been adhered to.	Project Developer	▪ Ensure that contractors and staff are constantly made aware to stay away from no-go areas. ▪ Submit monitoring reports to the SAHRIS application	During the construction and decommissioning phases Following construction phase	ECO ECO or appointed Heritage specialist	Weekly After construction	Carry out inspections and record and report any non-compliance. Submission of monitoring reports to SAHRIS application.

7.5 AVIFAUNA

Impact Management Outcome: Avoid or minimise impacts to avifauna by reducing unnecessary destruction and degradation of the habitat of Red Data Species.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
DESIGN PHASE						
A site-specific Construction EMPr (CEMPr) must be designed which gives an appropriate and detailed description of how construction activities must be conducted to reduce unnecessary destruction and degradation of habitat to avoid or reduce displacement of Red Data Species.	Project developer and avifaunal specialist	A site-specific CEMPr must be implemented.	Once-off prior to construction	Project developer and avifauna specialist.	Once-off prior to construction.	A site-specific CEMPr is in place and signed off by an avifaunal specialist.
CONSTRUCTION PHASE						
A site-specific CEMPr must be implemented, which gives an appropriate and detailed description of how construction activities must be conducted to reduce unnecessary destruction and degradation of habitat to avoid or reduce displacement of Red Data Species.	ECO	Implementation of the CEMPr. Oversee activities to ensure that the CEMPr is implemented and enforced via site audits and inspections.	Before construction commences.	ECO	On a daily basis	Report and record any non-compliance via site audits and inspections.
All contractors are to adhere to the CEMPr and should apply good environmental practice during construction. The CEMPr should specifically include the following: ▪ The minimum footprint areas for infrastructure should be used wherever possible, including road widths and lengths.	ECO	Ensure that the construction area and footprint is kept to a minimum. Carry out regular site inspections to verify the limits of the construction area to ensure unnecessary disturbance is avoided.	During construction.	ECO	Weekly	Report and record any non-compliance via site audits and inspections.
▪ No off-road driving.	ECO	Ensure that construction personnel are made aware of the impacts relating to off-road driving. Construction access roads must be demarcated clearly. Undertake site visits to verify.	During construction.	ECO	Weekly	Undertake site inspections to verify.

Impact Management Outcome: Avoid or minimise impacts to avifauna by reducing unnecessary destruction and degradation of the habitat of Red Data Species.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
▪ Maximum use of existing roads.	ECO	Ensure that construction personnel are made aware of the impacts relating to off-road driving. Construction access roads must be demarcated clearly. Monitor via site inspections.	During construction.	ECO	Weekly	Undertake site inspections to verify.
▪ Measures to control dust.	ECO	Monitor the implementation of dust control mechanisms via site inspections. Monitor via site inspections.	During construction.	ECO	Weekly	Undertake site visits and record and report non-compliance.
▪ Measures to control noise.	ECO	Monitor the implementation of noise control mechanisms via site inspections and record and report non-compliance.	During construction.	ECO	Weekly	Undertake site visits and record and report non-compliance.
▪ Restricted access to the rest of the property.	ECO	Ensure that the construction area is demarcated clearly and that construction personnel are made aware of these demarcations. Monitor via site inspection and report non-compliance.	During construction.	ECO	Weekly	Monitor via site inspections and report non-compliance.
The appointed ECO must be trained by an avifaunal specialist to identify the potential priority species as well as the signs that indicate possible breeding by these species. The ECO must then, during audits/site visits, make a concerted effort to look out for such breeding activities of Red Data species, and such efforts may include the training of construction staff to identify Red Data species, followed by regular questioning of staff as to the regular whereabouts on site of these species. If any of the Red Data species are confirmed to be breeding (e.g. if a nest site is found), construction activities within 500 m of the breeding site must cease, and an avifaunal specialist is to be contacted immediately	Project developer, avifauna specialist and ECO	Ensure that the construction area is demarcated clearly and that construction personnel are made aware of these demarcations. Monitor via site inspections and report non-compliance.	Before construction commences and during the construction phase.	ECO	Weekly	Record training in a training register and include attendance register.

Impact Management Outcome: Avoid or minimise impacts to avifauna by reducing unnecessary destruction and degradation of the habitat of Red Data Species.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
for further assessment of the situation and instruction on how to proceed.						
Prior to construction, an avifaunal specialist should conduct a site walk through, covering the final road and power line routes, to identify any nests/breeding/roosting activity of priority species, as well as any additional sensitive habitats. The results of which may inform the final construction schedule in close proximity to that specific area, including abbreviating construction time, scheduling activities around avian breeding and/or movement schedules, and lowering levels of associated noise.	Project developer, avifauna specialist and ECO	Appoint an Avifauna Specialist prior to the construction phase to train and guide the ECO to identify potential priority species and signs for potential breeding.	Once-off before construction commences, for a three-day period.	Project developer, avifauna specialist and ECO	Once-off before construction commences, for a three-day period.	Record training in a training register and include attendance register. Record via photographs.
	ECO	ECO to undertake site visits and audits to find breeding sites.	Before and during construction.	ECO	Weekly	Keep a register of site visits undertaken and record any breeding sites. Record via photographs.
	ECO	ECO to provide training and information sessions to the construction personnel to identify Red Data species. Conduct regular audits of attendance registers for training.	Before and during construction.	ECO	Once-off and ensure all new construction personnel are trained in this regard.	Keep attendance registers for training.
	Project developer, avifauna specialist and ECO	Ensure that construction activities are stopped within 500 m of any breeding sites of Red Data species. Ensure that an avifaunal specialist is contacted immediately for further assessment. Conduct audits to verify the placement	Throughout construction when breeding sites are found.	Project developer, avifauna specialist and ECO	Throughout construction when breeding sites are found.	Record audit findings. Record via photographs.

Impact Management Outcome: Avoid or minimise impacts to avifauna by reducing unnecessary destruction and degradation of the habitat of Red Data Species.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
		of the buffer area and verify if the avifaunal specialist has been appointed.				
Following construction, rehabilitation of all areas disturbed (e.g. temporary access tracks) must be undertaken and to this end a habitat restoration plan is to be developed by a rehabilitation specialist and implemented accordingly.	ECO, project developer and rehabilitation specialist	Appoint a rehabilitation specialist to develop a Habitat Restoration Plan.	Following construction.	ECO, project developer and rehabilitation specialist	Once-off prior to the completion of construction.	Ensure that the rehabilitation plan is approved by auditing the final and signed report acceptance.
	ECO, project developer and rehabilitation specialist	Monitor rehabilitation via site audits and site inspections to ensure compliance.	Following construction.	ECO, project developer and rehabilitation specialist	Monthly during the construction phase.	Record and report any non-compliance.
Anti-collision devices such as bird flappers must be installed on all high risk sections of the powerlines to forewarn birds of the risk	ECO and project developer	Ensure contractors are adequately trained to install devices.	During construction.	ECO and project developer	Once off or as required during maintenance	Bird anti-collision devices are installed on the power line.
OPERATIONAL PHASE						
The hardware within the proposed transmission substation yard is too complex to warrant any mitigation for electrocution at this stage. It is recommended that if on-going impacts are recorded once operational, site specific mitigation be applied reactively. If any electrocutions of Red Data avifauna are reported in the proposed transmission substation yard, the avifaunal specialist must be notified for an inspection of the problem and advice on how the problem can be resolved, if at all, through appropriate mitigation.	Avifaunal specialist, project developer and Environmental Manager	Avifaunal specialist to be appointed to conduct on-site investigation. Environmental Manager to verify appointment of specialist and monitor the frequency of monitoring by auditing signed reports and minutes of meetings.	During operational phase.	Avifaunal specialist, project developer and Environmental Manager	As and when required.	Maintain photographic record of bird mortalities at power lines and substation site. Record and report any non-compliance.

Impact Management Outcome: Avoid or minimise impacts to avifauna by reducing unnecessary destruction and degradation of the habitat of Red Data Species.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible Person	**Method of Implementation**	**Timeframe for Implementation**	**Responsible Person**	**Frequency**	**Evidence of Compliance**
The operational monitoring programme must include regular monitoring of the grid connection power line for collision mortalities.	Avifaunal specialist and facility manager	Avifaunal specialist to be appointed and must conduct a quarterly walk-through of the grid connection. Environmental Manager to verify appointment of specialist and monitor the frequency of monitoring by auditing signed reports and minutes of meetings.	During operational phase.	Avifaunal specialist and facility manager	Quarterly	Records of bird mortalities in operational monitoring programme. Conduct audits and record and report any non-compliance.
DECOMMISSIONING PHASE						
A site-specific Decommissioning EMPr (DEMPr) must be implemented, which gives appropriate and detailed description of how decommissioning activities must be conducted to reduce unnecessary destruction of habitat. All contractors are to adhere to the DEMPr and should apply good environmental practice during decommissioning.	ECO	Implementation of a DEMPr and oversee activities to ensure that the DEMPr is implemented and enforced. Conduct site audits and inspections.	During decommissioning.	ECO	On a daily basis.	Undertake site audits and inspections. Record and report any non-compliance.
Following decommissioning, rehabilitation of all areas disturbed (e.g. temporary access tracks) must be undertaken and to this end a habitat restoration plan is to be developed by a rehabilitation specialist and implemented accordingly.	Project Developer, Rehabilitation Specialist and ECO	Appointment of Rehabilitation Specialist to develop a Habitat Restoration Plan.	Following decommissioning.	Project Developer, Rehabilitation Specialist and ECO	Once-off prior to the completion of decommissioning.	The Restoration plan must be approved by auditing the final and signed report acceptance.
	ECO, Construction Manager or Contractor	Monitor rehabilitation via site audits and site inspections to ensure compliance.	Following decommissioning.	ECO, Construction Manager or Contractor	Monthly during the decommissioning phase.	Undertake site audits and inspections and record and report

Impact Management Outcome: Avoid or minimise impacts to avifauna by reducing unnecessary destruction and degradation of the habitat of Red Data Species.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
						any non-compliance.

7.6 AGRICULTURE

Impact Management Outcome: To avoid or reduce impact on agricultural land through effective storm water and erosion control.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
DESIGN PHASE						
Design an effective system of storm water run-off control, where it is required - that is at any points where run-off water might accumulate. The system must effectively collect and safely disseminate any run-off water from all hardened surfaces and it must prevent any potential down slope erosion.	Holder of the EA	Ensure that the storm water run-off control is included in the engineering design.	Once-off during the design phase	Holder of the EA	Once-off during design phase.	Effective system of storm water run-off control in place.
CONSTRUCTION PHASE						
Implement an effective system of storm water run-off control, where it is required - that is at any points where run-off water might accumulate. The system must effectively collect and safely disseminate any run-off water from all hardened surfaces and it must prevent any potential down slope erosion.	ECO	▪ Undertake a periodic site inspection to verify and inspect the effectiveness and integrity of the storm water run-off control system and to specifically record the occurrence of any erosion on site or downstream. ▪ Corrective action must be implemented to the run-off control system in the event	During construction phase	ECO	Monthly	Records and findings of site inspection. Records of correction action must be in place.

Impact Management Outcome: To avoid or reduce impact on agricultural land through effective storm water and erosion control.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
		of any erosion occurring.				
OPERATIONAL PHASE						
Maintain the storm water run-off control system. Monitor erosion and remedy the storm water control system in the event of any erosion occurring.	Facility Environmental Manager	▪ Undertake a periodic site inspection to verify and inspect the effectiveness and integrity of the storm water run-off control system and to specifically record the occurrence of any erosion on site or downstream. ▪ Corrective action must be implemented to the run-off control system in the event of any erosion occurring.	During Operational phase	Facility Environmental Manager	Bi-Annually	Records and findings of site inspection. Records of correction action must be in place.
DECOMMISSIONING PHASE						
▪ Maintain the storm water run-off control system. ▪ Monitor erosion and remedy the storm water control system in the event of any erosion occurring.	Project Developer	▪ Undertake a periodic site inspection to verify and inspect the effectiveness and integrity of the storm water run-off control system and to specifically record the occurrence of any erosion on site or downstream. ▪ Corrective action must be implemented to the run-off control system in the event of any erosion occurring	During the decommissioning phase	ECO	Monthly	Records and findings of site inspection. Records of correction action must be in place.

8 APPENDIX A – PRE-APPROVED GAZETTED GENERIC EMPRS

PRE-APPROVED GENERIC EMPR TEMPLATE FOR OVERHEAD ELECTRICITY TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE GOVERNMENT GAZETTE 42323, GOVERNMENT NOTICE 435

SECTION 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 contactor 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
– 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: a)Safety notifications; and						

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
b) No littering. – Environmental awareness training must include as a minimum the following: 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 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. – 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.						

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
– 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						

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
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
– 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
– 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; – 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.						

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
– 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;						

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
– 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 restricted areas, where appropriate and would not cause harm to the sensitive flora; – 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.						

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
– 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: 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 implemented. – Ensure water conservation is being practiced by: 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.						

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
– 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, such as soils and silt, may be released into watercourses or water bodies only once all suspended solids						

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
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.						

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
– 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; – 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.						

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
– 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; – 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: a) Water levels during the period of construction; b) No altering of the bed, banks, course or characteristics of a watercourse c) 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; d) 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 e) 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.						

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
General: – 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 pest control operator or is appropriately trained; – 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*. Servitude: – 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)						

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
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 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.						

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
– 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 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; – 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						

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
– 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.						

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
– 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.						

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
– 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
– 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: 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
– 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
– 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
– The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives substituted where possible; – 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); – 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						

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
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*.						

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
– 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						

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
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
– 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 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*.						

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
– 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 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 m^2 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.						

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
– 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: 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
– 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
– 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
– 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 person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– 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
– 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 managed in accordance with *Section 5.17: Hazardous substances*. – 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*.						

5.27. Assembly and erecting towers

Impact management outcome: No environmental degradation occurs as a result of assembly and erecting of towers.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– 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 of environmental impact; – 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;						

Impact management outcome: No environmental degradation occurs as a result of assembly and erecting of towers.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– 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 that 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 accordance with the requirements specified in Section 5.29: Landscaping and rehabilitation; – 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.						

5.28. 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
– 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						

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
with Section 5.17: Hazardous substances; – 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.						

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
– 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						

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
– 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		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– 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

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
– 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 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; – 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:						

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
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						

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.

PRE-APPROVED GENERIC EMPR TEMPLATE FOR SUBSTATION INFRASTRUCTURE FOR THE TRANSMISSION AND DISTRIBUTION OF ELECTRICITY GOVERNMENT GAZETTE 42323, GOVERNMENT NOTICE 435

SECTION 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 contactor 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
– 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: a) Safety notifications; and b) No littering. – Environmental awareness training must include as a minimum the following: a) Description of significant environmental impacts, actual or potential, related to their work activities; b) Mitigation measures to be implemented when carrying out specific						

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
activities; 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. – 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.						

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
– 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;						

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
– 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
– 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
– 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. – Any access route deviation from that in the written agreement must be closed and						

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
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.						

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
– 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						

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
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; – 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.						

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
– 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: 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 implemented. – Ensure water conservation is being practiced by: 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.						

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
– 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, 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.						

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
– 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; – General waste produced onsite must be disposed of at registered waste disposal sites/ recycling company;						

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
– 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.						

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
– 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; – 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: a) Water levels during the period of construction; b) No altering of the bed, banks, course or characteristics of a watercourse c) 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; d) Where earthwork is being undertaken in close proximity to any						

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
watercourse, slopes must be stabilised using suitable materials, i.e. sandbags or geotextile fabric, to prevent sand and rock from entering the channel; and e) 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.						

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
General: – 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						

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
or is appropriately trained; – 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***. Alien invasive vegetation must be removed and disposed of at a licensed waste management facility.						

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
– 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. 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; – 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.						

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
– 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.						

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
– 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
– 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: 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
– 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;						

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
– 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
– 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
– The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives substituted where possible; – 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						

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
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); – 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						

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
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***.						

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
– 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
– 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 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***.						

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
– 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;						

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
– 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.						

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
– 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
– 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						

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
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
– 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
– 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;						

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
– 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 person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– 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
– 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**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– 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
– 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						

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
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
– 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
– 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***.						

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
– 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
– 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

Impact management outcome: Minimise the risk of environmental impact during periods of site closure greater than five days.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– 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						

Impact management outcome: Minimise the risk of environmental impact during periods of site closure greater than five days.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
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
– 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
– 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; – 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: a) Annual and perennial plants are chosen;						

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
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						

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.

9 APPENDIX B – CURRICULUM VITAE OF THE EAP

Name of firm:	CSIR
Name of staff	Minnelise Rouchelle-Ann Levendal
Profession:	Environmental Assessment Practitioner/Project Manager
Position in firm:	Senior Environmental Assessment Practitioner
Years' experience:	18 years
Nationality:	South African
Languages:	Afrikaans and English
Affiliation:	SACNASP Registered Professional Natural Scientist (Registration Number: 117078)

Biographical sketch

Minnelise has more than 15 years of experience in environmental assessment and management, and is a Senior Environmental Assessment Practitioner (EAP) in the Environmental Management Services (EMS) group of the CSIR in Stellenbosch. She is a Registered Professional Natural Scientist (Registration Number: 117078) with the South African Council for Natural Scientific Professions (SACNASP). Minnelise has experience in the management and integration of various types of environmental assessments in South Africa for various sectors, including renewable energy and industry. Minnelise has undertaken several Environmental Assessments for wind farms and solar PV farms (i.e. EIAs, BAs, and Amendment and Appeal Processes) in the Northern Cape, Western Cape and Eastern Cape. Minnelise is currently the project leader for the Amendment processes for the adjacent Sutherland, Sutherland 2, and Rietrug WEFs, which received positive Environmental Assessments. A list of projects she had undertaken is provided below.

Education

1998	M.Sc. (Botany), Stellenbosch University
1994	B.Sc. (Hons.) (Botany), University of the Western Cape
1993	B.Sc. (Education), University of the Western Cape

Name of current employer	Position	From	To
CSIR (Environmental Management Services-EMS);	Senior Environmental Assessment Practitioner	2006	Present
CSIR (Natural Resources and the Environment)	Environmental Researcher	2004	2006
Western Cape Department of Environmental Affairs and Development Planning (DEA&DP)	Assistant Director	2003	2004
	Principal Environmental Officer	2002	2003
	Principal Environmental Officer	2002	2003
	Senior Environmental Officer	2001	2002
	Environmental Officer	1999	2000
University of the Western Cape	Junior Lecturer	1996	1996
Cape Peninsula University of Technology	Junior Lecturer	1995	1995

- Public Participation in Environmental Authorisation in South Africa: IAIA workshop presented by Tisha Greyling and Erika Du Plessis (2016).
- Environmental Law: Shepstone Wylie Attorneys; Presented by Janice Tooley (2015).
- Sharpening the Tool: New techniques and methods in Environmental Impact Assessment: Sustainable
- Environmental Solutions (Pty) Ltd (2015).
- Effective Skills for Challenging Meetings & Engagements: Conflict Dynamics (2015).
- Science Communication and Working with the Media: Proof Communications/Jive Media Africa (2014).
- Leadership, Innovation and Change Management: University of Stellenbosch (Business School) (2013).
- MS Project: CILLA (2011).
- Project Management I and II: CILLA (2005)
- Social Impact Assessment: IAIA workshop (2002)
- Environmental Law ("The New Environmental Law Course for Environmental Managers): University of Potchefstroom: Center for Environmental Management) (2002).
- Implementing Environmental Management Systems (SABS/ISO 14001:1996): University of Potchefstroom: Center for Environmental Management (2002).
- Conflict Management in Environmental Issues: University of Potchefstroom: Center for Environmental Management) (2001).

The following table presents a list of key projects undertaken by Minnelise Levendal at the CSIR to date, as well as the role played in each project:

Environmental Impact Assessment (EIAs) and Basic Assessments (BAs)-including their respective Environmental Management Programmes (EMPRs):

Completion Date	Project description	Role	Client
2019	Amendment Application for the proposed Kuruman Phase 1 Wind Energy Facility near Kuruman in the Northern Cape	Project Leader and EAP	Mulilo Renewable Project Developments (Pty) Ltd
2019	Amendment Application for the proposed Kuruman Phase 2 Wind Energy Facility near Kuruman in the Northern Cape	Project Leader and EAP	Mulilo Renewable Project Developments (Pty Ltd
2019	Substantive Amendment Application for the proposed Kap Vley Wind Energy Facility near Kleinzee in the Northern Cape	Project Leader and EAP	juwi Renewable Energies (Pty) Ltd
2019	Substantive Amendment Application for the proposed Rietrug Wind Energy Facility near Sutherland in the Northern Cape	Project Leader and EAP	South Africa Mainstream Renewable Power Developments (Pty) Ltd
2019	Substantive Amendment Application for the proposed Sutheland Wind Energy Facility near Sutherland in the Northern and Western Cape	Project Leader and EAP	South Africa Mainstream Renewable Power Developments (Pty) Ltd
2019	Substantive Amendment Application for the proposed Sutherland 2 Wind Energy Facility near Sutherland in the Northern Cape	Project Leader and EAP	South Africa Mainstream Renewable Power Developments (Pty) Ltd
2019	BA for the proposed Gromis wind farm near Kleinzee in the Northern Cape	Project Leader and EAP	ENERTRAG South Africa (Pty) Ltd
2019	BA for the proposed Komas wind farm near Kleinzee in the Northern Cape	Project Leader and EAP	ENERTRAG South Africa (Pty) Ltd
2019	BA for the proposed electrical infrastructure for the Gromis wind farm near Kleinzee in the Northern Cape	Project Leader and EAP	ENERTRAG South Africa (Pty) Ltd
2019	BA for the proposed electrical infrastructure for the Komas wind farm near Kleinzee in the Northern Cape	Project Leader and EAP	ENERTRAG South Africa (Pty) Ltd
2018-2019	BA for the proposed Kudusberg WEF near Sutherland in the Northern and Western Cape	Project Leader and EAP	G7 Renewable Energies (Pty) Ltd
2017-2018	EIA for the proposed Kap Vley Wind Energy Facility near Kleinzee in the Northern Cape	Project Leader and EAP	juwi Renewable Energies (Pty) Ltd
2018	BA for the proposed electrical infrastructure to support he proposed Kap Vley Wind Energy Facility near Kleinzee in the Northern Cape	Project Leader and EAP	juwi Renewable Energies (Pty) Ltd
2015-2016	EIA for the Gemsbok Solar Photovoltaic, PV 3 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2015-2016	EIA for the Gemsbok Solar PV 4 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2015-2016	EIA for the Gemsbok Solar PV 5 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2015-2016	EIA for the Gemsbok Solar PV 6 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2015-2016	EIA for the Boven Solar PV 2 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2015-2016	EIA for the Boven Solar PV 3 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2015-2016	EIA for the Boven Solar PV 4 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2010-2011 (EA Granted)	EIA for the proposed Ubuntu wind energy project, Eastern Cape	Project Manager	WKN Windkraft SA
2010-2011 (EA granted)	EIA for the proposed Banna Ba Pifhu wind energy project, Eastern Cape	Project Manager	WKN Windkraft SA
2010-2011 (EA granted)	BA for a powerline for a WEF near Swellendam in the Western Cape	Project Manager	BioTherm Energy (Pty Ltd
2010-2011 (EA Granted)	EIA for a proposed wind farm near Swellendam in the Western Cape	Project Manager	BioTherm Energy (Pty Ltd
2010	Basic Assessment for the erection of two wind	Project Manager	BioTherm Energy (Pty Ltd

Completion Date	Project description	Role	Client
(EAs granted)	monitoring masts near Swellendam and Bredasdorp in the Western Cape		
2010 (complete)	Basic Assessment for the erection of two wind monitoring masts near Jeffrey's Bay in the Eastern Cape	Project Manager	Windcurrent (Pty Ltd
2009-2010 (EAs granted)	Basic Assessment Process for the proposed erection of 10 wind monitoring masts in SA as part of the national wind atlas project	Project Manager	Department of Energy through SANERI; GEF
2009 (EAs granted)	Basic Assessment Report for a proposed boundary wall at the Port of Port Elizabeth, Eastern Cape	Project Manager	Transnet Ltd
Other Environmental Assessments, Strategies, Biodiversity Management Plans, Frameworks and Reporting tools:			
2014-2018	Special Needs and Skills Development Programme	Project Leader	DEA
2013-2014	Development of a National Management Plan and Strategy for Invasive Alien species	Project Manager	DEA
2012-2014	Development of a Biodiversity Management Plan for the African Lion (*Panthera leo*)	Project Manager	DEA
2010	South Africa's Second National Communication under the United Nations Framework Convention on Climate Change	Project Manager	SANBI
2008	The development of protocols for the monitoring and evaluation of benefits arising from the Working for Water Programme (2008).	Project manager	DEA
2006-2008	Monitoring and Evaluation of aspects of Biodiversity	Project Leader	Internal project awarded through the Young Researchers Fund
2006	Integrated veldfire management in South Africa. An assessment of current conditions and future approaches.	Co- author	Working on Fire
2004-2005	Biodiversity Strategy and Action Plan Wild Coast, Eastern Cape, SA	Co-author	Wilderness Foundation
2005	Western Cape State of the Environment Report: Biodiversity section. (Year One).	Co- author and Project Manager	Department of Environmental Affairs and Development Planning

Awards

- 2008: Best presentation Award at Arid Zone Conference (Northern Cape)
- 2015: CSIR award for Human Capital Development: Special Needs and Skills Development Programme

Conference Presentations and Papers

- **Levendal, M**. (2012). "Challenges in the Environmental Assessment of Renewable Energy Projects in South Africa" In IAIA (Portugal) Conference Proceedings.
- **Bowie, M.** (néé Levendal) (1998). "Ecophysiological responses of four succulent Karoo species under different temperature and water regimes." In *Arid Zone Conference (Northern Cape) Conference Proceedings*.

Publications

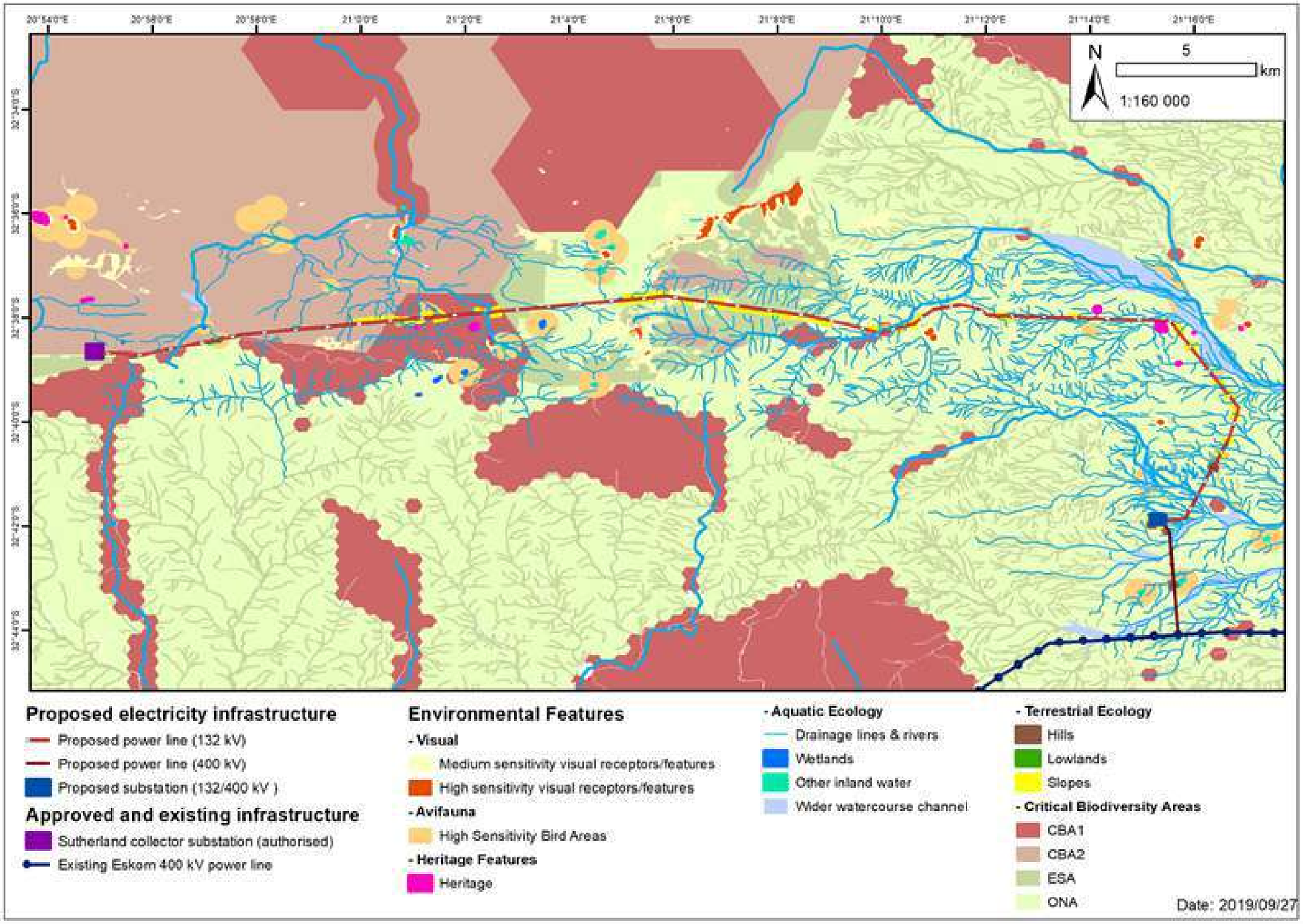
- **Bowie, M.** (néé Levendal) and Ward, D. (2004). Water status of the mistletoe *Plicosepalus acaciae* parasitic on isolated Negev Desert populations of *Acacia raddiana* differing in level of mortality. Journal of Arid Environments 56: 487-508.
- Wand, S.J.E., Esler, K.J. and **Bowie, M.R** (2001). Seasonal photosynthetic temperature responses and changes in 13C under varying temperature regimes in leaf-succulent and drought-deciduous shrubs from the Succulent Karoo, South Africa. South African Journal of Botany 67:235-243.
- **Bowie, M.R.,** Wand, S.J.E. and Esler, K.J. (2000). Seasonal gas exchange responses under three different temperature treatments in a leaf-succulent and a drought-deciduous shrub from the Succulent Karoo. *South African Journal of Botany* 66:118-123.

Language capabilities

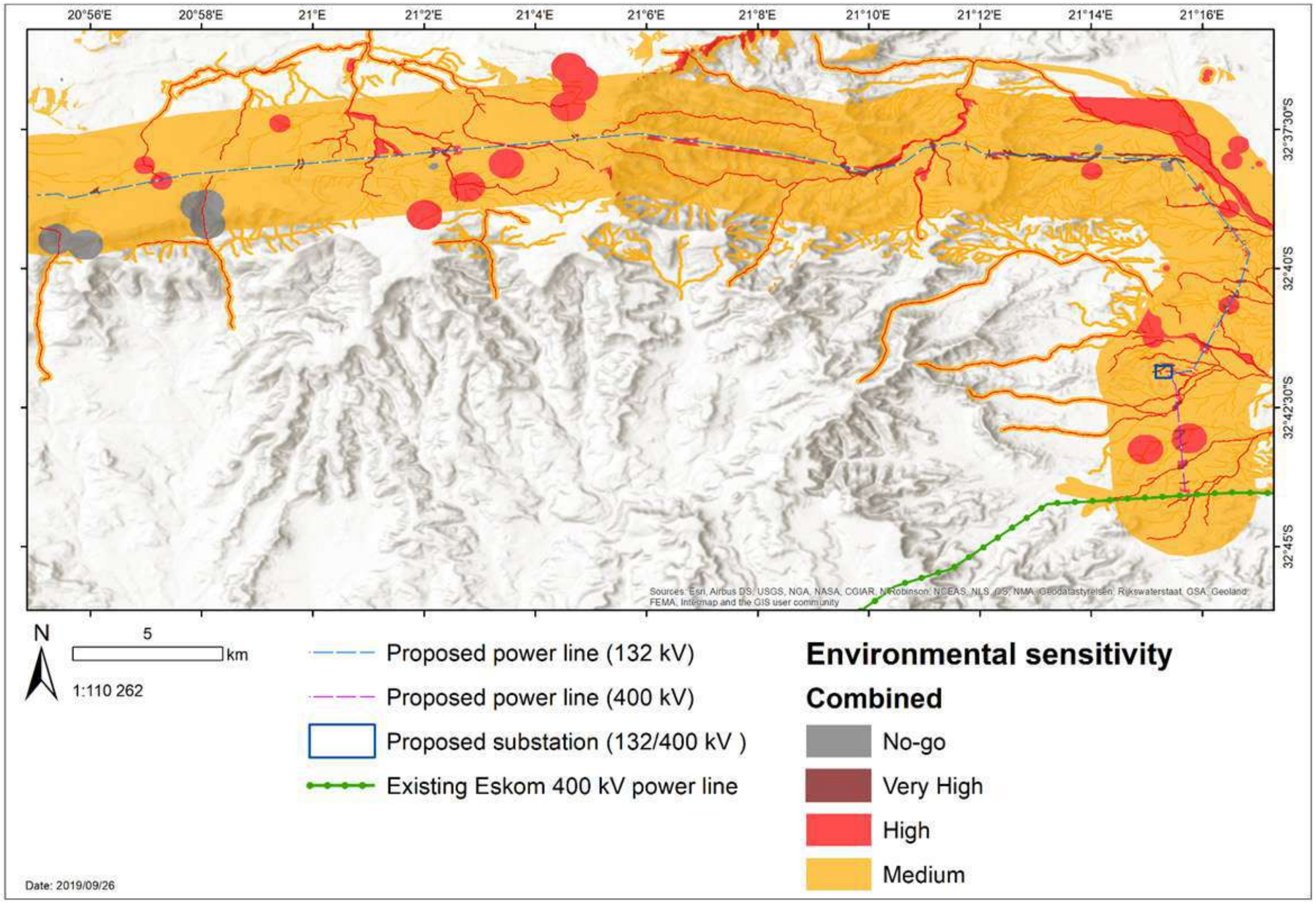
	Speaking	*Reading*	*Writing*
Afrikaans	Excellent	Excellent	Excellent
English	Excellent	Excellent	Excellent

Minnelise Levendal
December 2019

10APPENDIX C – ENVIRONMENTAL FEATURES MAP


20°54'0"E
20°58'0"E
21°2'0"E
21°6'0"E
21°10'0"E
21°14'0"E
21°16'0"E
32°0'0"S
32°4'0"S
32°8'0"S
32°12'0"S
N
5
km
1:160 000
Proposed electricity infrastructure
Proposed power line (132 kV)
Proposed power line (400 kV)
Proposed substation (132/400 kV)
Approved and existing infrastructure
Sutherland collector substation (authorised)
Existing Eskom 400 kV power line
Environmental Features
- Visual
Medium sensitivity visual receptors/features
High sensitivity visual receptors/features
- Avifauna
High Sensitivity Bird Areas
- Heritage Features
Heritage
- Aquatic Ecology
Drainage lines & rivers
Wetlands
Other inland water
Wider watercourse channel
- Terrestrial Ecology
Hills
Lowlands
Slopes
- Critical Biodiversity Areas
CBA1
CBA2
ESA
ONA
Date: 2019/09/27

11APPENDIX D – ENVIRONMENTAL SENSITIVITY MAP


20°56'E
20°58'E
21°E
21°2'E
21°4'E
21°6'E
21°8'E
21°10'E
21°12'E
21°14'E
21°16'E
32°37'30"S
32°40'S
32°42'30"S
32°45'S
Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community
N
5
km
1:110 262
Proposed power line (132 kV)
Proposed power line (400 kV)
Proposed substation (132/400 kV)
Existing Eskom 400 kV power line
Environmental sensitivity
Combined
No-go
Very High
High
Medium
Date: 2019/09/26

12APPENDIX E – ENVIRONMENTAL POLICY OF MAINSTREAM.

ENVIRONMENTAL POLICY

MAINSTREAM RENEWABLE POWER SOUTH AFRICA

At Mainstream Renewable Power ('Mainstream'), we believe in taking a sustainable approach to everything we do. Our core business is to project manage the development, construction and operations of renewable wind and solar energy projects in South Africa.

Mainstream Renewable Power's Environmental Management System has been designed to fulfil the requirements of ISO 14001:2015. Mainstream is committed not only to adherence with compliance obligations but also to the continual improvement of environmental performance through setting, implementing and monitoring environmental and sustainability targets.

To deliver and maintain high standards of environmental care, Mainstream will:

- Promote environmental awareness amongst our employees, partners and contractors.
- Promote environmental sustainability, considering the life-cycle perspective where relevant, in all our activities.
- Ensure that the working methods adopted by Mainstream, our partners and our contractors minimise adverse environmental impacts and protect the natural environment from harm and degradation.
- Enhance environmental performance by establishing, implementing, maintaining and continually improving an Environmental Management System that fulfils the requirements of ISO 14001:2015.
- Promote and maintain effective relationships with enforcing authorities, non-governmental organisations and other interested parties as appropriate.
- Report Mainstream's verified environmental performance to the public.

This Environmental Policy is brought to the attention of all who work with Mainstream and is available to interested parties on request. Employees and contractors are encouraged to promote environmental awareness and report any opportunities for improvement.

Hendrik Reyneke
General Manager, South Africa
February 2019

Bogdan Vranes
Group SHEQ Manager
February 2019

BASIC ASSESSMENT REPORT

APPENDIX G: DETAILS OF EAP AND EXPERTISE

contents

Appendix G.1 Curriculum Vitae of Technical Advisor and Quality Assurance – Paul Lochner

CSIR
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South Africa

Phone: +27 21 888 2400
Fax: +27 21 888 2693
Email: *plochner@csir.co.za*

Name of firm:	CSIR
Name of staff:	Paul Lochner
Profession:	Environmental Assessment and Management
Position in firm:	Manager: CSIR Environmental Management Services
Years' experience:	24 years
Nationality:	South African

BIO-SKETCH:

Paul Lochner commenced work at CSIR in 1992, after completing a degree in Civil Engineering and a Masters in Environmental Science, both at the University of Cape Town. His initial work at CSIR focused on sediment dynamics and soft engineering applications in the coastal zone, in particular, beach and dune management. He conducted several shoreline erosion analyses and prepared coastal zone management plans for beaches. He also prepared wetland management plans.

As the market for environmental assessment work grew, he led Environmental Impact Assessments (EIAs), in particular for coastal resort developments and large-scale industrial developments located on the coast; and Environmental Management Plans (EMPs), in particular for wetlands, estuaries and coastal developments. He has also been involved in researching and applying higher-level approaches to environmental assessment and management, such as Strategic Environmental Assessment (SEA). In 1998-1999, he coordinated the SEA research programme within the CSIR, which led to him being a lead author of the Guideline Document for SEA in South Africa, published by CSIR and national Department of Environmental Affairs (DEA) in February 2000.

In 1999 and 2000, he was the project manager for the legal, institutional, policy, financial and socio-economic component of the Cape Action Plan for the Environment ("CAPE"), a large-scale multi-disciplinary study to ensure the sustainable conservation of the Cape Floral Kingdom. This was funded by the Global Environmental Fund (GEF) and prepared for WWF-South Africa. The study required extensive stakeholder interaction, in particular with government institutions, leading to the development of a Strategy and Action Plan for regional conservation.

In July 2003, he was certified as an Environmental Assessment Practitioner by the Interim Certification Board for Environmental Assessment Practitioners of South Africa.

He has authored several guidelines for government. In 2004, he was lead author of the *Overview of IEM* document in the updated Integrated Environmental Management (IEM) Information Series published by national Department of Environmental Affairs and Tourism (DEAT). In 2005, he was part of the CSIR team that prepared the series entitled *Guidelines for involving specialists in EIA processes* for the Western Cape Department of Environmental Affairs and Development Planning (DEADP); and he authored the *Guideline for Environmental Management Plans* published by Western Cape government in 2005. In 2006-2007, he worked closely with the (then) Dept of Minerals and Energy (DME) of South Africa to prepare a Guideline for Scoping, Environmental Impact Assessment and Environmental Management Plans for mining in South Africa.
Over the past 20 years has been closely involved with several environmental studies for industrial and port-related projects in Coega Industrial Development Zone (IDZ), near Port Elizabeth. This included the SEA for the establishment of the Coega IDZ in 1996/7, an EIA and EMP for a proposed aluminium smelter in 2002/3, and assistance with environmental permit applications for air, water and waste. At the Coega IDZ and port, he has also conducted environmental assessments for port development, LNG storage and a combined cycle gas turbine power plant, manganese export, rail development, marine pipelines, and wind energy projects.

Since 2009, he has undertaken numerous EIAs for the renewable energy sector, in particular for wind and solar photovoltaic energy projects. In these EIAs, he has been project leader and integrated the specialist findings from a range of specialist disciplines.

He is currently project leader on two Strategic Environmental Assessments (SEAs) that are being undertaken for national DEA. These SEAs are to support the implementation of the Strategic Integrated Projects (SIPs) that are being promoted by the Presidential Infrastructure Coordinating Committee (PICC). The SEA for Wind and Solar Photovoltaic Energy for South Africa is being conducted over 2013-2014, and the SEA for electricity grid infrastructure commenced January 2014.

Since 2009, Paul has been the manager of the Environmental Management Services (EMS) group within CSIR. This group currently consists of approximately 20 environmental assessment practitioners and a group assistant, with offices in Stellenbosch and Durban. EMS focuses on conducting complex environmental studies in challenging environments, such as remote and data poor regions in Africa (e.g. Cameroon, Gabon, Angola, Namibia and Ethiopia). We also specialise in environmental studies for emerging and innovative technologies, drawing on research and applied scientific expertise within CSIR. Our role is to assist in ensuring the sustainability of projects in terms of environmental and social criteria, by providing a range of environmental services that extend across the project lifecycle, from the pre-feasibility stage through to feasibility, commissioning, operations and closure. We provide this service to government, international agencies, private sector and non-government organisations.

EMPLOYMENT TRACK RECORD

The following table presents a sample of the projects that Paul Lochner has been involved in to date:

Completion Date	Project description	Role	Client
In progress	**SEA for the identification of Energy Corridors** and Development of a **Gas Pipeline Network** for South Africa	Project leader	Dept. of Environmental Affairs (DEA), DoE and DPE
In progress	**SEA for Aquaculture** Development in South Africa (marine and freshwater)	Project leader	DEA and DAFF
2015-2017	**SEA for the Square Kilometre Array** radio-telescope in the Karoo, South Africa	Project leader	DEA and DST
2015-2017	**SEA for Shale Gas Development** in South Africa	Project co-leader	DEA, DMR, DoE, DST, DWS
2015-2016	SEA for the development of **Electrical Grid Infrastructure** for South Africa	Project leader	DEA
2016-2017	EIA for the 75 MW x 12 **solar photovoltaic** energy projects near Dealesville, Free State	Project Leader	Mainstream Renewable Power SA
2014-2015	SEA of **planning** for the far south Cape Peninsula	Project Leader	City of Cape Town
2013-2015	EIA for the Ishwati Emoyeni 140 MW **wind energy project** and supporting electrical infrastructure near Murraysburg, Western Cape	Project Leader	Windlab
2013-2015	EIA for the Saldanha marine outfall **pipeline**	Project Leader	Frontier Saldanha Utilities
2012-2015	SEA for identification of **renewable energy zones** for wind and solar PV projects in South Africa	Project leader	DEA
2012-2013	**Environmental Screening Study for a desalination plant** for the City of Cape Town	Project leader	City of Cape Town & WorleyParsons
2012-2013	EIA for **LNG Import** to the Mossel Bay Gas-to-Liquid refinery (stopped end of Scoping)	Project leader	PetroSA
2012-2013	EIA for the **desalination plant** for the Saldanha area	Project leader	West Coast District Municipality & WorleyParsons

Completion Date	Project description	Role	Client
2012-2013	EIA for the **manganese export terminal** at the Port of Ngqura and Coega IDZ	Project leader	Transnet
2011 - 2012	EIA for the **100 MW solar photovoltaic** project proposed by Mainstream Renewable Power at Blocuso, near Keimoes in the Northern Cape	Project leader	Mainstream Renewable Power
2011 – 2012	EIA for the **100 MW solar photovoltaic** project proposed by Mainstream Renewable Power at Roode Kop Farm, near Douglas, in the Northern Cape	Project leader	Mainstream Renewable Power
2011 – 2012	EIA for the 75 MW **solar photovoltaic project** proposed by Solaire Direct at **GlenThorne**, near Bloemfontein in the Free State	Project leader	Solaire Direct
2011 – 2012	EIA for the 75 MW **solar photovoltaic project** proposed by SolaireDirect at **Valleydora**, near Springfontein in the Free State	Project leader	Solaire Direct
2010-2011	More than 10 Basic Assessments (BAs) for **solar photovoltaic projects** in the western cape, Northern Cape, Eastern Cape and Free State	Project leader	Various clients including Dutch, German, French and South African companies
2010/2011	**EIA for the Langerfontein** wind project near Darling, Western Cape.	Project leader	Mr Herman Oelsner, Khwe Khoa
2010/2011	**EIA for a 100 MW wind project at Zuurbron and a 50 MW wind project Broadlands** in the Eastern Cape	Project leader	WindCurrent SA (German-based company)
2010/2011	**EIA for the proposed 143 MW Biotherm wind energy project near Swellendam**, Western Cape, South Africa	Project leader	Biotherm South Africa (Pty) Ltd
2010/2011	**EIA for the proposed InnoWind wind energy projects near Swellendam, Heidelberg, Albertinia and Mossel Bay (totalling approx 210 MW),** Western Cape, South Africa	Project leader	InnoWind South Africa (Pty) Ltd
2009/2010	**EIA for the proposed Electrawinds wind energy facility** of 45-75 MW capacity in the Coega IDZ, Eastern Cape	Project leader	Electrawinds N.V. (Belgium)
2009/2010	**EIA for proposed 180 MW Jeffreys Bay wind energy project,** Eastern Cape	Project Leader and co-author	Mainstream Renewable Power South Africa
2009/2010	**Basic Assessment for the national wind Atlas for South Africa**	Project leader	SANERI and SA Wind Energy Programme, Dept of Energy
2009/2010	**EIA for the proposed Gecko soda plant,** Otjivalunda and Arandis, Namibia (cancelled)	Project leader	Gecko, Namibia
2009-2010	**EIA for the proposed desalination plant** at Swakopmund, Namibia	Project leader	NamWater, Namibia
2009	**EMP for the Operational Phase of the Berg River Dam**, Franschoek, South Africa	Project leader and report co-author	TCTA, South Africa
2009/2010 *(on hold)*	**EIA for the proposed crude oil refinery** at Coega, South Africa	Project leader and lead author	PetroSA, South Africa
2008	**Environmental Risk Review** for proposed	Project leader	PetroSA, South

Completion Date	Project description	Role	Client
	LNG/CNG import to Mossel Bay, South Africa	and lead author	Africa
2008	**Review of the Business Plan** for catchment management for the Berg Water Dam Project, Franschhoek, South Africa	Project reviewer and co-author	TCTA, South Africa
2007 – 2010	**EIA for proposed Jacobsbaai Tortoise Reserve eco-development**, Saldanha, Western Cape	Project Leader and co-author	Jacobsbaai Tortoise Reserve (Pty) Ltd
2007 – 2010	**Independent reviewer** for the EIA proposed Amanzi lifestyle development, Port Elizabeth	Independent reviewer appointed to advise EAP	Public Process Consultants and Pam Golding
2007 – 2008	**EIA for proposed 18 MW Kouga wind energy project,** Eastern Cape	Project Leader and co-author	Genesis Eco-Energy (Approved by DEDEA in March 2009)
2007	**Review of EIA for the proposed Hanglip Eco-Development**, Plettenberg Bay, Western Cape	Co-author of review of EIA, undertaken on behalf of DEADP	Dept of Environmental Affairs & Development Planning, Western Cape
2006-2007	**Scoping phase for the EIA for the proposed Coega LNG-to-Power Project** at the Port of Ngqura, Coega IDZ	Project Leader and co-author	Eskom and iGas
2006-2007	**Guideline** for Scoping, Environmental Impact Assessment and Environmental Management Plans for mining in South Africa	Project leader and co-author	Dept of Minerals and Energy (DME), South Africa
2006	**Environmental Impact Assessment (EIA)** for the extension of the Port of Ngqura, Eastern Cape	Project Leader and co-author	Transnet
2006	**Integrating Sustainability Into Strategy: Handbook** (Version 1)	Project Leader and co-author	CSIR (STEP research report)
2005	**Technology Review** for the proposed aluminium smelter at Coega, South Africa	Project Leader and lead author	Alcan, Canada
2005	**Environmental and Social Impact Assessment (ESIA) report** for the proposed alumina refinery near Sosnogorsk, Komi Republic, Russia	Project manager and co-author	Komi Aluminium, Russia, IFC, EBRD
2005	**Guideline for Environmental Management Plans (EMPs)** for the Western Cape province, including conducting a training course for provincial government	Author	Dept of Environmental Affairs & Development Planning, Western Cape
2005	**Guideline for the review of specialist studies** undertaken as part of environmental assessments	Member of Steering Committee and project facilitator	Dept of Environmental Affairs & Development Planning, Western Cape
2004	**Review of Strategic Management Plan** for Table Mountain National Park (2001-2004)	Reviewer and co-author	South African National Parks
2004	**Strategic Needs Assessment Process** for mainstreaming sustainable development into business operations	Researcher and co-author	CSIR (internal research)
2004	**Environmental Monitoring Committees** booklet in	Contributing	Department of Environmental

Completion Date	Project description	Role	Client
	the IEM Information Series for DEAT	author	Affairs and Tourism (DEAT)
2004	**Overview of Integrated Environmental Management** (IEM) booklet in the IEM Information Series	Lead author and researcher	DEAT
2003	**Environmental Screening Study** for gas power station, South Africa	Project Manager and lead author	Eskom, iGas and Shell
2003	**Environmental Management Programme** (EMP) Framework for the proposed Coega Aluminium Smelter; and assistance with preparing permit and licence applications	Project Manager and lead author	Pechiney, France
2003	**Environmental Management Plan** for the Operational Phase of the wetlands and canals at Century City, Cape Town	Project leader and lead author	Century City Property Owners' Association
2002	**Environmental Impact Assessment** for the proposed Pechiney aluminium smelter at Coega, South Africa	Project Manager and lead author	Pechiney, France
2002 - 2003	**Research project:** Ecological impact of large-scale groundwater abstraction on the Table Mountain Group aquifer	Project Manager	Water Research Commission
2002	**Environmental Management Plan** for the Eskom Wind Energy Demonstration Facility in the Western Cape	Co-author	Eskom
2001-2002	**Environmental Impact Assessment** for the Eskom Wind Energy Demonstration Facility in the Western Cape	Quality control & co-author	Eskom
2001	**Environmental Due Diligence** study of four strategic oil storage facilities in South Africa	Project manager and co-author	SFF Association
2000	**Cape Action Plan for the Environment**: a biodiversity Strategy and Action Plan for the Cape Floral Kingdom - legal, institutional, policy, financial and socio-economic component	Project manager and contributing writer	World Wide Fund for Nature (WWF): South Africa
1999	**Environmental Management Plan** for the establishment phase of the wetlands and canals at Century City, Cape Town	Project manager and lead author	Monex Development Company
1999	**Environmental Management Programme** for the Thesen Islands development, Knysna	Process design and Co-author	Chris Mulder Associates Inc; Thesen and Co.
1999	**Management Plan** for the coastal zone between the Eerste and Lourens River, False Bay, South Africa	Project manager and lead author	Heartland Properties and Somchem (a Division of Denel)
1998	**Environmental Assessment** of the Mozal Matola Terminal Development proposed for the Port of Matola, Maputo, Mozambique	Project manager and author.	*SNC-Lavalin-EMS*
1998	**Strategic Environmental Assessment (SEA)** for the Somchem industrial complex at Krantzkop, South Africa	Project manager and co-author	Somchem, a Division of Denel
1997	**Strategic Environmental Assessment (SEA)** for the proposed Industrial Development Zone and Harbour at Coega, Port Elizabeth, South Africa	SEA project manager and report writer	Coega IDZ Initiative Section 21 Company
1996	**Environmental Impact Assessment** of Development Scenarios for Thesen Island, Knysna,	Project manager and report writer	Thesen and Co.

Completion Date	Project description	Role	Client
	South Africa		
1996	**Environmental Impact Assessment** of the Management Options for the Blouvlei wetlands, Cape Town	Project manager and report writer	Ilco Homes Ltd (now Monex Ltd)
1995	**Environmental Impact Assessment** for the Saldanha Steel Project, South Africa	Report writing and management of specialist studies	Saldanha Steel Project
1994	**Environmental Impact Assessment** for the upgrading of resort facilities on Frégate Island, Seychelles	Member of the project management team, co-author, process facilitator	Schneid Israelite and Partners
1994	**Environmental Impact Assessment** for exploration drilling in offshore Area 2815, Namibia	Project manager and co-author	Chevron Overseas (Namibia) Limited
1994	**Management Plan** for the Rietvlei Wetland Reserve, Cape Town	Project manager and lead author	Southern African Nature Foundation (now WWF-SA)
1993	**Beach management plan** for Stilbaai beachfront and dunes, South Africa	Project manager and lead author	Stilbaai Municipality
1993	**Beach and dune management plan for Sedgefield** for the beach east of the mouth of the Swartvlei estuary	Project manager and lead author	Nel and De Kock Planners, George
1993	**Coastal Stability analysis and beach management plan** for the Table View coastline north of Blaauwberg Road, Cape Town.	Project manager and lead author	Milnerton Municipality

EMPLOYMENT RECORD

- **1992 to present** Involved in coastal engineering studies; and various forms of environmental assessment and management studies. Council for Scientific and Industrial Research – Environmental Management Services (EMS) - Stellenbosch

QUALIFICATIONS/EDUCATION

- M. Phil. Environmental Science (University of Cape Town)
- B.Sc. Civil Engineering (awarded with Honours) (University of Cape Town)

LANGUAGE CAPABILITY

LANGUAGES	*Speaking*	*Reading*	*Writing*
English	Excellent	Excellent	Excellent
Afrikaans	Moderate	Moderate	Moderate

Appendix G.2 Curriculum Vitae of EAP and Project Leader – Minnelise Levendal

CSIR
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South Africa

Phone: +27 21 888 2495/2661
Fax: +27 21 888 2693
Email: mlevendal@csir.co.za

Name of firm:	CSIR
Name of staff	Minnelise Rouchelle-Ann Levendal
Profession:	Environmental Assessment Practitioner/Project Manager
Position in firm:	Senior Environmental Assessment Practitioner
Years' experience:	18 years
Nationality:	South African
Languages:	Afrikaans and English
Affiliation:	SACNASP Registered Professional Natural Scientist (Registration Number: 117078)

Biographical sketch

Minnelise has more than 15 years of experience in environmental assessment and management, and is a Senior Environmental Assessment Practitioner (EAP) in the Environmental Management Services (EMS) group of the CSIR in Stellenbosch. She is a Registered Professional Natural Scientist (Registration Number: 117078) with the South African Council for Natural Scientific Professions (SACNASP). Minnelise has experience in the management and integration of various types of environmental assessments in South Africa for various sectors, including renewable energy and industry. Minnelise has undertaken several Environmental Assessments for wind farms and solar PV farms (i.e. EIAs, BAs, and Amendment and Appeal Processes) in the Northern Cape, Western Cape and Eastern Cape. Minnelise is currently the project leader for the Amendment processes for the adjacent Sutherland, Sutherland 2, and Rietrug WEFs, which received positive Environmental Assessments.

A list of projects she had undertaken is provided below.

Education

1998	M.Sc. (Botany), Stellenbosch University
1994	B.Sc. (Hons.) (Botany), University of the Western Cape
1993	B.Sc. (Education), University of the Western Cape

Employment Record

Name of current employer	Position	From	To
CSIR (Environmental Management Services-EMS);	Senior Environmental Assessment Practitioner	2006	Present
CSIR (Natural Resources and the Environment)	Environmental Researcher	2004	2006
Western Cape Department of Environmental Affairs and Development Planning (DEA&DP)	Assistant Director	2003	2004
	Principal Environmental Officer	2002	2003
	Principal Environmental Officer	2002	2003
	Senior Environmental Officer	2001	2002
	Environmental Officer	1999	2000

University of the Western Cape	Junior Lecturer	1996	1996
Cape Peninsula University of Technology	Junior Lecturer	1995	1995

Key Courses

- Public Participation in Environmental Authorisation in South Africa: IAIA workshop presented by Tisha Greyling and Erika Du Plessis (2016).
- Environmental Law: Shepstone Wylie Attorneys; Presented by Janice Tooley (2015).
- Sharpening the Tool: New techniques and methods in Environmental Impact Assessment: Sustainable
- Environmental Solutions (Pty) Ltd (2015).
- Effective Skills for Challenging Meetings & Engagements: Conflict Dynamics (2015).
- Science Communication and Working with the Media: Proof Communications/Jive Media Africa (2014).
- Leadership, Innovation and Change Management: University of Stellenbosch (Business School) (2013).
- MS Project: CILLA (2011).
- Project Management I and II: CILLA (2005)
- Social Impact Assessment: IAIA workshop (2002)
- Environmental Law ("The New Environmental Law Course for Environmental Managers): University of Potchefstroom: Center for Environmental Management) (2002).
- Implementing Environmental Management Systems (SABS/ISO 14001:1996): University of Potchefstroom: Center for Environmental Management (2002).
- Conflict Management in Environmental Issues: University of Potchefstroom: Center for Environmental Management) (2001).

Project Experience Record *The following table presents a list of key projects undertaken by Minnelise Levendal at the CSIR to date, as well as the role played in each project:*

Environmental Impact Assessment (EIAs) and Basic Assessments (BAs)-including their respective Environmental Management Programmes (EMPRs):

Completion Date	Project description	Role	Client
2019	Amendment Application for the proposed Kuruman Phase 1 Wind Energy Facility near Kuruman in the Northern Cape	Project Leader and EAP	Mulilo Renewable Project Developments (Pty) Ltd
2019	Amendment Application for the proposed Kuruman Phase 2 Wind Energy Facility near Kuruman in the Northern Cape	Project Leader and EAP	Mulilo Renewable Project Developments (Pty Ltd
2019	Substantive Amendment Application for the proposed Kap Vley Wind Energy Facility near Kleinzee in the Northern Cape	Project Leader and EAP	juwi Renewable Energies (Pty) Ltd
2019	Substantive Amendment Application for the proposed Rietrug Wind Energy Facility near Sutherland in the Northern Cape	Project Leader and EAP	South Africa Mainstream Renewable Power Developments (Pty) Ltd
2019	Substantive Amendment Application for the proposed Sutheland Wind Energy Facility near Sutherland in the Northern and Western Cape	Project Leader and EAP	South Africa Mainstream Renewable Power Developments (Pty) Ltd
2019	Substantive Amendment Application for the proposed Sutherland 2 Wind Energy Facility near Sutherland in the Northern Cape	Project Leader and EAP	South Africa Mainstream Renewable Power Developments (Pty) Ltd
2019	BA for the proposed Gromis wind farm near Kleinzee in the Northern Cape	Project Leader and EAP	ENERTRAG South Africa (Pty) Ltd
2019	BA for the proposed Komas wind farm near Kleinzee in the Northern Cape	Project Leader and EAP	ENERTRAG South Africa (Pty) Ltd
2019	BA for the proposed electrical infrastructure	Project Leader	ENERTRAG South Africa (Pty)

Completion Date	Project description	Role	Client
	for the Gromis wind farm near Kleinzee in the Northern Cape	and EAP	Ltd
2019	BA for the proposed electrical infrastructure for the Komas wind farm near Kleinzee in the Northern Cape	Project Leader and EAP	ENERTRAG South Africa (Pty) Ltd
2018-2019	BA for the proposed Kudusberg WEF near Sutherland in the Northern and Western Cape	Project Leader and EAP	G7 Renewable Energies (Pty) Ltd
2017-2018	EIA for the proposed Kap Vley Wind Energy Facility near Kleinzee in the Northern Cape	Project Leader and EAP	juwi Renewable Energies (Pty) Ltd
2018	BA for the proposed electrical infrastructure to support he proposed Kap Vley Wind Energy Facility near Kleinzee in the Northern Cape	Project Leader and EAP	juwi Renewable Energies (Pty) Ltd
2015-2016	EIA for the Gemsbok Solar Photovoltaic, PV 3 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2015-2016	EIA for the Gemsbok Solar PV 4 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2015-2016	EIA for the Gemsbok Solar PV 5 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2015-2016	EIA for the Gemsbok Solar PV 6 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2015-2016	EIA for the Boven Solar PV 2 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2015-2016	EIA for the Boven Solar PV 3 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2015-2016	EIA for the Boven Solar PV 4 near Kenhardt in the Northern Cape	Project Manager and EAP	Mulilo Renewable Project Developments
2010-2011 (EA Granted)	EIA for the proposed Ubuntu wind energy project, Eastern Cape	Project Manager	WKN Windkraft SA
2010-2011 (EA granted)	EIA for the proposed Banna Ba Pifhu wind energy project, Eastern Cape	Project Manager	WKN Windkraft SA
2010-2011 (EA granted)	BA for a powerline for a WEF near Swellendam in the Western Cape	Project Manager	BioTherm Energy (Pty Ltd
2010-2011 (EA Granted)	EIA for a proposed wind farm near Swellendam in the Western Cape	Project Manager	BioTherm Energy (Pty Ltd
2010 (EAs granted)	Basic Assessment for the erection of two wind monitoring masts near Swellendam and Bredasdorp in the Western Cape	Project Manager	BioTherm Energy (Pty Ltd
2010 (complete)	Basic Assessment for the erection of two wind monitoring masts near Jeffrey's Bay in the Eastern Cape	Project Manager	Windcurrent (Pty Ltd
2009-2010 (EAs granted)	Basic Assessment Process for the proposed erection of 10 wind monitoring masts in SA as part of the national wind atlas project	Project Manager	Department of Energy through SANERI; GEF
2009 (EAs granted)	Basic Assessment Report for a proposed boundary wall at the Port of Port Elizabeth, Eastern Cape	Project Manager	Transnet Ltd
Other Environmental Assessments, Strategies, Biodiversity Management Plans, Frameworks and Reporting tools:			
2014-2018	Special Needs and Skills Development Programme	Project Leader	DEA
2013-2014	Development of a National Management Plan and Strategy for Invasive Alien species	Project Manager	DEA
2012-2014	Development of a Biodiversity Management	Project Manager	DEA

Completion Date	Project description	Role	Client
	Plan for the African Lion (*Panthera leo*)		
2010	South Africa's Second National Communication under the United Nations Framework Convention on Climate Change	Project Manager	SANBI
2008	The development of protocols for the monitoring and evaluation of benefits arising from the Working for Water Programme (2008).	Project manager	DEA
2006-2008	Monitoring and Evaluation of aspects of Biodiversity	Project Leader	Internal project awarded through the Young Researchers Fund
2006	Integrated veldfire management in South Africa. An assessment of current conditions and future approaches.	Co- author	Working on Fire
2004-2005	Biodiversity Strategy and Action Plan Wild Coast, Eastern Cape, SA	Co-author	Wilderness Foundation
2005	Western Cape State of the Environment Report: Biodiversity section. (Year One).	Co- author and Project Manager	Department of Environmental Affairs and Development Planning

Awards

- 2008: Best presentation Award at Arid Zone Conference (Northern Cape)
- 2015: CSIR award for Human Capital Development: Special Needs and Skills Development Programme

Conference Presentations and Papers

- **Levendal, M**. (2012). "Challenges in the Environmental Assessment of Renewable Energy Projects in South Africa" In IAIA (Portugal) Conference Proceedings.
- **Bowie, M.** (néé Levendal) (1998). "Ecophysiological responses of four succulent Karoo species under different temperature and water regimes." In *Arid Zone Conference (Northern Cape) Conference Proceedings*.

Publications

- **Bowie, M.** (néé Levendal) and Ward, D. (2004). Water status of the mistletoe Plicosepalus acaciae parasitic on isolated Negev Desert populations of Acacia raddiana differing in level of mortality. Journal of Arid Environments 56: 487-508.
- Wand, S.J.E., Esler, K.J. and **Bowie, M.R** (2001). Seasonal photosynthetic temperature responses and changes in 13C under varying temperature regimes in leaf-succulent and drought-deciduous shrubs from the Succulent Karoo, South Africa. South African Journal of Botany 67:235-243.
- **Bowie, M.R.,** Wand, S.J.E. and Esler, K.J. (2000). Seasonal gas exchange responses under three different temperature treatments in a leaf-succulent and a drought-deciduous shrub from the Succulent Karoo. South African Journal of Botany 66:118-123.

Language capabilities

	Speaking	*Reading*	*Writing*
Afrikaans	Excellent	Excellent	Excellent
English	Excellent	Excellent	Excellent

Minnelise Levendal
November 2019

Appendix G.3 EAP Declaration of Interest

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

	(For official use only)
File Reference Number:	
NEAS Reference Number:	DEA/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

PROJECT TITLE

Basic Assessment for the Proposed Construction and Operation of Electrical Grid Infrastructure to support the Sutherland, Sutherland 2 and Rietrug Wind Energy Facilities, Northern and Western Cape Provinces

Kindly note the following:

1. This form must always be used for applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting where this Department is the Competent Authority.
2. This form is current as of 01 September 2018. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at https://www.environment.gov.za/documents/forms.
3. A copy of this form containing original signatures must be appended to all Draft and Final Reports submitted to the department for consideration.
4. All documentation delivered to the physical address contained in this form must be delivered during the official Departmental Officer Hours which is visible on the Departmental gate.
5. All EIA related documents (includes application forms, reports or any EIA related submissions) that are faxed; emailed; delivered to Security or placed in the Departmental Tender Box will not be accepted, only hardcopy submissions are accepted.

Departmental Details

Postal address:
Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Private Bag X447
Pretoria
0001

Physical address:
Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Environment House
473 Steve Biko Road
Arcadia

Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:
Email: EIAAdmin@environment.gov.za

Details of EAP, Declaration and Undertaking Under Oath

Page 1 of 4

1. ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP) INFORMATION

EAP Company Name:	CSIR			
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	3	Percentage Procurement recognition	110 %
EAP name:	Minnelise Levendal			
EAP Qualifications:	MSc (Botany) University of Stellenbosch			
Professional affiliation/registration:	Registered Professional Natural Scientist (Registration Number: 117078) with the South African Council for Natural Scientific Professions (SACNASP)			
Physical address:	11 Jan Celliers Street, Stellenbosch			
Postal address:	PO Box 320, Stellenbosch			
Postal code:	7599	Cell:	083 309 8159	
Telephone:	021 888 2495	Fax:	021 888 2693	
E-mail:	mlevendal@csir.co.za			

The appointed EAP must meet the requirements of Regulation 13 of GN R982 of 04 December 2014, as amended.

2. DECLARATION BY THE EAP

I, _____MINNELISE LEVENDAL_____, declare that –

- I act as the independent environmental assessment practitioner in this application;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I will take into account, to the extent possible, the matters listed in Regulation 13 of the Regulations when preparing the application and any report relating to the application;
- I undertake to disclose to the applicant and the Competent Authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the Competent Authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the Competent Authority, unless access to that information is protected by law, in which case it will be indicated that such information exists and will be provided to the Competent Authority;
- I will perform all obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I am aware of what constitutes an offence in terms of Regulation 48 and that a person convicted of an offence in terms of Regulation 48(1) is liable to the penalties as contemplated in Section 49B of the Act.

Disclosure of Vested Interest (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;
- ~~I have a vested interest in the proposed activity proceeding, such vested interest being~~:

_____

_____

_____

_____

Signature of the Environmental Assessment Practitioner

CSIR

Name of Company:

26 September 2019

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, Minnelise Levendal, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

Signature of the Environmental Assessment Practitioner

CSIR

Name of Company

26 September 2019

Date

Signature of the Commissioner of Oaths

2019/09/26

Date

HESTER VAN GREUNING
Commissioner of Oaths
Chartered HR Professional (CHRP)
Member number: 42865591
11 Jan Celliers Road
Stellenbosch
7600

SABPP™

Appendix G.4 Curriculum Vitae of Project Manager – Rohaida Abed

Name of firm	CSIR
Name of staff	Rohaida Abed
Profession	Environmental Assessment Practitioner
Position in firm	Senior Environmental Assessment Practitioner
Years' experience	9 years
Nationality	South African

Biographical Sketch

Rohaida Abed is an Environmental Assessment Practitioner in the CSIR Environmental Management Services team based in Durban. She has 9 years of experience in the Environmental Management field, and has been involved in various transport infrastructure related projects as an Environmental Control Officer, which included monitoring compliance with Environmental Authorizations and Environmental Management Plans. She has also been conducting Environmental Assessments relating to Port infrastructure, Bulk Liquid Storage facilities and renewable energy in the capacity of Project Manager. She is also part of a team undertaking a Strategic Environmental Assessment (SEA) for the development of a Phased Gas Pipeline and expansion of Electricity Grid Infrastructure (EGI) in South Africa, for the National DEA, DOE, DPE, iGas, Transnet and Eskom.

Registered Professional Natural Scientist (Pr. Sci. Nat.) in Environmental Science (Reg. No: 400247/14) with the South African Council of Natural Scientific Professions.

Education

2005	Bachelor of Science (Environmental Science), UKZN
2006	Bachelor of Science Honours (Environmental Science), UKZN
2010	Master of Science (Environmental Science), UKZN

Employment Record

2006 – 2008	University of KwaZulu-Natal (Academic Demonstrator)
March 2010 – April 2010	EnAq Consulting (Environmental Officer)
May 2010 – September 2011	Henwood & Nxumalo Consulting Engineers (Environmental Scientist)
October 2011 – to present	CSIR (Environmental Assessment Practitioner)

Short Courses

May 2009	Management of Estuaries in South Africa (Marine and Estuarine Research, FET Water, and Water Research Commission)
October 2010	Environmental Impact Assessment: A Practical Approach (North West University (Potchefstroom Campus), Centre for Environmental Management)

Experience record

Date	Project Description	Role	Client
2010 – 2011	The Repair and Rehabilitation of the Umzinto River Bridge Number 823 on the South Coast of KwaZulu-Natal	Environmental Control Officer	KwaZulu-Natal Department of Transport
2010 – 2011	The Construction of the Kwahlongwa Bridge Number 3257 over the Kwa-Malukaka River on D297 near Umzumbe, South Coast of KwaZulu-Natal	Environmental Control Officer	KwaZulu-Natal Department of Transport
2010 – 2011	The Construction of a bridge and approach roads across the Indaka River at Eludimbi, within the Msinga Local Municipality, KwaZulu-	Environmental Control Officer	KwaZulu-Natal Department of Transport

Date	Project Description	Role	Client
	Natal		
2010 – 2011	The Extension of the Lion Park Pipeline along the P566 and D2173 in the Manyavu area, KwaZulu-Natal	Environmental Control Officer	Umgeni Water
2010 – 2011	The Construction of a bridge and approach roads across the Tugela River at Thulwane, within the Nkandla Local Municipality, KwaZulu-Natal	Environmental Control Officer	KwaZulu-Natal Department of Transport
2010 – 2011	The Construction of a bridge and approach roads across the Mona River at Nqolotshe, within the Hlabisa and Nongoma Local Municipalities, KwaZulu-Natal	Environmental Control Officer	KwaZulu-Natal Department of Transport
2010 – 2011	The Construction of the Mdloti River Bridge (Northbound) on the R102, within the eThekwini Municipality, KwaZulu-Natal.	Environmental Control Officer	KwaZulu-Natal Department of Transport
2010 – 2011	The Upgrade of the R102 from the Duffs Road Interchange to King Shaka International Airport, within the eThekwini Municipality, KwaZulu-Natal.	Environmental Control Officer	KwaZulu-Natal Department of Transport
2010 – 2011	The Construction of the P701 Provincial Road from Ulundi to Empangeni, KwaZulu-Natal	Environmental Control Officer	KwaZulu-Natal Department of Transport
2010	Environmental Impact Assessment for the construction of a bridge and approach roads across the Mona River at Nqolotshe, within the Hlabisa and Nongoma Local Municipalities, KwaZulu-Natal	Project Assistant	KwaZulu-Natal Department of Transport
2011 - 2014	Environmental Impact Assessment for the proposed Bulk Liquid Storage and Handling Facility in Zone 8 of the Coega IDZ, Port of Ngqura	Project Consultant	Oiltanking Grindrod Calulo (PTY) Ltd
2012 - 2014	Environmental Impact Assessment for the proposed Manganese Export Terminal in Zones 8, 9 and 11 of the Coega IDZ, including the Port of Ngqura, and surrounding area	Project Assistant	Hatch Africa (PTY) Ltd c/o Transnet
2012 - 2014	Basic Assessment for the Provision of Landside Structures and Infrastructure to the Bulk Liquid Storage and Handling Facility in the Port of Ngqura	Project Manager	Eastern Cape Infrastructure Joint Venture c/o Transnet Capital Projects
2013 – 2014	Environmental Impact Assessment for the Provision of Marine Infrastructure, including a General Cargo Berth and Liquid Bulk Berths at the Port of Ngqura	Project Manager	Transnet Capital Projects
2013 – 2016	Basic Assessment for the decommissioning of unused infrastructure at the Port of Ngqura	Project Manager	Transnet Capital Projects
2015	Public Participation Process for the Application for non-substantive Amendment to the Environmental Authorisation for the proposed Landside Structures and Infrastructure to the Bulk Liquid Storage and Handling Facility in the Port of Ngqura	Project Manager	Transnet Capital Projects
2014 – 2016	Basic Assessment for the Proposed Decommissioning and Upgrade of a Bulk Liquid Storage and Handling Facility at Maydon Wharf, Port of Durban, KwaZulu-Natal	Project Manager	Oiltanking Grindrod Calulo Terminals (PTY) Ltd
2015 – ongoing	Environmental Management Plan for the Proposed Construction of a Bulk Liquid Storage and Handling Facility in the Port of Cape Town, Western Cape	Project Manager	Oiltanking Grindrod Calulo Terminals (PTY) Ltd
2015 – 2016	Basic Assessment Process for the Proposed development of three Transmission Lines and	Project Manager	Scatec Solar SA 163 (PTY) Ltd

Date	Project Description	Role	Client
	electrical infrastructure to connect to the proposed 75 MW Solar PV Facilities (Kenhardt PV 1, PV 2, and PV 3) on the remaining extent of Onder Rugzeer Farm 168, and the remaining extent of Portion 3 of Gemsbok Bult Farm 120, north-east of Kenhardt, Northern Cape.		
2015 – 2016	Scoping and EIA Process for the Proposed development of three 75 MW Solar PV Facilities (Kenhardt PV 1, PV 2, and PV 3) on the remaining extent of Onder Rugzeer Farm 168, north-east of Kenhardt, Northern Cape.	Project Manager	Scatec Solar SA 163 (PTY) Ltd
2015 - 2016	Environmental Impact Assessment Process for the Proposed Construction, Operation and Decommissioning of a Seawater Reverse Osmosis Plant and Associated Infrastructure at Tongaat and Lovu on the KwaZulu-Natal North Coast and South Coast	Project Assistant	Umgeni Water Amanzi
2015 – 2016	EIA for a Gas-To-Power project and associated infrastructure, forming part of the proposed Uyekraal Gas-to-Power Development, Saldanha Bay, Western Cape	Project Manager	Mulilo Thermal Developments
2016	Application for the non-substantive Amendment to the Environmental Authorisation for the proposed Bulk Liquid Storage and Handling Facility in Zone 8 of the Coega IDZ, Port of Ngqura	Project Manager	Oiltanking Grindrod Calulo (PTY) Ltd
2016	Application for the non-substantive Amendment to the Environmental Authorisation for the proposed Victoria West Renewable Energy Facility, Northern Cape	Project Manager	South Africa Mainstream Renewable Power Developments (Pty) Ltd
2016	Scoping and EIA Process: Proposed Development of the Teekloof WEF, near Victoria West, Northern Cape.	Project Assistant	South Africa Mainstream Renewable Power Developments (Pty) Ltd
2016	Scoping and EIA Process: Proposed Development of the Platberg WEF, near Victoria West, Northern Cape.	Project Assistant	South Africa Mainstream Renewable Power Developments (Pty) Ltd
2016 - 2017	Screening Assessment for the proposed storage of Dangerous Goods at an existing Storage Terminal at Maydon Wharf, Port of Durban, KwaZulu-Natal	Project Manager	Oiltanking Grindrod Calulo Terminals (PTY) Ltd
2016 – 2017	Basic Assessment Processes: Proposed development of three Distribution Lines and electrical grid infrastructure to connect to the proposed Sutherland WEF, Sutherland 2 WEF and Rietrug WEF to the National Grid, near Sutherland in the Northern and Western Cape	Project Manager	South Africa Mainstream Renewable Power Developments (Pty) Ltd
2017	Application for the non-substantive Amendment to the Environmental Authorisation for the proposed Bulk Liquid Storage and Handling Facility at Maydon Wharf, Port of Durban, KwaZulu-Natal	Project Manager	Oiltanking Grindrod Calulo (PTY) Ltd
2017 – Ongoing	Strategic Environmental Assessment (SEA for a Phased Gas Pipeline Network and expansion of Electricity Grid Infrastructure (EGI) for South Africa	Project Manager	National DEA, DOE, DPE, Transnet, iGas and Eskom
2018	Three Basic Assessment Processes for the	Project Team	Veroniva (Pty) Ltd -

Date	Project Description	Role	Client
	proposed development of three transmission Lines and three 115 MW Solar PV Facilities (Vryburg PV 1, PV 2, and PV 3) near Vryburg, North-West.	Member	Energy | Property
2019	Equator Principles Review of the Final EIA Report for the proposed Bulk Liquid Storage and Handling Facility in Zone 8 of the Coega IDZ, Port of Ngqura	Project Manager	Oiltanking Grindrod Calulo (PTY) Ltd

Language capabilities

	Speaking	*Reading*	*Writing*
English	Excellent	Excellent	Excellent

NALA

ENVIRONMENTAL

CONSULTING FIRM

PROPOSED CONSTRUCTION AND OPERATION OF THEELECTRICAL GRID INFRASRUCTURE TO SUPPORT THE SUTHERLAND, SUTHERLAND 2 AND RIETRUG WIND ENERGY FACILITIES (WEF'S), NORTHERN AND WESTERN CAPE PROVINCES

ADDENDUM TO ENVIRONMENTAL MANAGEMENT PROGRAMME

JULY 2021

DOCUMENT DETAILS

Applicant	:	South Africa Mainstream Renewable Energy Developments (Pty) Ltd
Title	:	Proposed construction and operation of the of electrical grid infrasructure to support the Sutherland, Sutherland 2 and Rietrug wind energy facilities (wef's), Northern and Western cape provinces: Addendum to the Environmental Management Programme
Author/EAP	:	Nala Environmental (Pty) Ltd Arlene Singh
Specialists	:	Dr. Jayson Orton (ASHA Consulting) John Almond (Natura Viva) Marine Pienaar (TerraAfrica) Gerhard Both (Nkurenkuru Ecology & Biodiversity)
Purpose of Report	:	Addendum to the EMPr for submission to DFFE for the Part 2 Amendment associated with the Relocation of the authorised Main Transmission Substation (MTS) and powerline co-ordinates for the electrical grid infrastructure to support the Sutherland, Sutherland 2 and Rietrug Wind Energy Facilities (WEF's).
Date	:	July 2021

DEFINITIONS AND TERMINOLOGY

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

Alien species: A species that is not indigenous to the area or out of its natural distribution range.

Alternatives: Alternatives are different means of meeting the general purpose and need of a proposed activity. Alternatives may include location or site alternatives, activity alternatives, process or technology alternatives, temporal alternatives or the 'do nothing' alternative.

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

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

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

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

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

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

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

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

Development footprint: the defined area (located within the development area) where the various supporting infrastructure is planned to be constructed. This is the actual footprint of the infrastructure, and the area which would be disturbed.

Direct impacts: Impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity (e.g., noise generated by blasting operations on the site of the activity). These impacts are usually associated with the construction, operation, or maintenance of an activity and are generally obvious and quantifiable.

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

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

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

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

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

Environment: the surroundings within which humans exist and that is made up of:

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

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

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

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

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

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

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

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

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

Habitat: The place in which a species or ecological community occurs naturally.

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

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

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

Indirect impacts: Indirect or induced changes that may occur because of the activity (e.g., the reduction of water in a stream that supply water to a reservoir that supply water to the activity). These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken, or which occur at a different place because of the activity.

Interested and affected party: Individuals or groups concerned with or affected by an activity and its consequences. These include the authorities, local communities, investors, work force, consumers, environmental interest groups, and the public.

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

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

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

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

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

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

Study area: Portion 7 of Farm Hamelkraal 16

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

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

(a) any substance, material or object, that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether or not such substance, material or object can be re-used, recycled or recovered and includes all wastes as defined in Schedule 3.

(b) any other substance, material or object that is not included in Schedule 3 that may be defined as a waste by the Minister by notice in the *Gazette,*

but any waste or portion of waste, referred to in paragraph (a) and (b), ceases to be a waste –

(i) once an application for its re-use, recycling or recovery has been approved or, after such approval, once it is, or has been re-used, recycled or recovered;

(ii) where approval is not required, once a waste is, or has been re-used, recycled or recovered;

(iii) where the Minister has, in terms of section 74, exempted any waste or a portion of waste generated by a particular process from the definition of waste; or

(iv) where the Minister has, in the prescribed manner, excluded any waste stream or a portion of a waste stream from the definition of waste.

ABBREVIATIONS

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

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

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SECTION 1: BACKGROUND TO THE ENVIRONMENTAL AUTHORISATION

South Africa Mainstream Renewable Power Developments (PTY) Ltd (herein-after referred to as Mainstream) received and Environmental Authorisation (DEA Ref:. 14/12/16/3/3/1/2077) dated (08/06/2020) for the development of a 132 kV powerline, a 400 kV powerline and a 400 kV Main Transmission Substation (MTS) near Sutherland in the Northern and Western Cape. The authorised powerlines will evacuate electricity generated by the authorised Rietrug Wind Energy Facility (WEF), Sutherland WEF and the Sutherland 2 WEF (herein-after referred to as WEFs) to the national grid. These WEFs received EAs dated 10 November 2016 (Department of Environmental Affairs (DEA) Reference Numbers: 12/12/20/1782/1; 12/12/20/1782/2; and 12/12/20/1782/3, respectively), from the National Department of Forestry, Fisheries and Environment (DFFE).

In this regard, South Africa Mainstream Renewable Power Development (Pty) Ltd (Mainstream) is considering the MTS previously assessed and authorised as per centre co-ordinates 31º 41'51.998"S 21º15'18.445"E be relocated further south within the authorised 500m 400kV grid corridor and an amendment to the start and end co-ordinates of the 132kV and 400kV powerlines that are related to this 400kV MTS. The current authorised location of the MTS has been deemed to be unsuitable as it is located upon a steep hill that would be unsuitable for construction, would require extreme amounts of earthworks and would hinder the connection of other renewable energy projects in the future. Mainstream is therefore requesting the DFFE to amend the Environmental Authorisation to reflect the new proposed location of the MTS and new start and end co-ordinates of the associated 132kV and 400kV powerlines,

1.1. Addendum to the Environmental Management Programme (EMPr)

This document forms an addendum to the Environmental Management Programme (prepared by CSIR Environmental Management Services) as submitted with the Final Basic Assessment Report (BA Report) in December 2019.

The stipulations herein must be read with Part C of the gazetted Generic EMPr in Section 7 of this EMPr (CSIR, 2019). It includes site specific impact management outcomes and impact management actions that are not included in the pre-approved generic EMPr. It is hereby submitted to the DFFE together with the Part 2 Amendment Application, for consideration of, and decision on, the Application Amendment to the EA. This section has been prepared by an Environmental Assessment Practitioner (EAP), with input from relevant specialists.

1.2. Expertise of Environmental Assessment Practitioners

This Addendum to the EMPr was compiled by Nala Environmental (Pty) Ltd to include new location of the Main Transmission Substation (MTS) and updated powerline co-ordinates within the authorised grid connection corridor associated with the electrical grid infrastructure to support the Sutherland, Sutherland 2 and Rietrug Wind Energy Facilities (WEF's), Northern and Western Cape Provinces.

Nala Environmental is an environmental consultancy firm established in December 2020. The main line of business is the compilation of environmental impact assessments for a variety of industries. The Nala Environmental management team has a broad client base from both the private and government sectors which has developed over the past 10 years. Nala Environmental is experience in undertaking environmental impact assessments spans across South Africa, with significant experience in the Northern Cape, Western Cape, Eastern Cape, Mpumalanga and Kwa-Zulu Natal Provinces. The Environmental Assessment Practitioner (EAP) for this project is Arlene Singh who is registered with the Environmental Assessment Practitioner's Association of South Africa (EAPASA) and the South African Council for Natural Scientific Professions (SACNASP). Refer to Appendix A for a Company Profile and condensed Curriculum Vitae of the EAP.

1.3. Relocation of the authorised MTS and Powerline Co-ordinates

The MTS previously assessed and authorised as per centre co-ordinates 31º 41'51.998"S 21º15'18.445"E be relocated further south within the authorised 500m 400kV grid corridor and an amendment to the start and end co-ordinates of the 132kV and 400kV powerlines that are related to this 400kV MTS. The current authorised location of the MTS has been deemed to be unsuitable as it is located upon a steep hill that would be unsuitable for construction, would require extreme amounts of earthworks and would hinder the connection of other renewable energy projects in the future. Mainstream is therefore requesting the DFFE to amend the Environmental Authorisation to reflect the new proposed location of the MTS and new start and end co-ordinates of the associated 132kV and 400kV powerlines.

A Part 2 EA Amendment application was undertaken, and it was determined that new location of the MTS within the originally authorised grid corridor should be authorised (as per the map below). This Addendum to the Environmental Management Programme (EMPr) provides mitigation measures to minimise the impact the relocation of the MTS could have on the environment and should be read together with the EMPr as submitted with the Final Basic Assessment Report, dated December 2019. The report and EMPr was compiled by the CSIR: Environmental Management Services.

The following amendments are applicable:

a) It is requested that the co-ordinates of the MTS specifications on page 7 of the Environmental Authorisation be amended ***from***.

400kV Major Transmission Substation (MTS)	**Latitude (S)**	**Longitude (E)**
Centre Co-ordinates	32º41'.51.998"S	21º15'.18.445"E

To

400kV Main Transmission Substation (MTS)- Corner Co-ordinates	**Latitude**	**Longitude**
Corner 1	32º42'36.88"S	21º15'24.18"E
Corner 2	32º42'35.60"S	21º15'43.50"E
Corner 3	32º42'50.34"S	21º15'46.79"E
Corner 4	32º42'52.48"S	21º15'25.49"E

b) It is requested that the start and end co-ordinates of the 132kV and 400kV powerline that terminate and start at the MTS on page 7 of the Environmental Authorisation be amended ***from***.

132kV Power line	**Latitude (S)**	**Longitude (E)**
Starting point of activity	32º38'41.115"S	20º55'2.470"E
Middle point of activity	32º37'52.510"S	21º8'0.841"E
End point of activity	32º41'54.652"S	21º15'23.209"E
400kV Powerline	**Latitude (S)**	**Longitude (E)**
Starting point of activity	32º41'54.625"S	21º15'23.209"E
End point of activity	32º44'4.970"S	21º15'41.530"E

To

132kV Power line	**Latitude (S)**	**Longitude (E)**
Starting point of activity	32°38'41.115"S	20°55'2.470"E
Middle point of activity	32°37'52.510"S	21°8'0.841"E
End point of activity	32°42'44.67"S	21°15'34.25"E
400kV Powerline	**Latitude (S)**	**Longitude (E)**
Starting point of activity	32°42'45.09"S	21°15'34.52"E
End point of activity	32°44'4.970"S	21°15'41.530"E

The amendment to the authorised MTS location and powerline co-ordinates specifications in itself not a listed activity and will not trigger any new listed activities, as the MTS will remain within the authorised grid connection corridor and grid corridor for powerline remains unchanged and fall within the originally authorised grid corridor footprint of the facility presented within the BA.

1.4. Project Description

PROJECT COMPONENTS

- 400kV Main Transmission Substation (25ha MTS) including an O&M Building and Laydown area) as well as associated infrastructure in order to facilitate connection to the national grid.
- 132kV powerline (end point at the MTS)
- 400kV powerline (start point from MTS)

The Main Transmission Substation (MTS) will be relocated further south of the authorised location within the authorised 500m grid corridor. Due the relocation of the MTS the end co-ordinates of the authorised adjoining 132kV powerline and 400kV powerlines will need to be updated accordingly. The routing of the 132kV and 400kV powerline remains unchanged and will remain within the grid corridor as originally authorised.

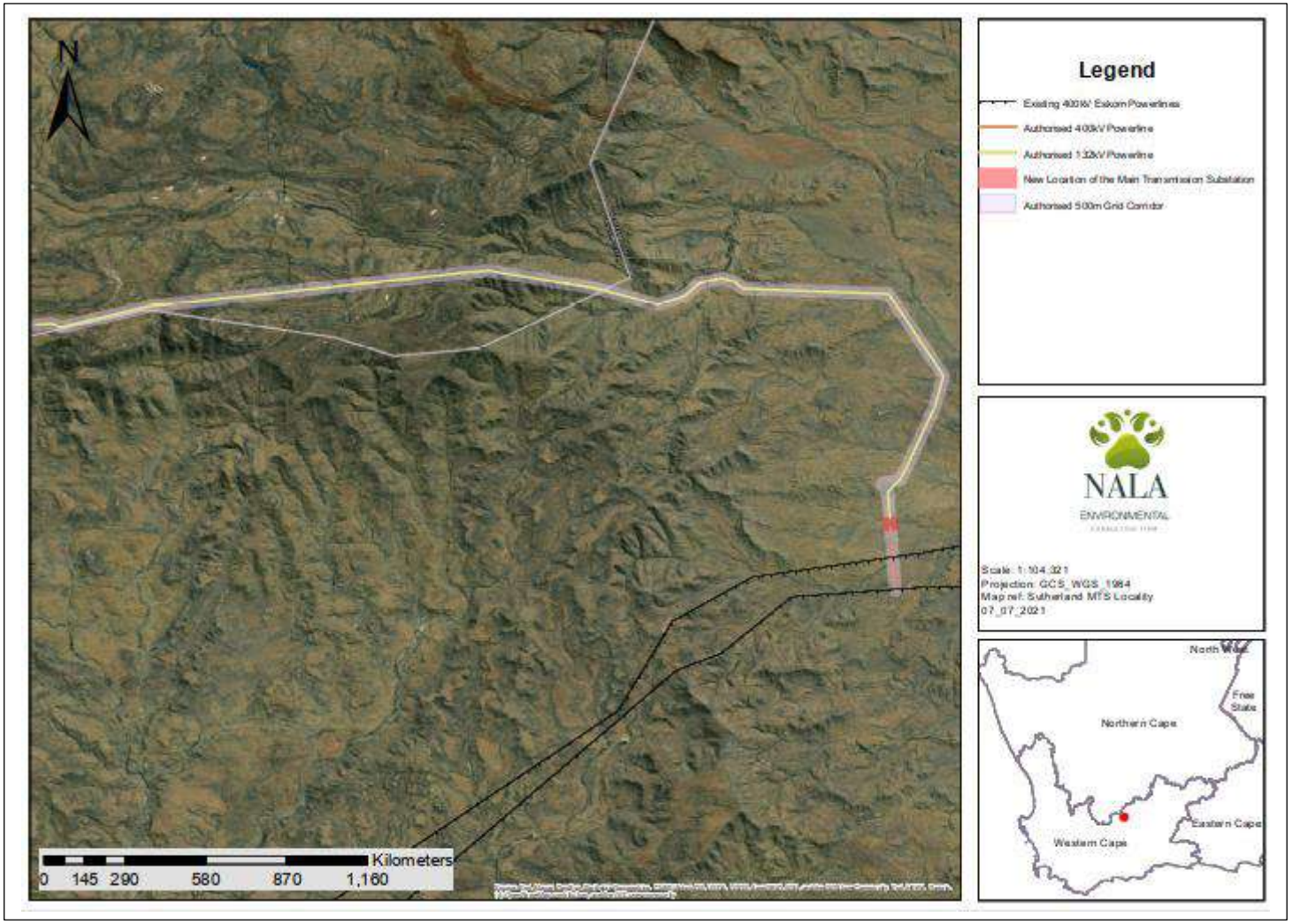


Figure 1. Layout Map of the updated MTS location and 132kV and 400kv Powerlines within the authorised 500m corridor

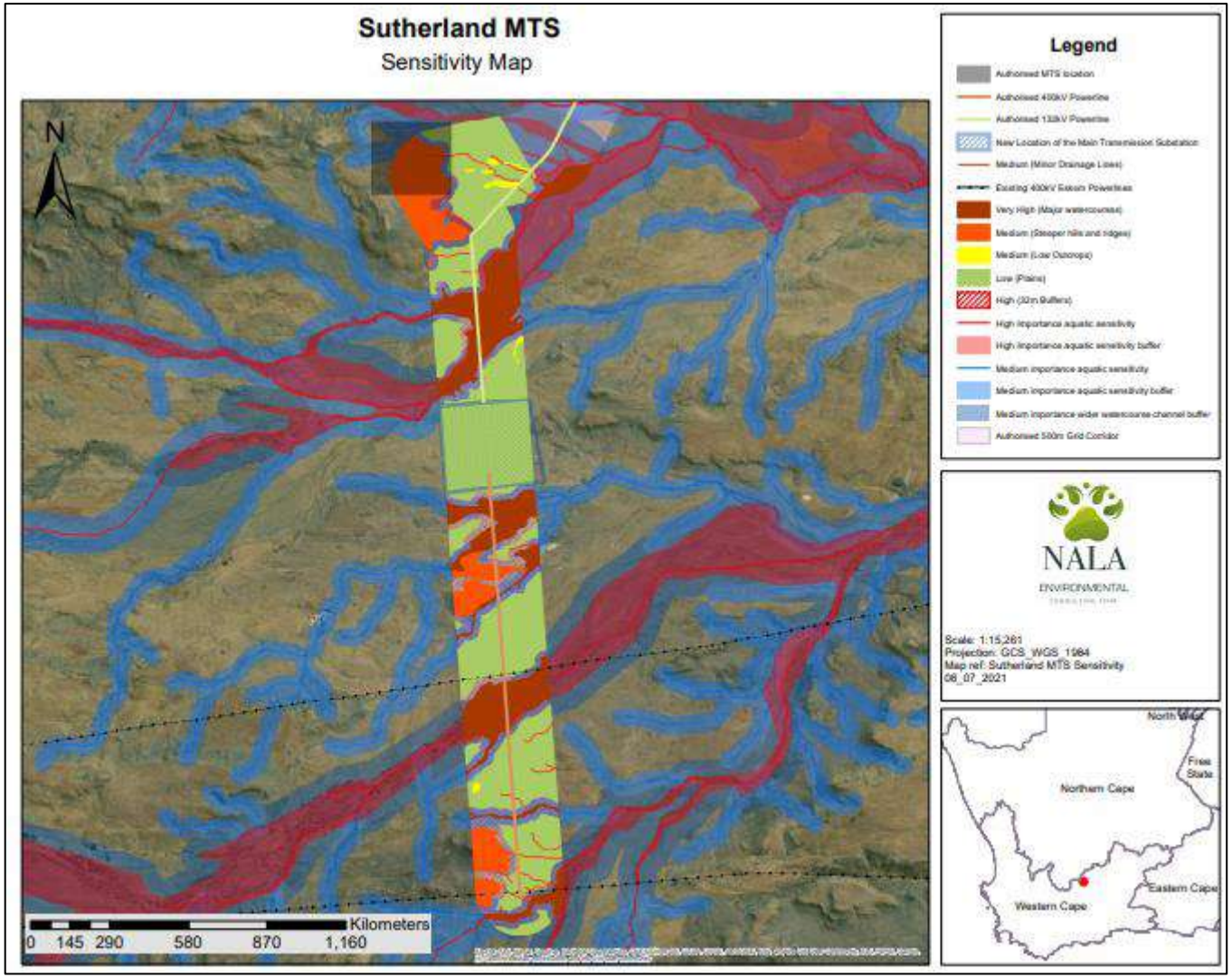


Figure 2. Sensitivity Map of the updated MTS location and previously authorised MTS location within the authorised 500m corridor

SECTION 2: MITIGATION FOR INCLUSION WITHIN THE EMPR

2.1. Specialist Studies: No Additional Mitigation Required

As per the specialist studies undertaken as part of the Part 2 Amendment process for the relocation of the MTS (July 2021), it was it was clear that no further input would be required in terms of the following:

- Palaeontology: No additional mitigation measures were identified for the relocation of the MTS that differ from the original findings of the palaeontological assessment.
- Surface Water: No additional mitigation measures were identified for the relocation of the MTS other than the recommended 100m buffer around the freshwater resource feature to the north-west and north of the new footprint, this buffer should be applied strictly, apart from the small section of buffer area the extends into the north-western corner of the new MTS footprint. The exclusion of this small section from the buffer area is regarded as acceptable.
- Terrestrial Ecology: No additional mitigation measures were identified for the relocation of the MTS that differ from the original findings of the Terrestrial Ecology assessment.

Final Basic Assessment report and EMP's undertaken by CSIR in December 2019.

- Visual: The power line route as presented in this document was assessed and no further mitigation measures are required.
- Socio-Economic: The power line route as presented in this document was assessed and no further mitigation measures are required.
- Heritage: The power line route as presented in this document was assessed and no further mitigation measures are required.

Table 1: Environmental Features and Sensitive Areas that were identified by the Specialists

Specialist Study	Key Environmental Features and Sensitive Areas
Heritage (Palaeontology, Archaeology and Cultural Landscape) (Appendix F of the Motivation Report)	<u>Palaeontology:</u> ▪ The PIA explains that the authorised and amended MTS sites are both underlain at depth by potentially fossiliferous sedimentary rocks of the Abrahamskraal Formation, Lower Beaufort Group (Karoo Supergroup) which are of Middle Permian age. However, only one highly-sensitive "no-go" area was identified within the study area, however it lies outside of the proposed development footprint. This specifically includes an extensive surface scatter of petrified wood blocks, some of which are well-preserved, and occasional bone fragments, which was found on Farm Hamelkraal 16 on either side of a farm track. This fossil scatter is located approximately 500 m southwest of the 132 kV power line route. A 30 m wide peripheral buffer zone is required around the fossil scatter. ▪ The majority of the amended site is occupied by low relief terrain mantled by alluvial and downwasted surface gravels as well as finer-grained deposits of low palaeosensitivity, with very little fresh bedrock exposure. The overall palaeontological sensitivity of the Electrical Grid Infrastructure study area is rated as low. ▪ No new fossil sites were recorded within the amended site during the recent one-day site visit. ▪ To the east and shortly outside the amended substation project area new fossil sites comprising downwasted large tetrapod bones, moulds of plant stems within channel sandstones and locally abundant (but equivocal) trace fossils have been recorded. ▪ None of these new sites would require mitigation as a result of the MTS or associated 132 kV and 400 kV grid connection developments. <u>Archaeology:</u> ▪ The Heritage Impact Assessment explains the most important within the study area are a number of engravings that are all assumed to be historical. None of them seems represent recognisable imagery and the markings at waypoint 497 may even simply be chop marks from somebody using the rock to chop firewood on. ▪ Some stone features were also found. A set of rocks on a level area of alluvium and that appear to form two conjoined semi-circular shapes. They have no obvious function and there were no artefacts in the area. ▪ A number of archaeological finds were made on a small raised rocky area just outside the eastern edge of the study area. List of sites and features recorded during the survey inside the study area: » <u>Waypoint 497</u> - Rock engraving on a koffieklip boulder on a small rise in the middle of the western half of the study area. The engraving consists of two converging lines of pecked marks. Recorded by Orton (2019) as waypoint 1783. » <u>Waypoint 498</u> - Rock engraving on koffieklip in a cluster of boulders on a small rise, close to 499 and 500. The engraving consists of scratched lines which partly cross over each other and pecked marks within three rounded shapes. » <u>Waypoint 499</u> - Rock engraving on koffieklip in a cluster of boulders on a small rise, close to 498 and 500. The engraving consists of a scratched irregular triangle with a line through the middle.

	» Waypoint 500 - Rock engraving on koffieklip in a cluster of boulders on a small rise, close to 498 and 499. The engraving consists of 2 sets of roughly parallel lines of peck marks which diverge slightly. » Waypoint 501 - Rock engraving on koffieklip in a different cluster of boulders on the same small rise as 497 to 500. The engraving consists of a scratched diamond shape. The outline of three of the four sides is made up of multiple lines rather than a single outline. Recorded by Orton (2019) as waypoint 1784. » Waypoint 502 - Rock engraving on a koffieklip boulder at the eastern extremity of the small rise with the previous engravings. The engraving consists of scratched lines, a scratched circle and pecked marks within a semi-circular shape. Recorded by Orton (2019) as waypoint 1785. » Waypoint 503 - Stone feature of koffieklip boulders, approximately 40cm x 70cm, situated within the sandstone and koffieklip gravels on the alluvium in the low-lying area close to the southern boundary of the study area. This could possibly indicate a burial. No artefacts in association with it. » Waypoint 504 - Irregularly spaced arrangement of koffieklip boulders in two adjoining semicircles on the alluvium in the south-eastern corner of the study area. Each semi-circle is approximately 1.5 x 2m. No artefacts were seen in association with them. » Waypoint 505 - Isolated flaked quartzite cobble. » Waypoint 506 - Rock engraving situated in the western-most cluster of koffieklip boulders on the higher rocky area between the eastern boundary of the study area and the gravel road. It lies just within the study area. The engraving is obviously of colonial age as it consists of scratched letters – WICKUS DE WEE… ▪ Most of these were spatially related (waypoints 507 to 512). In this area there were many stone artefacts dating from both the MSA and LSA, but with the former strongly dominating. Blades and points (pr fragments of these types) were quite common. The slightly elevated position of this area was obviously a favoured spot. ▪ Aside from the engravings, no historical archaeological materials were found in the study area. ▪ No graves were found, but one pile of stones seemed suggestive of a possible burial cairn. It is undoubtedly an anthropogenic feature but, although unlikely to be a grave, this cannot be ruled out. ▪ All but one of the previously proposed points for inclusion in the Environmental Management Program (EMPr) are still valid. The one that needs to change is that dealing with the engraving at waypoint 1785 (the 4th bullet in Orton 2019). Note that this engraving is now listed under waypoint 502 in this report. The engraving can no longer be protected and will require mitigation, along with others on the same outcrop. This point should be substituted with the following two points: » The engravings at waypoints 497 to 502 and at waypoint 506 in Western Cape will require recording prior to construction. The developer or ECO should ensure that this has occurred well in advance of construction and that final approval of the mitigation work has been issued by HWC prior to construction. » The area to the east of the MTS footprint and centred on waypoints 508 and 510 should be declared a no go area and monitored periodically by the ECO to ensure compliance. » Fencing of the other known sites in the corridor is not necessary since, with the exception of the painted rock art site, none are very close to the route. The rock art is not easily discernible by a non-specialist and it is better not to draw attention to it. However, no entry signs should be placed at regular intervals around the two historical complexes in Western Cape.
Surface Water (Appendix E of Motivation Report)	▪ A 100m buffer must be applied around the freshwater resource feature to the north-west and north of the new footprint, this buffer should be applied strictly, apart from the small section of buffer area the extends into the north-western corner of the new MTS footprint. The exclusion of this small section from the buffer area is regarded as acceptable.

2.2. SITE SPECIFIC IMPACT AND MITIGATION TABLE

HERITAGE: ARCHAEOLOGY, PALAEONTOLOGY AND CULTURAL LANDSCAPE

Impact Management Outcome: To minimise the impact on and risk to heritage features.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
DESIGN PHASE						
The MTS site should be included within the preconstruction survey for the already authorised powerlines in order to check for any further significant resources, especially engravings;	Project Developer	Project Developer to appoint a qualified archaeologist/ palaeontologist to do a pre-construction survey.	During the design phase, prior to the commencement of construction	ECO	Once-off	Archaeologist/ palaeontologist appointed, report compiled and submitted to SAHRA.
The engravings should be photographed and traced as necessary to produce a clear record. This should include moving the stones in order to achieve the best light for photography	Project Developer	Project Developer to appoint a qualified archaeologist/ palaeontologist to do a pre-construction survey.	During the design phase, prior to the commencement of construction	ECO	Once-off	Archaeologist/ palaeontologist appointed, report compiled and submitted to SAHRA.
The potential grave cairn should be unpacked, and the ground tested to determine the status of the feature	Project Developer	Project Developer to appoint a qualified archaeologist/ palaeontologist to do a pre-construction survey.	During the design phase, prior to the commencement of construction	ECO	Once-off	Archaeologist/ palaeontologist appointed, report compiled and submitted to SAHRA.

The engravings at waypoints 497 to 502 and at waypoint 506 in Western Cape will require recording prior to construction. The developer or ECO should ensure that this has occurred well in advance of construction and that final approval of the mitigation work has been issued by HWC prior to construction.	Project Developer	Project Developer to appoint a qualified archaeologist/ palaeontologist to do a pre-construction survey.	During the design phase, prior to the commencement of construction	ECO	Once-off	Archaeologist/ palaeontologist appointed, report compiled and submitted to SAHRA.
The area to the east of the MTS footprint and centred on waypoints 508 and 510 should be declared a no-go area and monitored periodically by the ECO to ensure compliance	Project Developer	Project Developer to appoint a qualified archaeologist/ palaeontologist to do a pre-construction survey.	During the design phase, prior to the commencement of construction	ECO	Once-off	Archaeologist/ palaeontologist appointed, report compiled and submitted to SAHRA.
Fencing of the other known sites in the corridor is not necessary since, with the exception of the painted rock art site, none are very close to the route. The rock art is not easily discernible by a non-specialist, and it is better not to draw attention to it. However, no entry signs should be placed at regular intervals around the two historical complexes in Western Cape.	Project Developer	Project Developer to appoint a qualified archaeologist/ palaeontologist to do a pre-construction survey.	During the design phase, prior to the commencement of construction	ECO	Once-off	Archaeologist/ palaeontologist appointed, report compiled and submitted to SAHRA.

Impact Management Outcome: To minimise the impact on and risk to heritage features.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
CONSTRUCTION AND DECOMMISSIONING PHASES						

The cluster of Stone Age materials located just outside the eastern edge of the site should be avoided and protected from harm throughout the construction phase; and	Project Developer	▪ Ensure that the ECO receives adequate training from a professional specialist to be able to identify fossils during excavations. ▪ A Chance Fossil Finds Procedure is recommended.	During the construction phase (and as applicable during the decommissioning phase)	ECO	During excavation work during the construction phase (and as applicable during the decommissioning phase)	Undertake inspections and record all findings and document the inspection process.
If any fossils, archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.	Project Developer	▪ Ensure that the ECO receives adequate training from a professional specialist to be able to identify archaeological sites or remains and fossils during excavations.	During the construction phase (and as applicable during the decommissioning phase)	ECO	During excavation work during the construction phase (and as applicable during the decommissioning phase)	Undertake inspections and record all findings and document the inspection process.
On-going Construction Phase monitoring for fossils of surface clearance and excavations by ECO / ESO.	Project Developer	▪ Ensure that the ECO receives adequate training from a professional specialist to be able to identify fossils during excavations. ▪ A Chance Fossil Finds Procedure is recommended.	During the construction phase (and as applicable during the decommissioning phase)	ECO	During excavation work during the construction phase (and as applicable during the decommissioning phase)	Undertake inspections and record all findings and document the inspection process.
Implementation of the Chance Fossil Finds Procedure	Project Developer	▪ Ensure that the ECO receives adequate training from a professional specialist to be able to identify fossils during excavations. ▪ A Chance Fossil Finds Procedure is recommended.	During the construction phase (and as applicable during the decommissioning phase)	ECO	During excavation work during the construction phase (and as applicable during the decommissioning phase)	Undertake inspections and record all findings and document the inspection process.

SOIL AND AGRICULTURAL POTENTIAL

Impact Management Outcome: To avoid or reduce impact as a result of soil pollution						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
CONSTRUCTION PHASE						
▪ Prevention of petroleum hydrocarbon (present in oil and diesel) spills by machinery and vehicles during earthworks and the removal of vegetation as part of site preparation. ▪ Prevention of spills from vehicles transporting workers, equipment, and construction material to and from the construction site. ▪ Prevention of accidental spills from temporary chemical toilets used by construction workers. ▪ Minimisation of domestic waste generation by construction workers. ▪ Removal of construction material remaining within the construction area once construction is completed.	ECO	▪ Maintenance must be undertaken regularly on all vehicles and construction/maintenance machinery to prevent hydrocarbon spills; ▪ Any waste generated during construction, must be stored into designated containers and removed from the site by the construction teams. ▪ Any left-over construction materials must be removed from site.	During construction phase	ECO	Monthly	▪ No visible signs of waste and spills within the project site. ▪ No accumulation of contaminants in the soils of the project site.
Impact Management Outcome: Decrease in areas with suitable land capability for livestock farming.						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
CONSTRUCTION PHASE						
▪ Limit activities to the development footprint.		▪ The only mitigation measure for this impact is to keep the	During construction phase	ECO	Ongoing	Undertake inspections and

		footprints of all renewable energy facilities and the supporting infrastructure, as small as possible and to manage the soil quality by avoiding far-reaching soil degradation such as erosion.				record all findings and document the inspection process.
Impact Management Outcome: To avoid or reduce impact as a result of soil pollution						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
OPERATIONAL PHASE						
▪ Prevention of petroleum hydrocarbon (present in oil and diesel) spills by machinery and vehicles during earthworks and the removal of vegetation as part of site preparation. ▪ Prevention of spills from vehicles transporting workers, equipment, and construction material to and from the construction site. ▪ Prevention of accidental spills from temporary chemical toilets used by construction workers. ▪ Minimisation of domestic waste generation by construction workers. ▪ Removal of construction material remaining within the construction area once construction is completed. ▪ In the event of a significant spill or leak of hazardous substances (e.g. petrol, diesel, etc.) used during the proposed activities, such an incident(s) must be reported to the relevant authorities, including the Directorate: Pollution and Chemicals Management of this Department (DEA&DP) (Directorate: Waste Management – Mr Gary Arendse (Gary.Arendse@westerncape.gov.za; Tel: (021) 483 3713):., in accordance with section 30 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"), pertaining to the control of incidents.	ECO	▪ Maintenance must be undertaken regularly on all vehicles and construction/maintenance machinery to prevent hydrocarbon spills; ▪ Any waste generated during construction, must be stored into designated containers and removed from the site by the construction teams ▪ Any left-over construction materials must be removed from site.	During operational phase	ECO	Monthly	▪ No visible signs of waste and spills within the project site. ▪ No accumulation of contaminants in the soils of the project site.

SURFACE WATER

Impact Management Outcome: To avoid or reduce impact on sensitive surface water bodies						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
CONSTRUCTION PHASE						
▪ Avoid encroachment within 100m buffer around the freshwater resource feature to the north-west and north of the new footprint, this buffer should be applied strictly, apart from the small section of buffer area the extends into the north-western corner of the new MTS footprint.	ECO	▪ The ECO must ensure that the 100m buffer must be demarcated prior to commencement of construction with the exception of the small portion of the MTS footprint that will encroach within this buffer. ▪ The ECO must ensure that construction workers and vehicle access is prohibited within the 100m buffers around the freshwater resources and featured identified to the north-west and north of the MTS footprint.	During construction phase	ECO	Weekly	Undertake inspections and record all findings and document the inspection process.

Impact Management Outcome: To avoid or reduce impact on sensitive surface water bodies						
Impact Management Actions	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
OPERATIONAL PHASE						
▪ Avoid encroachment within 100m buffer around the freshwater resource feature to the north-west and north of the new footprint, this buffer should be applied strictly, apart from the small section of buffer area the extends into the north-western corner of the new MTS footprint.	ECO	▪ No access to the 100m buffer to be permitted during the operational phase of the MTS	During operational phase	ECO	On-going during operational phase	▪ Undertake inspections and record all findings and document the inspection process.

SECTION 3: REQUIREMENTS

3.1 SAHRA Requirements

The following requirements are made in terms of section 3(4) of the NEMA Regulations and section 38(8) of the National Heritage Resources Act, Act No 25 of 1999 (NHRA):

- 38(4)b – The recommendations of the specialists must be adhered to.
- 38(4)c(i) – If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule.
- 38(4)c(ii) – If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. Non-compliance with this section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule.
- 38(4)e – The following condition apply with regards to the appointment of specialists:

» If heritage resources are uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA.

3.2. Water Use Authorisation Requirements

Regulations requiring that a water user be registered, GN R.1352 (1999). Regulations requiring the registration of water users were promulgated by the Minister of Water Affairs in terms of provision made in Section 26(1)(c), read together with Section 69 of the National Water Act, 1998. Section 26(1)(c) of the Act allows for registration of all water uses including existing lawful water use in terms of Section 34(2). Section 29(1)(b)(vi) also states that in the case of a GA, the responsible authority may attach a condition requiring the registration of such water use. The Regulations (Art. 3) oblige any water user as defined under Section 21 of the Act to register such use with the responsible authority and effectively to apply for a Registration Certificate as contemplated under Art.7(1) of the Regulations. GA in terms of Section. 39 of the NWA.

According to the preamble to Part 6 of the NWA, 1998, "This Part established a procedure to enable a responsible authority, after public consultation, to permit the use of water by publishing general authorisations in the Gazette…" and further states that "The use of water under a general authorisation does not require a licence until the general authorisation is revoked, in which case licensing will be necessary…" The GAs for Section 21 (c) and (i) water uses (impeding or diverting flow or changing the bed, banks or characteristics of a watercourse) as defined under the NWA have recently been revised (Government Notice R509 of 2016). The proposed works within or adjacent to the wetland areas and river channels are likely to change the characteristics of the associated freshwater ecosystems and may therefore require authorization. Determining if a water use licence is required for these water uses is now associated with the risk of degrading the ecological status of a watercourse. A low risk of impact could be authorised in terms of a GA. A risk assessment has been undertaken for the proposed project under Section 5.7 of the Basic Assessment report (CSIR, 2019). The risk assessment determined that the proposed electrical grid infrastructure poses a low risk of impacting aquatic habitat, water flow and water quality. With these findings of the risk assessment, the water use activities associated with the proposed project could potentially be authorised by means of the general authorisations for the Section 21(c) and (i) water uses.

SECTION 4 : CONCLUSION

The mitigation and permit/license requirements as mentioned in this document include all recommendations made by the specialists appointed for the EA amendment application as made for the electrical grid infrastructure to support the Sutherland, Sutherland 2 and Rietrug Wind Energy Facilities (WEF's), Northern and Western Cape Provinces. Recommendations and stipulations received during the public participation process have also been included in this document. The EAP is confident that this addendum to the 2019 EMPr addresses all identified impacts to acceptable levels and that this document should be accepted as an addendum to the existing (2019) EMPr.

APPENDIX A
CV OF THE EAP

Kikuyu Waterfall
Cnr. Old Pretoria Main Road & Maxewell Drive
Johannesburg, South Africa

Email: arlene@veersgroup.com
Tel: +278 277 7074

CURRICULUM VITAE OF ARLENE SINGH

Profession: Environmental Assessment Practitioner (EAP) / Director

Specialisation: Environmental Assessments, report writing, report reviewing, development of project proposals for procuring new projects and project administration.

Work Experience: 8 years' experience in Environmental Assessments and 1 year in Sustainability Consulting.

VOCATIONAL EXPERIENCE

Professional execution of consulting services for projects in the environmental management field, specialising in Environmental Impact Assessment studies, environmental permitting, public participation, compilation of Environmental Management Plans and Programmes, environmental policy, and integrated environmental management. Responsibilities include report writing, project management, review of specialist studies and the identification and assessment of potential negative environmental impacts and benefits. Compilation of the reports for environmental studies is in accordance with all relevant environmental legislation.

Experience in conducting environmental impact assessments for infrastructure development projects (roads, stormwater, pipelines), Mixed Use Developments and Section 24G Applications for complex projects. She has extensive experience in managing and monitoring ECO functions and compliance on relevant projects. She has gained the ability to conduct sustainability assurance audits for non-financial environmental KPI's through her experience with listed mining corporations.

SKILLS BASE AND CORE COMPETENCIES

- Compilation of environmental impact assessment reports and environmental management programmes in accordance with relevant environmental legislative requirements;
- Identification and assessment of potential negative environmental impacts and benefits through the review of specialist studies;
- Key experience in the assessment of impacts associated with complex Section 24G Applications.
- Review of environmental impact assessment reports, impacts matrices and environmental management programme reports;
- Conducting of ECO audits, managing ECO staff, review of ECO reports and liaison with the client;
- Review of Carbon Footprint Analysis report and provision of recommendations for industry;
- Developing Business Development Plans, action plans and carrying out Business Development initiatives;
- Compilation of Integrated Reports in line with King IV;
- Conducting Mining Permit Applications with the DMR and the associated Basic Assessment process in line with the MPRDA;
- Extensive experience in compilation and submission of Tenders and Proposals;

EDUCATION AND PROFESSIONAL STATUS

Degrees:

- B.Sc. (Hons.) Environmental Management (2016), University of South Africa (UNISA);
- B.Sc. Environmental Science (2012), University of Kwa-Zulu Natal, Westville

Short Courses:

- Official DWS Section 21 (c) and (i) Water Use Authorisation Course (2018)- Dr Wietsche Roets, Specialist Scientist: (In Stream Water Use);
- SMME Green Building Face to Face Workshop (2018)- GBCSA hosted by JP Morgan;
- ArcGISBasic 10,3 (2016)- Esri South Africa

Professional Society Affiliations:

- South African Council for Natural Scientific Professionals - Professional Natural Scientist: Environmental Scientist) – Reg No. 118872
- Environmental Assessment Practitioners Association of South Africa- Reg No: 2019/898

Other Relevant Skills:

- Compiling and submission of invoices on projects;
- Registration of Waste Management Facilities on GWIS

EMPLOYMENT

Date	Company	Roles and Responsibilities
16 December 2020- Current		Environmental Assessment Practitioner / Director *Tasks include:* *Compilation of Environmental Impact Assessment (EIA) reports; Basic Assessment (BA) reports and Environmental Management Programmes; Environmental Screening reports; Co-ordination of the public participation process; Project management; project proposals and tenders; Client liaison and Marketing; Process EIA Applications. Business Development, Integrated reporting. Strategy, policy and procedure development. Planning of staff on engagements and Invoicing of clients.*

Date	Company	Roles and Responsibilities
08 April 2019- 15 December 2020:		Environmental Assessment Practitioner *Tasks include:* *Compilation of Environmental Impact Assessment (EIA) reports; Basic Assessment (BA) reports and Environmental Management Programmes; Environmental Screening reports; Co-ordination of the public participation process; Project management; project proposals and tenders; Client liaison and Marketing; Process EIA Applications.*
01 January 2016- 05 April 2019		Environmental Consultant/Gauteng Office Manager *Tasks included:* *Review of Basic Assessment reports, Environmental Management Programme reports, Impact Matrices. Review of Environmental Control Officer functions, report and planning of site visits. Compiling Waste Management License Applications and Section 24G Application with reports for review by company Director. Review of specialist reports. Compilation of tenders, proposals and fee proposals. Co-ordinate public participation processes. Liaison with clients, stakeholders and competent authorities. Business Development, Integrated reporting. Strategy, policy and procedure development. Planning of staff on engagements and Invoicing of clients.*
01 October 2014 – 31 December 2015		Sustainability Consultant 2 *Tasks included:* *Non-financial auditing of Environmental KPI's (Primary water, Total Waste, Total Electricity, Total CDP Calc, Scope 1, 2 and 3 emissions, Total CSI spend, Total Environmental incidents and Total Rock waste generated) for listed mining companies. Role included, testing of controls, applications of audit standards and guidelines, preparation and conclusions of audit papers and files, reporting to management and preparation of audit reports.*
01 January 2013- 30 September 2014	Triplo4 Sustainable Solutions (Pty) Ltd	Junior Environmental Consultant

Date	Company	Roles and Responsibilities
		Tasks included: *Conducting Environmental Control Officer audits and drafting of ECO reports for review. Drafting of Basic Assessment (BA) reports, Environmental Management Programme reports for review by Environmental Consultant. Conducting public participation by liaison with competent authorities and stakeholders. Assisting with compiling of Basic Assessment documents.*

PROJECT EXPERIENCE

Arlene has extensive experience in conducting environmental impact assessments for infrastructure development projects (roads, stormwater, pipelines) and renewable energy projects (solar, wind, csp and hybrid projects), Mixed Use Developments and Section 24G Applications for complex projects and housing developments. She has extensive experience in managing and monitoring ECO functions and compliance on relevant projects. She has gained the ability to conduct sustainability assurance audits for non-financial environmental KPI's through her experience with listed mining corporations. She has also been involved in undertaking Part 2 Amendment Applications and impact assessments for Renewable Energy Projects. She currently manages staff and undertakes project planning to ensure that projects are executed within the appropriate timeframes and within budget.

MINING SECTOR PROJECTS

Environmental Impact Assessments and Environmental Management Programmes

Project Name & Location	*Client Name*	*Role*
Yzermyn Coal Mine EMPr, Piet Retief, Mpumalanga	*Atha Group*	*EAP*

Basic Assessments

Project Name & Location	*Client Name*	*Role*
Shaya Quarry Basic Assessment process, Empangeni, Kwazulu-Natal	*Mbavuza Minerals*	*Project Manager*
Umvoti River Sand Mining Basic Assessment process, Kwazulu-Natal	*Izimbiwe Minerals Pty Ltd*	*Project Manager*

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

Project Name & Location	*Client Name*	*Role*
Shaya Quarry Mining Permit Application, Empangeni, Kwazulu-Natal	*Mbavuza Minerals*	*Project Manager*

Umvoti River Sand Mining Mining Permit Application, Kwazulu-Natal	*Izimbiwe Minerals Pty Ltd*	*Project Manager*
Newark Quarry, Ilembe Municipality, Kwazulu-Natal	*iLembe Concrete Pty Ltd*	*Junior EAP*

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

Basic Assessments

Project Name & Location	***Client Name***	***Role***
Replacement of Nseleni Bridge- Empangeni, Kwazulu-Natal	*RHDHV*	*EAP*
Construction of the 60ML Ntuzuma Reservoir, Ntuzuma, Kwazulu-Natal	*eThekwini Metropolitan Municipality*	*Project Manager*
Upgrade of the Nyathikazi box culvert, Darnell, Kwazulu-Natal	*KwaDukuza Municipality*	*Junior EAP*
Upgrade and Expansion Provincial Main Road D887, Kwazulu-Natal	*RHDHV*	*Junior EAP*
Expansion of LOX and Diesel Storage at the Air Products Facility in Coega, Eastern Cape	*Air Products South Africa (Pty) Ltd*	*EAP*

Environmental Compliance, Auditing and ECO

Project Name & Location	***Client Name***	***Role***
ECO Monitoring for Construction of Offtake 1 Reservoir, KwaDukuza, Kwazulu-Natal	*KwaDukuza Municipality*	*Project Manager*
ECO Monitoring for Construction of Offtake 6A2, 6D, 8C, 8D, 9, 11D Pipelines, KwaDukuza, Kwazulu-Natal	*KwaDukuza Municipality*	*Project Manager*
ECO Monitoring for the Construction of the Jozini RCWSS Phase 1A, Jozini, Kwazulu-Natal	*RHDHV*	*ECO (1 year), Project Manager*
ECO Monitoring for the Greytown BWSS, Greytown, Kwazulu-Natal	*RHDHV*	*Project Manager*
ECO Monitoring for the Kranskop Water Supply Scheme, Kranskop, Kwazulu-Natal	*RHDHV*	*ECO*
ECO Monitoring for the Zulti South Access Road, Richards Bay, Kwazulu-Natal	*RHDHV*	*Project Manager*

Compliance Advice and ESAP reporting

Project Name & Location	***Client Name***	***Role***
Ethafeni Cemetery Environmental Assessment Report, KwaDukuza, Kwazulu-Natal	*KwaDukuza Municipality*	*EAP*

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

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

General Authorisation for the Replacement of the Nseleni Bridge, Empangeni, Kwzulu-Natal	*RHDHV*	*EAP*
Water Use Licence Amendment for Country Club Johannesburg	*Country Club Johannesburg*	*EAP*

HOUSING AND URBAN PROJECTS

Environmental Impact Assessments and Environmental Management Programmes

Project Name & Location	***Client Name***	***Role***
Ethafeni Precinct Project Section 24G Application- Groutville , Kwazulu- Natal.	*KwaDukuza Municipality*	*Project Manager/Lead Consultant*
Environmental Management Programme report Brettenwood Residential Development, Kwazulu-Natal.	*Brettenwood Coastal Estate*	*EAP*
Environmental Management Programme report for CTM Ballito, Ballito, Kwazulu-Natal	*CTM*	*EAP*

Basic Assessments

Project Name & Location	***Client Name***	***Role***
Upgrade of residential dwelling on Colwyn Drive, Salt Rock, Kwazulu-Natal	*Mike Graham*	*Junior EAP*
Ethafeni Precinct Project Basic Assessment, Groutville, Kwazulu-Natal	*KwaDukuza Municipality*	*Project Manager*
105 Nkwazi Drive Single Residential House Basic Assessment, Zinkwazi, Kwazulu-Natal	*Ituwiz Pty Ltd*	*Project Manager*

Environmental Compliance, Auditing and ECO

Project Name & Location	***Client Name***	***Role***
88 Compensation ECO Audits – Ballito, Kwazulu- Natal	*Imali Corp*	*Environmental Control Officer (ECO)*
Oceans Umhlanga Hotel & Residential Development, Umhlanga, Kwazulu-Natal	*Edison Property Group*	*Project Manager*
Inoxa Cookware Factory Warehouse, Woodmead Estate, Shakaskraal, Kwazulu-Natal	*Shree Property*	*Project Manager*
Woodmead Estate Warehousing, Gauteng	*Shree Property*	*Project Manager*
Ridgeside Commercial Development, Umhlanga, Kwazulu-Natal	*Shree Property*	*Project Manager*
Construction of Jozini Shopping Centre, Jozini, Kwazulu-Natal	*GK Projects*	*ECO*

Birdhaven Residential Development, Ballito, Kwazulu-Natal	*Mike Graham Trust*	*ECO*
Foxhill Church and Residential Development, Ballito, Kwazulu-Natal	*M&C Janigh Trust*	*ECO*
Beema Bamboo Plantation Site (Bamboo to Energy project, Kwazulu-Natal	*Green Grid Energy*	*ECO*

OTHER PROJECTS

Environmental Compliance, Auditing and ECO

Project Name & Location	***Client Name***	***Role***
Beema Bamboo Plantation Site (Bamboo to Energy project, Kwazulu-Natal	*Green Grid Energy*	*ECO*
Mkondeni Medical Waste External Waste Management License Audit , Pietermaritzburg	*Ecocyle Waste Solutions*	*Auditor*
Dube Tradeport External Audit, eThekwini	*Dube Tradeport Corporation*	*Junior Auditor*

Carbon Footprint Analysis

Project Name & Location	***Client Name***	***Role***
Carbon footprint analysis of Newcastle and Sasolburg Plants, (Kwazulu Natal & North West	*Karbochem Pty Ltd*	*EAP*
Measure Carbon Emissions and provide updated baseline that would enable DTPC to quantify, monitor and assess carbon footprint and its climate change impact for DTPC, eThekwini	*Dube Tradeport Corporation*	*Junior EAP*

Waste Management

Project Name & Location	***Client Name***	***Role***
Waste Classification Assessment for Karbochem Newcastle facility , Kwazulu-Natal	*Karbochem Pty Ltd*	*EAP*
Waste Management Licenses for Wadeville & Rosslyn Waste Management Facilities, Gauteng.	*Planet Care Pty Ltd*	*EAP*

Compliance Advice and ESAP reporting

Project Name & Location	***Client Name***	***Role***
Environmental Opinion and Enquiry for the Rosslyn Tyre Pyrolysis Plant, Gauteng	*Cosmic Energy*	*EAP*

Non-Financial Auditing

KPI'S Audited	*Client Name & Location*	*Role*
Total Primary Water Use, Total Electricity Used, Total Waste Generated, Scope 1, 2 & 3 Emissions and Total Number of Environmental Incidents.	*Anglo Platinum (South Africa)*	*Sustainability Consultant*
Total Primary Water Use, Total Waste Generate and Total Number of Environmental Incidents.	*De Beers (Namibia)*	*Sustainability Consultant*
Scope 1, 2 & 3 Emissions, Total Electricity Purchased, Total Primary Water Used.	*Harmony Gold (South Africa)*	*Sustainability Consultant*
Scope 1, 2 & 3 Emissions, Total Electricity Purchased, Total Primary Water Used and Total Rock Waste Generated.	*Exxaro (South Africa, Papua New Guinea)*	*Sustainability Consultant*
Total Corporate Social Investment fund spend by Barclays Group	*Barclays Group*	*Sustainability Consultant*
Audit Environmental and Social Risk Finance Projects - Equator Principles	*MTN (South Africa & Nigeria)*	*Sustainability Consultant*

Renewable Energy Projects

Part 2 Amendment Applications and Motivation Reports

Project Name & Location	*Client Name*	*Role*
Transalloys Coal-Fired Power Station near Emalahleni, Mpumalanga Province	*Transalloys (Pty) Ltd*	*EAP*
Zen Wind Energy Facility, Western Cape	*Energy Team (Pty) Ltd*	*EAP*
Hartebeest Wind Energy Facility, Western Cape	*juwi Renewable Energies (Pty) Ltd*	*EAP*
Khai-Ma and Korana Wind Energy Facilities	*Mainstream Renewable Power (Pty) Ltd*	*EAP*
Korana Solar PV facility	*Mainstream Renewable Power (Pty) Ltd*	*EAP*

Basic Assessments

Project Name & Location	*Client Name*	*Role*
Upilanga Solar Park, Northern Cape (x6 100MW PV's and x3 350MW PV Basic Assessments)	*Emvelo Capital Projects (Pty) Ltd*	*EAP*
Kolkies and Sadawa PV facilities and associated grid infrastructure	*Mainstream Renewable Power South Africa (Pty) Ltd*	*EAP*
Hyperion Overhead Powerline	*Red Rocket (Pty) Ltd*	*EAP*
132KkV Phinda Power underground transmission line	*Phinda Power Producers (Pty) Ltd*	*EAP*

Msenge Emoyeni Wind Energy Facility supporting infrastructure	*Windlab (Pty) Ltd*	*EAP*

Environmental Impact Assessments

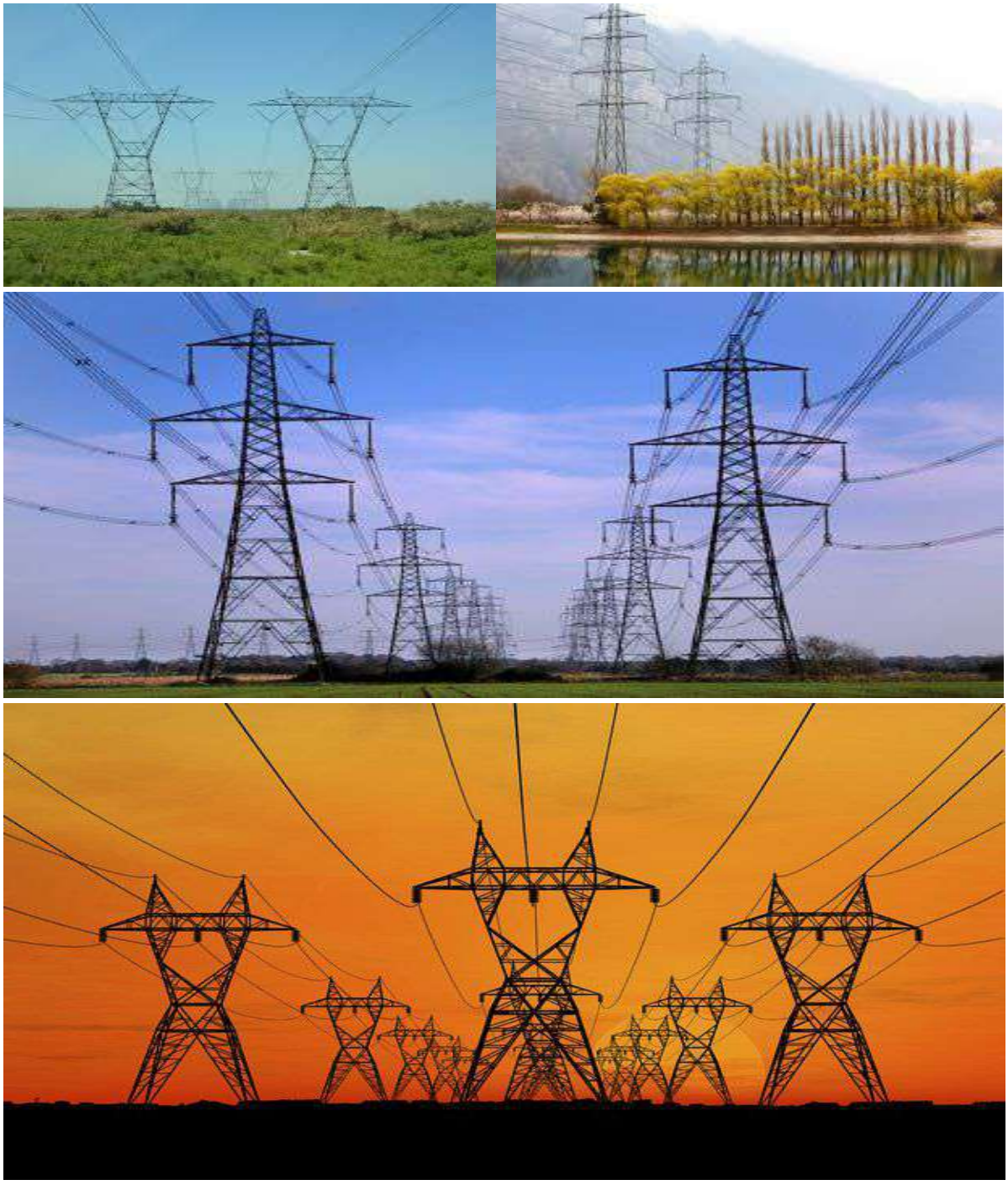
Project Name & Location	***Client Name***	***Role***
Upilanga Solar Park, Northern Cape (350MW CSP Tower)	*Emvelo Capital Projects (Pty) Ltd*	*EAP*
350MW Risk Mitigation Power Plant (Gas to Power facility)	*Phinda Power Producers (Pty) Ltd*	*EAP*
75mw Thermal Dual Fuel Facility and associated infrastructure (Hybrid facility i.e. gas to power and solar pv)	*Red Rocket (Pty) Ltd*	*EAP*
Berg River Wind Energy Facility	*Energy Team (Pty) Ltd*	*EAP*

Section 54 Audits

Project Name & Location	***Client Name***	***Role***
Mulilo 20MW PV Facility, Prieska, Northern Cape	*Mulilo (Pty) Ltd*	*Auditor*
Mulilo 10MW PV Facility, De Aar, Northern Cape	*Mulilo (Pty) Ltd*	*Auditor*
Karoshoek CSP 1 Facility/ Solar One,, Upington, Northern Cape	*Karoshoek Solar One (Pty) Ltd*	*Audit*

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

DFFE REF:. 14/12/16/3/3/1/2077/AM2



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	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. 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. Where an impact management outcome is not relevant, the words "not applicable" can be inserted in the template under the "responsible persons" column. 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. 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.
	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
			template contained in Part B: Section 1, 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 Part C. 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 Part B: section 2 not be submitted. Once approved, this Section forms part of the EMPr for the development and is legally binding.
C		Site specific sensitivities/ attributes	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 (Part B: section 1) This section will not be required should the site contain no specific environmental sensitivities or attributes. However, if Part C 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

Part	Section	Heading	Content
			approved, Part C forms part of the EMPr for the site and is legally binding. 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 Part B: section 1.
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	Environment 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&APs	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)	Role 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. Responsibilities - 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)	Role

Responsible Person (s)	Role and Responsibilities
	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. <u>Responsibilities</u> - 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)	<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. 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&APs), as required. Issues of non-compliance raised by the ECO must be taken up by the Project Manager and resolved with the Contractor as per the conditions of his contract. Decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e. those that are deemed to be a variation, not allowed for in the Performance Specification) must be endorsed by the Project Manager. The ECO must also, as specified by the EA, report to the relevant CA as and when required.

Responsible Person (s)	Role and Responsibilities
	Responsibilities The responsibilities of the ECO will include the following: - 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;

Responsible Person (s)	Role and Responsibilities
	- 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 (dEO)	<u>Role</u> 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. <u>Responsibilities</u> - 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 the 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;

Responsible Person (s)	Role and Responsibilities
	- 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	Role 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 for overhead electricity transmission and distribution infrastructure activities. Responsibilities - 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)	Role 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

Responsible Person (s)	Role and Responsibilities
	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: <u>Responsibilities</u> - 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 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 Substances;
- 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. Where0 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 contactor 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 understand 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**
– All staff must receive environmental awareness training prior to commencement of the activities;	ECO / cEO / dEO	Hold environmental awareness training workshops	Pre-construction Construction	ECO dEO	Monthly and as and when required	Attendance register and training minutes / notes for the record
– The Contractor must allow for sufficient sessions to train all personnel with no more than 20 personnel attending each course;	Contractor	Scheduling of sufficient sessions through consultation with the ECO / cEO / dEO	Pre-construction Construction	ECO dEO	Monthly and as and when required	Attendance register and training minutes / notes for the record
– Refresher environmental awareness training is available as and when required;	cEO / dEO in consultation with the ECO	Hold refresher environmental awareness training workshops	During the construction phase	ECO dEO	Monthly and as and when required	Attendance register and training minutes / notes for the record
– 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;	cEO / dEO	Hold training workshops and ensure that the EA and EMPr is readily available	During the construction phase	ECO dEO	Monthly and as and when required	Attendance register and training minutes / notes for the record
– The Contractor must erect and maintain information posters at key locations on site, and the posters must include the following information as a minimum: a) Safety notifications; and	Contractor	Develop and place appropriate	Pre-construction Construction	ECO dEO cEO	Monthly	Photographic record

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
b) No littering.		posters at key locations				
– Environmental awareness training must include as a minimum the following: 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 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.	cEO / dEO in consultation with the ECO	Develop environmental awareness training material which covers the minimum requirements	Pre-construction Construction	ECO dEO	Prior to the commencement of the environmental awareness training	Environmental awareness training material requirements checklist
– A record of all environmental awareness training courses undertaken as part of the EMPr must be available;	ECO / cEO / dEO	Filing system including all proof of training (i.e. attendance register and training minutes / notes for the record)	During the construction phase	ECO dEO	Monthly	Completed and up to date filing system with proof of training

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Educate workers on the dangers of open and/or unattended fires;	cEO / dEO in consultation with the ECO	Develop environmental awareness training material which covers the dangers of open and/or unattended fire	Pre-construction Construction	ECO dEO	Prior to the commencement of the environmental awareness training	Environmental awareness training material requirements checklist
– A staff attendance register of all staff to have received environmental awareness training must be available.	ECO / cEO / dEO	Filing system including all proof of training (i.e. attendance register)	During the construction phase	ECO dEO	Monthly	Completed and up to date filing system inclusive of all attendance registers
– Course material must be available and presented in appropriate languages that all staff can understand.	ECO / cEO / dEO	Develop environmental awareness training material in the required languages. Training material must by readily available to all staff	During the construction phase	ECO dEO	Monthly	Environmental awareness training material requirements checklist and the training register which must indicate the language of the training

5.2 Site Establishment Development

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– 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;	Contractor	Development of an appropriate method statement	Pre-construction	ECO dEO	Once, prior to construction	Availability of the method statement which complies with the minimum requirements listed
– Location of construction 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;	DPM	Place construction camps outside of sensitive areas identified in the Basic Assessment Report	Pre-construction Construction	ECO dEO	Once, prior to construction	Availability of a layout and sensitivity map indicating avoidance of sensitive areas
– Sites must be located where possible on previously disturbed areas;	DPM	Place site outside of sensitive areas	Pre-construction	ECO dEO	Once, prior to construction	Availability of a layout and sensitivity map

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		and within previously disturbed areas identified in the authorised BA Report				indicating avoidance of sensitive areas and placement within disturbed areas
– The camp must be fenced in accordance with ***Section 5.5: Fencing and gate installation***; and	DPM	Design and implementation of fencing as per the requirements of Section 5.5 of this EMPr	Pre-construction & Construction	ECO dEO	Once, prior to construction and once during the construction of the fencing	The camp is fenced in accordance with Section 5.5 of this EMPr
– The use of existing accommodation for contractor staff, where possible, is encouraged.	Not applicable – the development of new accommodation facilities will not be required. Staff will be accommodated in the nearby towns of Bedford and Cookhouse.					

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**
– Identification of access restricted areas is to be informed by the environmental assessment, site walk through and any additional areas identified during development;	dEO / cEO in consultation with the ECO	Spatially demarcate access restricted	Pre-construction	ECO	Once, prior to construction	Access restricted areas are identified

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		areas informed by the BA Report				and provided in a spatial format
– 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	dEO / cEO in consultation with the ECO	Erect appropriate temporary barriers around access restricted areas	At the commencement and for the duration of the construction phase	ECO	Monthly	Access restricted areas are closed-off through temporary barriers and barriers are maintained to a sufficient standard
– Unauthorised access and development related activity inside access restricted areas is prohibited.	Contractor / dEO / cEO	Erect appropriate temporary barriers around access restricted areas and provide clear signage of restricted status	During the construction phase	ECO	Monthly, and as and when required	Photographic evidence and notes of compliance that no unauthorised access or activities has taken place within the access restricted areas

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**
– Access to the servitude and tower positions must be negotiated with the relevant landowner and must fall within the assessed and authorised area;	DPM	Undertake negotiations for access to the servitude and tower positions with landowners affected by the grid connection corridor	Pre-construction Construction Operation	dEO	Ongoing throughout construction and operation	Proof of negotiations with affected landowners and requirements for access to the servitude and tower positions in the form of written and signed agreements
– An access agreement must be formalised and signed by the DPM, Contractor and landowner before commencing with the activities;	DPM Contractor	Develop access agreements with the affected landowners. Ensure that agreements are approved and signed	Pre-construction	dEO ECO	Once, prior to construction	Availability of approved and signed negotiations
– The access roads to tower positions must be signposted after access has been negotiated and before the commencement of the activities;	Contractor	Develop and install signs to indicate access for the project	Pre-construction	cEO / ECO	Once, prior to construction	Photographic record of signposted access roads

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
						and GPS co-ordinates of where these are placed
– 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	Contractor	Undertake maintenance activities on gravel roads used for construction as degradation takes place	During the construction phase	cEO / ECO	Weekly	Photographic record of the pre-construction condition and degradation of roads, and records of the implementation and effectiveness of maintenance activities
– All contractors must be made aware of all the access routes.	dEO / cEO	Develop a map illustrating all access routes associated with the project and present and provide the map to all contractors	Pre-construction Construction	ECO	Once, prior to construction	Access routes map readily available
– Any access route deviation from that in the written agreement must be closed and re-vegetated immediately, at the contractor's expense.	Contractor	All access routes developed that are not in-line with the access	Construction and Rehabilitation	ECO	Bi-weekly (every two weeks)	Photographic record of the closure of access roads

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		route agreements must be closed and re-habilitated to the pre-disturbance state				and re-vegetation
– Maximum use of both existing servitudes and existing roads must be made to minimise further disturbance through the development of new roads;	Contractor (and Eskom maintenance staff where relevant to operation)	Existing access routes to be used must be specified and the development of new roads must be avoided as far as possible	Construction and operation	cEO Operation and maintenance team	Weekly	Implementation of the approved layout
– 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;	dEO / cEO	Record the conditions of private roads to be used (prior to use) as per the requirements of section 4.9 and agree on the required condition of the roads with the	During the construction phase	ECO	Prior to the use of private roads	Photographic record and proof of the road conditions agreed upon with the relevant parties

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		landowner, DPM and contractor				
– Access roads in flattish areas must follow fence lines and tree belts to avoid fragmentation of vegetated areas or croplands.	DPM and Contractor	Design access roads to follow fence lines and avoid vegetated areas	Pre-construction	ECO	Once during the design and once prior to construction	Implementation of the approved layout
– Access roads must only be developed on pre-planned and approved roads.	Contractor	Construction of access roads only on pre-planned and approved access roads	During the construction phase	ECO dEO	Once during the design and weekly during the construction of access roads	Implementation of the approved layout

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**
– Use existing gates provided to gain access to all parts of the area authorised for development, where possible.	Contractor	Identify and inform all relevant staff of the existing gates to be used	Pre-construction & Construction	dEO	Monthly	Existing gates are utilised on a frequent basis and only limited new access

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
						gates are developed
– Existing and new gates to be recorded and documented in accordance with section 4.9: photographic record.	dEO	Existing and new gates will be recorded and documented as per the requirements of section 4.9	During the construction phase	ECO	Once, when the construction of all new gates has been completed	Photographic record of the existing and new gates as per the requirements of section 4.9
– All gates must be fitted with locks and be kept locked at all times during the development phase, unless otherwise agreed with the landowner.	Contractor	Ensure all relevant gates are fitted with locks and are always locked	Construction and Operation	ECO Operation and maintenance team	Bi-weekly (every second week)	All gates are locked and no complaints from landowners are received in this regard
– At points where the line crosses an existing 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.	dEO	Install new gates where required with the approval of the affected landowner	During the construction phase	ECO	Once, prior to construction and during the construction phase, as and when required	New gates are installed where the power line crosses fences
– Care must be taken that the gates must be so erected that there is a gap of no more than 100mm between the bottom of the gate and the ground.	Contractor	Install gates in a manner so that there is a gap of no more than 100mm between the bottom of the	During the construction phase	cEO	Once, during the erection of the gates during the construction phase	New gates installed as per the requirement

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		gate and the ground				
– Where gates are installed in jackal proof fencing, a suitable reinforced concrete sill must be provided beneath the gate.	Contractor	Implement a reinforced concrete sill beneath gates installed for jackal proofing	During the construction phase	cEO	Once, during the erection of the gates during the construction phase	New gates installed as per the requirement
– Original tension must be maintained in the fence wires.	Contractor	Maintain original tension of fences through required activities	During the construction phase	ECO	Monthly	No tension reduction on fence wires
– All gates installed in electrified fencing must be re-electrified.	Contractor	Electrify gates installed in electrified fencing	During the construction phase	ECO	Once, during the erection of the gates during the construction phase	Gates installed in electrified fencing is 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.	Contractor	Undertake maintenance activities on fences and barriers	During the construction phase	ECO	Monthly	Photographic record of maintained fences and barriers
– Fencing must be erected around the camp, batching plants, hazardous storage areas, and all designated access restricted areas, where appropriate and would not cause harm to the sensitive flora.	Contractor	Fence construction camps, batching plants, hazardous storage areas	During the construction phase	ECO	Once during the erection of fencing	Photographic record of fences erected

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		and access restricted areas. Avoid sensitive flora				
– Any temporary fencing to restrict the movement of livestock must only be erected with the permission of the landowner.	dEO/ cEO Contractor	Obtain written approval from the relevant landowner where temporary fencing is required to restrict livestock movement	During the construction phase	ECO	To be monitored as temporary fencing is required	Written approval to be provided by the dEO
– All fencing must be developed of high-quality material bearing the SABS mark.	Contractor	Make use of high-quality materials approved by SABS	During the construction phase	cEO	To be monitored as fencing is erected during the construction phase	Use of high-quality materials for fencing approved by SABS
– The use of razor wire as fencing must be avoided as far as possible.	Contractor	Razor wire must not be sourced or used for the erection of fencing	During the construction phase	ECO	To be monitored as fencing is erected during the construction phase	Fences erected do not make use of razor wire
– 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.	DSS and Contractor	Ensure fenced areas are locked as required through the	During the construction phase	cEO	Weekly and as and when required	Fences are locked and no complaints from landowners are

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		implementation of a formalised process. Appoint a security company				received. A security company is appointed
– On completion of the development phase all temporary fences are to be removed.	Contractor	Removal of all temporary fences	At the end of the Construction Phase	ECO dEO	Once, following the completion of the construction phase	No temporary fences associated with the project is present following the completion of the construction phase
– The contractor must ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but rather removed completely.	Contractor	Appropriate removal of all fence uprights	At the end of the Construction Phase	ECO dEO	Once, following the completion of the construction phase	No fence uprights associated with the project is present following the completion of the construction phase

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**
– 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.	DPM / Contractor / dEO / cEO in consultation with the ECO	The onsite borehole must be registered with the DWS prior to commencement of activities	Prior to commencement, during construction and operational phase	ECO / dEO	Registration of borehole once off prior commencement of construction and monitoring of abstraction volumes on a daily basis during construction and during operation.	Proof of registration of borehole from DWS and proof of daily records of abstraction volumes to be attached to monthly audit reports.
– The Contractor must ensure the following: 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 riverbed 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 implemented.	<u>Not applicable</u> - During the construction phase, water will be sourced from the local municipality or existing boreholes (if groundwater is available and if suitable). The exact details of water requirements will be confirmed during the detailed engineering phase. At this stage, no water is planned to be abstracted from or discharged to any surface water systems. During the operational phase of the proposed distribution line, water requirements are not applicable.					
– Ensure water conservation is being practiced by: a. Minimising water use during cleaning of equipment; b. Undertaking regular audits of water systems; and	Contractor / dEO / cEO in	Implement the required water conservation	During the construction phase	ECO	Monthly, and as and when required	Successful implementation

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
c. Including a discussion on water usage and conservation during environmental awareness training. d. The use of grey water is encouraged.	consultation with the ECO	measures throughout on-site construction processes				of water conservation

5.7 Storm and wastewater management

Impact management outcome: Impacts to the environment caused by stormwater 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**
– 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.	Contractor	Implement measures for the control and management of runoff	During the construction phase	ECO	Weekly	No mismanagement of runoff or contaminated water due to the temporary concrete batching plant
– 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.	Contractor and cEO	Obtain approved absorbent material and make use of licensed waste	During the Construction Phase	ECO	Monthly	Availability of approved absorbent material at the construction site and proof of disposal of oil at

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		disposal facilities for disposal of oil				licensed disposal facilities
– Natural stormwater 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.	DPM in consultation with the ECO	Consultation between the DPM and the ECO to determine if water can be discharged directly into water bodies (where present). The necessary water quality testing must be undertaken prior to discharge	During the construction phase	ECO	As and when the need arises to discharge natural stormwater runoff and clean water	Proof of consultation between the DPM and ECO and the outcomes thereof to be provided. Proof of water quality testing and the results thereof.
– 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.	DPM in consultation with the ECO	Consultation between the DPM and the ECO to determine if water can be discharged directly into water bodies (where present). The necessary water quality testing must be	During the construction phase	ECO	As and when the need arises to discharge water	Proof of consultation between the DPM and ECO and the outcomes thereof to be provided. Proof of water quality testing and the results thereof.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
		undertaken prior to discharge				

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
– All measures regarding waste management must be undertaken using an integrated waste management approach.	Contractor	Develop and implement a waste management plan	During the construction phase	ECO	Monthly	Implementation of the waste management plan and proof of waste management through proof of responsible disposal
– Sufficient, covered waste collection bins (scavenger and weatherproof) must be provided.	Contractor	Provision of appropriate waste collection bins strategically placed throughout the site	During the construction phase	ECO	Weekly	Appropriate waste collection bins are available throughout the site
– A suitably positioned and clearly demarcated waste collection site must be identified and provided.	DPM and Contractor	Identify an appropriate location for the waste collection site which must	Design and Construction Phase	ECO	Once, prior to the commencement of construction	A waste collection site is appropriately placed and demarcated

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		be clearly demarcated through signage and temporary fencing				
– The waste collection site must be maintained in a clean and orderly manner.	Contractor	Regular collection of waste and maintenance of the area must be undertaken as per the waste requirements for the project during construction	During the Construction Phase	ECO	Weekly	The waste collection site is maintained and clean
– Waste must be segregated into separate bins and clearly marked for each waste type for recycling and safe disposal.	Contractor	Provide separate and marked bins for the different waste types associated with the construction phase	During the Construction Phase	cEO	Weekly	Separate waste bins are available on site and waste generated is separated into the relevant bins
– Staff must be trained in waste segregation.	cEO / dEO	Include waste segregation as part of the environmental awareness training material.	Pre-construction Construction	ECO	Monthly, and as and when required	Environmental awareness training material requirements checklist

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Bins must be emptied regularly.	Contractor cEO	Bins must be emptied before reaching total capacity and on a regular basis as required for the project	During the construction phase	ECO	Monthly	No mismanagement of bins.
– General waste produced onsite must be disposed of at registered waste disposal sites / recycling company.	Contractor cEO	Disposal of general waste at licensed waste disposal facilities must be undertaken as per the waste management plan	During the construction phase	ECO	Monthly	Disposal certificates of disposal at licensed facilities to be provided
– Hazardous waste must be disposed of at a registered waste disposal site.	Contractor cEO	Disposal of hazardous waste at licensed waste disposal facilities must be undertaken as per the waste management plan	During the construction phase	ECO	Monthly	Disposal certificates of disposal at licensed facilities to be provided
– Certificates of safe disposal for general, hazardous and recycled waste must be maintained.	Contractor cEO	Obtain certificates for safe disposal of waste	During the construction phase	ECO	Monthly	Disposal certificates of disposal at licensed facilities to be provided

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
						and filed as part of the filing system

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
– 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.	Contractor and cEO	Contractor to undertake activities which can cause spills of pollutants outside of watercourses	During the construction phase	ECO	Weekly	No incidents reported of spillage of pollutants into watercourses
– In the event of a spill, prompt action must be taken to clear the polluted or affected areas.	Contractor and cEO	Develop a management plan or process for implementation should a spill take place	During the construction phase	ECO	Weekly	Feedback must be provided by the contractor in terms of how the spill was handled and photographic evidence of the feedback must be provided and kept on record

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Where possible, no development equipment must traverse any seasonal or permanent wetland.	Contractor and cEO	Contractor to ensure that movement of equipment is undertaken outside the footprint and riparian habitat of the wetlands identified within the area.	During the construction phase	ECO	Weekly	No incidents of the movement of equipment within the wetlands or their riparian habitat.
– No return flow into the estuaries must be allowed and no disturbance of the Estuarine Functional Zone should occur.	Not applicable – no estuaries were identified within the grid connection corridor.					
– Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to tower position is available.	Contractor and cEO	Ensure that only existing roads or tracks are used to access construction areas within the vicinity of watercourses (including wetlands). No new access roads/tracks should be constructed to provide access to construction areas	During the construction phase	ECO	Weekly	Ensure that permanent crossings are developed if there is no alternative.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		within the vicinity of watercourses and wetlands within the grid connection corridor/servitude.				
– There must not be any impact on the long-term morphological dynamics of watercourses or estuaries.	DPM Contractor cEO	Develop a management plan or process for implementation should morphological changes be visible within the watercourses and the wetlands within the grid connection corridor	During the construction and operation phase	ECO dEO	For all phases of the project life cycle (i.e. construction, operation, decommissioning)	No incidents reported of spillage of pollutants into watercourses
– Existing crossing points must be favoured over the creation of new crossings (including temporary access).	DPM Contractor cEO	Develop a management plan or process for implementation should a spill take place within a watercourse and ensure continuous monitoring	During the pre-construction and construction phase	ECO dEO	During the construction phase of the project.	Existing crossing points utilised as opposed to new ones created and no incidents reported of spillage of pollutants into watercourses

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		Existing crossing points to be used must be identified and personnel within the construction must be aware of these crossings for their use.				
– When working in or near any watercourse or estuary, the following environmental controls and consideration must be taken: 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	Contractor cEO	Activities undertaken near watercourses must be in-line with and consider the specified environmental controls	During the construction phase	ECO	Monthly, and as and when required	No degradation of the watercourses and no incidents of destruction reported

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
should be appropriately and incrementally stabilised as soon as development allows.						

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**
General:						
– Indigenous vegetation which does not interfere with the development must be left undisturbed.	cEO and Contractor	Demarcate areas of indigenous vegetation to be avoided before clearance is undertaken	Construction and operation (i.e. for maintenance purposes)	ECO Operation and maintenance team	Weekly, and as and when required	No unnecessary clearance of indigenous vegetation is undertaken
– Protected or endangered species may occur on or near the development site. Special care should be taken not to damage such species.	Contractor cEO	Demarcate areas containing protected or endangered species to be avoided by construction activities	During the Construction Phase	ECO	Weekly, and as and when required	No clearance of protected or endangered species other than those permitted to be removed
– Search, rescue and replanting of all protected and endangered species likely to be damaged during project development must be identified by the	Relevant specialist in consultation with the Contractor	Develop and implement a Plant Search and Rescue Plan	Pre-construction & Construction	ECO	Weekly, and as and when required	Implementation of the Plant Search and Rescue Plan and

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
relevant specialist and completed prior to any development or clearing.						photographic evidence and notes of the implementation of the plan
– Permits for removal must be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF) and the Northern Cape Department of Environment and Nature Conservation (DENC) prior to the cutting or clearing of the affected species, and they must be filed.	DPM dEO	Undertake the permitting process in order to obtain the relevant permits for the removal of protected species. Permits must be kept on file	Pre-construction	ECO	Once, prior to the commencement of the construction phase and removal of the protected species	DAFF and DENC permits on file
– 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.	ECO	Ensure that the audit report indicates all species rescued and replanted and provides feedback in terms of compliance with the conditions of permits for replanting	During the Construction Phase and following the completion of the Construction Phase	ECO	Once off or as and when required	ECO confirmed rescued and replanted programme implemented correctly.
– Trees felled due to construction must be documented and form part of the Environmental Audit Report.	ECO	Ensure that the audit report documents the	During the Construction Phase and	CA permits on file		

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		details of trees felled	following the completion of the Construction Phase			
– Rivers and watercourses must be kept clear of felled trees, vegetation cuttings and debris.	Contractor cEO	Felled trees, vegetation cuttings and debris must be disposed of at a licensed waste disposal facility	During the Construction Phase	ECO	Monthly	No felled trees, vegetation cuttings and debris are dumped in inappropriate locations and disposal certificates are available as proof of responsible disposal
– 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 that is appropriately trained.	DPM dEO Contractor cEO and Eskom maintenance staff, where relevant to operation	A suitably qualified pest control operator must be appointed	Construction and Operation	ECO	As and when the use of herbicides is required	Only registered pest control operators must be appointed and proof of their registration must be provided
– A daily register must be kept of all relevant details of herbicide usage.	Contractor cEO	Develop a daily register for the documentation of the details of herbicide usage	During the construction phase	ECO	Monthly	Daily register provided by the pest control operator

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– No herbicides must be used in estuaries.	Not applicable - no estuaries were identified within the grid connection corridor.					
– 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**.	Contractor, cEO in consultation with the dEO	Spatially demarcate protected species and sensitive vegetation and implement appropriate fencing where required as per section 5.3	During the construction phase	ECO	Once, during the undertaking of the demarcation of the areas and the erection of the fencing	Demarcation and fencing is undertaken in-line with the requirements of section 5.3
Servitude:						
– 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.	Contractor, cEO in consultation with the DPM and Eskom maintenance staff where relevant to operation)	Identify areas of vegetation not to be trimmed.	Construction and Operation	ECO Operation and maintenance team	Monthly	An indication of the areas where vegetation has not been trimmed or where vegetation has been removed from access roads must be provided.
– 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 landowner and the EA holder.	Contractor cEO and Eskom maintenance staff where relevant to operation)	Clearing for access must be undertaken as per the requirements provided by the	During the construction phase	ECO	Monthly, and as and when required	Proof must be provided that only agreed upon areas have been cleared

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		landowner 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.	Contractor cEO	Undertake removal of alien invasive vegetation in accordance with the relevant guideline relevant to the project area and ensure the vegetation is disposed of at a licensed waste disposal facility	Construction and Operation	ECO Operation and maintenance team	Monthly, and as and when required	Proof must be provided that alien invasive vegetation has been cleared in accordance to the relevant guideline and that the vegetation was disposed of at a licensed 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.	Contractor cEO and Eskom maintenance staff where relevant to operation)	Develop a procedure for the trimming of vegetation in terms of the listed requirements	Construction and operation	ECO Operation and maintenance team	Monthly, and as and when required	Proof must be provided that vegetation is trimmed in accordance with the listed requirements
– 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.	Contractor cEO and Eskom maintenance staff where relevant to operation)	Dispose of the debris in accordance with the waste management plan	Construction and operation	ECO Operation and maintenance team	Monthly, and as and when required	Proof must be provided that the debris has been disposed of at a licensed waste disposal facility or

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
						retained by the landowners.
– 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 purposes only and no vehicle access must be cleared along the "trace-line". Alternative methods of stringing that limit impact to the environment must always be considered.	Contractor cEO and Eskom maintenance staff where relevant to operation)	Develop a procedure for the cutting of vegetation for stringing purposes	Pre-construction & Construction	ECO	Once, prior to the commencement of construction	Proof of implementation of the procedure for the cutting of vegetation for stringing purposes

5.11 Protection of fauna

Impact management outcome: Minimise disturbance to fauna and avifauna.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– No interference with livestock must occur without the landowner's written consent and with the landowner or a person representing the landowner being present.	dEO / cEO Contractor	Develop a procedure for dealing with livestock within the affected properties	Pre-construction and during the construction phase	ECO	Once, prior to the commencement of construction and as and when required during the construction phase	Written consent provided by the landowner and proof of representation of the landowner during interference
– The breeding sites of raptors and other wild bird species must be taken into consideration during the planning of the development programme.	dEO / cEO in consultation with the Contractor	Ensure that the planning and development programme	Pre-construction & Construction	ECO	Once, prior to the commencement of construction	The planning and development programme

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		considers breeding sites for raptors and wild bird species			and as and when required	includes the consideration of breeding sites for wild bird species
– 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.	dEO / cEO in consultation with the Contractor and Eskom maintenance staff where relevant to operation)	Avoid breeding sites and ensure that special care is taken in the presence of nestlings and fledglings	During the Construction Phase Operation Phase	ECO Operation and maintenance team	Weekly, and as an when required during the construction. Monthly, and as and when required during operation	Photographic record of intact breeding sites
– Nesting sites on existing parallel lines must documented.	dEO / cEO and Eskom maintenance staff where relevant to operation)	Walk-downs of the existing lines located parallel to the project must be undertaken and nests and the details thereof documented	During the Construction Phase Operation Phase	ECO Operation and maintenance team	Quarterly, and as and when required	Details of walk-downs undertaken must be noted and kept on file and photographic records of nesting sites must be kept
– Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds.	dEO / cEO in consultation with the Contractor and Eskom maintenance staff where relevant to operation)	All mitigation measures recommended by the avifauna specialist must be implemented	During the Construction Phase Operation Phase	ECO Operation and maintenance team	Weekly during construction and monthly during operation	Photographic record of compliance and successful implementation of the recommended measures

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Bird guards and diverters must be installed on the new line as per the recommendations of the specialist.	dEO / cEO in consultation with the Contractor and Eskom maintenance staff where relevant to operation)	Recommendations made by the specialist for the installation of bird guards and diverters must be adhered to and implemented as appropriate. Bird guards and diverters must be maintained	During the Construction Phase Operation Phase	ECO Operation and maintenance team	Monthly, and as and when required	Photographic record of implementation and maintenance of bird guards and diverters
– 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.	dEO / cEO in consultation with the Contractor	All site staff must be informed of this requirement during the Environmental Awareness Training and the consequences of not adhering to the requirement. These areas must be demarcated as Access Restricted Areas	During the Construction Phase	ECO	Monthly, and as and when required	No instances of poaching are reported
– No deliberate or intentional killing of fauna is allowed.	dEO / cEO in consultation with the Contractor	All site staff must be informed of this requirement	During the Construction Phase	ECO	Monthly, and as and when required	No instances of deliberate or

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		during the Environmental Awareness Training and the consequences of not adhering to the requirement. These areas must be demarcated as Access Restricted Areas				intentional killing is reported
– In areas where snakes are abundant, snake deterrents are to be deployed on the pylons to prevent snakes climbing up, being electrocuted and causing power outages; and	dEO / cEO in consultation with the Contractor and Eskom maintenance staff where relevant to operation)	Implement and maintain snake deterrents on pylons in areas where snakes are abundant	During the Construction Phase Operation Phase	ECO Operation and maintenance team	Once, during the construction of the pylons and as and when required. Monthly during operation	Photographic record of the implementation and maintenance of snake deterrents
– 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.	DPM in consultation with the dEO	Undertake a permitting process to obtain the required permits	Pre-construction	ECO	Once, prior to the commencement of construction and as and when required	Permits for removal and/relocation must be kept on file and be readily available

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**
– 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;	DPM and a suitably qualified specialist dEO / cEO in consultation with the Contractor	Undertake a Heritage Walk-through Survey Spatially identify and demarcate areas of heritage significance as per the Heritage Walk-through Report and as per the requirements of section 5.3	Pre-construction	ECO	Once, prior to the commencement of construction	Proof of avoidance of sensitive heritage features through details of avoidance and photographic records
– Carry out general monitoring of excavations for potential fossils, artefacts and material of heritage importance;	Suitably qualified specialist in consultation with the dEO / cEO	Appoint a suitably qualified specialist to carry out the monitoring of excavations for fossils, artefacts and important heritage material	During the Construction Phase	ECO	During the undertaking of excavations of fossils, artefacts and heritage material	Proof of appointment of a suitably qualified specialist and photographic record of required monitoring by the specialist

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– -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.	dEO / cEO in consultation with the Contractor and ECO	Develop and implement procedures for situations where human remains, archaeological, palaeontological or historical material are uncovered. If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage	During the Construction Phase	ECO	Weekly, during the construction phase and as and when required	Proof of work ceased and the required procedures followed in cases where material is discovered.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
		resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA or HWC Tel: 021 483 5959 Email: ceoheritage@westerncape.gov.za. If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490), must be alerted				

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
		immediately as per section 36(6) of the NHRA or HWC Tel: 021 483 5959 Email: ceoheritage@westerncape.gov.za.				

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
– 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.;	cEO in consultation with the Contractor	Develop an Emergency Preparedness, Response and Fire Management Plan specific to the project	Pre-construction Construction	ECO	Once, prior to the commencement of construction and weekly during the construction phase	Compliance with the Emergency Preparedness, Response and Fire Management Plan
– All unattended open excavations must be adequately fenced or demarcated;	Contractor	Ensure that all excavations undertaken is fenced and	During the Construction Phase	ECO	Weekly	Excavations are fenced where required and photographic

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		demarcated within a reasonable timeframe and in instances where excavations will be open for long-periods of time				proof can be provided
– Adequate protective measures must be implemented to prevent unauthorised access to and climbing of partly constructed towers and protective scaffolding;	Contractor	All staff must be easily identifiable and the climbing of towers and scaffolding must be undertaken by authorised personnel as managed by the Contractor	During the construction phase	ECO	Monthly, and as and when required	No incidents of unauthorised climbing is reported
– Ensure structures vulnerable to high winds are secured; and	Contractor	Ensure that sufficient stabilisation measures are implemented to secure structures vulnerable to high winds	During the construction phase	ECO	Weekly, and as and when required	No incidents of unstable structures due to high winds is reported

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged.	cEO	Compile and regularly update as incidents and complaints are submitted from the public and indicate the actions taken to resolve the complaint	During the construction phase	ECO	Monthly, and as and when required	The incidents and complaints register is complete and provides all the required details

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**
– Mobile chemical toilets are installed onsite if no other ablution facilities are available;	Contractor	Mobile chemical toilets must be placed appropriately and in areas that avoid environmental sensitivities	During the Construction Phase	ECO	Weekly	Mobile toilets are installed and avoid environmental sensitivities
– The use of ablution facilities and or mobile toilets must be used at all times and no indiscriminate use of the	Contractor in consultation with the cEO	All site staff must be informed of this requirement	Pe-construction & Construction	ECO	Monthly, and as and when required	No evidence of non-compliance identified

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
veld for the purposes of ablutions must be permitted under any circumstances;		during the Environmental Awareness Training and the consequences of not adhering to the requirement.				
– Where mobile chemical toilets are required, the following must be ensured: a) Toilets are located no closer than 100m 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; and f) Toilets are serviced regularly and the ECO must inspect toilets to ensure compliance to health standards.	Contractor in consultation with the cEO	The installation of the toilets by the Contractor must be as per the listed requirements	During the Construction Phase	ECO	Weekly	No evidence of non-compliance identified
– A copy of the waste disposal certificates must be maintained.	Contractor	Certificates obtained from the licensed	During the Construction Phase	ECO	Monthly, and as and when required	Certificates for waste disposal from the

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		waste disposal facility with the emptying of the toilets must be kept on file				licensed waste disposal facility

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**
– Undertake environmentally friendly pest control in the camp area;	Contractor	Only environmentally-friendly pest control must be used, when required	During the Construction Phase	ECO	As and when pest control is required for the project	Contractor to provide proof of pest control used being environmentally-friendly
– Ensure that the workforce is sensitised to the effects of sexually transmitted diseases, especially HIV/ AIDS;	cEO / Contractor	The effects of sexually transmitted diseases and HIV/ AIDS must be covered in the Environmental Awareness Training	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during construction	Environmental awareness training material requirements checklist

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– The Contractor must ensure that information posters on HIV/ AIDS are displayed in the Contractor Camp area;	Contractor	Develop and place information posters on HIV/ AIDS	During the Construction Phase	ECO	Weekly	Photographic evidence of poster placement
– Information and education relating to sexually transmitted diseases to be made available to both construction workers and local community, where applicable;	cEO / Contractor	Information and education of sexually transmitted diseases must be covered in the Environmental Awareness Training.	Pre-construction & Construction	ECO	Monthly	Environmental awareness training material requirements checklist
– Free condoms must be made available to all staff on site at central points;	Contractor	Placement of free condoms in mobile toilets and at the construction camps	During the Construction Phase	ECO	Monthly	Proof of placement of free condoms by the contractor to be provided
– Medical support must be made available; and	dEO / cEO in consultation with the Contractor	Ensure that designated personnel with first aid training are available on site and that first aid kits to provide medical support is readily available	Construction and Operations	ECO	Monthly	Check the availability of first aid trained personnel and medical kits (including if these are complete in terms of supplies)

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Provide access to Voluntary HIV Testing and Counselling Services.	Contractor	Compile a HIV testing schedule and provide counselling services where required	During the Construction Phase	ECO	Quarterly, and as and when required	Voluntary testing schedules and proof of counselling (where undertaken)

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**
– Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the proposed project;	Contractor	Develop an Emergency Preparedness, Response and Fire Management Plan specific to the project	Pre-construction	ECO	Once, prior to the commencement of construction	Emergency Preparedness, Response and Fire Management Plan compiled
– The Emergency Plan must deal with accidents, potential spillages and fires in line with relevant legislation;	Contractor	Develop an Emergency Preparedness, Response and Fire Management Plan specific to the project	Pre-construction	ECO	Once, prior to the commencement of construction	Emergency Preparedness, Response and Fire Management Plan includes required specifications

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		which covers accidents, potential spillages and fires				
– All staff must be made aware of emergency procedures as part of environmental awareness training;	cEO / dEO	Develop environmental awareness training material which covers the relevant emergency procedures	Pre-construction	ECO	Prior to the commencement of the environmental awareness training	Environmental awareness training material requirements checklist
– The relevant local authority must be made aware of a fire as soon as it starts; and	Contractor	Develop and include a procedure in the Emergency Preparedness, Response and Fire Management Plan for the event of a fire and the procedure to be followed for informing the local authority	Construction	ECO	As and when a fire occurs	The local authority was informed as per the relevant procedure set out in the Emergency Preparedness, Response and Fire Management Plan

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– In the event of emergency, necessary mitigation measures to contain the spill or leak must be implemented (see **Hazardous Substances section 5.17**).	Contractor and Eskom maintenance staff where relevant to operation)	Implement the required mitigation measures in the event of a spill or leak as per the requirements of Section 5.17.	Construction and Operations	ECO	As and when a spill or leak occurs	The mitigation measures included under Section 5.17 have been adhered to

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**
– The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives substituted where possible;	cEO in consultation with the Contractor	Develop a strategy of how hazardous substances can be and should be minimised	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during the construction phase	Contractor to provide evidence of substances used for proof of compliance
– All hazardous substances must be stored in suitable containers as defined in the Method Statement;	Contractor	Develop a Method Statement for the storage of hazardous substances in	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during the	Photographic proof that hazardous substances are stored in suitable containers as

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		suitable containers			construction phase	per the requirements of the relevant Method Statements
– Containers must be clearly marked to indicate contents, quantities and safety requirements;	Contractor	Where hazardous waste is stored these must be clearly marked indicating the required details of the contents	During the Construction Phase	ECO	Monthly	Photographic proof that containers are marked as per the requirements
– All storage areas must be bunded. The bunded area must be of sufficient capacity to contain a spill / leak from the stored containers;	Contractor	Ensure that storage areas are sufficiently bunded which are of sufficient capacity to contain a spill / leak from the stored containers	During the Construction Phase	ECO	Monthly during the Construction Phase	Photographic proof that storage areas are bunded and proof that the bund areas are of sufficient capacity to contain a spill / leak from the stored containers
– Bunded areas to be suitably lined with a SABS approved liner;	Contractor	Ensure that bunded storage areas are suitably lined	During the Construction Phase	ECO	Once, during the Construction Phase	Photographic proof that bunded storage areas are suitably lined

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– An Alphabetical Hazardous Chemical Substance (HCS) control sheet must be drawn up and kept up to date on a continuous basis;	cEO / Contractor	Compile and update an Alphabetical Hazardous Chemical Substance (HCS) control sheet specific to the project	During the Construction Phase	ECO	Monthly, and as and when required	Complete and up to date control sheet provided by the Contractor
– All hazardous chemicals that will be used on site must have Material Safety Data Sheets (MSDS);	cEO / Contractor	Keep a record of all hazardous chemicals and the respective MSDS	During the Construction Phase	ECO	Monthly, and as and when required	Record of hazardous chemicals and the respective MSDS
– All employees working with HCS must be trained in the safe use of the substance and according to the safety data sheet;	cEO / Contractor	Provide training for personnel working with HCS	Pre-construction	ECO	Once, prior to the commencement of construction and as and when required	Record of training provided to personnel working with HCS
– 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;	cEO / Contractor	Develop environmental awareness training material which covers the relevant impacts and safety measures.	Pre-construction & Construction	ECO	Prior to the commencement of the environmental awareness training and monthly during the construction phase for personal	Environmental awareness training material requirements checklist and all relevant personnel have undergone appropriate training and

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		Provide appropriate training and personal protective equipment for the relevant personnel handling hazardous substances and materials			protective equipment	have access to personal protective equipment
– The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowsers;	Contractor	Appropriate storage facilities must be constructed or obtained for the storing of diesel, other liquid fuel, oil and hydraulic fluid	During the Construction Phase	ECO	Monthly, and as and when required	Storage tanks for the project are appropriate and no incidents are reported in this regard
– 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);	Contractor	Appropriate storage facilities must be constructed or obtained for tanks as per the requirements listed	During the Construction Phase	ECO	Monthly, and as and when required	Storage areas for the tanks/ bowsers for the project are appropriate and no incidents are reported in this regard

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– The floor of the bund must be sloped, draining to an oil separator;	Contractor	Appropriate storage facilities must be constructed as per the requirements listed	During the Construction Phase	ECO	Once, during construction	Bunded storage areas are constructed according to the requirements
– Provision must be made for refuelling 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;	Contractor	Appropriately constructed refuelling facility must be developed as per the requirements. Drip trays must be provided for use	During the Construction Phase	ECO cEO	Monthly Weekly	Soils at the refuelling facility are protected as required and drip trays are provided and used
– All empty externally dirty drums must be stored on a drip tray or within a bunded area;	Contractor	Ensure that empty dirty drums are stored appropriately as per the requirements	During the Construction Phase	ECO cEO	Monthly Weekly	Drip trays or bunded areas are used for the storage of dirty drums
– No unauthorised access into the hazardous substances storage areas must be permitted;	Contractor	Ensure through the implementation of procedures that no unauthorised access is	During the Construction Phase	ECO	Monthly	Proof of the implementation of the relevant procedure must be provided by the contractor

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		undertaken into the storage areas				
– No smoking must be allowed within the vicinity of the hazardous storage areas;	Contractor	Inform all employees of the requirement and develop and place relevant signage in the relevant areas	During the Construction Phase	ECO cEO	Monthly Weekly	Photographic record of the signage placed must be provided
– Adequate fire-fighting equipment must be made available at all hazardous storage areas;	Contractor	Hazardous storage areas must be fitted with adequate fire-fighting equipment	During the Construction Phase	ECO	Monthly	Adequate fire-fighting equipment is available and has been serviced
– Where refuelling away from the dedicated refuelling station is required, a mobile refuelling unit must be used. Appropriate ground protection such as drip trays must be used;	Contractor	Provide a mobile refuelling unit as well as suitable ground protection, where required	During the Construction Phase	ECO	Monthly, and as and when required	A mobile refuelling unit and suitable ground protection is available for use
– 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;	Contractor	Provide an appropriate spill kit for the project for the use of hazardous substances	During the Construction Phase	ECO	Monthly, and as and when required	Appropriate spill kits are available for use

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– The responsible operator must have the required training to make use of the spill kit in emergency situations;	cEO and Contractor	Provide training on the use of spill kits to the relevant employees	Pre-construction	ECO	Once, prior to the commencement of construction	Proof of training to be provided by the contractor
– An appropriate number of spill kits must be available and must be located in all areas where activities are being undertaken; and	cEO and Contractor	Provide an appropriate number of spill kits in relevant areas	During the Construction Phase	ECO	Monthly	Proof of appropriate number of spill kits in appropriate areas to be provided by the contractor
– 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 wastewater management and 5.8 for solid and hazardous waste management.	cEO and Contractor	Storage and disposal of contaminated soil must be in accordance with the National Environmental Management: Waste Act and sections 5.7 and 5.8 of this EMPr	During the Construction Phase	ECO	Monthly, and as and when required	Proof of storage and disposal in terms of the National Environmental Management: Waste Act must be provided. Certificates of disposal at licensed waste disposal facilities must be provided

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**
– Where possible and practical all maintenance of vehicles and equipment must take place in the workshop area;	Contractor	Demarcate specific areas for the maintenance of vehicles and equipment	During the Construction Phase	ECO	Monthly	A dedicated area for the maintenance of vehicles and machinery is used.
– 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.	Contractor	Ensure that a drip tray is available for any emergency repairs required	During the Construction Phase	ECO	Monthly	Contractor to provide evidence of drip tray use for emergency repairs
– Leaking equipment must be repaired immediately or be removed from site to facilitate repair;	Contractor	Ensure that where leaking equipment is identified it is repaired immediately or removed from site for repairs	During the Construction Phase	ECO	Monthly	Contractor to provide details of equipment repaired or removed from site
– Workshop areas must be monitored for oil and fuel spills;	cEO	Undertake regular inspections of the workshop areas for oil and fuel spills and keep an	During the Construction Phase	ECO	Monthly	Updated register of inspection

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		updated register of inspection on site				
– Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place must be available;	Contractor	Provide an appropriate spill kit for the project	During the Construction Phase	ECO	Monthly, and as and when required	Appropriate spill kits are available for use
– 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;	Contractor	Ensure that the workshop area is sufficiently bunded in accordance with the required specification	During the Construction Phase	ECO	Once, during the Construction Phase and as and when required	Workshop area is bunded in accordance with the required specification
– Water drainage from the workshop must be contained and managed in accordance with Section 5.7: storm and wastewater management.	Contractor	Ensure that water drainage from workshop area is managed as per the requirements of section 5.7	During the Construction Phase	ECO	Monthly	Workshop drainage is managed in accordance with the requirements

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**
– Concrete mixing must be carried out on an impermeable surface;	Contractor	Provide impermeable surface for the	During the Construction Phase	ECO	Weekly	No concrete mixing is

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		mixing of concrete				undertaken on open ground
– Batching plants areas must be fitted with a containment facility for the collection of cement laden water.	Contractor	Ensure batching plant used on site contains a containment facility for the collection of cement laden water.	During the Construction Phase	ECO	Weekly	No run-off cement laden water is released into the surrounding area from the batching plant.
– Dirty water from the batching plant must be contained to prevent soil and groundwater contamination	Contractor	Dirty water from the batching plant is safely stored.	During the Construction Phase	ECO	Weekly	No leaks of dirty water from the batching plant into the surrounding area is reported.
– Bagged cement must be stored in an appropriate facility and at least 10m away from any water courses, gullies and drains;	Contractor	Demarcate and provide a storage area for bagged cement in-line with the listed requirements	During the Construction Phase	ECO	Weekly	Photographic proof of bagged cement stored within the demarcated area
– A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted;	Contractor	Provide a washout facility for the washing of associated equipment. Enforce limitations on	During the Construction Phase	ECO	Weekly	No cement laden water is released into the environment. Only minimal water is used for washing

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		water use for washing of equipment				
– Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licensed disposal facility;	Contractor cEO	Make use of hardened concrete where possible or dispose of concrete in a suitable manner	During the Construction Phase	ECO	Monthly	Certificates of disposal of concrete at licensed waste disposal facility
– Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site;	Contractor cEO	Bind empty cement bags and temporarily store it in an appropriate area on site	During the Construction Phase	ECO	Monthly	Proof of binding of empty cement bags and storage in an appropriate area on site to be provided by the Contractor
– Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to Section 5.20: Dust emissions)	Contractor	Ensure that sand and aggregates are kept damp or otherwise protected from dust generation	During the Construction Phase	ECO	Monthly	Proof of damping (or alternative dust suppression) of sand and aggregates must be provided by the Contractor
– Any excess sand, stone and cement must be removed or reused from site on completion of construction	Contractor	Ensure that all excess sand, stone and	At the completion of	ECO	Once, with the completion of construction	Certificates for the disposal of sand, stone and

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
period and disposed at a registered disposal facility; and		cement is removed or reused	the Construction Phase			cement at licensed waste disposal facilities or proof of reuse must be provided
– Temporary fencing must be erected around batching plants in accordance with Section 5.5: Fencing and gate installation.	Contractor	Installation of fencing around the batching plant.	Prior to commencement of construction activities	ECO	Weekly	Fencing is installed around the footprint of the batching plant.

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**
– Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO;	Contractor cEO	Apply appropriate dust suppressant	During the Construction Phase	ECO	Weekly	Contractor to provide proof of use of appropriate dust suppressants
– 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;	Contractor cEO	Proper planning for vegetation removal must be undertaken as well as for the	During the Construction Phase and Rehabilitation	ECO	Weekly	Plan for implementation must be provided by the Contractor

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		associated rehabilitation				
– Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present;	Contractor cEO	Ensure that specific limitations are placed on the transport and handling of erodible materials during high wind conditions or when a visible dust plume is present	During the Construction Phase	ECO	Bi-weekly (every second week)	No complaints submitted in this regard
– 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;	ECO	ECO to provide adequate recommendations	During the Construction Phase	Not Applicable		
– Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind;	Contractor cEO	Place soil stockpiles in areas less affected by wind	During the Construction Phase	ECO	Bi-weekly (every second week)	Soil stockpiles are not exposed to wind and have not been eroded
– Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of the ECO;	Contractor in consultation with the ECO	Contractor to implement erosion control measures as recommended and agreed with the ECO	During the Construction Phase	ECO	Weekly, until erosion is no longer a problem	Recommendations made by the ECO have been implemented by the Contractor

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Vehicle speeds must not exceed 40km/h along dust roads or 20km/h when traversing unconsolidated and non-vegetated areas;	cEO / dEO / contractor and Eskom maintenance staff where relevant to operation)	Inform all drivers of speed limits and place appropriate signage along the relevant roads	During the Construction Phase Operation Phase	ECO Operation and Maintenance team	Monthly	No complaints from community members are submitted
– Straw stabilisation must be applied at a rate of one bale/10m² and harrowed into the top 100mm of top material, for all completed earthworks;	Contractor	Ensure that straw stabilisation is undertaken as per the listed requirements	During the Construction Phase	ECO	Monthly	Photographic record of all straw stabilisation undertaken
– For significant areas of excavation or exposed ground, dust suppression measures must be used to minimise the spread of dust.	Contractor	Appropriate dust suppressant measures are implemented	During the Construction Phase	ECO	Weekly	Photographic record of measures being implemented and the results thereof

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**
– Any blasting activity must be conducted by a suitably licensed blasting contractor; and	Not Applicable – no blasting will be required for the project.					

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– 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: 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
– The Contractor must keep noise level within acceptable limits. Restrict the use of sound amplification equipment for communication and emergency only;	Contractor	Ensure that noise limits do not exceed acceptable limits and avoid the use of amplification communication	During the Construction Phase	ECO	Monthly, and as and when required	No complaints registered in this regard. No amplification equipment is used.
– All vehicles and machinery must be fitted with appropriate silencing technology and must be properly maintained;	Contractor cEO	Provide and implement silencing technology	During the Construction Phase	ECO	Monthly, and as and when required	No complaints registered in this regard. Silencing technology is utilised.
– 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;	Contractor cEO	Update complaints register. Provide daily transport to and from site for employees	During the Construction Phase	ECO	Monthly, and as and when required	Complaints register provided by the cEO and proof of transportation

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
						services provided
– 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.	Contractor cEO	Compile a Code of Conduct for staff. Appropriate operating hours must be identified for the project.	Pre-construction and Construction	ECO	Once, prior to the commencement of construction	No complaints registered in this regard.

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**
– Designate smoking areas where the fire hazard could be regarded as insignificant;	cEO / Contractor	Identify and demarcate through signage designated smoking areas	Pre-construction & Construction	ECO	Monthly	Photographic record of designated smoking area
– Firefighting equipment must be available on all vehicles located on site;	cEO / dEO in consultation with the Contractor	Provide all vehicles with firefighting equipment	Construction	ECO	Monthly	All vehicles are fitted with firefighting equipment and the details thereof are

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
						provided by the cEO
– The local Fire Protection Agency (FPA) must be informed of construction activities;	cEO	Undertake formal consultation to inform the local FPA of the associated construction activities	Pre-construction	ECO	Once, during the commencement of the Construction Phase	Proof of consultation with the FPA
– Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site;	dEO / cEO / Contractor	Develop environmental awareness training material which covers the contact numbers for the FPA and emergency services. Place the contact numbers for the FPA and emergency services at a visible and central location	Pre-construction & Construction	ECO	Prior to the commencement of the environmental awareness training and once during the construction phase	Environmental awareness training material requirements checklist and photographic record of contact numbers on display

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Two-way swop of contact details between ECO and FPA.	ECO	Consultation between the ECO and FPA in order to exchange contact details	Pre-construction	Not Applicable		

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**
– 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 and water bodies;	Contractor	Identify and demarcate an appropriate location for the storage of excavated materials	Pre-construction & Construction	ECO	Monthly	Excavated material is not stored within sensitive environmental areas
– All stockpiled material must be maintained and kept clear of weeds and alien vegetation growth by undertaking regular weeding and control methods;	Contractor	Implement appropriate and sufficient maintenance on stockpiled material regularly	During the Construction Phase	ECO	Bi-weekly (every second week)	Stockpiled material is maintained sufficiently and is clear of weeds and alien vegetation
– Topsoil stockpiles must not exceed 2m in height;	Contractor	Enforce limitations for the	During the Construction Phase	ECO	Bi-weekly (every second week)	Topsoil stockpiles do not exceed 2m in height

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		height of topsoil stockpiles				
– During periods of strong winds and heavy rain, the stockpiles must be covered with appropriate material (e.g. cloth, tarpaulin etc.);	Contractor	Appropriate material must be provided in order to cover stockpiles when required	During the Construction Phase	ECO	Monthly	Contractor to provide proof of availability of appropriate material to cover stockpiles when required
– Where possible, sandbags (or similar) must be placed at the bases of the stockpiled material in order to prevent erosion of the material.	Contractor	Sandbags must be provided in order to prevent erosion of stockpiled materials	During the Construction Phase	ECO	Monthly	Contractor to provide proof of availability of sandbags to prevent erosion of stockpiled materials

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 person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– No vegetation clearing must occur during survey and pegging operations;	Contractor	Implement restrictions in terms of vegetation clearing during the survey and	Pre-construction	ECO	Weekly	Contractor to provide photographic proof that no vegetation has been cleared

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		pegging operations				
– No new access roads must be developed to facilitate access for survey and pegging purposes;	Contractor	Restrict the development of new access roads for survey and pegging purposes	Pre-construction	ECO	Weekly	Contractor to provide photographic proof that no new roads have been developed
– Project manager, botanical specialist and contractor to agree on final tower positions based on survey within assessed and approved areas;	DPM, Suitably Qualified Specialist and Contractor	Undertake consultation between the relevant responsible people and finalise the tower positions for the power line	Pre-construction	ECO	Once the final tower positions have been finalised and agreed upon	Provision of final tower positions to the ECO
– 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.	Surveyor in consultation with the ECO	Undertake consultation between the surveyor and the ECO	Pre-construction	ECO	Weekly	Consultation with the ECO regarding the distribution of pegs.

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**
– 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;	Contractor	Use a licensed waste disposal facility for the disposal of excess spoil	During the Construction Phase	ECO	Monthly	Certificates obtained for the disposal of excess spoil at a licensed waste disposal facility
– Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes;	Contractor	Spoil used for landscaping must be applied as per the listed requirements	Construction and Rehabilitation	ECO	Monthly	Photographic record of spoil used for landscaping purposes as well as feedback from the contractor
– Management of equipment for excavation purposes must be undertaken in accordance with Section 5.18: Workshop equipment maintenance and storage; and	Contractor	Undertake the management of equipment for excavation as per the requirements of section 5.18	During the Construction Phase	ECO	Monthly	Management of equipment is undertaken in line with the requirements of section 5.18
– Hazardous substances spills from equipment must be managed in accordance with Section 5.17: Hazardous substances.	Contractor	Undertake the management of hazardous substances spills from equipment as per the requirements of section 5.17	During the Construction Phase	ECO	Monthly	Management of hazardous substances spills from equipment is undertaken in line with the requirements of section 5.17

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Batching of cement to be undertaken in accordance with Section 5.19: Batching plants;	Contractor	Undertake the batching of cement as per the requirements of section 5.19.	During the Construction Phase	ECO	Monthly	Management of the batching of cement in accordance with the requirements of section 5.19.
– Residual cement must be disposed of in accordance with Section 5.8: Solid and hazardous waste management.	Contractor	Undertake the disposal of residual cement as per the requirements of section 5.8	During the Construction Phase	ECO	Monthly	The disposal of residual cement is undertaken in line with section 5.8.

5.27 Assembly and erecting towers

Impact management outcome: No environmental degradation occurs as a result of assembly and erecting of towers.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Prior to erection, assembled towers and tower sections must be stored on elevated surfaces (suggest wooden blocks) to minimise damage to the underlying vegetation;	Contractor	Provide the necessary materials for the elevated surface, where towers are to be placed on indigenous vegetation	During the Construction Phase	ECO	Weekly	Implementation of elevated surface and photographic record thereof

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– In sensitive areas, tower assembly must take place off-site or away from sensitive positions;	Contractor in consultation with the cEO	Identify sensitive areas, including buffers, to be avoided by tower assembly and ensure that the areas are not infringed upon	Pre-construction & Construction	ECO	Weekly	Tower assembly is undertaken outside of sensitive areas
– The crane used for tower assembly must be operated in a manner which minimises impact to the environment;	Contractor in consultation with the cEO	Ensure that no impact to the environment is imposed during the operation of the crane	Pre-construction & Construction	ECO	Weekly	No environmental damages incurred as a result of the crane.
– The number of crane trips to each site must be minimised;	Contractor in consultation with the cEO	Ensure that the utilisation of the crane is maximised when on site.	Pre-construction & Construction	ECO	Weekly	Few crane trips to each site observed.
– Wheeled cranes must be utilised in preference to tracked cranes;	Contractor	Ensure wheeled cranes are utilised.	Pre-construction & Construction	ECO	Weekly	Wheeled cranes observed on site.
– Consideration must be given to erecting towers by helicopter or by hand where it is warranted to limit the extent of environmental impact;	Contractor	Contractor to undertaken erecting of towers in an environmentally acceptable manner	During the Construction Phase	ECO	Monthly	No unacceptable environmental impacts occur with the erecting of the towers

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Access to tower positions to be undertaken in accordance with access requirements specified in **Section 5.4: Access Roads**;	Contractor	Undertake access to tower positions as per the requirements of section 5.4	During the Construction Phase	ECO	Monthly	Access to tower positions are undertaken as per the requirements of section 5.4
– Vegetation clearance to be undertaken in accordance with general vegetation clearance requirements specified in **Section 5.10: Vegetation clearing**;	Contractor	Undertake vegetation clearance as per the requirements of section 5.10	During the Construction Phase	ECO	Weekly	Vegetation clearance is undertaken as per the requirements of section 5.10
– No levelling at tower sites must be permitted unless approved by the Development Project Manager or Developer Site Supervisor;	Contractor in consultation with the DPM and DSS	Written permission for levelling at tower sites, if required, must be obtained from the DPM and DSS prior to the undertaking of any levelling activities	During the Construction Phase	ECO	Monthly, and as and when required	Written permission from the DPM and DSS provided to the Contractor
– Topsoil must be removed separately from subsoil material and stored for later use during rehabilitation of such tower sites;	Contractor	Implement appropriate measures to ensure that topsoil is removed from subsoil material	Construction and Rehabilitation	ECO	Weekly, and as and when required	Proof of appropriate measures implemented must be provided by the Contractor

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Topsoil must be stored in heaps not higher than 2m to prevent destruction of the seed bank within the topsoil;	Contractor	Implement the listed requirements for the storage of topsoil	During the Construction Phase	ECO	Weekly	Topsoil is stored as per the listed requirements
– Excavated slopes must be no greater that 1:3, but where this is unavoidable, appropriate measures must be undertaken to stabilise the slopes;	Contractor	Implement the listed requirements for the excavation of slopes	During the Construction Phase	ECO	Weekly	Excavation of slopes is undertaken as per the listed requirements
– 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;	Not Applicable - no blasting activities will be required for the project.					
– Only existing disturbed areas are utilised as spoil areas;	Contractor	Identify, demarcate and use existing disturbed areas for spoil areas	Pre-construction & Construction	ECO	Weekly	Only identified disturbed areas are used as spoil areas
– Drainage is provided to control groundwater exit gradient with the spill areas such that migration of fires is kept to a minimum;	Not Applicable					
– Surface water runoff is appropriately channelled through or around spoil areas;	DPM and Contractor	Design and implement appropriate surface runoff measures for spoil areas	Pre-construction & Construction	ECO	Once, during the construction of the surface runoff measures	Implementation of surface runoff measures through and/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;	Contractor	Develop and implement backfilling	Pre-construction & Construction	ECO	Weekly	Backfilling operations are undertaken as

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		procedures which ensures that topsoil is not placed at the bottom of foundations.				per the procedures developed
– The surface of the spoil is appropriately rehabilitated in accordance with the requirements specified in Section 5.29: Landscaping and rehabilitation;	Contractor	Rehabilitation of the surface spoil must be undertaken in accordance with the requirements of section 5.29	Rehabilitation	ECO	Weekly	Rehabilitation of the surface spoil is undertaken as per the requirements of section 5.29
– 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.	Contractor	Ensure that topsoil is spread evenly and compacted appropriately. This must be undertaken outside of the start of the dry season	Rehabilitation	ECO	Weekly	Proof that topsoil has been spread evenly and compacted correctly must be provided by the Contractor/ cEO. Proof that the activities were undertaken outside of the start of the dry season must be provided by the Contractor

5.28 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**
– 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;	Contractor	Identify and demarcate areas appropriate for the siting of winch and tensioner stations which does not infringe on access restricted areas or environmentally sensitive areas	Pre-construction & Construction	ECO	Weekly	Winch and tensioner stations are located outside of identified 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;	Contractor	Provide sufficient drip trays	During the Construction Phase	ECO	Weekly	Sufficient drip trays are available for the winch and tensioner stations and no spills occur
– Refuelling of the winch and tensioner stations must be undertaken in accordance with **Section 5.17: Hazardous substances;**	Contractor	The refuelling of winch and tensioner stations must be undertaken as per the	During the Construction Phase	ECO	Monthly	The refuelling of winch and tensioner stations is undertaken as per the

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		requirements of section 5.17				requirements of section 5.17
– 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 handheld implements, with vegetation being cut off at ground level. No tracked or wheeled mechanised equipment must be used;	Contractor	Develop and implement procedures for implementation for vegetation clearing during stringing in line with the specification.	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and weekly during stringing	Implementation of the procedures put in place and proof thereof from the Contractor
– Alternative methods of stringing which limit impact to the environment must always be considered e.g. by hand or by using a helicopter;	Contractor	Identify and implement the stringing method with the least environmental impact	During the Construction Phase	ECO	Weekly	Implementation of identified method of stringing with the least environmental impact
– 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;	Contractor	Identify prior to construction areas where protection measures will be required during stringing. Where access is to be restricted timeous written notice must be	Pre-construction & Construction	ECO	Monthly, and as and when required	Proof of implementation of protection measures and proof of written notice to affected parties must be provided by the Contractor

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		provided to the affected parties				
– 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;	Contractor in consultation with the cEO	Avoid the damaging or disturbance of existing services. Where services will be disrupted timeous notice must be provided to the affected parties	During the Construction Phase	ECO	Monthly, and as and when required	No disruption of services occurs. Where disruption occurs proof of written notice to affected parties must be provided by the Contractor
– Where stringing operations cross cultivated land, damage to crops is restricted to the minimum required to conduct stringing operations, and reasonable notice (10 workdays minimum), in writing, must be provided to the landowner;	Not Applicable - no cultivated land is present within the grid connection corridor.					
– Necessary scaffolding protection measures must be installed to prevent damage to the structures supporting certain high value agricultural areas such as vineyards, orchards, nurseries.	Not Applicable – no high value agricultural areas are present within the grid connection corridor.					

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**
– Develop and implement communication strategies to facilitate public participation;	dEO / cEO	Identify and implement appropriate strategies for communication with the communities through consideration of the community needs	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during the construction	Communication is undertaken as per the identified strategies and no complaints are submitted regarding communication
– Develop and implement a collaborative and constructive approach to conflict resolution as part of the external stakeholder engagement process;	Contractor	Development and implement a Grievance Mechanism which considers the community needs and provides procedures for conflict resolution	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during the construction phase	Conflict resolution is undertaken in line with the requirements of the Grievance Mechanism. No complaints on conflict resolution is submitted by the community
– Sustain continuous communication and liaison with neighbouring owners and residents	Contractor	Development and implement a Grievance Mechanism which provides procedures for communication	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during the	Communication / liaison with neighbouring landowners and residents are undertaken in line with the

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		/ liaison with neighbouring landowners and residents			construction phase	requirements of the Grievance Mechanism. No complaints on communication with neighbouring landowners and residents is submitted
– Create work and training opportunities for local stakeholders; and	Contractor	Develop and implement a "locals first" policy for the provision of employment opportunities	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during the construction phase	The "locals first" policy is considered in terms of the employment and training opportunities
– 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.	Not Applicable - no workers, other than security is proposed to stay on-site overnight.					

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		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– 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**;	Contractor	Regular emptying of the bunds must be undertaken. This must be undertaken as per the requirements listed in sections 5.17 and 5.18	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Bunds are emptied as per the requirements listed under sections 5.17 and 5.18
– Hazardous storage areas must be well ventilated;	Contractor	Install appropriate ventilation in all hazardous storage areas	During the construction phase	ECO	Prior to site closure for more than 05 days	Effective ventilation is installed in hazardous storage areas
– Fire extinguishers must be serviced and accessible. Service records to be filed and audited at last service;	Contractor / cEO	Ensure fire extinguishers are serviced, as required and are easily accessible with appropriate signage indicating location. Ensure service records are kept up to date and filed	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Signage placed indicating location of fire extinguishers and service records
– Emergency and contact details must be displayed;	Contractor / cEO	Place emergency and contact details	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Photographic proof of contact

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		which are readily available and easily accessible				details on display
– Security personnel must be briefed and have the facilities to contact or be contacted by relevant management and emergency personnel;	Contractor	Hold a workshop with all security personnel to provide a brief of the project and security requirements. Provide facilities in order to contact management and emergency personnel	Pre-construction & construction	ECO	Prior to site closure for more than 05 days	Proof of the workshop held must be kept on file by the contractor.
– Night hazards such as reflectors, lighting, traffic signage etc. must have been checked;	Contractor	Regular checks of night hazards must be undertaken	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Proof of checks of night hazards must be provided by the contractor
– Fire hazards identified and the local authority must have been notified of any potential threats e.g. large brush stockpiles, fuels etc.;	cEO / Contractor	Identify any potential fire hazards and notify the relevant local authority	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Proof of notification of the fire hazards to the local authority must be provided by the Contractor

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Structures vulnerable to high winds must be secured;	Contractor	Ensure structures vulnerable to wind are secure prior to site closure	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Structures vulnerable to wind are secured prior to site closure
– Wind and dust mitigation must be implemented;	Contractor	Implement wind and dust mitigation prior to site closure	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Wind and dust mitigation is implemented prior to site closure
– Cement and materials stores must have been secured;	Contractor	Ensure cement and material stores are secured prior to site closure	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Cement and material stores are secured prior to site closure
– Toilets must have been emptied and secured;	Contractor	Ensure toilets are emptied and secured prior to site closure	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Toilets are emptied and secured prior to site closure
– Refuse bins must have been emptied and secured;	Contractor	Ensure refuse bins are emptied and secured prior to site closure	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Refuse bins are emptied and secured prior to site closure
– Drip trays must have been emptied and secured.	Contractor	Ensure drip trays are emptied and secured prior to site closure	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Drip trays are emptied and secured prior to site closure

5.31 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**
– 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;	Contractor	Develop and implement a rehabilitation plan for the rehabilitation of all disturbed areas. Dispose of all spoil and waste at a licensed waste disposal facility	Pre-construction & Rehabilitation	ECO	Weekly	Rehabilitation of the disturbed areas is undertaken as per the rehabilitation plan. All certificates of waste disposal at licensed facilities are available.
– 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	Contractor	Assess all slopes and determine whether contouring is required	Rehabilitation	ECO	Weekly	All slopes are assessed and contoured as required
– 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;	Contractor	Assess all slopes and determine whether terracing is required	Rehabilitation	ECO	Weekly	All slopes are assessed and terraced as required
– 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;	Contractor	Ensure all berms have a slope of 1:4 and is replanted with	Rehabilitation	ECO	Weekly	All berms have a slope of 1:4 and is replanted with indigenous

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		indigenous species and grasses				species and grasses
– 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;	Contractor	The upper 10cm of soil which was stripped and stockpiled from the entire area where levelling has been conducted should be re-spread over the disturbed surface during rehabilitation: If no levelling was done on a particular area, it is not necessary to strip topsoil from that area.	Rehabilitation	ECO	Weekly	Topsoil is spread evenly
– Rehabilitation of tower sites and access roads outside of farmland;	Contractor	Ensure stockpiled topsoil is used as per the requirements listed under section 5.24	Rehabilitation	ECO	Weekly	Topsoil is spread evenly

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Indigenous species must be used for with species and/grasses to where it compliments or approximates the original condition;	Contractor	Make use of indigenous species for rehabilitation	Rehabilitation	ECO	Weekly	Indigenous species are used for rehabilitation
– Stockpiled topsoil must be used for rehabilitation (refer to **Section 5.24: Stockpiling and stockpiled areas**);	Contractor	Ensure stockpiled topsoil is used as per the requirements listed under section 5.24	Rehabilitation	ECO	Weekly	Stockpiled topsoil is used as per the requirements listed under section 5.24
– Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion;	Contractor	Ensure that topsoil is spread evenly	Rehabilitation	ECO	Weekly	Topsoil is spread evenly
– Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed;	Contractor	Remove all visible weeds from placement area and topsoil before spreading the topsoil	Rehabilitation	ECO	Weekly	No weeds are visible in the placement area or the topsoil
– Subsoil must be ripped before topsoil is placed;	Contractor	Undertake the ripping of subsoil prior to the spreading of topsoil	Rehabilitation	ECO	Weekly	Subsoil is ripped before topsoil is placed
– The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment;	Contractor	Plan the timeframe for rehabilitation in order to	Rehabilitation	ECO	At the start of rehabilitation to confirm correct timeframe	Rehabilitation is undertaken during the optimal time

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		undertake vegetation planting during 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;	Contractor	All disturbed slope areas must be stabilised	Rehabilitation	ECO	Weekly	Disturbed slopes are stabilised sufficiently
– 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;	Contractor	Stabilise slopes as per the design specifications	Pre-construction & Rehabilitation	ECO	Weekly	Slopes are stabilised as per the design specifications
– Spoil can be used for backfilling or landscaping as long as it is covered by a minimum of 150mm of topsoil.	Contractor	Spoil used for landscaping must be applied as per the listed requirements	Rehabilitation	ECO	Weekly	Photographic record of spoil used for landscaping purposes as well as feedback from the contractor
– 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: a) Annual and perennial plants are chosen; b) Pioneer species are included;	Contractor in consultation with a suitably qualified specialist	Make use of a suitable vegetation seed mixture should enhancement be required	Rehabilitation	ECO	As and when required	Use of a suitable vegetation seed mixture if required

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
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						

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 Contact details and description of the project

7.1.1. Details of the Applicant

Applicant Name	Sutherland Wind Farm (Pty) Ltd / Rietrug Wind Farm (Pty) Ltd[1]
Contact Person	Eugene Marais
Physical Address	4th Floor Mariendahl House, Newlands on Main, Corner Main and Campground Road, Claremont, Cape Town, 7708
Postal Address	PO Box 45063, Claremont, 7735
Telephone	021 657 4052
Fax	N/A
Cell	(073) 871 5781
Email Address	Eugene.Marais@mainstreamrp.com

7.1.2. Details and Expertise of Environmental Assessment Practitioner (EAP)

EAP Name	Arlene Singh
EAP Qualifications	B.Sc. (Hons.) Environmental Management
Professional Affiliation/Registration	SACNASP EAPASA
Physical Address	Waterfall, Cnr Old Main Road & Maxwell Drive, Johannesburg, 2090
Telephone	N/A
Fax	086 471 4190
Cell	084 277 7074
Email Address	arlene@veersgroup.com

Refer to **Appendix A** of the EMPr for the detailed experience of the EAP and the Project Team.

[1] The 132kV main powerline supports both Sutherland and Rietrug Wind Energy Facilities (WEFs), however, the EA was issued under Sutherland Wind Farm (Pty) Ltd (DFFE REF: 14/12/16/3/3/1/2077/AM2)

7.1.3. Project Details

Project Name: ESTABLISHMENT OF ELECTRICAL GRID INFRASTRUCTURE (132KV POWERLINE, AND ASSOCIATED INFRASTRUCTURE) TO SUPPORT THE AUTHORISED SUTHERLAND, SUTHERLAND 2 AND RIETRUG WIND ENERGY FACILITIES, NORTHERN AND WESTERN CAPE PROVINCES

7.1.4. Project Description

Sutherland Wind Farm (Pty) Ltd is proposing the development of a **new 132kV powerline** (DFFE Reference: 14/12/16/3/3/1/2077/AM2) for the authorised Sutherland and Rietrug Wind Energy Facilities (WEFs). The new powerline, approximately 41km in length, will span from the authorised Sutherland WEF Acrux on-site substation (DFFE Ref: 14/12/16/3/3/1/2457/AM1) to the 400kV Koring Main Transmission Substation (MTS) (including tower/pylon infrastructure and foundations) (DFFE Reference: 14/12/16/3/3/1/2077/AM2) in the Northern and Western Cape Province.

The authorised WEFs and associated grid connection infrastructure are located approximately 23 km south of the town Sutherland, while the proposed project components fall within the Karoo Hoogland and Laingsburg Local Municipalities under the Namakwa and Central Karoo District Municipalities respectively.

The developer has bid the WEF and associated infrastructure (including grid connection infrastructure) into the Renewable Energy IPP Procurement Programme (REIPPPP) Bid Window 5, for the procurement of up to 1 600MW of onshore wind energy technologies, and has since been granted preferred bidder status for the Sutherland and Rietrug Wind Energy Facilities. This allocation is in accordance with the generation capacity required as specified in the Integrated Resource Plan (IRP) 2019 and accompanying ministerial determination from the Minister for the Department of Mineral Resources and Energy (DMRE).

The infrastructure and key components considered as part of the Basic Assessment (BA) process for the grid connection infrastructure (CSIR, 2019) includes:

- A new 132kV powerline that will be located on the following properties:
  - Remaining extent of Hartebeeste Fontein Farm 147;
  - Remaining Extent of Nooitgedacht Farm 148;
  - Remaining Extent of Beeren Valley Farm 150;
  - Portion 1 of Farm 219;
  - Remaining extent of Farm 219;
  - Remaining extent of Farm 280;
  - Portion 1 of Rheebokkenfontein Farm 4;
  - Portion 2 of Rheebokkenfontein Farm 4;
  - Portion 2 of De Molen Farm 5;
  - Portion 6 of Hamelkraal Farm 16;
  - Portion 7 of Hamelkraal Farm 16; and
  - Remainder of Spitzkop Farm 20.

- The length of the proposed powerline is approximately 41km long, with a 500m wide assessment corridor, and will span from the 132kV powerline associated with the Acrux on-

site substation located on the Northern Cape portion of the Sutherland WEF site to the authorised Koring MTS in the Western Cape Province.

- Development of access tracks up to 4m wide within the powerline corridor to enable construction and maintenance activities.

POWERLINE CO-ORDINATES:

132kV Powerline:

The proposed 132kV double circuit power line will be located within the authorised Sutherland WEF site (DFFE Reference: 14/12/16/3/3/1/2077/AM2), and will start at the authorised 132kV portion of powerline associated with the Eskom portion of the Acrux switching station (DFFE Reference: 14/12/16/3/3/1/2457/AM1) and join the authorised electrical grid infrastructure located to the south of the Sutherland WEF (DFFE Reference: 14/12/16/3/3/1/2077/AM2) site that will allow for evacuation of electricity to the national grid. The design of the power line is required to conform to Eskom's technical standards, as it will form part of the national electricity supply network, and must therefore be in-line with the existing network systems, technology and infrastructure.

	Latitude	Longitude
Start	32°38.025'S	20°57.839'E
Middle	32°38.295'S	21°09.873'E
End	32°42.763'S	21°15.601'E

This Generic EMPr is applicable to the establishment of the new 132kv powerline and associated infrastructure to support the authorised the Sutherland, Sutherland 2 Rietrug WEFs, Northern and Western Cape Provinces.

This document forms a completed addendum to the Approved Environmental Management Programme (EMPr) (prepared by CSIR Environmental Management Services) as submitted with the Final Basic Assessment Report (BA Report) in December 2019 and the addendum to the EMPr (prepared by NALA Environmental) for the Part 2 Amendment report associated with the relocation of the MTS (July 2021).

7.1.5. Project Location

Location details of the development of the powerline:

Province	Northern and Western Cape
District Municipality	Namakwa and Central Karoo District Municipalities
Local Municipality	Karoo Hoogland and Laingsburg Local Municipalities
Nearest town(s)	Sutherland
Affected Properties: Farm name(s), number(s) and portion numbers (on-site substation)	» Remaining extent of Hartebeeste Fontein Farm 147; » Remaining Extent of Nooitgedacht Farm 148; » Remaining Extent of Beeren Valley Farm 150; » Portion 1 of Farm 219; » Remaining extent of Farm 219; » Remaining extent of Farm 280; » Portion 1 of Rheebokkenfontein Farm 4; » Portion 2 of Rheebokkenfontein Farm 4;

	» Portion 2 of De Molen Farm 5; » Portion 6 of Hamelkraal Farm 16; » Portion 7 of Hamelkraal Farm 16; » Remainder of Spitzkop Farm 20
SG 21 Digit Code (s)	» C07200000000014700000 » C07200000000014800000 » C07200000000015000000 » C07200000000021900000 » C07200000000021900001 » C04300000000028000000 » C04300000000000400001 » C04300000000000400002 » C04300000000000500002 » C04300000000001600006 » C04300000000001600007 » C04300000000002000000
Current zoning and land use	Agriculture

7.1.6. Preliminary Technical Specifications of the 132kV main grid powerline to the Koring Main Transmission Substation (MTS)

Infrastructure	**Footprint, dimensions and details**
Powerline capacity	132kV
Powerline Servitude Width	36m
Powerline length	41km
Powerline corridor	500m
Tower Spacing	Up to 360m
Height of the Towers	Up to 32m
Connection to the Proposed Third Party Substation	Overhead 132kV powerline that ties into the authorised 132kV powerline associated with the Eskom portion of the Acrux on-site substation (Northern Cape) on the Sutherland WEF site to the 400kV Koring MTS in the Western Cape Province.

It should be noted that Eskom's requirements for work in or near Eskom servitudes should be adhered to.

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.

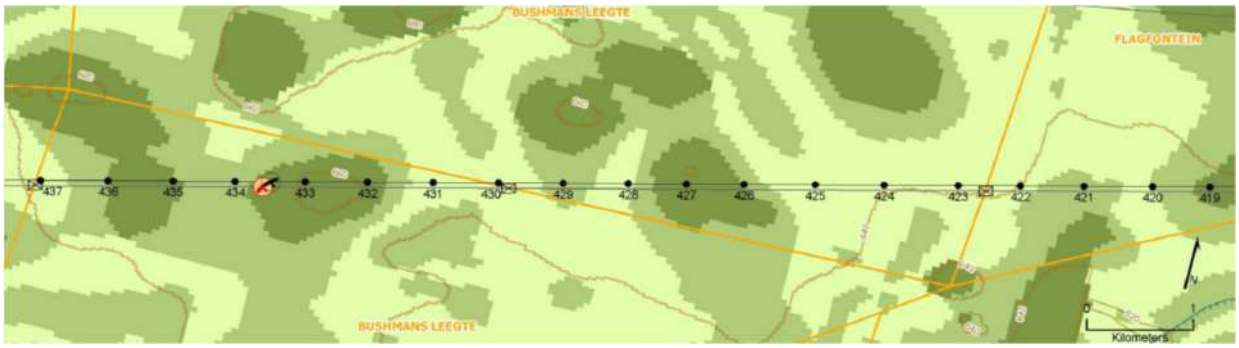


Figure 1: Example of an environmental sensitivity map in the context of a final overhead transmission and distribution profile

The national web-based environmental screening tool was utilised for this project and the grid connection corridor sensitivity maps can be seen in Figures 3 to 7. The site-specific environmental sensitivity map included in the BA Report is included as Figure 2.

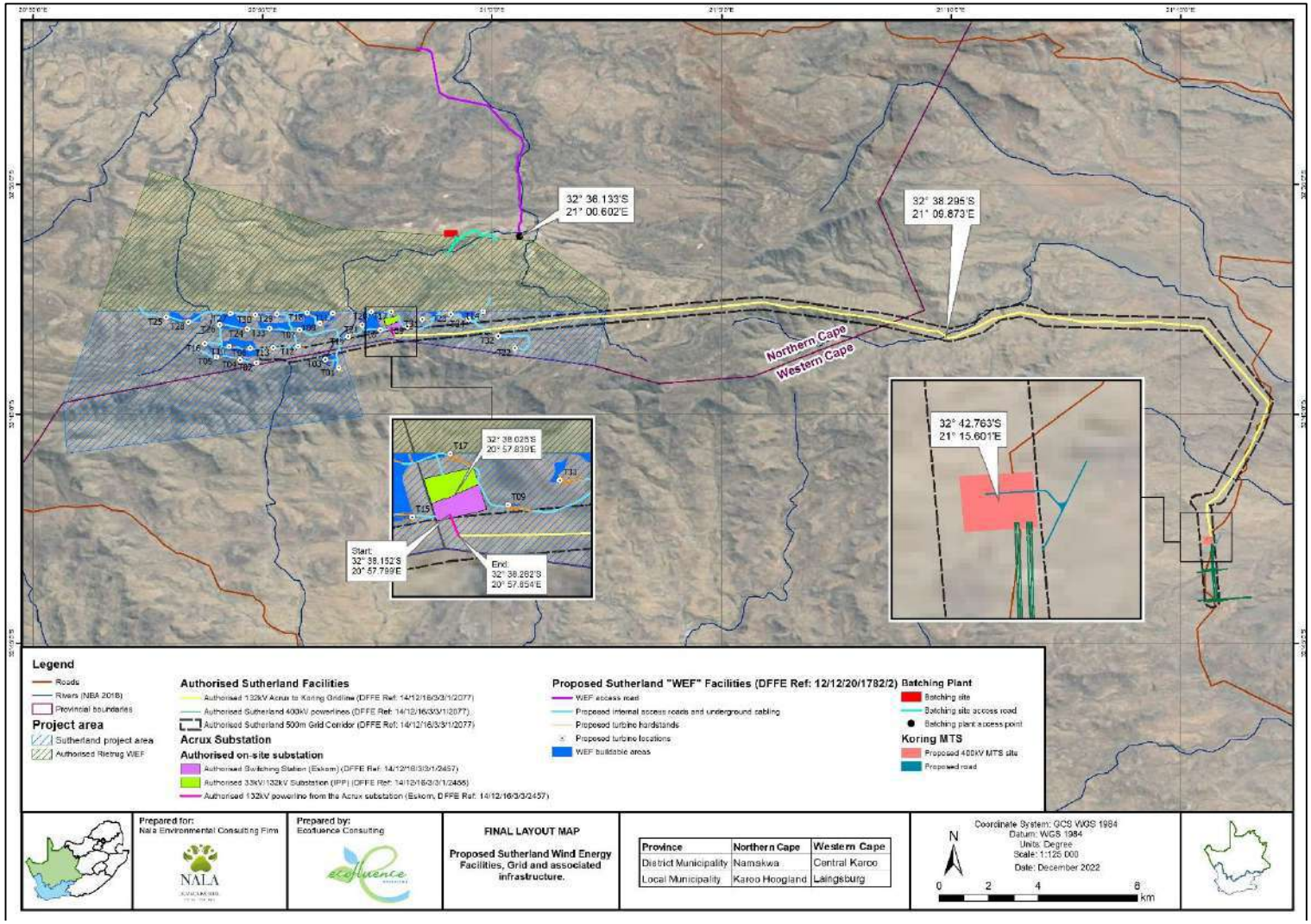


Figure 2: Layout Map for the proposed new 132kv Powerline, and Associated Infrastructure to Support the Authorised the Sutherland and Rietrug Wind Energy Facilities, Northern & Western Cape Province

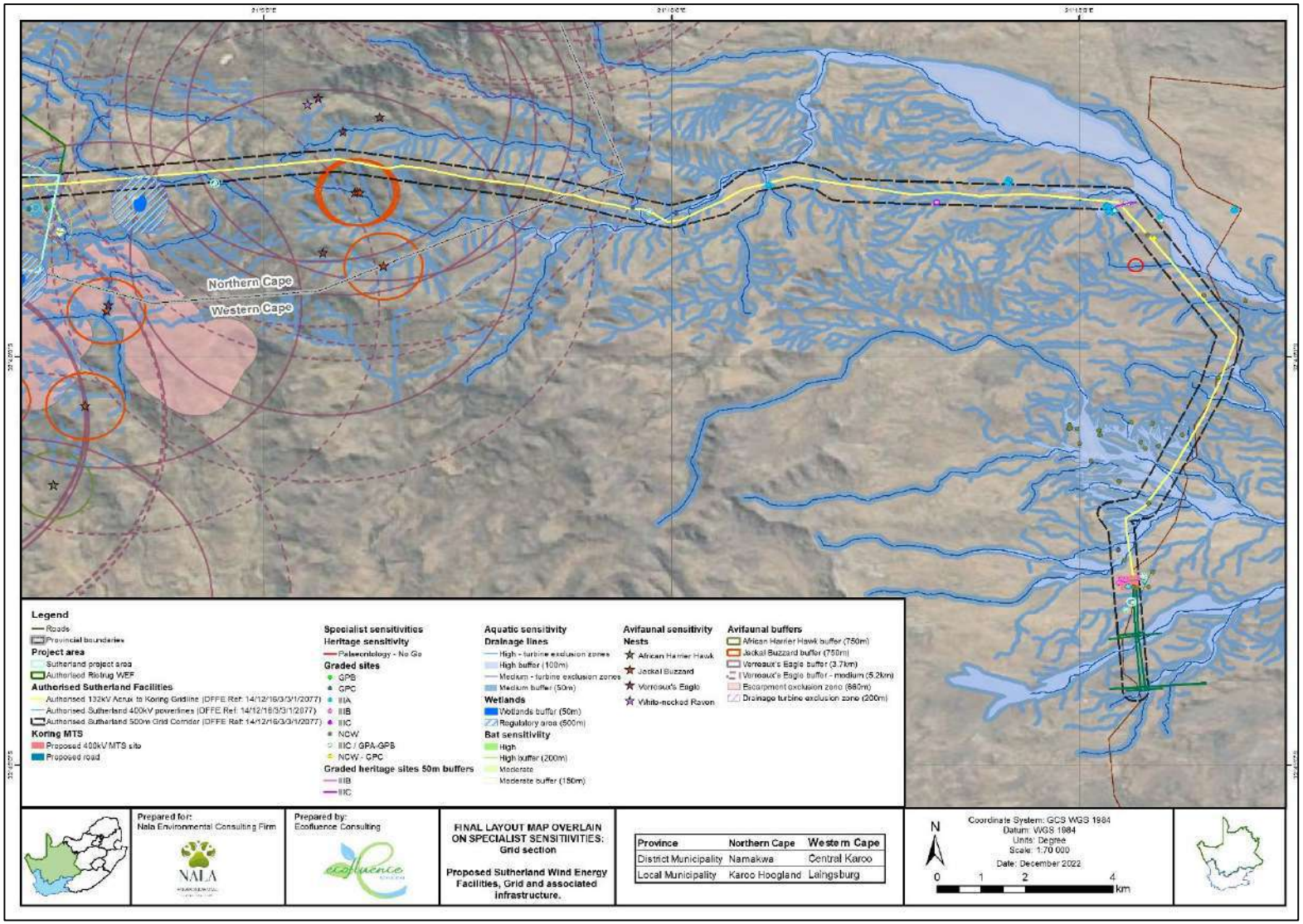


Figure 3: Sensitivity map for the proposed Powerline and associated with the authorised Sutherland and Rietrug Wind Energy Facilities, Northern & Western Cape.

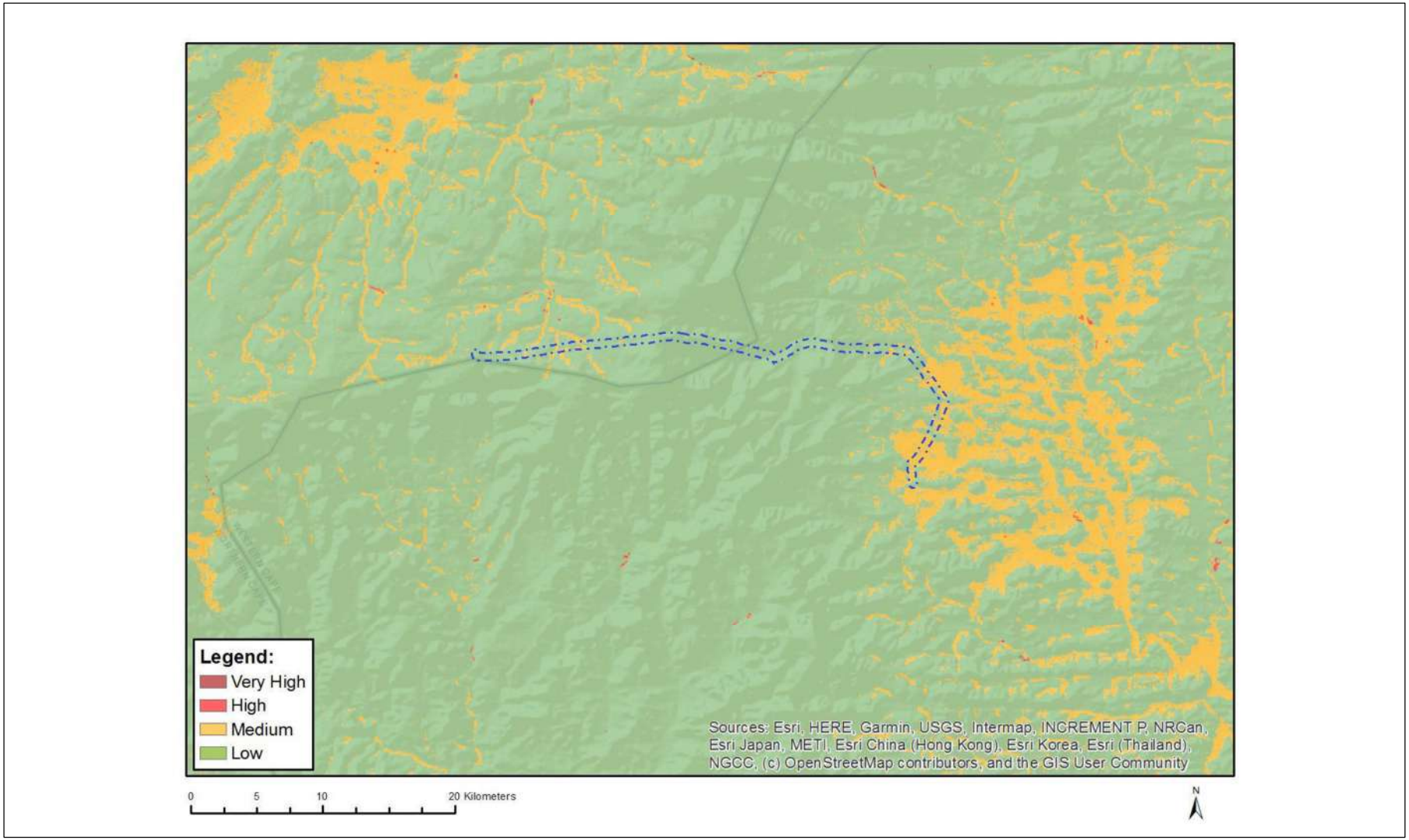


Figure 4: Map of Relative Agriculture Theme Sensitivity.

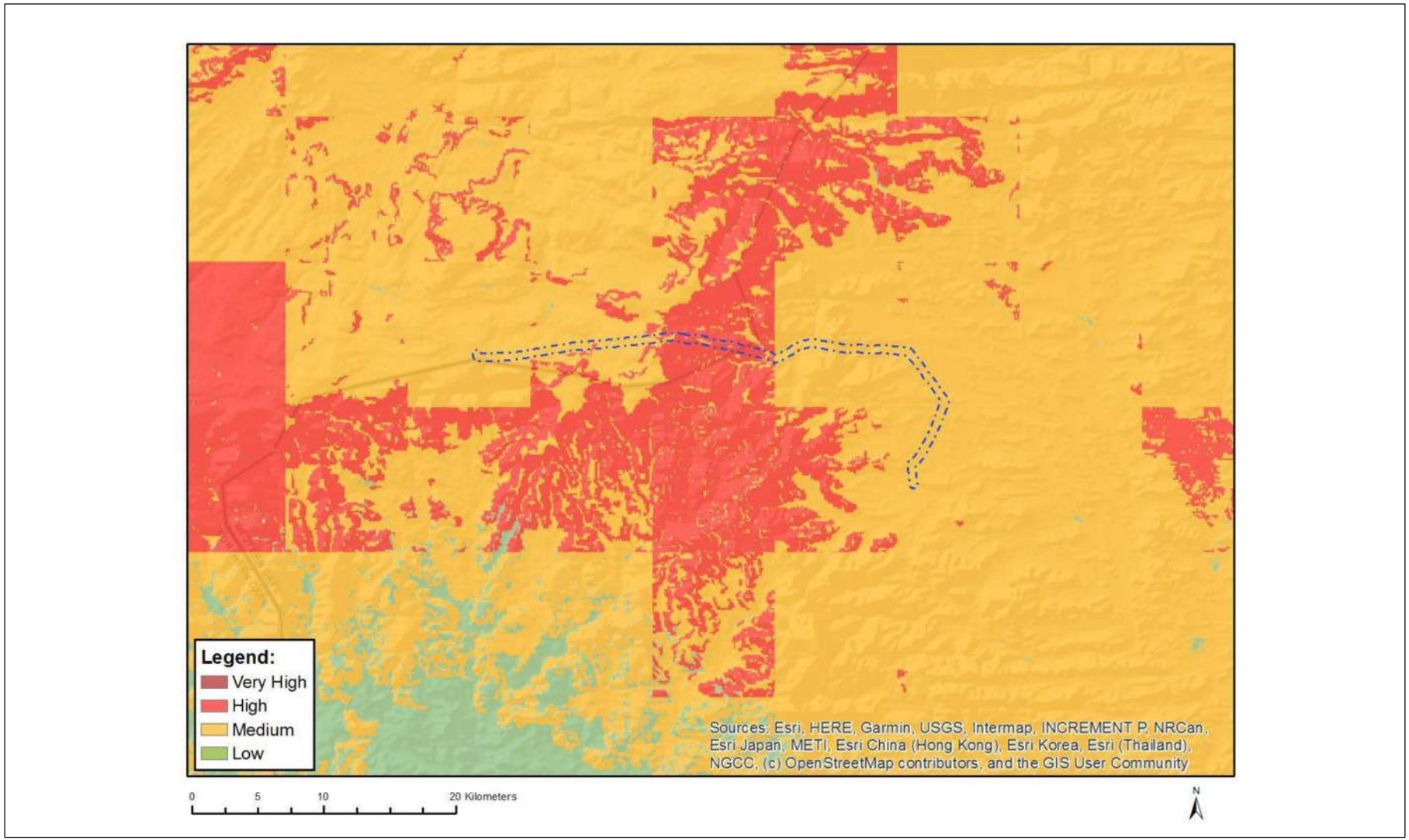


Figure 5: Map of Animal Species Theme Sensitivity

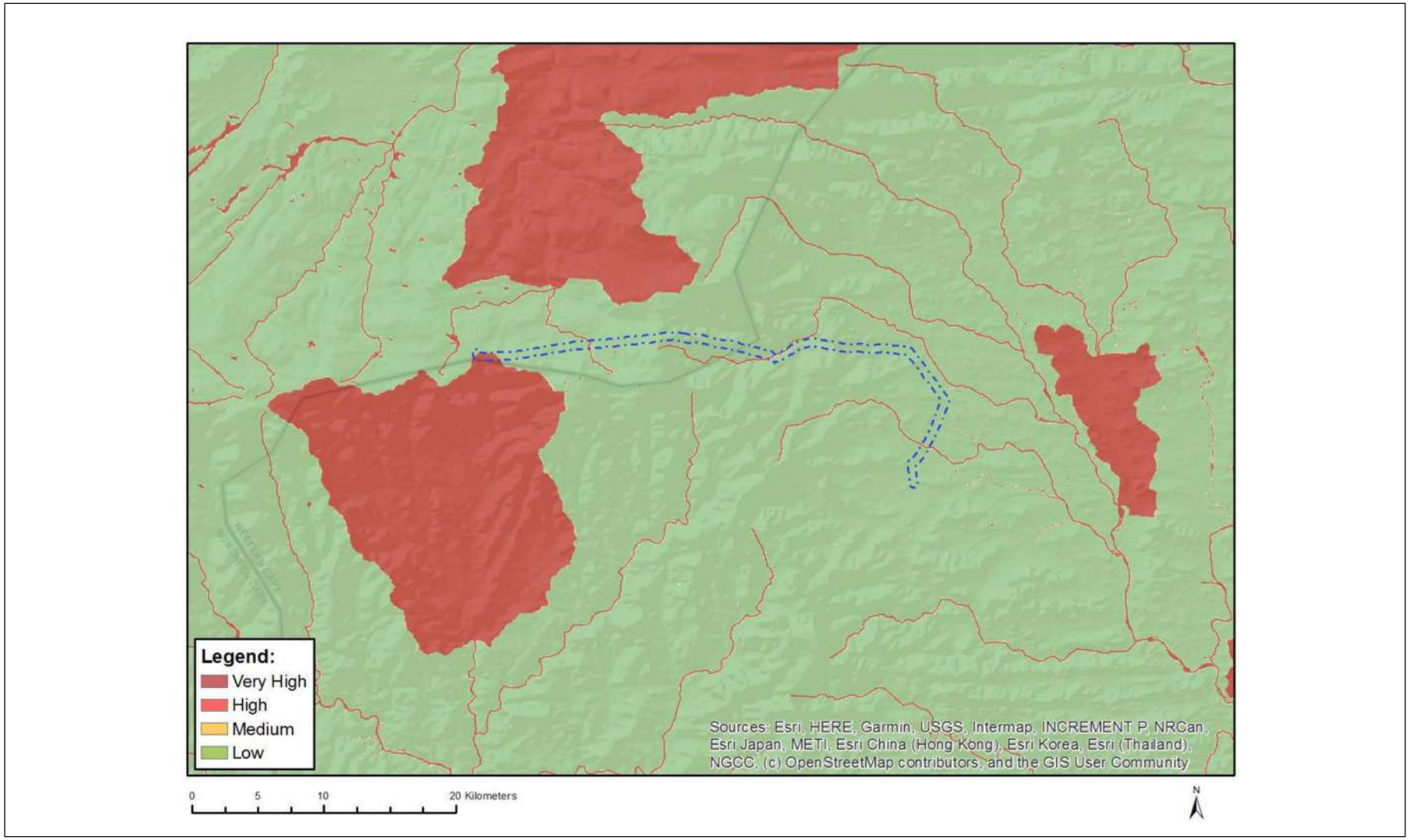


Figure 6: Map of Aquatic Biodiversity Theme Sensitivity

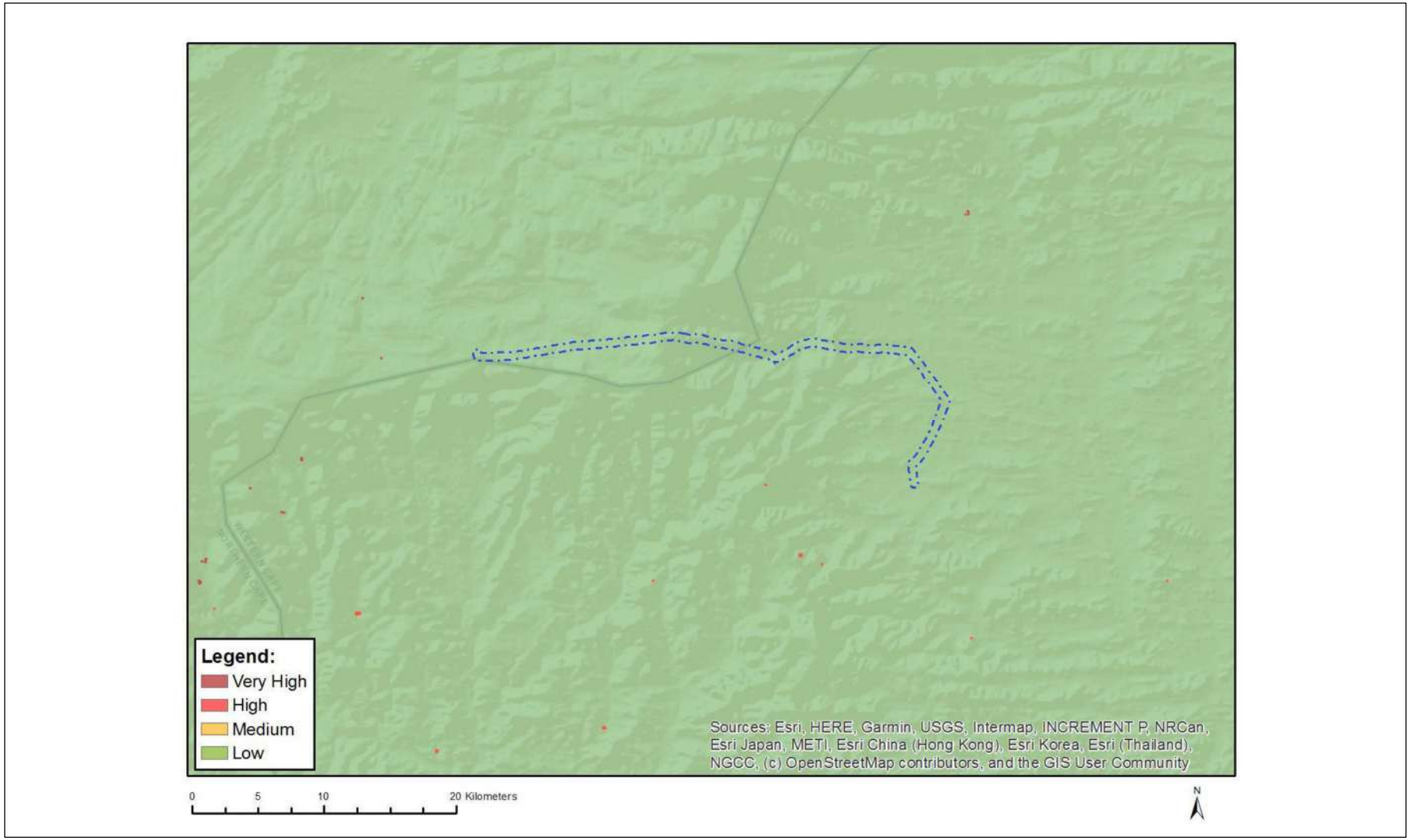


Figure 7: Map of Archaeological and Cultural Heritage Species Theme Sensitivity

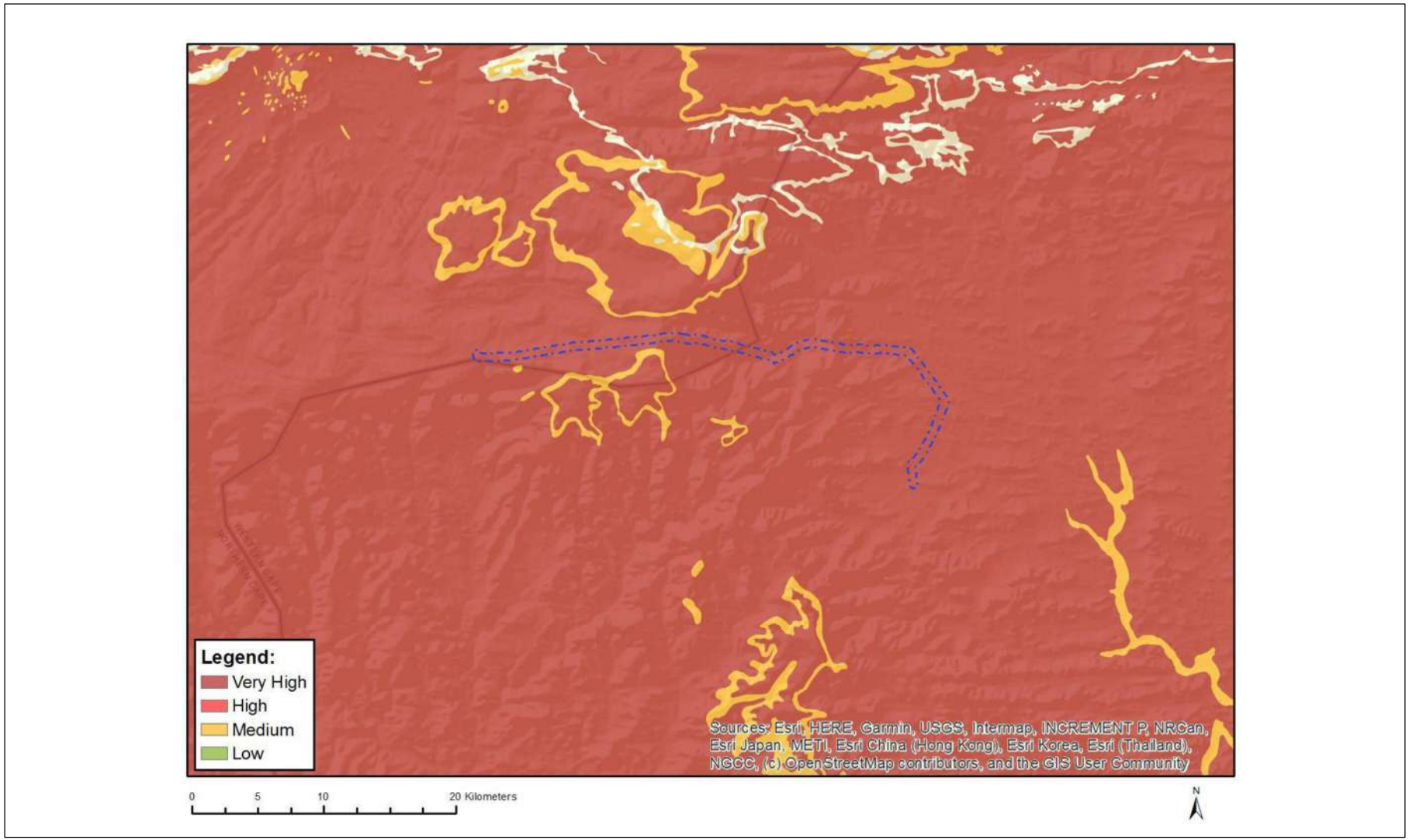


Figure 8: Map of Relative Palaeontology Theme Sensitivity

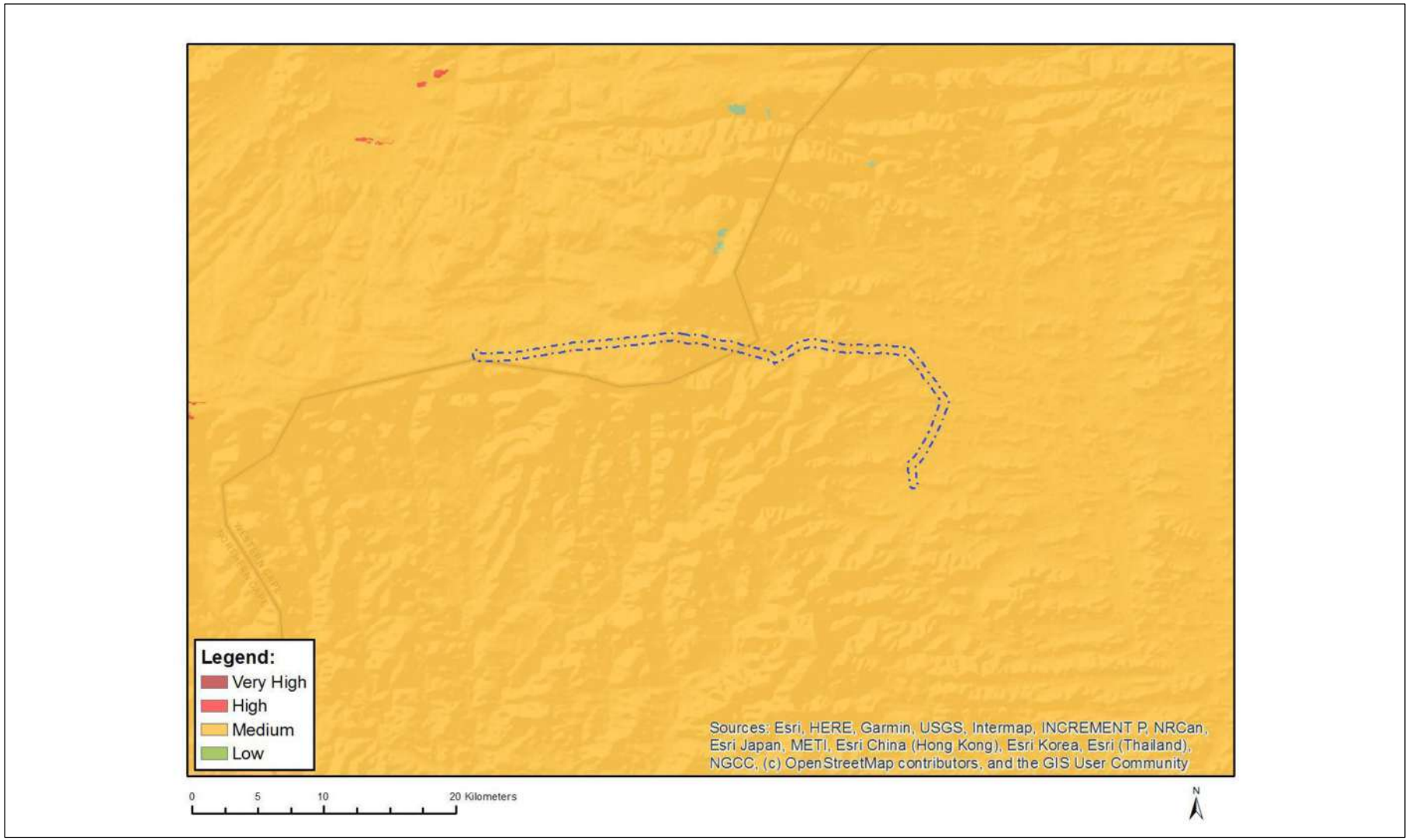


Figure 9: Map of Relative Plant Species Theme Sensitivity

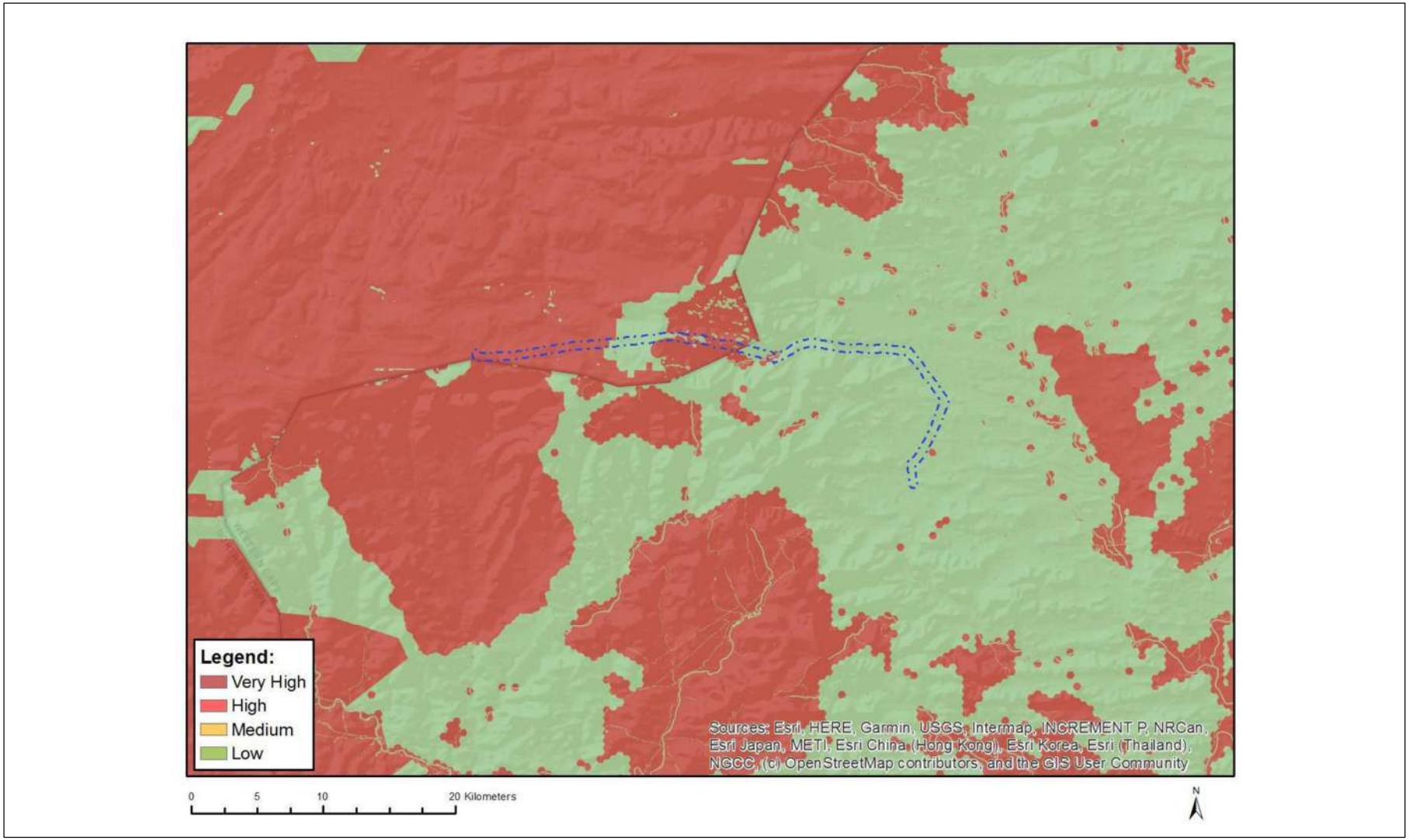


Figure 10: Map of Relative Terrestrial Biodiversity Theme Sensitivity

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:

2022/11/22

This declaration will be signed by the proponent/applicant/holder of the EA once the contractor is appointed and has provided inputs to this Generic EMPr as per the requirements of this template.

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.

8.1 Avifaunal Impacts

Impact management outcome: Reduce potential impact on avifauna						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
Minimise displacement due to disturbance and habitat transformation associated with the construction of the 132kV powerline.	Project Manager / ECO	» Construction activity should be restricted to the immediate footprint of the infrastructure. » An 800m all infrastructure exclusion zone must be implemented around the Black Harrier nest to prevent potential disturbance of the breeding pair. » Access to the remainder of the site (i.e. areas where no construction activities are planned) should be strictly controlled to prevent unnecessary disturbance of Species of Conservation Concern (SCC). » Removal of vegetation must be restricted to a minimum. » Measures to control noise and dust should be applied according to	During design & prior to the commencement of the construction activities.	ECO	Before Commencement and Ongoing	All activities constantly monitored for restriction into immediate footprint and prescribed access control

		current best practice in the industry. » Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum. » Construction of new roads should only be considered if existing roads cannot be upgraded. » Vehicle and pedestrian access to the site should be controlled and restricted to access roads to prevent unnecessary disturbance of Species of Conservation Concern (SCC). » There is one Verreaux Eagle (VE) nest which is situated less than 1km from the proposed grid (closest distance 640m). 1km is the recommended no-disturbance buffer in the VE guidelines. The poles / pylons that are implicated are numbers 44 – 48. Construction work on structures 44 - 48 of the proposed Acrux to Koring 132kV grid				

		connection should be timed to fall outside the Verreaux's Eagle breeding season (i.e. construction should not take place from April to October).				
Minimise Collisions with the 132kV powerline - This in only applicable to the application for the 132kV powerline	Project Manager / ECO	» The bird flight diverters should be installed on the whole line, for the full span length on the earthwire (according to Eskom guidelines - five metres apart). Light and dark colour devices must be alternated to provide contrast against both dark and light backgrounds respectively. These devices must be installed as soon as the conductors are strung. » As a minimum, post-construction monitoring should be undertaken for the first two years of operation, and then repeated again in Year 5, and again every five years thereafter for the operational lifetime of the facility. The exact scope	During design & prior to the commencement of the construction activities and operational phase	ECO	Before Commencement and Ongoing	Monitor installation of bird flight diverters Recording of ongoing impacts and monitoring.

		and nature of the post-construction monitoring will be determined on an ongoing basis by the results of the monitoring through a process of adaptive management				
Minimise displacement due to disturbance associated with the decommissioning of the powerline.	ECO	» Decommissioning activity/activities should be restricted to the immediate footprint of the infrastructure. » Access to the remainder of the site (i.e., areas where no construction activities are planned) should be strictly controlled to prevent unnecessary disturbance of priority species. » Measures to control noise and dust should be applied according to current best practice in the industry. » Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum.	Decommissioning phase	ECO	During the decommissioning phase	Footprint restriction and access control monitored and maintained during decommissioning.

8.2 Bat *Impacts*[2]

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

[2] Bat Assessments are not required for the powerline and were not assessed during the BA process for this powerline, however, as the infrastructure was included in the walkthrough undertaken in 2022 general measures that would be applicable have been included in this EMPr.

8.3 Aquatic Ecology (Freshwater impacts)

Impact management outcome: Potential impact on aquatic (freshwater) resources						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
Reduce loss of riparian systems and disturbance of the alluvial water courses during the construction, operation and decommissioning phase	Project Manager/ECO	No direct impact or disturbance of riparian systems and alluvial water courses during the construction, operation and decommissioning phase as such features are avoided.	N/A	ECO	N/A	N/A
Minimise the impact on freshwater resource systems through the increase in surface runoff on form and function during the operational and decommissioning phases	Project Manager/ECO	Infrastructure footprint and associated area of disturbance should be minimised as far as practically possible	Construction, operation and decommissioning phase	ECO	Before commencement and Ongoing	Monitor and implement the methods of minimising the impacts. Implementation of mitigation measures
Manage increase in sedimentation and erosion during the construction, operational and decommissioning phase	Project Manager/ECO	» Any erosion problems observed to be associated with the powerline infrastructure should be rectified as soon as possible and monitored thereafter to ensure that they do not re-occur. » All bare areas, as a result of the development, should be revegetated with locally occurring	Construction, operation and decommissioning phase	ECO	Before commencement and Ongoing	Monitor and implement the methods of minimising the impacts. Implementation of erosion control measures

		species, to bind the soil and limit erosion potential. » An erosion control management plan should be utilised to prevent erosion » Silt traps should be used where there is a danger of topsoil eroding and entering streams and other sensitive areas. » Ensure vehicles are regularly serviced so that hydrocarbon leaks are limited. » Keep a spill kit on site to deal with any hydrocarbon leaks. » Remove soil from the site which has been contaminated by hydrocarbon spillage.				
Reduce potential compromise ecological processes as well as ecological functioning of important freshwater resource habitats	Project Manager/ECO	» All highly sensitive major ephemeral washes and their associated buffer areas should be regarded as No-Go areas for all construction activities. » The recommended buffer (namely 50m) areas between the delineated freshwater resource features and	Construction phase	ECO / Landscape Architect / Contractor	Before commencement and Ongoing	Monitor and implement the methods of minimising the impacts.

		proposed project activities should be maintained. » Vegetation clearing to be kept to a minimum. No unnecessary vegetation to be cleared. » Good housekeeping measures as stipulated in the EMPr for the project should be in place where construction activities take place to prevent contamination of any freshwater features. » All construction materials, including fuels and oil, should be stored in demarcated areas that are contained within berms / bunds to avoid spread of any contamination. Washing and cleaning of equipment should also be done in berms or bunds, in order to trap any cement and prevent excessive soil erosion. » Mechanical plant and bowsers must not be refuelled or serviced within or directly				

		adjacent to any channel. It is therefore suggested that all construction camps, lay down areas, batching plants or areas and any stores should be outside of any demarcated water courses. » Disturbed areas should be rehabilitated through reshaping of the surface to resemble that prior to the disturbance and vegetated with suitable local indigenous vegetation. » All alien plant re-growth (mostly forbs) must be monitored, and should it occur, these plants should be eradicated. The scale of the operation does however not warrant the use of a Landscape Architect and / or Landscape Contractor				

8.4 Terrestrial Ecology

Impact management outcome: Reduce potential impact on fauna and flora with the powerline corridor						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**

Minimise potential impacts on vegetation and listed protected plant species	Project Manager /ECO	» Pre-construction walk-through of the approved power line route/corridor to locate species of conservation concern that can be translocated or avoided. » It is important that a spring survey of the approved powerline footprint must be conducted in order to finalise the applications for permits (red data and protected species) prior to the commencement of construction and site clearing activities.	During design & prior to the commencement of the construction activities.	ECO/ Specialist Ecologist	Before Commencement and Ongoing	Walkthrough reports of file (Appendix A1) and translocation evidence.
Minimise disturbance of sensitive areas	Project Manager/ECO	» On the rock sheets the *Mesembryanthemaceae, Colchicaceae, Crassulaceae* and *Apocynaceae* were present and therefore these areas are sensitive and must be avoided. It will be important to keep a 5m buffer around the outer edges to ensure no permanent damage results. No driving over these areas is permitted at any time.	Pre-construction and construction activities	ECO/ Specialist Ecologist	Before Commencement and Ongoing	Proof of buffers put in place and adhered to. Evidence of non-compliance as per ECO audit reports

		» The landscape, with the drainage features, have a number of small drainage lines that congregate into larger streams. These areas must be avoided as far as possible and limited crossing is recommended » It is very important to stay within the 8/10m corridor (final layout of the road system) for the roads during construction. » No activity must occur outside the road margins. » It is recommended that the road layout follow the less steep inclines and contours to limit access on steep and sensitive slopes. » No driving over the sensitive bedrock sheets are allowed at any time during the construction, operational or decommissioning phases for this project. This include any driving into				

		the veld outside any demarcated corridors or footprint areas. » All activities during construction must be restricted to take place within the footprint area.				
Minimise erosion potential	Project Manager/ECO	» All hard surfaces (roads footprints) will contribute to the erosion potential and the accelerated flow velocities from roads, culverts and areas cleared of vegetation are of concern. It will be important to monitor these areas regularly, especially downstream of these zones, as accelerated flows are the main concern related to increased erosion. » The exposed areas must be rehabilitated to prevent erosion and to ensure no alien plant species establish in these areas. As plants associated with the vegetation unit are slower to recover, the clearing footprint must be kept to	Pre-construction and construction activities	ECO/ Specialist Ecologist	Before Commencement and Ongoing	No evidence of erosion

		an absolute minimum e.g. leave 300mm basal layer.				

8.5 Heritage and Palaeontolgical Impacts

Impact management outcome: Potential impact on heritage and archaeological resources						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
Management of Impacts to archaeology and impacts to the cultural landscape.	Project Manager / dEO / cEO in consultation with the Contractor	» Impacts to archaeology would occur during construction only, while impacts to the cultural landscape would occur during all phases of the development. » Develop and implement procedures for situations where archaeological sites or remains are uncovered » If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA or HWC Tel: 021 483 5959 Email: ceoheritage@westerncape.gov.za	During construction only (Archaeology impacts). During all development phases (cultural landscape impacts)	ECO/ dEO / cEO in consultation with the Contractor	Ongoing (Monthly)	Record and monitor ongoing impacts and proof of communication to SAHRA /HWC APM Unit and the required procedures followed in cases where material is discovered.

		» If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA or HWC, 3rd Floor Protea Assurance Building, 142 Longmarket Street, Green Market Square, Cape Town 8000. Tel: 021 483 5959 Email: ceoheritage@westerncape.gov.za				
The sites identified for avoidance must be avoided (Northern Cape and Western Cape); Any unsurveyed sections of the approved layout must be checked in the field in case of further small sites requiring recording or mitigation (Northern Cape and Western Cape);	Project Manager/ dEO / cEO in consultation with the Contractor	» Flagging of no-go areas is required for sites less than 30 m from the project footprint (Northern Cape and Western Cape). This must be done before construction and the sites must be monitored for compliance during construction by the ECO (at least weekly while construction is busy in the relevant areas) (Sites that are not visually prominent and are located more than 30 m from the footprint should not be flagged, as it is preferable to not draw attention to them). All sites lying less than 30 m from the footprint are assumed to be at risk from construction work and should be flagged as no-go areas; » The possible grave at waypoint 503 (Koring MTS, Western Cape) must be carefully tested and, if found to be a grave, it must be closed up	Pre-construction and during construction and as and when required	ECO/ dEO / cEO in consultation with the Contractor	Once before construction and as and when required	Proof of flagged no-go areas for sites less than 30m form the project footprint Evidence of waypoint 503 testing results

		and, in consultation with HWC, the appropriate grave relocation process followed; » The suite of historical/recent engravings at waypoints 497-502 & 1154 (Koring MTS, Western Cape) must be fully recorded *in situ* and then moved to an appropriate location to be determined in consultation with HWC; » Certain sites (namely waypoints 781, 806, 497) are impractical or unfeasible to mitigate and these must be avoided; » As large a buffer as possible must be incorporated between the road and waypoint 556 at the Nooitgedacht Farmstead; » No stones may be removed from any heritage sites (Northern Cape and Western Cape) » The historical/recent engraving at waypoint 506 (Koring MTS, Western Cape) must be fully recorded *in situ* and then protected				Proof of recording of waypoints 497-502 & 1154 Evidence of undisturbed heritage sites Recording results of waypoint 506 in site
Management of Impacts to archaeology and impacts to the cultural landscape.	Project Manager/ dEO / cEO in consultation	All construction work must occur within the demarcated project footprints and vehicles may not move outside of these areas (Northern Cape and Western Cape);	Pre-construction and during construction	ECO/ dEO / cEO in consultation with the Contractor	During construction and as and when required	Evidence of all construction work occurring within

	with the Contractor					demarcated footprints
Compliance to permit requirements	Project Manager/ dEO / cEO in consultation with the Contractor	» A Workplan application must be lodged with HWC for all mitigation required in Western Cape; » A Permit application must be lodged with SAHRA for any mitigation required in Northern Cape (currently none is needed);	Pre-construction and during construction	ECO/ dEO / cEO in consultation with the Contractor	During construction and as and when required	Proof of Workplan application lodged with HWC Proof of permit application lodged with SAHRA
Minimise impacts to scientifically valuable fossil material	Project Manager / dEO / cEO in consultation with the Contractor / professional palaeontologist	» The final, approved layouts of the WEF and its associated Grid Connection Infrastructure must be cross-checked by a professional palaeontologist against the available palaeontological database prior to commencement of site clearing and excavation activities. Residual, potentially sensitive, unsurveyed sectors of the approved project footprint must be surveyed and mitigated in the Pre-construction Phase (prior to any site clearance and bedrock excavations) by a professional palaeontologist, with recording and judicious sampling or collection of scientifically valuable fossil material.	Pre-construction	ECO/ dEO / cEO in consultation with the appointed palaeontologist	Once-off prior to commencement of construction	Proof of appointment of profession Palaeontologist.

		» New fossil material encountered or exposed during the Construction Phase is best handled through the Chance Fossil Finds Protocol. The Environmental Control Officer (ECO) / Environmental Site Officer (ESO) responsible for the WEF and grid connection developments should be made aware of the possibility of important fossil remains (vertebrate bones, teeth and burrows, petrified wood, plant-rich horizons etc.) being found or unearthed during the construction phase of the projects. Monitoring for fossil material of all major surface clearance (including access roads) and deeper (>1m) excavations by the ESOon an on-going basis during the construction phase is therefore recommended. » Significant fossil finds should be safeguarded, preferably in situ, and reported at the earliest opportunity to Heritage Western Cape / SAHRA for recording and sampling by a professional palaeontologist. If triggered, these mitigation actions to conserve legally-protected fossil heritage are considered to be essential. » The palaeontologist responsible for any mitigation work in the Western			On-going during construction On-going during construction	Evidence of fossil finds as per ECO audit reporting. Proof of Chance find procedure developed for use (Appendix 3) Proof of Fossil Collection Permit / approved Work Plan on file and appointment of

		Cape will need to submit a Work Plan for approval by Heritage Western Cape (HWC) and apply for a Fossil Collection Permit from SAHRA for professional mitigation in the Northern Cape. All fieldwork and reporting should meet the standards of international best practice as well as those developed for PIA reports by SAHRA (2013) and Heritage Western Cape (2021). » Fossil material collected must be safeguarded and curated within an approved palaeontological repository (e.g. museum or university collection) with full collection data.				a professional palaeontologist.

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.

APPENDIX 2: CURRICULA VITAE

Kikuyu Waterfall
Cnr. Old Pretoria Main Road & Maxewell Drive
Johannesburg, South Africa

Email: arlene@veersgroup.com
Tel: +278 277 7074

CURRICULUM VITAE OF ARLENE SINGH

Profession: Environmental Assessment Practitioner (EAP) / Director

Specialisation: Environmental Assessments, report writing, report reviewing, development of project proposals for procuring new projects and project administration.

Work Experience: 9 years' experience in Environmental Assessments and 1 year in Sustainability Consulting.

VOCATIONAL EXPERIENCE

Professional execution of consulting services for projects in the environmental management field, specialising in Environmental Impact Assessment studies, environmental permitting, public participation, compilation of Environmental Management Plans and Programmes, environmental policy, and integrated environmental management. Responsibilities include report writing, project management, review of specialist studies and the identification and assessment of potential negative environmental impacts and benefits. Compilation of the reports for environmental studies is in accordance with all relevant environmental legislation.

Experience in conducting environmental impact assessments for infrastructure development projects (roads, stormwater, pipelines), Mixed Use Developments and Section 24G Applications for complex projects. She has extensive experience in managing and monitoring ECO functions and compliance on relevant projects. She has gained the ability to conduct sustainability assurance audits for non-financial environmental KPI's through her experience with listed mining corporations.

SKILLS BASE AND CORE COMPETENCIES

- Compilation of environmental impact assessment reports and environmental management programmes in accordance with relevant environmental legislative requirements;
- Identification and assessment of potential negative environmental impacts and benefits through the review of specialist studies;
- Key experience in the assessment of impacts associated with complex Section 24G Applications.
- Review of environmental impact assessment reports, impacts matrices and environmental management programme reports;
- Conducting of ECO audits, managing ECO staff, review of ECO reports and liaison with the client;
- Review of Carbon Footprint Analysis report and provision of recommendations for industry;
- Developing Business Development Plans, action plans and carrying out Business Development initiatives;
- Compilation of Integrated Reports in line with King IV;
- Conducting Mining Permit Applications with the DMR and the associated Basic Assessment process in line with the MPRDA;
- Extensive experience in compilation and submission of Tenders and Proposals;

EDUCATION AND PROFESSIONAL STATUS

Degrees:

- B.Sc. (Hons.) Environmental Management (2016), University of South Africa (UNISA);
- B.Sc. Environmental Science (2012), University of Kwa-Zulu Natal, Westville

Short Courses:

- Official DWS Section 21 (c) and (i) Water Use Authorisation Course (2018)- Dr Wietsche Roets, Specialist Scientist: (In Stream Water Use);
- SMME Green Building Face to Face Workshop (2018)- GBCSA hosted by JP Morgan;
- ArcGISBasic 10,3 (2016)- Esri South Africa
- Energy within Environmental Constraints (2020)- Harvard (Online)
- Becoming an Entrepreneur (2020)- Massachusetts Institute of Technology (Online)

Professional Society Affiliations:

- South African Council for Natural Scientific Professionals - Professional Natural Scientist: Environmental Scientist) – Reg No. 118872
- Environmental Assessment Practitioners Association of South Africa- Reg No: 2019/898

Other Relevant Skills:

- Compiling and submission of invoices on projects;
- Registration of Waste Management Facilities on GWIS

EMPLOYMENT

Date	Company	Roles and Responsibilities
16 December 2020- Current	Nala Environmental (Pty) Ltd	Environmental Assessment Practitioner / Director *Tasks include:* *Compilation of Environmental Impact Assessment (EIA) reports; Basic Assessment (BA) reports and Environmental Management Programmes; Environmental Screening reports; Co-ordination of the public participation process; Project management; project proposals and tenders; Client liaison and Marketing; Process EIA Applications. Business Development, Integrated reporting. Strategy, policy and procedure*

Date	Company	Roles and Responsibilities
		development. Planning of staff on engagements and Invoicing of clients.
08 April 2019- 15 December 2020:	Savannah Environmental (Pty) Ltd	Environmental Assessment Practitioner *<u>Tasks include</u>:* *Compilation of Environmental Impact Assessment (EIA) reports; Basic Assessment (BA) reports and Environmental Management Programmes; Environmental Screening reports; Co-ordination of the public participation process; Project management; project proposals and tenders; Client liaison and Marketing; Process EIA Applications.*
01 January 2016- 05 April 2019	Triplo4 Sustainable Solutions (Pty) Ltd	Environmental Consultant/Gauteng Office Manager *<u>Tasks included:</u>* *Review of Basic Assessment reports, Environmental Management Programme reports, Impact Matrices. Review of Environmental Control Officer functions, report and planning of site visits. Compiling Waste Management License Applications and Section 24G Application with reports for review by company Director. Review of specialist reports. Compilation of tenders, proposals and fee proposals. Co-ordinate public participation processes. Liaison with clients, stakeholders and competent authorities. Business Development, Integrated reporting. Strategy, policy and procedure development. Planning of staff on engagements and Invoicing of clients.*
01 October 2014 – 31 December 2015	PricewaterHouse Coopers (PwC)	Sustainability Consultant 2 *<u>Tasks included:</u>* *Non-financial auditing of Environmental KPI's (Primary water, Total Waste, Total Electricity, Total CDP Calc, Scope 1, 2 and 3 emissions, Total CSI spend, Total Environmental incidents and Total Rock waste generated) for listed mining companies. Role included, testing of controls, applications of audit standards and guidelines, preparation and conclusions of audit papers and files, reporting to management and preparation of audit reports.*

Date	Company	Roles and Responsibilities
01 January 2013- 30 September 2014	Triplo4 Sustainable Solutions (Pty) Ltd	Junior Environmental Consultant *Tasks included:* *Conducting Environmental Control Officer audits and drafting of ECO reports for review. Drafting of Basic Assessment (BA) reports, Environmental Management Programme reports for review by Environmental Consultant. Conducting public participation by liaison with competent authorities and stakeholders. Assisting with compiling of Basic Assessment documents.*

PROJECT EXPERIENCE

Arlene has extensive experience in conducting environmental impact assessments for infrastructure development projects (roads, stormwater, pipelines) and renewable energy projects (solar, wind, csp and hybrid projects), Mixed Use Developments and Section 24G Applications for complex projects and housing developments. She has extensive experience in managing and monitoring ECO functions and compliance on relevant projects. She has gained the ability to conduct sustainability assurance audits for non-financial environmental KPI's through her experience with listed mining corporations. She has also been involved in undertaking Part 2 Amendment Applications and impact assessments for Renewable Energy Projects in South Africa. She currently manages staff and undertakes project planning to ensure that projects are executed within the appropriate timeframes and within budget.

MINING SECTOR PROJECTS

Environmental Impact Assessments and Environmental Management Programmes

Project Name & Location	*Client Name*	*Role*
Yzermyn Coal Mine EMPr, Piet Retief, Mpumalanga	*Atha Group*	*EAP*

Basic Assessments

Project Name & Location	*Client Name*	*Role*
Shaya Quarry Basic Assessment process, Empangeni, Kwazulu-Natal	*Mbavuza Minerals*	*Project Manager*
Umvoti River Sand Mining Basic Assessment process, Kwazulu-Natal	*Izimbiwe Minerals Pty Ltd*	*Project Manager*

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

Project Name & Location	*Client Name*	*Role*

Shaya Quarry Mining Permit Application, Empangeni, Kwazulu-Natal	*Mbavuza Minerals*	*Project Manager*
Umvoti River Sand Mining Mining Permit Application, Kwazulu-Natal	*Izimbiwe Minerals Pty Ltd*	*Project Manager*
Newark Quarry, Ilembe Municipality, Kwazulu-Natal	*iLembe Concrete Pty Ltd*	*Junior EAP*

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

Basic Assessments

Project Name & Location	***Client Name***	***Role***
Replacement of Nseleni Bridge- Empangeni, Kwazulu-Natal	*RHDHV*	*EAP*
Construction of the 60ML Ntuzuma Reservoir, Ntuzuma, Kwazulu-Natal	*eThekwini Metropolitan Municipality*	*Project Manager*
Upgrade of the Nyathikazi box culvert, Darnell, Kwazulu-Natal	*KwaDukuza Municipality*	*Junior EAP*
Upgrade and Expansion Provincial Main Road D887, Kwazulu-Natal	*RHDHV*	*Junior EAP*
Expansion of LOX and Diesel Storage at the Air Products Facility in Coega, Eastern Cape	*Air Products South Africa (Pty) Ltd*	*EAP*

Environmental Compliance, Auditing and ECO

Project Name & Location	***Client Name***	***Role***
ECO Monitoring for Construction of Offtake 1 Reservoir, KwaDukuza, Kwazulu-Natal	*KwaDukuza Municipality*	*Project Manager*
ECO Monitoring for Construction of Offtake 6A2, 6D, 8C, 8D, 9, 11D Pipelines, KwaDukuza, Kwazulu-Natal	*KwaDukuza Municipality*	*Project Manager*
ECO Monitoring for the Construction of the Jozini RCWSS Phase 1A, Jozini, Kwazulu-Natal	*RHDHV*	*ECO (1 year), Project Manager*
ECO Monitoring for the Greytown BWSS, Greytown, Kwazulu-Natal	*RHDHV*	*Project Manager*
ECO Monitoring for the Kranskop Water Supply Scheme, Kranskop, Kwazulu-Natal	*RHDHV*	*ECO*
ECO Monitoring for the Zulti South Access Road, Richards Bay, Kwazulu-Natal	*RHDHV*	*Project Manager*

Compliance Advice and ESAP reporting

Project Name & Location	***Client Name***	***Role***
Ethafeni Cemetery Environmental Assessment Report, KwaDukuza, Kwazulu-Natal	*KwaDukuza Municipality*	*EAP*

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

Project Name & Location	***Client Name***	***Role***
General Authorisation for the Replacement of the Nseleni Bridge, Empangeni, Kwzulu-Natal	*RHDHV*	*EAP*
Water Use Licence Amendment for Country Club Johannesburg	*Country Club Johannesburg*	*EAP*

HOUSING AND URBAN PROJECTS

Environmental Impact Assessments and Environmental Management Programmes

Project Name & Location	***Client Name***	***Role***
Ethafeni Precinct Project Section 24G Application- Groutville , Kwazulu- Natal.	*KwaDukuza Municipality*	*Project Manager/Lead Consultant*
Environmental Management Programme report Brettenwood Residential Development, Kwazulu-Natal.	*Brettenwood Coastal Estate*	*EAP*
Environmental Management Programme report for CTM Ballito, Ballito, Kwazulu-Natal	*CTM*	*EAP*

Basic Assessments

Project Name & Location	***Client Name***	***Role***
Upgrade of residential dwelling on Colwyn Drive, Salt Rock, Kwazulu-Natal	*Mike Graham*	*Junior EAP*
Ethafeni Precinct Project Basic Assessment, Groutville, Kwazulu-Natal	*KwaDukuza Municipality*	*Project Manager*
105 Nkwazi Drive Single Residential House Basic Assessment, Zinkwazi, Kwazulu-Natal	*Ituwiz Pty Ltd*	*Project Manager*

Environmental Compliance, Auditing and ECO

Project Name & Location	***Client Name***	***Role***
88 Compensation ECO Audits – Ballito, Kwazulu- Natal	*Imali Corp*	*Environmental Control Officer (ECO)*
Oceans Umhlanga Hotel & Residential Development, Umhlanga, Kwazulu-Natal	*Edison Property Group*	*Project Manager*
Inoxa Cookware Factory Warehouse, Woodmead Estate, Shakaskraal, Kwazulu-Natal	*Shree Property*	*Project Manager*
Woodmead Estate Warehousing, Gauteng	*Shree Property*	*Project Manager*
Ridgeside Commercial Development, Umhlanga, Kwazulu-Natal	*Shree Property*	*Project Manager*

Construction of Jozini Shopping Centre, Jozini, Kwazulu-Natal	*GK Projects*	*ECO*
Birdhaven Residential Development, Ballito, Kwazulu-Natal	*Mike Graham Trust*	*ECO*
Foxhill Church and Residential Development, Ballito, Kwazulu-Natal	*M&C Janigh Trust*	*ECO*
Beema Bamboo Plantation Site (Bamboo to Energy project, Kwazulu-Natal	*Green Grid Energy*	*ECO*

OTHER PROJECTS

Environmental Compliance, Auditing and ECO

Project Name & Location	***Client Name***	***Role***
Beema Bamboo Plantation Site (Bamboo to Energy project, Kwazulu-Natal	*Green Grid Energy*	*ECO*
Mkondeni Medical Waste External Waste Management License Audit , Pietermaritzburg	*Ecocyle Waste Solutions*	*Auditor*
Dube Tradeport External Audit, eThekwini	*Dube Tradeport Corporation*	*Junior Auditor*

Carbon Footprint Analysis

Project Name & Location	***Client Name***	***Role***
Carbon footprint analysis of Newcastle and Sasolburg Plants, (Kwazulu Natal & North West	*Karbochem Pty Ltd*	*EAP*
Measure Carbon Emissions and provide updated baseline that would enable DTPC to quantify, monitor and assess carbon footprint and its climate change impact for DTPC, eThekwini	*Dube Tradeport Corporation*	*Junior EAP*

Waste Management

Project Name & Location	***Client Name***	***Role***
Waste Classification Assessment for Karbochem Newcastle facility , Kwazulu-Natal	*Karbochem Pty Ltd*	*EAP*
Waste Management Licenses for Wadeville & Rosslyn Waste Management Facilities, Gauteng.	*Planet Care Pty Ltd*	*EAP*

Compliance Advice and ESAP reporting

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

Environmental Opinion and Enquiry for the Rosslyn Tyre Pyrolysis Plant, Gauteng	*Cosmic Energy*	*EAP*

Non-Financial Auditing

KPI'S Audited	***Client Name & Location***	***Role***
Total Primary Water Use, Total Electricity Used, Total Waste Generated, Scope 1, 2 & 3 Emissions and Total Number of Environmental Incidents.	*Anglo Platinum (South Africa)*	*Sustainability Consultant*
Total Primary Water Use, Total Waste Generate and Total Number of Environmental Incidents.	*De Beers (Namibia)*	*Sustainability Consultant*
Scope 1, 2 & 3 Emissions, Total Electricity Purchased, Total Primary Water Used.	*Harmony Gold (South Africa)*	*Sustainability Consultant*
Scope 1, 2 & 3 Emissions, Total Electricity Purchased, Total Primary Water Used and Total Rock Waste Generated.	*Exxaro (South Africa, Papua New Guinea)*	*Sustainability Consultant*
Total Corporate Social Investment fund spend by Barclays Group	*Barclays Group*	*Sustainability Consultant*
Audit Environmental and Social Risk Finance Projects - Equator Principles	*MTN (South Africa & Nigeria)*	*Sustainability Consultant*

Renewable Energy Projects

Part 2 Amendment Applications and Motivation Reports

Project Name & Location	***Client Name***	***Role***
Transalloys Coal-Fired Power Station near Emalahleni, Mpumalanga Province	*Transalloys (Pty) Ltd*	*EAP*
Zen Wind Energy Facility, Western Cape	*Energy Team (Pty) Ltd*	*EAP*
Hartebeest Wind Energy Facility, Western Cape	*juwi Renewable Energies (Pty) Ltd*	*EAP*
Khai-Ma and Korana Wind Energy Facilities	*Mainstream Renewable Power (Pty) Ltd*	*EAP*
Korana Solar PV facility	*Mainstream Renewable Power (Pty) Ltd*	*EAP*
Sutherland Wind Energy Facility	*Mainstream Renewable Power (Pty) Ltd*	*EAP*
Rietrug Wind Energy Facility	*Mainstream Renewable Power (Pty) Ltd*	*EAP*

Basic Assessments

Project Name & Location	*Client Name*	*Role*
Upilanga Solar Park, Northern Cape (x6 100MW PV's and x3 350MW PV Basic Assessments)	*Emvelo Capital Projects (Pty) Ltd*	*EAP*
Kolkies and Sadawa PV facilities and associated grid infrastructure	*Mainstream Renewable Power South Africa (Pty) Ltd*	*EAP*
Hyperion Overhead Powerline	*Red Rocket (Pty) Ltd*	*EAP*
132KkV Phinda Power underground transmission line	*Phinda Power Producers (Pty) Ltd*	*EAP*
Msenge Emoyeni Wind Energy Facility supporting infrastructure	*Windlab (Pty) Ltd*	*EAP*
Sutherland Wind Energy Facility Grid Infrastructure	*Mainstream Renewable Power South Africa (Pty) Ltd*	*EAP*
Rietrug Wind Energy Facility Grid Infrastructure	*Mainstream Renewable Power South Africa (Pty) Ltd*	*EAP*

Environmental Impact Assessments

Project Name & Location	*Client Name*	*Role*
Upilanga Solar Park, Northern Cape (350MW CSP Tower)	*Emvelo Capital Projects (Pty) Ltd*	*EAP*
350MW Risk Mitigation Power Plant (Gas to Power facility)	*Phinda Power Producers (Pty) Ltd*	*EAP*
75mw Thermal Dual Fuel Facility and associated infrastructure (Hybrid facility i.e. gas to power and solar pv)	*Red Rocket (Pty) Ltd*	*EAP*
Berg River Wind Energy Facility	*Energy Team (Pty) Ltd*	*EAP*

Section 54 Audits

Project Name & Location	*Client Name*	*Role*
Mulilo 20MW PV Facility, Prieska, Northern Cape	*Mulilo (Pty) Ltd*	*Auditor*
Mulilo 10MW PV Facility, De Aar, Northern Cape	*Mulilo (Pty) Ltd*	*Auditor*
Karoshoek CSP I Facility/ Solar One,, Upington, Northern Cape	*Karoshoek Solar One (Pty) Ltd*	*Audit*

Environmental Assessment Practitioners Association of South Africa

Registration No. 2019/898

Herewith certifies that

Arlene Singh

is registered as an

Environmental Assessment Practitioner

Registered in accordance with the prescribed criteria of Regulation 15. (1) of the Section 24H Registration Authority Regulations (Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).

Effective: 01 March 2022

Expires: 28 February 2023

Chairperson

Registrar

SAQA
SOUTH AFRICAN QUALIFICATIONS AUTHORITY

SACNASP

South African Council for Natural Scientific Professions

herewith certifies that

Arlene Singh

Registration Number: 118872

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following fields(s) of practice (Schedule 1 of the Act)

Environmental Science (Professional Natural Scientist)

Effective **6 June 2018** Expires **31 March 2023**

Chairperson

Chief Executive Officer

To verify this certificate scan this code

APPENDIX 3: CHANCE FIND FOSSIL PROCEDURE

<table>
<tr><th colspan="3">CHANCE FOSSIL FINDS PROCEDURE: Authorised Grid Connection Infrastructure, Northern and Western Cape Provinces</th></tr>
<tr><td>Province & region:</td><td colspan="2">Northern Cape, Sutherland & Laingsburg Districts</td></tr>
<tr><td>Responsible Heritage Resources Agency</td><td colspan="2">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
HWC, 3rd Floor Protea Assurance Building, 142 Longmarket Street, Green Market Square, Cape Town 8000. Private Bag X9067, Cape Town 8001. Tel: 021 483 5959 Email: ceoheritage@westerncape.gov.za</td></tr>
<tr><td>Rock unit(s)</td><td colspan="2">Abrahamskraal Formation (Lower Beaufort Group, Karoo Supergroup)
Late Caenozoic alluvium along water courses and calcrete hardpans</td></tr>
<tr><td>Potential fossils</td><td colspan="2">Petrified wood and other plant remains, skeletal remains of tetrapods (e.g. therapsids), trace fossils of invertebrates and vertebrates (fish / tetrapod burrows, trails & trackways) in Abrahamskraal Formation bedrocks.
Bones, teeth and horn cores of mammals, freshwater molluscs, calcretised termitaria and other trace fossils in older consolidated alluvium.</td></tr>
<tr><td rowspan="5">ECO protocol</td><td colspan="2">1. Once alerted to fossil occurrence(s): alert site foreman, stop work in area immediately (N.B. safety first!), safeguard site with security tape / fence / sand bags if necessary.</td></tr>
<tr><td colspan="2">2. Record key data while fossil remains are still in situ:
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) in situ with scale, from different angles, including images showing context (e.g. rock layering)</td></tr>
<tr><td>3. If feasible to leave fossils in situ:
Alert Heritage Resources Authority 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</td><td>3. If not feasible to leave fossils in situ (emergency procedure only):
Carefully remove fossils, as far as possible still enclosed within the original sedimentary matrix (e.g. 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</td></tr>
<tr><td colspan="2">4. If required by Heritage Resources Agency, ensure that a suitably-qualified specialist palaeontologist is appointed as soon as possible by the developer.</td></tr>
<tr><td colspan="2">5. Implement any further mitigation measures proposed by the palaeontologist and Heritage Resources Authority</td></tr>
<tr><td>Specialist palaeontologist</td><td colspan="2">Record, describe and judiciously sample fossil remains together with relevant contextual data (stratigraphy / sedimentology / taphonomy). Ensure that fossils are curated in an approved repository (e.g. 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 Authority minimum standards.</td></tr>
</table>

APPENDIX 4: EROSION CONTROL MANAGEMENT PLAN

EROSION MANAGEMENT PLAN

OBJECTIVES:

To ensure that erosion is managed during the operation of the facility.

TARGETS:

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

MEASURES:

- Regular inspection to assess erosion which may result from a loss in vegetation or cavitation from soil slumping;
- Continued watering to ensure wind erosion is limited at the construction sites until such time that the natural vegetation is effectively established; and
- Maintain and clean all drainage structures along roads within the project area

EROSION AND SEDIMENT CONTROL PRINCIPLES

The goal of erosion control during and after construction within the study area should be to:
– Protect the land surface from erosion;
– Intercept and safely direct run-off water from undisturbed upslope areas through the study area without allowing it to cause erosion within the site or become contaminated with sediment;
– Progressively re-vegetate or stabilise disturbed areas.

These goals can be achieved by applying the management practices outlined in the following sections.

1. PURPOSE

This Erosion Management Plan addresses the management and mitigation of potential impacts relating to soil erosion. The objective of the plan is to provide:

» A general framework for soil erosion and sediment control, which enables the Contractor to identify areas where erosion can occur and is likely to be accelerated by construction related activities.
» An outline of general methods to monitor, manage and rehabilitate erosion prone areas, ensuring that all erosion resulting from all phases of the development is addressed.

This plan must be updated and refined once the construction/ civil engineering plans have been finalised following detailed design.

2. RELEVANT ASPECTS OF THE STUDY AREA

According to Mucina and Rutherford (2006) the Roggeveld Shale Renosterveld (FRs 3) comprises of an undulating, slightly sloping plateau landscape, with low hills and broad shallow valleys (sandy soils). The natural vegetation is characterised by the moderately tall shrublands which is dominated by Elytropappus rhinocerotis and where the more moist and rocky habitats support a rich geophytic flora.

The broad geology of the vegetation unit overlies mudrocks and sandstones of the Adelaide Subgroup (Beaufort Group of the Karoo Supergroup), with some intrusions of the Karoo Dolerite Suite. The vegetation unit is regarded to have a moderate erosion potential (Mucina and Rutherford, 2006), but on sloped areas devoid of vegetation, the impact can be high.

It is noted that the study area forms part of the core zone of the Hantam Roggeveld Centre of Endemism (Mucina and Rutherford, 2006; van Wyk and Smith, 2001) where it is distributed across the Northern and Western Cape provinces. To the west it is on the edge of the Great Escarpment above the Tanqua Basin with the Hantam Plateau region to the south. Dispersed within the landscape one find numerous isolated high plateau areas.

During construction, there will be a lot of disturbed and loose soil within the development footprint which will render the area vulnerable to erosion. Erosion is one of the greater risk factors associated with the development and it is therefore critically important that proper erosion control structures are built and maintained over the lifespan of the project.

3. EROSION AND SEDIMENT CONTROL PRINCIPLES

These goals can be achieved by applying the management practices outlined in the following sections.

GENERAL EROSION CONTROL

The Contractor should take all reasonable measures to prevent soil erosion resulting from the construction activities as well as to prevent the restriction or increase in the flow of storm water caused by the presence of temporary / permanent works. Erosion prevention measures must be implemented to the satisfaction of the Engineer and the ESCO / ECO. Areas affected by construction related activities must be monitored regularly for evidence of erosion. Areas particularly susceptible to erosion include areas stripped of topsoil and soil stockpiles and steep slopes (gradients > 6 %). Where evidence of erosion appears, the construction of contour berms, cut-off drains or planting of grass sods may be necessary. Where soil erosion does occur, the Contractor shall reinstate such areas and areas damaged by the erosion, at his own cost and to the satisfaction of the Engineer and ESCO / ECO.

PREVENTATIVE MEASURES

The following prevention measures are recommended:

- The Contractor is to provide a method statement on erosion control showing clearly how cleared surfaces and stormwater will be managed on site during construction and rehabilitation;
- Wind screening and stormwater control will be undertaken to prevent soil loss from the study site;
- All erosion control mechanisms will be regularly maintained;
- Re-vegetation of disturbed surfaces will occur immediately after the construction activities are completed;
- In the case of existing surface wash-away and wind erosion, the Contractor shall implement remedial measures as soon as possible to prevent further erosion;
- During construction, the Contractor shall protect areas susceptible to erosion by installing necessary temporary and permanent drainage works as soon as possible and by taking other measures necessary to prevent the surface water from being concentrated in streams and from scouring the slopes, banks or other
- areas; and
- Traffic and movement over stabilised areas is to be restricted and controlled, and damage to stabilised areas shall be repaired and maintained to the satisfaction of the ESCO / ECO.

EROSION AND SEDIMENT CONTROL MEASURES

The following precautionary measures must be implemented onsite to manage erosion and sediment control:

- Re-vegetate areas that have been disturbed as soon as possible;
- Cut and fill slopes must be made stable and be re-vegetated as soon as possible during the construction phase;
- Newly formed terraces within the facility must be vegetated to stabilise the soil;
- Where erosion and/or sedimentation, whether on or off the site, occurs despite the Contractor complying with the foregoing, rectification shall be carried out in accordance with details specified by the ESCO / ECO;
- Where erosion and/or sedimentation occur due to the fault of the Contractor, rectification shall be carried out to the reasonable requirements of the ESCO / ECO and at the expense of the Contractor;
- If the Site is closed for a period exceeding 5 days, the Contractor, in consultation with the ESCO / ECO, shall carry out the following checklist procedure:
- Excavated and filled slopes and stockpiles are at a stable angle and capable of accommodating normal expected water flows; and
- Re-vegetated areas have a watering schedule and the supply to such areas is secured.

3.1. On-Site Erosion Management

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

» Due to the sandy nature of soils in the study area, soil loss will be greater during dry periods as it is more prone to wind erosion. Therefore, precautions to prevent erosion should be present throughout the year.

» Soil loss will be greater on steeper slopes. Ensure that steep slopes are not de-vegetated unnecessarily and subsequently become hydrophobic (i.e. have increased runoff and a decreased infiltration rate) increasing the erosion potential.

» Soil loss is related to the length of time that soils are exposed prior to rehabilitation or stabilisation. Therefore, the gap between construction activities and rehabilitation should be minimised. Phased construction and progressive rehabilitation, where practically possible, are therefore important elements of the erosion control strategy.

» The extent of disturbance will influence the risk and consequences of erosion. Therefore, site clearing should be restricted to areas required for construction purposes only. As far as possible, large areas should not be cleared all at once, especially in areas where the risk of erosion is higher.

» Roads should be planned and constructed in a manner which minimises their erosion potential. Roads should therefore follow the natural contour as far as possible. Roads parallel to the slope direction should be avoided as far as possible.

» Where necessary, new roads constructed should include water diversion structures with energy dissipation features present to slow and disperse the water into the receiving area.

» Roads used for project-related activities and other disturbed areas should be regularly monitored for erosion. Any erosion problems recorded should be rectified as soon as possible and monitored thereafter to ensure that they do not re-occur.

» Runoff may have to be specifically channelled or storm water adequately controlled to prevent localised rill and gully erosion.

» Compacted areas should have adequate drainage systems to avoid pooling and surface flow. Heavy machinery should not compact those areas which are not intended to be compacted as this will result in compacted hydrophobic, water repellent soils which increase the erosion potential of the area. Where compaction does occur, the areas should be ripped.

» All bare areas should be revegetated with appropriate locally occurring species, to bind the soil and limit erosion potential.

» Silt fences should be used where there is a danger of topsoil or material stockpiles eroding and entering streams and other sensitive areas.

- Gabions and other stabilisation features must be used on steep slopes and other areas vulnerable to erosion to minimise erosion risk as far as possible.
- Activity at the site after large rainfall events when the soils are wet and erosion risk is increased should be reduced. No driving off of hardened roads should occur at any time, and particularly immediately following large rainfall events.
- Topsoil should be removed and stored in a designated area separately from subsoil and away from construction activities (as per the recommendations in the EMPr). Topsoil should be reapplied where appropriate as soon as possible in order to encourage and facilitate rapid regeneration of the natural vegetation in cleared areas.
- Regular monitoring of the site for erosion problems during construction (on-going) and operation (at least twice annually) is recommended, particularly after large summer thunderstorms have been experienced. The ECO will determine the frequency of monitoring based on the severity of the impacts in the erosion prone areas.

3.1.1. Erosion Control Mechanisms

The Contractor may use the following mechanisms (whichever proves more appropriate/ effective) to combat erosion when necessary:

- Reno mattresses;
- Slope attenuation;
- Hessian material;
- Shade catch nets;
- Gabion baskets;
- Silt fences;
- Storm water channels and catch pits;
- Soil bindings;
- Geofabrics;
- Hydro-seeding and/or re-vegetating;
- Mulching over cleared areas;
- Boulders and size varied rocks; and
- Tilling.

3.2. Engineering Specifications

A detailed engineering specifications Storm Water Management Plan describing and illustrating the proposed stormwater control measures must be prepared during the detailed design phase and should be based on the underlying principles of the Storm Water Management Plan (**Appendix G** of the WEF EMPr is also applicable to this grid infrastructure) and this should include erosion control measures. Requirements for project design include:

- Erosion control measures to be implemented before and during the construction period, including the final storm water control measures (post construction).
- All temporary and permanent water management structures or stabilisation methods must be indicated within the Storm water Management Plan.
- An on-site Engineer or Environmental Officer (EO)/ SHE Representative to be responsible for ensuring implementation of the erosion control measures on site during the construction period. The ECO should monitor the effectiveness of these measures on the interval agreed upon with the Site Manager and EO.

» The Contractor holds ultimate responsibility for remedial action in the event that the approved Storm Water Management Plan is not correctly or appropriately implemented and damage to the environment is caused.

APPENDIX 5: FIRE MANAGEMENT & EMERGENCY PREPARENESS PLAN

FIRE MANAGEMENT AND EMERGENCY PREPAREDNESS MANAGEMENT PLAN

1. PURPOSE

The purpose of the Emergency Preparedness, Response and Fire Management Plan is:

- To assist contractor personnel to prepare for and respond quickly and safely to emergency incidents, and to establish a state of readiness which will enable prompt and effective responses to possible events.
- To control or limit any effect that an emergency or potential emergency may have on site or on neighbouring areas.
- To facilitate emergency responses and to provide such assistance on the site as is appropriate to the occasion.
- To ensure communication of all vital information as soon as possible.
- To facilitate the reorganisation and reconstruction activities so that normal operations can be resumed.
- To provide for training so that a high level of preparedness can be continually maintained.

This plan outlines response actions for potential incidents of any size. It details response procedures that will minimise potential health and safety hazards, environmental damage, and clean-up efforts. The plan has been prepared to ensure quick access to all the information required in responding to an emergency event. The plan will enable an effective, comprehensive response to prevent injury or damage to the construction personnel, public, and environment during the project. Contractors are expected to comply with all procedures described in this document. A Method Statement should be prepared at the commencement of the construction phase detailing how this plan is to be implemented as well as details of relevant responsible parties for the implementation. The method statement must also reflect conditions of the IFC Performance Standard 1 and include the following:

- Identification of areas where accidents and emergency situations may occur;
- Communities and individuals that may be impacted;
- Response procedure;
- Provisions of equipment and resources;
- Designation of responsibilities;
- Communication; and
- Periodic training to ensure effective response to potentially affected communities.

2. PROJECT-SPECIFIC DETAILS

The authorised powerline is located in the Karoo Hoogland and Laingsburg Local Municipalities, Northern Cape and Western Cape Provinces near the town of Sutherland. The project will comprise the following key infrastructure and components:

- Overhead 132kV powerline from the Sutherland WEF on-site substation to the Koring MTS; and
- Service roads will be constructed below the powerline (jeep tracks)

Due to the scale and nature of this development, it is anticipated that the following risks could potentially arises during the construction and operation phases:

- Fires;
- Leakage of hazardous substances;
- Storage of flammable materials and substances;
- Flood events;
- Accidents; and
- Natural disasters.

3. EMERGENCY RESPONSE PLAN

There are three levels of emergency as follows:

- Local Emergency: An alert confined to a specific locality.
- Site Emergency: An alert that cannot be localised and which presents danger to other areas within the site boundary or outside the site boundary.
- Evacuation: An alert when all personnel are required to leave the affected area and assemble in a safe location.

If there is any doubt as to whether any hazardous situation constitutes an emergency, then it must be treated as an Evacuation.

Every effort must be made to control, reduce or stop the cause of any emergency, provided it is safe to do so. For example, in the event of a fire, isolate the fuel supply and limit the propagation of the fire by cooling the adjacent areas. Then confine and extinguish the fire (where appropriate) making sure that re-ignition cannot occur.

3.1. Emergency Scenario Contingency Planning

3.1.1. Scenario: Spill which would result in the contamination of land, surface or groundwater

OBJECTIVE: PREVENT AND MONITOR ACCIDENTAL LEAKAGES AND SPILLAGES

- All hazardous chemicals should be stored on bunded surfaces and no storage of such chemicals should be permitted within the riparian buffer zones
- It must be ensured that all hazardous storage containers and storage areas comply with the relevant SABS standards to prevent leakage. All vehicles must be regularly inspected for leaks. Refuelling must take place on a sealed surface area to prevent ingress of hydrocarbons into topsoil; and
- All spills, should they occur, should be immediately cleaned up and treated accordingly
- All vehicles and other equipment (generators etc.) must be regularly serviced to ensure they do not spill oil. Vehicles should be refuelled on paved (impervious) areas. If liquid product is being transported it must be ensured this does not spill during transit.
- Emergency measures and plans must be put in place and rehearsed in order to prepare for accidental spillage.
- Diesel fuel storage tanks must be above ground in a bunded area.
- Engines that stand in one place for an excessive length of time must have drip trays.
- Vehicle and washing areas must also be on paved surfaces and the by-products removed to an evaporative storage area or a hazardous waste disposal site (if the material is hazardous).
- Establish an effective record keeping system for accidental leakage/spillage incidents.
- Excess or spilled concrete should be confined within the work area and then removed to a licensed landfill site.
- Concrete shall be mixed on mortar boards, away from drainage channels and water courses.
- The visible remains of the mixing of concrete, either solid or from washings, shall be physically removed and disposed of as waste at a licensed landfill site.
- All excess aggregate shall also be removed from site.

i. Spill Prevention Measures

Preventing spills must be the top priority at all operations which have the potential of endangering the environment. The responsibility to effectively prevent and mitigate any scenario lies with the Contractor and the ECO. In order to reduce the risk of spills and associated contamination, the following principles should be considered during construction and operation activities:

- All equipment refuelling, servicing and maintenance activities should only be undertaken within appropriately sealed/contained or bunded designated areas.
- All maintenance materials, oils, grease, lubricants, etc. should be stored in a designated area in an appropriate storage container.
- No refuelling, storage, servicing, or maintenance of equipment should take place within sensitive environmental resources in order to reduce the risk of contamination by spills.
- No refuelling or servicing should be undertaken without absorbent material or drip pans properly placed to contain spilled fuel.
- Any fluids drained from the machinery during servicing should be collected in leak-proof containers and taken to an appropriate disposal or recycling facility.
- If these activities result in damage or accumulation of product on the soil, the contaminated soil must be disposed of as hazardous waste. Under no circumstances shall contaminated soil be added to a spoils pile and transported to a regular disposal site.
- Chemical toilets used during construction must be regularly cleaned. Chemicals used in toilets are also hazardous to the environment and must be controlled. Portable chemical toilets could overflow if not pumped regularly or they could spill if dropped or overturned during moving. Care and due diligence should be taken at all times.
- Contact details of emergency services and HazMat Response Contractors are to be clearly displayed on the site. All staff are to be made aware of these details and must be familiar with the procedures for notification in the event of an emergency.

ii. Procedures

The following action plan is proposed in the event of a spill:

1. Spill or release identified.
2. Assess person safety, safety of others and the environment.
3. Stop the spill if safely possible.
4. Contain the spill to limit entering surrounding areas.
5. Identify the substance spilled.
6. Quantify the spill (under or over guideline/threshold levels).
7. Notify the Site Manager and emergency response crew and authorities (in the event of major spill).
8. Inform users (and downstream users) of the potential risk.
9. Clean up of the spill using spill kit or by HazMat team.
10. Record of the spill incident on company database.

a) Procedures for containing and controlling the spill (i.e. on land or in water)

Measures can be taken to prepare for quick and effective containment of any potential spills. Each contractor must keep sufficient supplies of spill containment equipment at the construction sites, at all times during and after the construction phase. These should include specialised spill kits or spill containment equipment. Other spill containment measures include using drip pans underneath vehicles and equipment every time refuelling, servicing, or maintenance activities are undertaken.

Specific spill containment methods for land and water contamination are outlined below.

<u>Containment of Spills on Land</u>

Spills on land include spills on rock, gravel, soil and/or vegetation. It is important to note that soil is a natural sorbent, and therefore spills on soil are generally less serious than spills on water as contaminated soil can be more easily recovered. It is important that all measures be undertaken to avoid spills reaching open water bodies located outside of the development footprint. The following methods could be used:

- Dykes - Dykes can be created using soil surrounding a spill on land. These dykes are constructed around the perimeter or down slope of the spilled substance. A dyke needs to be built up to a size that will ensure containment of the maximum quantity of contaminant that may reach it. A plastic tarp can be placed on and at the base of the dyke such that the contaminant can pool up and subsequently be removed with sorbent materials or by pump into barrels or bags. If the spill is migrating very slowly, a dyke may not be necessary, and sorbents can be used to soak up contaminants before they migrate away from the source of the spill.
- Trenches - Trenches can be dug out to contain spills. Spades, pickaxes or a front-end loader can be used depending on the size of the trench required. Spilled substances can then be recovered using a pump or sorbent materials.

b) Procedures for transferring, storing, and managing spill related wastes

Used sorbent materials are to be placed in plastic bags for future disposal. All materials mentioned in this section are to be available in the spill kits. Following clean up, any tools or equipment used must be properly washed and decontaminated or replaced if this is not possible.

Spilled substances and materials used for containment must be placed into empty waste oil containers and sealed for proper disposal at an approved disposal facility.

c) Procedures for restoring affected areas

Criteria that may be considered include natural biodegradation of oil, replacement of soil and revegetation. Once a spill of reportable size has been contained, the ECO and the relevant Authority must be consulted to confirm that the appropriate clean up levels are met.

3.1.2. Scenario: Fire (and fire water handling)

Fire Management Plan

OBJECTIVE: REDUCE THE RISK OF FIRE IN THE GRASSLAND ENVIRONMENT

- Construct fire-breaks around the site/footprint area before any other construction begins.
- Prohibit smoking on-site or alternatively indicate designated smoking areas for staff.
- Prohibit open fires.
- Designate cooking areas for staff where fire hazard will be insignificant.
- Educate staff of the dangers of open and unattended fires.
- Educate staff as to proper fire safety.
- Enforce proper waste management including disposal of flammable material (e.g. cigarette butts and packaging).
- Place firefighting equipment at appropriate locations on site and ensure staff are aware of such equipment and associated procedure.
- No fires are allowed around the construction area.
- Welding, gas cutting or cutting of metal will only be permitted in an area designated as safe by the subcontractor.

i. Action Plan

The following action plan is proposed in the event of a fire:

1. Quantify risk.
2. Assess person safety, safety of others and the environment.
3. If safe – attempt to extinguish the fire using appropriate equipment.
4. If not safe to extinguish, contain fire.
5. Notify the Site Manager and emergency response crew and authorities.
6. Inform users of the potential risk of fire.
7. Record the incident on the company database or filing register.

ii. Procedures

Because large scale fires may spread very fast it is most advisable that the employee/contractor not put his/her life in danger in the case of an uncontrolled fire.

Portable firefighting equipment must be provided at strategic locations throughout the site, in line with the Building Code of South Africa and the relevant provincial building code. All emergency equipment including portable fire extinguishers, hose reels and hydrants must be maintained and inspected by a qualified contractor in accordance with the relevant legislation and national standards.

Current evacuation signs and diagrams for the building or site that are compliant to relevant state legislation must be provided in a conspicuous position, on each evacuation route. Contact details for the relevant emergency services should be clearly displayed on site and all employees should be aware of procedures to follow in the case of an emergency.

d) Procedures for initial actions

Persons should not fight the fire if any of the following conditions exist:

- They have not been trained or instructed in the use of a fire extinguisher.
- They do not know what is burning.
- The fire is spreading rapidly.
- They do not have the proper equipment.
- They cannot do so without a means of escape.
- They may inhale toxic smoke.

e) Reporting procedures

In terms of the requirements of NEMA, the responsible person must, within 14 days of the incident, report to the Director General, provincial head of department and municipality.

- Report fire immediately to the site manager, who will determine if it is to be reported to the relevant emergency services and authorities.
- The Site Manager must have copies of the Report form to be completed.

SUMMARY: RESPONSE PROCEDURE

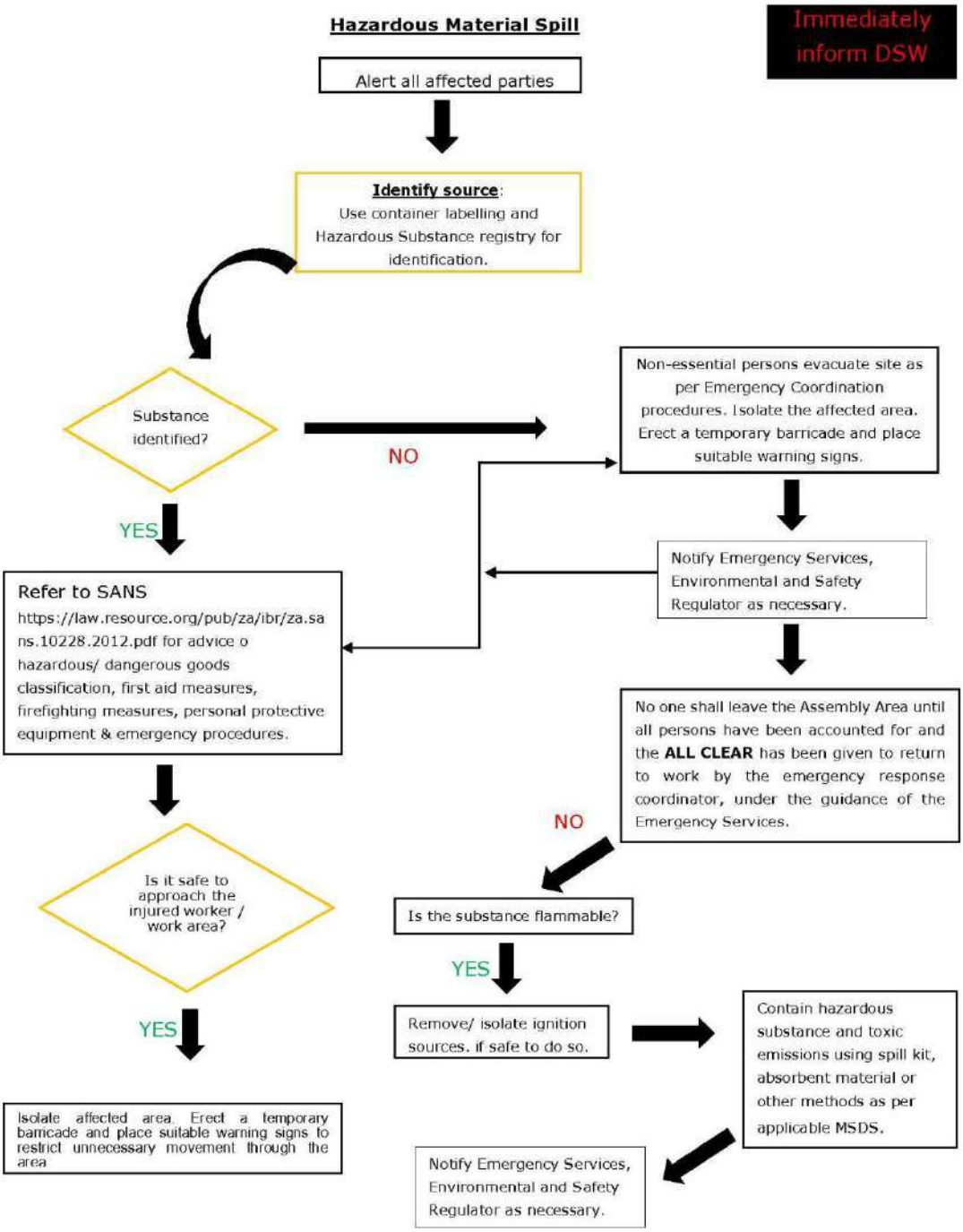


Figure 1: Hazardous Material Spill

Fire/Medical Emergency Situation

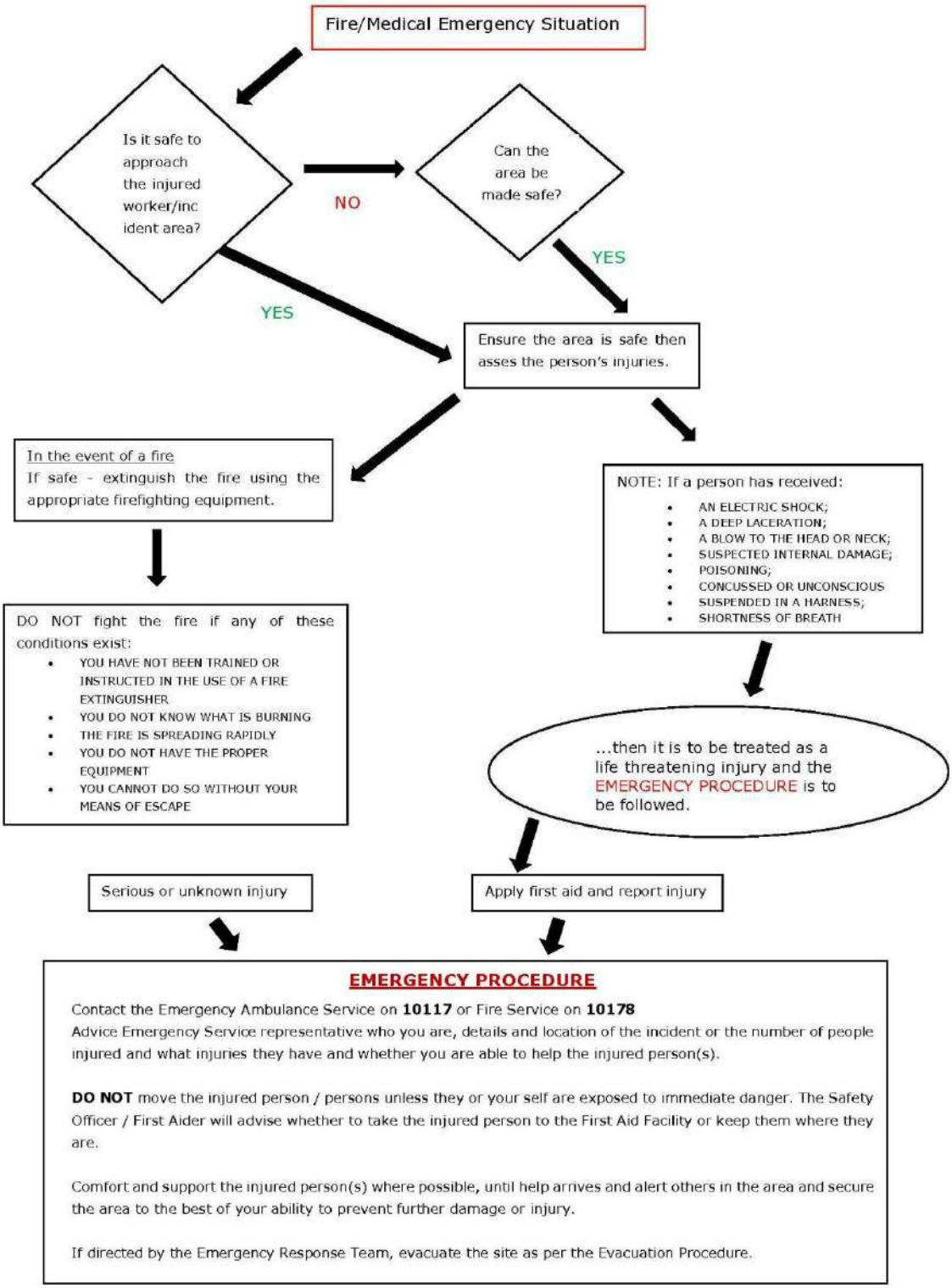


Figure 2: Emergency Fire/Medical

4. PROCEDURE RESPONSIBILITY

The Contractor's Safety, Health and Environment (SHE) Representative, employed by the Contractor, is responsible for managing the day-to-day on-site implementation of this Plan, and for the compilation of regular (usually weekly) Monitoring Reports. In addition, the SHE must act as liaison and advisor on all environmental and related issues.

The local authorities will provide their assistance when deemed necessary, or when it has been requested and/or indicated in Section 30(8) of NEMA. The provincial authority will provide assistance and guidance where required and conduct awareness programmes.

APPENDIX 6: WASTE MANAGEMENT PLAN

WASTE MANAGEMENT PLAN

1. PURPOSE

A Waste Management Plan (WMP) plays a key role in achieving sustainable waste management throughout all phases of the project. The plan prescribes measures for the collection, temporary storage and safe disposal of the various waste streams associated with the project and includes provisions for the recovery, re-use and recycling of waste. The purpose of this plan is therefore to ensure that effective procedures are implemented for the handling, storage, transportation and disposal of waste generated from the project activities on site.

This WMP has been compiled as part of the project EMPr and is based on waste stream information available at the time of compilation. Construction and operation activities must be assessed on an ongoing basis in order to determine the efficacy of the plan and whether further revision of the plan is required. This plan should be updated once further detail regarding waste quantities and categorisation become available, during the construction and/or operation phases. This plan should be updated throughout the life cycle of the infrastructure established for the Wind Energy Facilities and associated grid infrastructure, as required in order to ensure that appropriate measures are in place to manage and control waste and to ensure compliance with relevant legislation.

Prior to the commencement of construction, a detailed Waste Management Method Statement for the site should be compiled by the Contractor.

OBJECTIVE: Promote proper waste disposal, waste reduction, re-use, and recycling opportunities

2. RELEVANT ASPECTS OF THE SITE

It is expected that the development of various infrastructure will generate construction solid waste, as well as general waste and hazardous waste during the lifetime of the grid connection infrastructure.

Waste generated on site, originates from various sources, including but not limited to:

- Concrete waste generated from spoil and excess concrete.
- Contaminated water, soil, rocks and vegetation due to hydrocarbon spills.
- Hazardous waste from vehicle, equipment and machinery parts and servicing, fluorescent tubes, used hydrocarbon containers, batteries situated in specially adapted shipping containers, and waste ink cartridges.
- Recyclable waste in the form of paper, glass, steel, aluminium, wood/ wood pallets, plastic (PET bottles, PVC, LDPE) and cardboard.
- Organic waste from food waste as well as alien and endemic vegetation removal.
- Sewage from portable toilets and septic tanks.
- Inert waste from spoil material from site clearance and trenching works.

3. LEGISLATIVE REQUIREMENTS

Waste in South Africa is currently governed by several regulations, including:

- National Environmental Management: Waste Act (NEM: WA), 2008 (Act 59 of 2008);
- National Environmental Management: Waste Amendment Act, 2014 (Act 26 of 2014);
- The South African Constitution (Act 108 of 1996);

» Hazardous Substances Act (Act 5 of 1973);
» Health Act (Act 63 of 1977);
» Environment Conservation Act (Act 73 of 1989);
» Occupational Health and Safety Act (Act 85 of 1993);
» National Water Act (Act 36 of 1998);
» The National Environmental Management Act (Act 107 of 1998) (as amended);
» Municipal Structures Act (Act 117 of 1998);
» Municipal Systems Act (Act 32 of 2000);
» Mineral and Petroleum Resources Development Act (Act 28 of 2002); and
» Air Quality Act (Act 39 of 2004).

Storage of waste must be conducted in accordance with the National Norms and Standards for the Storage of Waste, published in GNR 926.

4. WASTE MANAGEMENT PRINCIPLES

An integrated approach to waste management is needed on site. Such an approach is illustrated in Figure 1.

It is important to ensure that waste is managed with the following objectives in mind during all phases of the project:
» Reducing volumes of waste is the greatest priority;
» If reduction is not feasible, the maximum amount of waste is to be recycled; and
» Waste that cannot be recycled is to be disposed of in the most environmentally responsible manner.

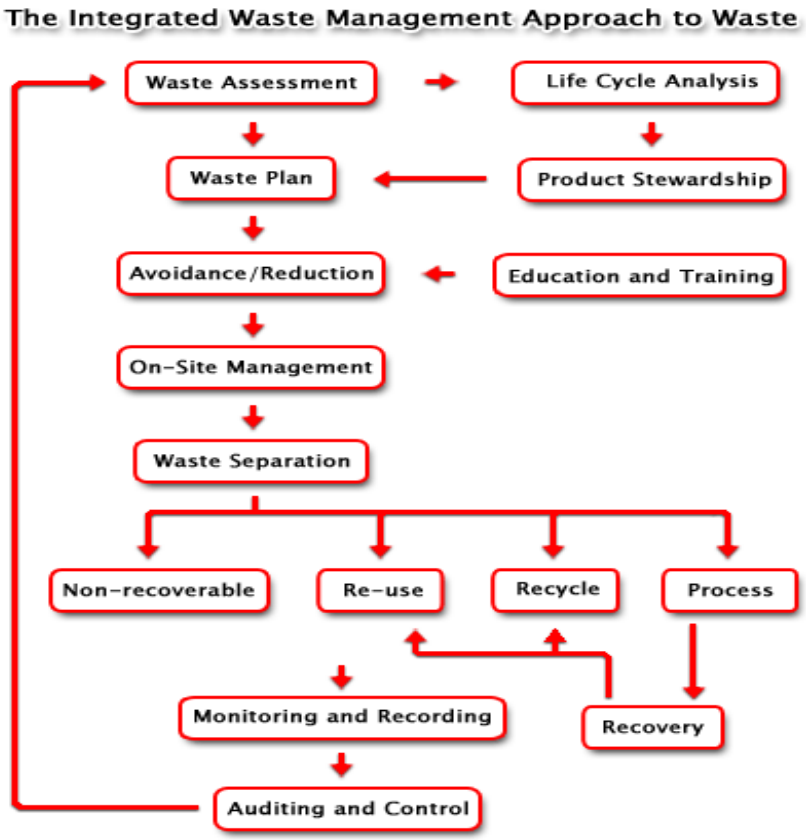


Figure 1: Integrated Waste Management Flow Diagram
(Source: http://www.enviroserv.co.za)

4.1. Construction phase

A plan for the management of waste during the construction phase is detailed below. A Method Statement detailing specific waste management practices during construction should be prepared by the Contractor prior to the commencement of construction, for approval by the Resident Engineer.

4.1.1. Waste Assessment / Inventory

» The Environmental Officer (EO), or designated staff member, must develop, implement and maintain a waste inventory reflecting all waste generated during construction for both general and hazardous waste streams.
» Construction methods and materials should be carefully considered in view of waste reduction, re-use, and recycling opportunities, to be pro-actively implemented.
» Once a waste inventory has been established, targets for the recovery of waste (minimisation, re-use, recycling) should be set.
» The EO must conduct waste classification and rating in terms of SANS 10288 and Government Notice 634 published under the NEM: WA.

4.1.2. Waste collection, handling and storage

» Off-cuts (steel, wood etc.) will be re-used or recycled, as far as possible.
» Vegetative material will be kept on site and mulched after construction to be spread over the disturbed areas to enhance rehabilitation of the natural vegetation.
» Waste separation is encouraged and therefore receptacles should be labelled to reflect the different waste types.
» Adequate containers for the cleaning of equipment and materials (paint, solvent) must be provided as to avoid spillages.
» Waste water from construction and painting activities must be collected in a designated container and disposed of at a suitable disposal point off site.
» Ensure an adequate and sustainable use of resources.
» A suitable area for the storage of waste must be selected (away from water courses) and included in the site layout plan.
» Ensuring that an adequate number of rubbish and "spill" bins are provided will also prevent litter and ensure the proper disposal of waste and spills
» It is the responsibility of the EO to ensure that each subcontractor implements their own waste recycling system, i.e. separate bins for food waste, plastics, paper, wood, glass cardboard, metals, etc. Such practises must be made contractually binding upon appointment of the subcontractors.
» Waste manifests and waste acceptance approvals (i.e. receipts) from designated waste facilities must be kept on file at the site office, in order to record and prove continual compliance for future auditing.
» Septic tanks and portable toilets must be monitored by the EO or responsible subcontractor and maintained regularly. Below ground storage of septic tanks must withstand the external forces of the surrounding environment. The area above the tank must be demarcated to prevent any vehicles or heavy machinery from moving around in the surrounding area.
» Waste collection bins and hazardous waste containers must be provided by the principal contractor and subcontractors and placed at strategic locations around the site for the storage of organic, recyclable and hazardous waste.
» A dedicated waste area must be established on site for the storage of all waste streams before removal from site. The storage period must not trigger listed waste activities as per the NEMWA, GN 921 of November 2013.
» Signage/ colour coding must be used to differentiate disposal areas for the various waste streams (i.e. paper, cardboard, metals, food waste, glass etc.).
» Hazardous waste must be stored within a bunded area constructed according to SABS requirements and must ensure complete containment of the spilled material in the event of a breach. As such, appropriate bunding material, design,

capacity and type must be utilised to ensure that no contamination of the surrounding environment will occur despite a containment breach. The net capacity of a bunded compound in a storage facility should be at least 120% of the net capacity of the largest tank.

» Take into consideration the capacity displaced by other tanks within the same bunded area and any foundations.
» Treat interconnected tanks as a single tank of equivalent total volume for the purposes of the bund design criteria.
» The location of all temporary waste storage areas must aim to minimise the potential for impact on the surrounding environment, including prevention of contaminated runoff, seepage, and vermin control, while being reasonably placed in terms of centrality and accessibility on site. Where required, an additional temporary waste storage area may be designated, provided identical controls are exercised for these locations.
» Waste storage shall be in accordance with all Regulations and best-practice guidelines and under no circumstances may waste be burnt on site.
» A dedicated waste management team must be appointed by the principal contractors' SHE Officer, who will be responsible for ensuring the continuous sorting of waste and maintenance of the area. The waste management team must be trained in all areas of waste management and monitored by the SHE Officer.
» All waste removed from site must be done by a registered/ licensed subcontractor, who must supply information regarding how waste recycling/ disposal will be achieved. The registered subcontractor must provide waste manifests for all removals at least once a month or for every disposal made, records of which must be kept on file at the site camp for the duration of the construction period.

4.1.3. Management of waste storage areas

» Control and implement waste management plans provided by contractors. Ensure that relevant legislative requirements are respected.
» Implement effective waste management in order to prevent construction related waste from entering the freshwater environments.
» Waste storage must be undertaken in accordance with the relevant Norms and Standards.
» The position of all waste storage areas must be located so as to ensure minimal degradation to the environment. The main waste storage area must have a suitable storm water system separating clean and contaminated storm water.
» Collection bins placed around the site and at subcontractors' camps (if at a different location than the main site camp) must be maintained and emptied on a regular basis by the principal contractor to avoid overflowing receptacles.
» Inspections and maintenance of the main waste storage area must be undertaken daily. Skips and storage containers must be clearly marked, or colour coded and well-maintained. Monitor for rodents and take corrective action if they become a problem.
» Waste must be stored in designated containers and not on the ground.
» Inspections and maintenance of bunds must be undertaken regularly. Bunds must be inspected for leaks or cracks in the foundation and walls.
» It is assumed that any rainwater collected inside the bund is contaminated and must be treated by oil/water separation (or similar method) prior to dewatering, or removed and stored as hazardous waste, and not released into the environment.
» If any leaks occur in the bund, these must be amended immediately.
» Bund systems must be designed to avoid dewatering of contaminated water, but to rather separate oil and hydrocarbons from water prior to dewatering.
» Following rainfall event bunds must always be dewatered in order to maintain a sufficient storage capacity in the event of a breach.
» No mixing of hazardous and general waste is allowed.

4.1.4. Disposal

- All operational waste (concrete, steel, rubbles etc.) to be removed from the site and waste hierarchy of prevention, as the preferred option, followed by reuse, recycling, recovery must be implemented, where possible.
- Other non-hazardous solid waste (e.g. packaging material) to be disposed of at a licensed landfill.
- All liquid waste (used oil, paints, lubricating compounds and grease) to be packaged and disposed of by appropriate means.
- The subcontractor shall not dispose of any waste and/or construction debris by burning or burying.
- Where solid waste disposal is to take place on site, ensure that only non-toxic materials which have no risk of polluting the groundwater, are buried in designated approved areas at acceptable depths below ground level.
- Waste generated on site must be removed on a regular basis. This frequency may change during construction depending on waste volumes generated at different stages of the construction process, however removal must occur prior to the storage capacity being reached to avoid overflow of containers and poor waste storage.
- Waste must be removed by a suitably qualified contractor and disposed of at an appropriately licensed landfill site. Proof of appropriate disposal must be provided by the contractor to the EO and ECO.

4.1.5. Record keeping

The success of the WMP is determined by measuring criteria such as waste volumes, cost recovery from recycling and 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.

- Documentation (waste manifest, certificate of issue or safe disposal) must be kept detailing the quantity, nature, and fate of any regulated waste for audit purposes.
- Waste management must form part of the monthly reporting requirements in terms of volumes generated, types, storage and final disposal.

4.1.6. Training

Training and awareness regarding waste management shall be provided to all employees and contractors as part of the toolbox talks or on-site awareness sessions with the EO and at the frequency as set out by the ECO.

4.2. Operation phase

It is expected that the operation phase will result in the production of limited amounts of general waste consisting mostly of cardboard, paper, plastic, tins, metals and a variety of synthetic compounds. Hazardous wastes (including grease, oils) will also be generated. All waste generated will be required to be temporarily stored at the facility in appropriately sealed containers prior to disposal at a permitted landfill site or other facilities.

The following waste management principles apply during the operation phase:

- The SHE Manager must develop, implement and maintain a waste inventory reflecting all waste generated during operation for both general and hazardous waste streams.
- Adequate waste collection bins at site must be supplied. Separate bins should be provided for general and hazardous waste.
- Recyclable waste must be removed from the waste stream and stored separately.
- All waste must be stored in appropriate temporary storage containers (separated between different operation wastes, and contaminated or wet waste).
- Waste storage shall be in accordance with all best-practice guidelines and under no circumstances may waste be burnt on site.

» Waste generated on site must be removed on a regular basis throughout the operation phase.
» Waste must be removed by a suitably qualified contractor and disposed of at an appropriately licensed landfill site. Proof of appropriate disposal must be provided by the contractor and kept on site.

5. Monitoring of Waste Management Activities

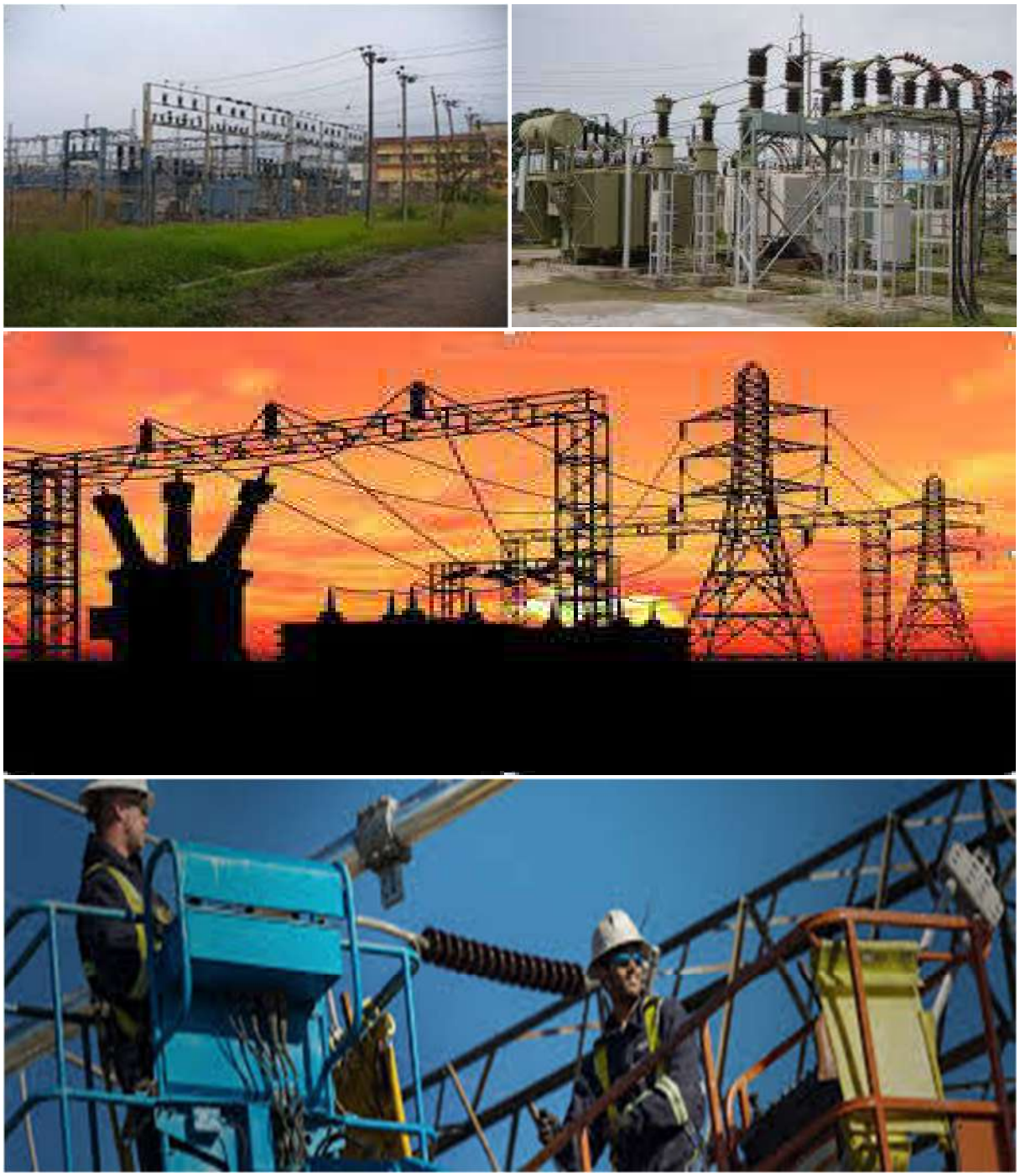
Records must be kept of the volumes/ mass of the different waste streams that are collected from the site throughout the life of the project. The appointed waste contractor is to provide monthly reports to the operator containing the following information:

» Monthly volumes/ mass of the different waste streams collected;
» Monthly volumes/ mass of the waste that is disposed of at a landfill site;
» Monthly volumes/ mass of the waste that is recycled;
» Data illustrating progress compared to previous months.

This report will aid in monitoring the progress and relevance of the waste management procedures that are in place. If it is found that the implemented procedures are not as effective as required, this WMP is to be reviewed and amended accordingly. This report must from part of the EO's reports to the ECO on a monthly basis.

GENERIC ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) FOR THE DEVELOPMENT AND EXPANSION OF SUBSTATION INFRASTRUCTURE FOR THE TRANSMISSION AND DISTRIBUTION OF ELECTRICITY

DFFE REF: 14/12/16/3/3/1/2077/AM2



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	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. 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. Where an impact management outcome is not relevant, the words "not applicable" can be inserted in the template under the "responsible persons" column. 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. 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.
	2	Site specific information	Contains preliminary infrastructure layout and a declaration that the applicant/holder of the EA

Part	Section	Heading	Content
			will comply with the pre-approved generic EMPr template contained in Part B: Section 1, 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 Part C. 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 Part B: section 2 not be submitted. Once approved, this Section forms part of the EMPr for the development and is legally binding.
C		Site specific sensitivities/ attributes	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 (Part B: section 1) This section will not be required should the site contain no specific environmental sensitivities or attributes. However, if Part C 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

Part	Section	Heading	Content
			approved, Part C forms part of the EMPr for the site and is legally binding. 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 Part B: section 1.
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	Environment 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&APs	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)	Role 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. Responsibilities - 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)	Role 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.

Responsible Person(s)	Role and Responsibilities
	Responsibilities - 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)	Role 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. 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&APs), as required. Issues of non-compliance raised by the ECO must be taken up by the Project Manager, and resolved with the Contractor as per the conditions of his contract. Decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e. those that are deemed to be a variation, not allowed for in the Performance Specification) must be endorsed by the Project Manager. The ECO must also, as specified by the EA, report to the relevant CA as and when required. Responsibilities The responsibilities of the ECO will include the following:

Responsible Person(s)	Role and Responsibilities
	- 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;

Responsible Person(s)	Role and Responsibilities
	- Maintenance, update and review of the EMPr; - Communication of all modifications to the EMPr to the relevant stakeholders.
developer Environmental Officer (dEO)	<u>Role</u> 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. <u>Responsibilities</u> - 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	<u>Role</u> 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

Responsible Person(s)	Role and Responsibilities
	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. <u>Responsibilities</u> - 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)	<u>Role</u> 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: <u>Responsibilities</u> - 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;

Responsible Person(s)	Role and Responsibilities
	- 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 contactor 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 understand 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
– All staff must receive environmental awareness training prior to commencement of the activities;	ECO / cEO / dEO	Hold environmental awareness training workshops	Pre-construction Construction	ECO dEO	Monthly and as and when required	Attendance register and training minutes / notes for the record
– The Contractor must allow for sufficient sessions to train all personnel, with no more than 20 personnel attending each course;	Contractor	Scheduling of sufficient sessions through consultation with the ECO / cEO / dEO	Pre-construction Construction	ECO dEO	Monthly and as and when required	Attendance register and training minutes / notes for the record
– Refresher environmental awareness training is available, as and when required;	cEO / dEO in consultation with the ECO	Hold refresher environmental awareness training workshops	During the construction phase	ECO dEO	Monthly and as and when required	Attendance register and training minutes / notes for the record
– 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;	cEO / dEO	Hold training workshops and ensure that the EA and EMPr is readily available	During the construction phase	ECO dEO	Monthly and as and when required	Attendance register and training minutes / notes for the record
– The Contractor must erect and maintain information posters at key locations on site, and the posters must include the following information as a minimum: a) Safety notifications; and b) No littering.	Contractor	Develop and place appropriate posters at key locations	Pre-construction Construction	ECO dEO cEO	Monthly	Photographic record

– Environmental awareness training must include as a minimum the following: 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 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.	cEO / dEO in consultation with the ECO	Develop environmental awareness training material which covers the minimum requirements	Pre-construction Construction	ECO dEO	Prior to the commencement of the environmental awareness training	Environmental awareness training material requirements checklist
– A record of all environmental awareness training courses undertaken as part of the EMPr must be available;	ECO / cEO / dEO	Filing system including all proof of training (i.e. attendance register and training minutes / notes for the record)	During the construction phase	ECO dEO	Monthly	Completed and up to date filing system with proof of training
– Educate workers on the dangers of open and/or unattended fires;	cEO / dEO in consultation with the ECO	Develop environmental awareness training material which covers the dangers of open and/or unattended fire	Pre-construction Construction	ECO dEO	Prior to the commencement of the environmental awareness training	Environmental awareness training material requirements checklist

– A staff attendance register of all staff to have received environmental awareness training must be available.	ECO / cEO / dEO	Filing system including all proof of training (i.e. attendance register)	During the construction phase	ECO dEO	Monthly	Completed and up to date filing system inclusive of all attendance registers
– Course material must be available and presented in appropriate languages that all staff can understand.	ECO / cEO / dEO	Develop environmental awareness training material in the required languages. Training material must by readily available to all staff	During the construction phase	ECO dEO	Monthly	Environmental awareness training material requirements checklist and the training register which must indicate the language of the training

5.2 Site Establishment development

Impact management outcome: Impacts on the environment are minimized 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
– A method statement must be provided by the contractor prior to any onsite activity. The method statement must include 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,	Contractor	Development of an appropriate method statement	Pre-construction	ECO dEO	Once, prior to construction	Availability of the method statement which complies with the minimum requirements listed

equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management;						
– Location of construction camps must be within approved areas, to ensure that the site does not impact on sensitive areas identified in the environmental assessment or site walk through;	DPM	Place construction camps outside of sensitive areas identified in the Basic Assessment Report	Pre-construction Construction	ECO dEO	Once, prior to construction	Availability of a layout and sensitivity map indicating avoidance of sensitive areas
– Sites must be located on previously disturbed areas, where possible;	DPM	Place site outside of sensitive areas and within previously disturbed areas identified in the BA Report	Pre-construction	ECO dEO	Once, prior to construction	Availability of a layout and sensitivity map indicating avoidance of sensitive areas and placement within disturbed areas
– The camp must be fenced in accordance with *Section 5.5: Fencing and gate installation*; and	DPM	Design and implementation of fencing as per the requirements of Section 5.5 of this EMPr	Pre-construction & Construction	ECO dEO	Once, prior to construction and once during the construction of the fencing	The camp is fenced in accordance with Section 5.5 of this EMPr
– The use of existing accommodation for contractor staff, where possible, is encouraged.	Not applicable – the development of new accommodation is not proposed.					

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
– Identification of access restricted areas is to be informed by the environmental assessment, site walk through and any additional areas identified during development;	dEO / cEO in consultation with the ECO	Spatially demarcate access restricted areas informed by the BA Report	Pre-construction	ECO	Once, prior to construction	Access restricted areas are identified and provided in a spatial format
– 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	dEO / cEO in consultation with the ECO	Erect appropriate temporary barriers around access restricted areas	At the commencement and for the duration of the construction phase	ECO	Monthly	Access restricted areas are closed-off through temporary barriers and barriers are maintained to a sufficient standard
– Unauthorised access and development related activity inside access restricted areas is prohibited.	Contractor / dEO / cEO	Erect appropriate temporary barriers around access restricted areas and provide clear signage of restricted status	During the construction phase	ECO	Monthly, and as and when required	Photographic evidence and notes of compliance that no unauthorised access or activities has taken place within the access restricted areas

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
– An access agreement must be formalized and signed by the DPM, Contractor and landowner before commencing with the activities;	DPM Contractor	Develop access agreements with the affected landowners. Ensure that agreements are approved and signed	Pre-construction	dEO ECO	Once, prior to construction	Availability of approved and signed negotiations
– 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	Contractor	Undertake maintenance activities on private roads used for construction as degradation takes place	During the construction phase	cEO / ECO	Weekly	Photographic record of the pre-construction condition and degradation of roads, and records of the implementation and effectiveness of maintenance activities
– All contractors must be made aware of all access routes.	dEO / cEO	Develop a map illustrating all access routes associated with the project and present and provide the map to all contractors	Pre-construction Construction	ECO	Once, prior to construction	Access routes map readily available
– Any access route deviation from that in the written agreement must be closed and re-vegetated immediately, at the contractor's expense;	Contractor	All access routes developed that are not in-line with the access route	Construction and Rehabilitation	ECO	Bi-weekly (every two weeks)	Photographic record of the closure of access roads

		agreements must be closed and re-habilitated to the pre-disturbance state				and re-vegetation
– Maximum use of both existing servitudes and existing roads must be made to minimise further disturbance through the development of new roads;	Contractor (and Eskom maintenance staff where relevant to operation)	Existing access routes to be used must be specified and the development of new roads must be avoided as far as possible	Construction and operation	cEO Operation and maintenance team	Weekly	Implementation of the approved layout
– 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;	dEO / cEO	Record the conditions of private roads to be used (prior to use), as per the requirements of section 4.9, and agree on the required condition of the roads with the landowner, DPM and contractor	During the construction phase	ECO	Prior to the use of private roads	Photographic record and proof of the road conditions agreed upon with the relevant parties
– Access roads in flattish areas must follow fence lines and tree belts to avoid fragmentation of vegetated areas or croplands; and	DPM and Contractor	Design access roads to follow fence lines and avoid vegetated areas	Pre-construction	ECO	Once during the design and once prior to construction	Implementation of the approved layout

– Access roads must only be developed on pre-planned and approved roads.	Contractor	Construction of access roads only on pre-planned and approved access roads	During the construction phase	ECO dEO	Once during the design and weekly during the construction of access roads	Implementation of the approved layout

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
– Use existing gates provided to gain access to all parts of the area authorised for development, where possible;	Contractor	Identify and inform all relevant staff of the existing gates to be used	Pre-construction & Construction	dEO	Monthly	Existing gates are utilised on a frequent basis and only limited new access gates are developed
– Existing and new gates to be recorded and documented in accordance with section 4.9: photographic record;	ECO	Existing and new gates will be recorded and documented as per the requirements of section 4.9	During the construction phase	ECO	Once, when the construction of all new gates have been completed	Photographic record of the existing and new gates as per the requirements of section4.9
– All gates must be fitted with locks and be kept locked at all times during the development phase, unless otherwise agreed with the landowner;	Contractor (and Eskom maintenance staff where relevant to operation)	Ensure all relevant gates are fitted with locks and are always locked	Construction and Operation	ECO Operation and maintenance team	Bi-weekly (every second week)	All gates are locked and no complaints from landowners are received in this regard

– At points where the line crosses an existing 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;	dEO	Install new gates, where required, with the approval of the affected landowner	During the construction phase	ECO	Once, prior to construction and during the construction phase, as and when required	New gates are installed where required
– 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;	Contractor	Install gates in a manner so that there is a gap of no more than 100mm between the bottom of the gate and the ground	During the construction phase	cEO	Once, during the erection of the gates during the construction phase	New gates installed as per the requirement
– Where gates are installed in jackal proof fencing, a suitable reinforced concrete sill must be provided beneath the gate;	Contractor	Implement a reinforced concrete sill beneath gates installed for jackal proofing	During the construction phase	cEO	Once, during the erection of the gates during the construction phase	New gates installed as per the requirement
– Original tension must be maintained in the fence wires;	Contractor	Maintain original tension of fences through required activities	During the construction phase	ECO	Monthly	No tension reduction on fence wires
– All gates installed in electrified fencing must be re-electrified;	Contractor	Electrify gates installed in electrified fencing	During the construction phase	ECO	Once, during the erection of the gates during the construction phase	Gates installed in electrified fencing is electrified
– All demarcation fencing and barriers must be maintained in good working order for the duration of the development activities;	Contractor	Undertake maintenance activities on fences and barriers	During the construction phase	ECO	Monthly	Photographic record of maintained fences and barriers

– Fencing must be erected around the camp, batching plants, hazardous storage areas, and all designated access restricted areas, where applicable;	Contractor	Fence construction camps, batching plants, hazardous storage areas and access restricted areas	During the construction phase	ECO	Once during the erection of fencing	Photographic record of fences erected
– Any temporary fencing to restrict the movement of life-stock must only be erected with the permission of the landowner.	dEO/ cEO Contractor	Obtain written approval from the relevant landowner where temporary fencing is required to restrict life-stock movement	During the construction phase	ECO	To be monitored as temporary fencing is required	Written approval to be provided by the dEO
– All fencing must be developed using high quality material bearing the SABS mark;	Contractor	Make use of high quality materials approved by SABS	During the construction phase	cEO	To be monitored as fencing is erected during the construction phase	Use of high quality materials for fencing approved by SABS
– The use of razor wire as fencing must be avoided, as far as possible;	Contractor	Razor wire must not be sourced or used for the erection of fencing	During the construction phase	ECO	To be monitored as fencing is erected during the construction phase	Fences erected do not make use of razor wire
– 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;	DSS and Contractor	Ensure fenced areas are locked as required through the implementation of a formalised process.	During the construction phase	cEO	Weekly and as and when required	Fences are locked and no complaints from landowners are received. A security

		Appoint a security company				company is appointed
– On completion of the development phase, all temporary fences are to be removed;	Contractor	Removal of all temporary fences	At the end of the Construction Phase	ECO dEO	Once, following the completion of the construction phase	No temporary fences associated with the project is present following the completion of the construction phase – photographic evidence
– The contractor must ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but rather removed completely.	Contractor	Appropriate removal of all fence uprights	At the end of the Construction Phase	ECO dEO	Once, following the completion of the construction phase	No fence uprights associated with the project is present following the completion of the construction phase - photographic evidence

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
– All abstraction points or bore holes must be registered with the DWS, and suitable water meters installed to	DPM / Contractor / dEO / cEO in	The onsite borehole must be registered	Prior to commencement, during	ECO / dEO	Registration of borehole once off prior	Proof of registration of borehole from

ensure that the abstracted volumes are measured on a daily basis;	consultation with the ECO	with the DWS prior to commencement of activities	construction and operational phase		commencement of construction and monitoring of abstraction volumes on a daily basis during construction and during operation.	DWS and proof of daily records of abstraction volumes to be attached to monthly audit reports.
– The Contractor must ensure the following: 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 bank,s 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 implemented.	Not applicable - During the construction phase, water will be sourced from the local municipality or existing boreholes (if groundwater is available and if suitable). The exact details of water requirements will be confirmed during the detailed engineering phase. At this stage, no water is planned to be abstracted from or discharged to any surface water systems. During the operational phase of the proposed distribution line, water requirements are not applicable.					
– Ensure water conservation is being practiced by: a. Minimising water use during cleaning of equipment; b. Undertaking regular audits of water systems; c. Including a discussion on water usage and conservation during environmental awareness training; and d. The use of grey water is encouraged.	Contractor / dEO / cEO in consultation with the ECO	Implement the required water conservation measures throughout on-site construction processes	During the construction phase	ECO	Monthly, and as and when required	Successful implementation of water conservation

5.7 Storm and wastewater 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

– 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;	Contractor	Implement measures for the control and management of runoff	During the construction phase	ECO	Weekly	No mismanagement of runoff or contaminated water due to the temporary concrete batching plant
– 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;	Contractor and cEO	Obtain approved absorbent material and make use of licensed waste disposal facilities for disposal of oil	During the Construction Phase	ECO	Monthly	Availability of approved absorbent material at the construction site and proof of disposal of oil at licenses disposal facilities
– Natural stormwater 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;	DPM in consultation with the ECO	Consultation between the DPM and the ECO to determine if water can be discharged directly into water bodies (where present). The necessary water quality testing must be undertaken prior to discharge	During the construction phase	ECO	As and when the need arises to discharge natural stormwater runoff and clean water	Proof of consultation between the DPM and ECO and the outcomes thereof to be provided. Proof of water quality testing and the results thereof.

– 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.	DPM in consultation with the ECO	Consultation between the DPM and the ECO to determine if water can be discharged directly into water bodies (where present). The necessary water quality testing must be undertaken prior to discharge	During the construction phase	ECO	As and when the need arises to discharge water	Proof of consultation between the DPM and ECO and the outcomes thereof to be provided. Proof of water quality testing and the results thereof.

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
– All measures regarding waste management must be undertaken using an integrated waste management approach;	Contractor	Develop and implement a waste management plan	During the construction phase	ECO	Monthly	Implementation of the waste management plan and proof of waste management through proof of responsible disposal
– Sufficient, covered waste collection bins (scavenger and weatherproof) must be provided;	Contractor	Provision of appropriate waste collection bins which are	During the construction phase and	ECO	Weekly	Appropriate waste collection bins are available

		strategically placed throughout the site	decommissioning phase			throughout the site
– A suitably positioned and clearly demarcated waste collection site must be identified and provided;	DPM and Contractor	Identify an appropriate location for the waste collection site which must be clearly demarcated through signage and temporary fencing	Design and Construction Phase	ECO	Once, prior to the commencement of construction	A waste collection site is appropriately placed and demarcated
– The waste collection site must be maintained in a clean and orderly manner;	Contractor	Regular collection of waste and maintenance of the area must be undertaken as per the waste requirements for the project during construction	During the Construction Phase	ECO	Weekly	The waste collection site is maintained and clean
– Waste must be segregated into separate bins and clearly marked for each waste type for recycling and safe disposal;	Contractor	Provide separate and marked bins for the different waste types associated with the construction phase	During the Construction Phase	cEO	Weekly	Separate waste bins are available on site and waste generated is separated into the relevant bins

– Staff must be trained in waste segregation;	cEO / dEO in consultation with the ECO	Include waste segregation as part of the environmental awareness training material.	Pre-construction Construction	ECO	Monthly, and as and when required	Environmental awareness training material requirements checklist
– Bins must be emptied regularly;	Contractor	Bins must be emptied before reaching total capacity and on a regular basis as required for the project	During the construction phase	ECO	Monthly	No mismanagement of bins.
– General waste produced onsite must be disposed of at registered waste disposal sites/ recycling company;	Contractor	Disposal of general waste at licensed waste disposal facilities must be undertaken as per the waste management plan	During the construction phase and decommissioning phase	ECO	Monthly	Disposal certificates of disposal at licensed facilities to be provided
– Hazardous waste must be disposed of at a registered waste disposal site;	Contractor	Disposal of hazardous waste at licensed waste disposal facilities must be undertaken as per the waste management plan	During the construction phase	ECO	Monthly	Disposal certificates of disposal at licensed facilities to be provided
– Certificates of safe disposal for general, hazardous and recycled waste must be maintained.	Contractor	Obtain certificates for	During the construction and	ECO	Monthly	Disposal certificates of disposal at

		safe disposal of waste	decommissioning phase			licensed facilities to be provided and filed as part of the filing system

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
– 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;	Contractor	Contractor to undertake activities which can cause spills of pollutants outside of watercourses	During the construction phase	ECO	Weekly	No incidents reported of spillage of pollutants into watercourses
– In the event of a spill, prompt action must be taken to clear the polluted or affected areas;	Contractor and cEO	Develop a management plan or process for implementation should a spill take place	During the construction phase	ECO	Weekly	Feedback must be provided by the contractor in terms of how the spill was handled and photographic evidence of the feedback must be provided and kept on record
– Where possible, no development equipment must traverse any seasonal or permanent wetland	cEO and Contractor	Ensure layout has been informed by the	Construction Phase	ECO	Once off review that the layout	Confirm no development equipment

		environmental sensitivities as determined by the basic assessment and specialist studies			used is the approved one	traverses any seasonal or permanent wetland as per the authorised layout by reviewing the as-built designs (once-off confirmation).
– No return flow into the estuaries must be allowed and no disturbance of the Estuarine functional Zone should occur;	Not applicable – no estuaries are located within the study area.					
– Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to tower position is available;	Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to tower position is available;	cEO, Contractor	Ensure that permeant crossings (access roads) are provided for access to the grid connection corridor if no alternative crossing is available.	During the construction phase	cEO	Weekly
– There must not be any impact on the long-term morphological dynamics of watercourses or estuaries	There must not be any impact on the long-term morphological dynamics of watercourses or estuaries;	DPM, cEO	Develop a management plan or process for implementation should a spill take place within a watercourse and ensure	During the construction and operation phase	ECO, dEO	For all phases of the project life cycle (i.e. construction, operation, decommissioning)

			continually monitoring			
– Existing crossing points must be favored over the creation of new crossings (including temporary access)	DPM, cEO	Develop a management plan or process for implementation should a spill take place within a watercourse and ensure continually monitoring	During the pre-construction and construction phase	ECO, dEO	During the construction phase of the project.	Existing crossing points utilised as opposed to new ones created and no incidents reported of spillage of pollutants into watercourses
– When working in or near any watercourse or estuary, the following environmental controls and consideration must be taken: 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.	Contractor	Activities undertaken near watercourses must be in-line with and consider the specified environmental controls	During the construction phase	ECO	Monthly, and as and when required	No degradation of the watercourses and no incidents of destruction reported

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
General:						
– Indigenous vegetation which does not interfere with the development must be left undisturbed;	cEO, Contractor (and Eskom maintenance staff where relevant to operation)	Demarcate areas of indigenous vegetation to be avoided before clearance is undertaken	Construction and operation (i.e. for maintenance purposes)	ECO Operation and maintenance team	Weekly, and as and when required	No unnecessary clearance of indigenous vegetation is undertaken
– Protected or endangered species may occur on or near the development site. Special care should be taken not to damage such species;	Contractor	Demarcate areas containing protected or endangered species to be avoided by construction activities	During the Construction Phase	ECO	Weekly, and as and when required	No clearance of protected or endangered species other than those permitted to be removed
– 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;	Relevant specialist in consultation with the Contractor	Develop and implement a Plant Search and Rescue Plan	Pre-construction & Construction	ECO	Weekly, and as and when required	Implementation of the Plant Search and Rescue Plan and photographic evidence and notes of the implementation of the plan

– 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;	DPM	Undertake the permitting process in order to obtain the relevant permits for the removal of protected species. Permits must be kept on file	Pre-construction	ECO	Once, prior to the commencement of the construction phase and removal of the protected species	Permits on file
– 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;	ECO	Ensure that the audit report indicates all species rescued and replanted and provides feedback in terms of compliance with the conditions of permits for replanting	During the Construction Phase and following the completion of the Construction Phase	ECO	Once off or as and when required	ECO confirmed rescued and replanted programme implemented correctly.
– Trees felled due to construction must be documented and form part of the Environmental Audit Report;	ECO	Ensure that the audit report documents the details of trees felled	During the Construction Phase and following the completion of the Construction Phase	CA permits on file	Trees felled due to construction must be documented and form part of the Environmental Audit Report;	ECO
– Rivers and watercourses must be kept clear of felled trees, vegetation cuttings and debris;	Contractor	Felled trees, vegetation cuttings and debris must be disposed of at a	During the Construction Phase	ECO	Monthly	No felled trees, vegetation cuttings and debris are dumped in

		licensed waste disposal facility				inappropriate locations and disposal certificates are available as proof of responsible disposal
– 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;	DPM qnd Contractor (and Eskom maintenance staff where relevant to operation)	A suitably qualified pest control operator must be appointed	Construction and Operation	ECO	As and when the use of herbicides is required	Only registered pest control operators must be appointed and proof of their registration must be provided
– A daily register must be kept of all relevant details of herbicide usage;	Contractor	Develop a daily register for the documentation of the details of herbicide usage	During the construction phase	ECO	Monthly	Daily register provided by the pest control operator
– No herbicides must be used in estuaries	Not applicable - no estuaries are present within the study area					
– 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.	Contractor in consultation with the cEO	Spatially demarcate protected species and sensitive vegetation and implement appropriate fencing where required as per section 5.3	During the construction phase	ECO	Once, during the undertaking of the demarcation of the areas and the erection of the fencing	Demarcation and fencing is undertaken in-line with the requirements of section 5.3

– Alien invasive vegetation must be removed and disposed of at a licensed waste management facility.	Contractor	Remove all alien invasive vegetation and dispose of the removed vegetation at a licensed waste management facility	During the construction phase	ECO	Monthly, and as and when required	Disposal certificates of disposal at licensed facilities to be provided and filed as part of the filing system

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
– No interference with livestock must occur without the landowner's written consent and with the landowner or a person representing the landowner being present;	dEO / cEO Contractor	Develop a procedure for dealing with livestock within the affected properties	Pre-construction and during the construction phase	ECO	Once, prior to the commencement of construction and as and when required during the construction phase	Written consent provided by the landowner and proof of representation of the landowner during interference
– The breeding sites of raptors and other wild birds species must be taken into consideration during the planning of the development programme;	dEO / cEO in consultation with the Contractor	Ensure that the planning and development programme considers breeding sites for wild bird species	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and as and when required	The planning and development programme which includes the consideration of breeding sites for wild bird species

– 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;	dEO / cEO in consultation with the Contractor (and Eskom maintenance staff where relevant to operation)	Avoid breeding sites and ensure that special care is taken in the presence of nestlings and fledgelings	During the Construction Phase Operation Phase	ECO Operation and maintenance team	Weekly, and as and when required during the construction. Monthly, and as and when required during operation	Photographic record of intact breeding sites
– Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds;	dEO / cEO in consultation with the Contractor (and Eskom maintenance staff where relevant to operation)	All mitigation measures recommended by the avifauna specialist must be implemented	During the Construction Phase Operation Phase	ECO Operation and maintenance team	Weekly during construction and monthly during operation	Photographic record of compliance and successful implementation of the recommended measures
– 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;	dEO / cEO in consultation with the Contractor	All site staff must be informed of this requirement during the Environmental Awareness Training and the consequences of not adhering to the requirement. These areas must be demarcated as Access Restricted Areas	During the Construction Phase	ECO	Monthly, and as and when required	No instances of poaching is reported

– No deliberate or intentional killing of fauna is allowed;	dEO / cEO in consultation with the Contractor	All site staff must be informed of this requirement during the Environmental Awareness Training and the consequences of not adhering to the requirement. These areas must be demarcated as Access Restricted Areas	During the Construction Phase	ECO	Monthly, and as and when required	No instances of deliberate or intentional killing is reported
– In areas where snakes are abundant, snake deterrents are to be deployed on the pylons to prevent snakes climbing up, being electrocuted and causing power outages; and	dEO / cEO in consultation with the Contractor (and Eskom maintenance staff where relevant to operation)	Implement and maintain snake deterrents in areas where snakes are abundant	During the Construction Phase Operation Phase	ECO Operation and maintenance team	Once, during the construction and as and when required. Monthly during operation	Photographic record of the implementation and maintenance of snake deterrents
– 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.	DPM in consultation with the dEO	Undertake a permitting process to obtain the required permits	Pre-construction	ECO	Once, prior to the commencement of construction and as and when required	Permits for removal and/relocation must be kept on file and be readily available

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
– 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;	DPM and a suitably qualified specialist dEO / cEO in consultation with the Contractor and ECO	Undertake a Heritage Walk-through Survey Spatially identify and demarcate areas of heritage significance as per the Heritage Walk-through Report and as per the requirements of section 5.3	Pre-construction	ECO	Once, prior to the commencement of construction	Proof of avoidance of sensitive heritage features through details of avoidance and photographic records
– Carry out general monitoring of excavations for potential fossils, artefacts and material of heritage importance;	Suitably qualified specialist in consultation with the ECO	Appoint a suitably qualified specialist to carry out the monitoring of excavations for fossils, artefacts and important heritage material	During the Construction Phase	ECO	During the undertaking of excavations of fossils, artefacts and heritage material	Proof of appointment of a suitably qualified specialist and photographic record of required monitoring by the specialist
– 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	dEO / cEO in consultation with the Contractor and ECO	Develop and implement procedures for situations where human remains, archaeological, palaeontologic	During the Construction Phase	ECO	Weekly, during the construction phase and as and when required	Proof of work ceased and the required procedures followed in cases where

be allowed to remove/collect such material before development recommences.		al or historical material are uncovered				material is discovered.

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
– 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.;	cEO in consultation with the Contractor	Develop an Emergency Preparedness, Response and Fire Management Plan specific to the project	Pre-construction Construction	ECO	Once, prior to the commencement of construction and weekly during the construction phase	Compliance with the Emergency Preparedness, Response and Fire Management Plan
– All unattended open excavations must be adequately fenced or demarcated;	Contractor	Ensure that all excavations undertaken is fenced and demarcated within a reasonable timeframe and in instances where excavations will be open for long-periods of time	During the Construction Phase	ECO	Weekly	Excavations are fenced where required and photographic proof can be provided
– Adequate protective measures must be implemented to prevent unauthorised access to and climbing of	Contractor	All staff must be easily identifiable and	During the construction phase	ECO	Monthly, and as and when required	No incidents of unauthorised

partly constructed infrastructure and protective scaffolding;		the climbing of infrastructure and scaffolding must be undertaken by authorised personnel as managed by the Contractor				climbing is reported
– Ensure structures vulnerable to high winds are secured;	Contractor	Ensure that sufficient stabilisation measures are implemented to secure structures vulnerable to high winds	During the construction phase	ECO	Weekly, and as and when required	No incidents of unstable structures due to high winds is reported
– Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged.	cEO	Compile and regularly update as incidents and complaints are submitted from the public and indicate the actions taken to resolve the complaint	During the construction phase	ECO	Monthly, and as and when required	The incidents and complaints register is complete and provides all the required details

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

– Mobile chemical toilets are installed onsite if no other ablution facilities are available;	Contractor	Mobile chemical toilets must be placed appropriately and in areas which avoid environmental sensitivities	During the Construction Phase	ECO	Weekly	Mobile toilets are installed and avoid environmental sensitivities
– 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;	Contractor in consultation with the cEO	All site staff must be informed of this requirement during the Environmental Awareness Training and the consequences of not adhering to the requirement.	Pre-construction & Construction	ECO	Monthly, and as and when required	No evidence of non-compliance identified
– Where mobile chemical toilets are required, the following must be ensured: 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;	Contractor in consultation with the cEO	The installation of the toilets by the Contractor must be as per the listed requirements	During the Construction Phase	ECO	Weekly	No evidence of non-compliance identified

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.	Contractor	Certificates obtained from the licensed waste disposal facility with the emptying of the toilets must be kept on file	During the Construction Phase	ECO	Monthly, and as and when required	Certificates for waste disposal from the licensed waste disposal facility

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
– Undertake environmentally-friendly pest control in the camp area;	Contractor	Only environmentally-friendly pest control must be used, when required	During the Construction Phase	ECO	As and when pest control is required for the project	Contractor to provide proof of pest control used being environmentally-friendly
– Ensure that the workforce is sensitised to the effects of sexually transmitted diseases, especially HIV/ AIDS;	cEO / Contractor in consultation with the ECO	The effects of sexually transmitted diseases and HIV/ AIDS must be covered in the Environmental Awareness Training	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during construction	Environmental awareness training material requirements checklist

– The Contractor must ensure that information posters on HIV/ AIDS are displayed in the Contractor Camp area;	Contractor	Develop and place information posters on HIV/ AIDS	During the Construction Phase	ECO	Weekly	Photographic evidence of poster placement
– Information and education relating to sexually transmitted diseases to be made available to both construction workers and local community, where applicable;	cEO / Contractor in consultation with the ECO	Information and education of sexually transmitted diseases must be covered in the Environmental Awareness Training.	Pre-construction & Construction	ECO	Monthly	Environmental awareness training material requirements checklist
– Free condoms must be made available to all staff on site at central points;	Contractor	Placement of free condoms in mobile toilets and at the construction camps	During the Construction Phase	ECO	Monthly	Proof of placement of free condoms by the contractor to be provided
– Medical support must be made available;	dEO / cEO in consultation Contractor (and Eskom maintenance staff where relevant to operation)	Ensure that designated personnel with first aid training are available on site and that first aid kits to provide medical support is readily available	Construction and Operations	ECO	Monthly	Check the availability of first aid trained personnel and medical kits (including if these are complete in terms of supplies)
– Provide access to Voluntary HIV Testing and Counselling Services.	Contractor	Compile a HIV testing schedule and provide counselling	During the Construction Phase	ECO	Quarterly, and as and when required	Voluntary testing schedules and proof of counselling

		services where required				(where undertaken)

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
– Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the proposed project;	Contractor	Develop an Emergency Preparedness, Response and Fire Management Plan specific to the project	Pre-construction	ECO	Once, prior to the commencement of construction	Emergency Preparedness, Response and Fire Management Plan compiled
– The Emergency Plan must deal with accidents, potential spillages and fires in line with relevant legislation;	Contractor	Develop an Emergency Preparedness, Response and Fire Management Plan specific to the project which covers accidents, potential spillages and fires	Pre-construction	ECO	Once, prior to the commencement of construction	Emergency Preparedness, Response and Fire Management Plan includes required specifications
– All staff must be made aware of emergency procedures as part of environmental awareness training;	cEO / dEO in consultation with the ECO	Develop environmental awareness	Pre-construction	ECO	Prior to the commencement of the	Environmental awareness training material

		training material which covers the relevant emergency procedures			environmental awareness training	requirements checklist
– The relevant local authority must be made aware of a fire as soon as it starts;	Contractor in consultation with the ECO	Develop and include a procedure in the Emergency Preparedness, Response and Fire Management Plan for the event of a fire and the procedure to be followed for informing the local authority	Construction	ECO	As and when a fire occurs	The local authority was informed as per the relevant procedure set out in the Emergency Preparedness, Response and Fire Management Plan
– In the event of emergency necessary mitigation measures to contain the spill or leak must be implemented (see Hazardous Substances section 5.17).	Contractor (and Eskom maintenance staff where relevant to operation)	Implement the required mitigation measures in the event of a spill or leak as per the requirements of Section 5.17.	Construction and Operations	ECO	As and when a spill or leak occurs	The mitigation measures included under Section 5.17 have been adhered to

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

– The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives substituted where possible;	cEO in consultation with the Contractor	Develop a strategy of how hazardous substances can be and should be minimised	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during the construction phase	Contractor to provide evidence of substances used for proof of compliance
– All hazardous substances must be stored in suitable containers as defined in the Method Statement;	Contractor	Develop a Method Statement for the storage of hazardous substances in suitable containers	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during the construction phase	Photographic proof that hazardous substances are stored in suitable containers as per the requirements of the relevant Method Statements
– Containers must be clearly marked to indicate contents, quantities and safety requirements;	Contractor	Where hazardous waste is stored these must be clearly marked indicating the required details of the contents	During the Construction Phase	ECO	Monthly	Photographic proof that containers are marked as per the requirements
– All storage areas must be bunded. The bunded area must be of sufficient capacity to contain a spill / leak from the stored containers;	Contractor	Ensure that storage areas are sufficiently bunded which are of sufficient capacity to contain a spill / leak from the	During the Construction Phase	ECO	Monthly during the Construction Phase	Photographic proof that storage areas are bunded and proof that the bund areas are of sufficient capacity to

		stored containers				contain a spill / leak from the stored containers
– Bunded areas to be suitably lined with a SABS approved liner;	Contractor	Ensure that bunded storage areas are suitably lined	During the Construction Phase	ECO	Once, during the Construction Phase	Photographic proof that bunded storage areas are suitably lined
– An Alphabetical Hazardous Chemical Substance (HCS) control sheet must be drawn up and kept up to date on a continuous basis;	cEO / Contractor	Compile and update an Alphabetical Hazardous Chemical Substance (HCS) control sheet specific to the project	During the Construction Phase	ECO	Monthly, and as and when required	Complete and up to date control sheet provided by the Contractor
– All hazardous chemicals that will be used on site must have Material Safety Data Sheets (MSDS);	cEO / Contractor	Keep a record of all hazardous chemicals and the respective MSDS	During the Construction Phase	ECO	Monthly, and as and when required	Record of hazardous chemicals and the respective MSDS
– All employees working with HCS must be trained in the safe use of the substance and according to the safety data sheet;	cEO / Contractor	Provide training for personnel working with HCS	Pre-construction	ECO	Once, prior to the commencement of construction and as and when required	Record of training provided to personnel working with HCS
– 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;	cEO / Contractor	Develop environmental awareness training material which covers the relevant impacts	Pre-construction & Construction	ECO	Prior to the commencement of the environmental awareness training and	Environmental awareness training material requirements checklist and all relevant

		and safety measures. Provide appropriate training and personal protective equipment for the relevant personnel handling hazardous substances and materials			monthly during the construction phase for personal protective equipment	personnel have undergone appropriate training and have access to personal protective equipment
– The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowsers;	Contractor	Appropriate storage facilities must be constructed or obtained for the storing of diesel, other liquid fuel, oil and hydraulic fluid	During the Construction Phase	ECO	Monthly, and as and when required	Storage tanks for the project are appropriate and no incidents are reported in this regard
– 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);	Contractor	Appropriate storage facilities must be constructed or obtained for tanks as per the requirements listed	During the Construction Phase	ECO	Monthly, and as and when required	Storage areas for the tanks/ bowsers for the project are appropriate and no incidents are reported in this regard
– The floor of the bund must be sloped, draining to an oil separator;	Contractor	Appropriate storage facilities must be	During the Construction Phase	ECO	Once, during construction	Bunded storage areas are constructed

		constructed as per the requirements listed				according to the requirements
– Provision must be made for refuelling 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;	Contractor	Appropriately constructed refuelling facility must be developed as per the requirements. Drip trays must be provided for use	During the Construction Phase	ECO cEO	Monthly Weekly	Soils at the refuelling facility are protected as required and drip trays are provided and used
– All empty externally dirty drums must be stored on a drip tray or within a bunded area;	Contractor	Ensure that empty dirty drums are stored appropriately as per the requirements	During the Construction Phase	ECO cEO	Monthly Weekly	Drip trays or bunded areas are used for the storage of dirty drums
– No unauthorised access into the hazardous substances storage areas must be permitted;	Contractor	Ensure through the implementation of procedures that no unauthorised access is undertaken into the storage areas	During the Construction Phase	ECO	Monthly	Proof of the implementation of the relevant procedure must be provided by the contractor
– No smoking must be allowed within the vicinity of the hazardous storage areas;	Contractor	Inform all employees of the requirement and develop and place	During the Construction Phase	ECO cEO	Monthly Weekly	Photographic record of the signage placed must be provided

		relevant signage in the relevant areas				
– Adequate fire-fighting equipment must be made available at all hazardous storage areas;	Contractor	Hazardous storage areas must be fitted with adequate fire-fighting equipment	During the Construction Phase	ECO	Monthly	Adequate fire-fighting equipment is available and has been serviced
– Where refuelling away from the dedicated refuelling station is required, a mobile refuelling unit must be used. Appropriate ground protection such as drip trays must be used;	Contractor	Provide a mobile refuelling unit as well as suitable ground protection, where required	During the Construction Phase	ECO	Monthly, and as and when required	A mobile refuelling unit and suitable ground protection is available for use
– 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;	Contractor	Provide an appropriate spill kit for the project for the use of hazardous substances	During the Construction Phase	ECO	Monthly, and as and when required	Appropriate spill kits are available for use
– The responsible operator must have the required training to make use of the spill kit in emergency situations;	cEO and Contractor	Provide training on the use of spill kits to the relevant employees	Pre-construction	ECO	Once, prior to the commencement of construction	Proof of training to be provided by the contractor
– An appropriate number of spill kits must be available and must be located in all areas where activities are being undertaken;	cEO and Contractor	Provide an appropriate number of spill kits in relevant areas	During the Construction Phase	ECO	Monthly	Proof of appropriate number of spill kits in appropriate areas to be provided by the contractor

– 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.	cEO and Contractor	Storage and disposal of contaminated soil must be in accordance with the National Environmental Management: Waste Act and sections 5.7 and 5.8 of this EMPr	During the Construction Phase	ECO	Monthly, and as and when required	Proof of storage and disposal in terms of the National Environmental Management: Waste Act must be provided. Certificates of disposal at licensed waste disposal facilities must be provided

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
– Where possible and practical, all maintenance of vehicles and equipment must take place in the workshop area;	Contractor	Demarcate specific areas for the maintenance of vehicles and equipment	During the Construction Phase	ECO	Monthly	A dedicated area for the maintenance of vehicles and machinery is used.
– 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;	Contractor	Ensure that a drip tray is available for an emergency repairs required	During the Construction Phase	ECO	Monthly	Contractor to provide evidence of drip tray use for emergency repairs

– Leaking equipment must be repaired immediately or be removed from site to facilitate repair;	Contractor	Ensure that where leaking equipment is identified it is repaired immediately or removed from site for repairs	During the Construction Phase	ECO	Monthly	Contractor to provide details of equipment repaired or removed from site
– Workshop areas must be monitored for oil and fuel spills;	cEO	Undertake regular inspections of the workshop areas for oil and fuel spills and keep an updated register of inspection on site	During the Construction Phase	ECO	Monthly	Register of inspection
– Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place must be available;	Contractor	Provide an appropriate spill kit for the project	During the Construction Phase	ECO	Monthly, and as and when required	Appropriate spill kits are available for use
– 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;	Contractor	Ensure that the workshop area is sufficiently bunded in accordance with the required specification	During the Construction Phase	ECO	Once, during the Construction Phase and as and when required	Workshop area is bunded in accordance with the required specification
– Water drainage from the workshop must be contained and managed in accordance Section 5.7: Storm and waste water management.	Contractor	Ensure that water drainage from workshop area is managed as per the	During the Construction Phase	ECO	Monthly	Workshop drainage is managed in accordance with the requirements

		requirements of section 5.7				

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
– Concrete mixing must be carried out on an impermeable surface;	Contractor	Provide impermeable surface for the mixing of concrete	During the Construction Phase	ECO	Weekly	No concrete mixing is undertaken on open ground
– Batching plants areas must be fitted with a containment facility for the collection of cement laden water.	Contractor	Provide containment facility for the collection of cement laden water	During the Construction Phase	ECO	Weekly	No cement laden water is released into the environment
– Dirty water from the batching plant must be contained to prevent soil and groundwater contamination	Contractor	Provide containment facility for the collection of cement laden water (dirty water)	During the Construction Phase	ECO	Weekly	No cement laden water is released into the environment
– Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains;	Contractor	Demarcate and provide a storage area for bagged cement in-line with the listed requirements	During the Construction Phase	ECO	Weekly	Photographic proof of bagged cement stored within the demarcated area

– A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted;	Contractor	Provide a washout facility for the washing of associated equipment. Enforce limitations on water use for washing of equipment	During the Construction Phase	ECO	Weekly	No cement laden water is released into the environment. Only minimal water is used for washing
– Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licensed disposal facility;	Contractor	Make use of hardened concrete where possible or dispose of concrete in a suitable manner	During the Construction Phase	ECO	Monthly	Certificates of disposal of concrete at licensed waste disposal facility
– Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site;	Contractor	Bind empty cement bags and temporarily store it in an appropriate area on site	During the Construction Phase	ECO	Monthly	Proof of binding of empty cement bags and storage in an appropriate area on site to be provided by the Contractor
– Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to Section 5.20: Dust emissions)	Contractor	Ensure that sand and aggregates are kept damp or otherwise protected from dust generation	During the Construction Phase	ECO	Monthly	Proof of damping (or alternative dust suppression) of sand and aggregates must be provided by the Contractor

– Any excess sand, stone and cement must be removed or reused from site on completion of the construction period and disposed at a registered disposal facility;	Contractor	Ensure that all excess sand, stone and cement is removed or reused	At the completion of the Construction Phase	ECO	Once, with the completion of construction	Certificates for the disposal of sand, stone and cement at licensed waste disposal facilities or proof of reuse must be provided
– Temporary fencing must be erected around batching plants in accordance with Section 5.5: Fencing and gate installation.	Contractor	Erect temporary fencing around batching plants as per the requirements listed in section 5.5	During the Construction Phase	ECO	Weekly	Temporary fencing is undertaken in accordance with section 5.5

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
– Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO;	Contractor	Apply appropriate dust suppressant	During the Construction Phase	ECO	Weekly	Contractor to provide proof of use of appropriate dust suppressants
– 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;	Contractor	Proper planning for vegetation removal must be undertaken as well as for the	During the Construction Phase and Rehabilitation	ECO	Weekly	Plan for implementation must be provided by the Contractor

		associated rehabilitation				
– Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present;	Contractor	Ensure that specific limitations are placed on the transport and handling of erodible materials during high wind conditions or when a visible dust plume is present	During the Construction Phase	ECO	Bi-weekly (every second week)	No complaints submitted in this regard
– 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;	ECO	ECO to provide adequate recommendations	During the Construction Phase	Not Applicable		
– Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind;	Contractor	Place soil stockpiles in areas less affected by wind	During the Construction Phase	ECO	Bi-weekly (every second week)	Soil stockpiles are not exposed to wind and have not been eroded
– Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of the ECO;	Contractor in consultation with the ECO	Contractor to implement erosion control measures as recommended and agreed with the ECO	During the Construction Phase	ECO	Weekly, until erosion is no longer a problem	Recommendations made by the ECO have been implemented by the Contractor
– Vehicle speeds must not exceed 40 km/h along dust roads or 20 km/h when traversing unconsolidated and non-vegetated areas;	cEO / dEO / contractor (and Eskom	Inform all drivers of speed limits and place	During the Construction Phase	ECO	Monthly	No complaints from community

	maintenance staff where relevant to operation)	appropriate signage along the relevant roads	Operation Phase	Operation and Maintenance team		members are submitted
– 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;	Contractor	Ensure that straw stabilisation is undertaken as per the listed requirements	During the Construction Phase	ECO	Monthly	Photographic record of all straw stabilisation undertaken
– For significant areas of excavation or exposed ground, dust suppression measures must be used to minimise the spread of dust.	Contractor	Appropriate dust suppressant measures are implemented	During the Construction Phase	ECO	Weekly	Photographic record of measures being implemented and the results thereof

5.21 Blasting

Impact management outcome: Impact to the environment is minimized through a safe blasting practice.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Any blasting activity must be conducted by a suitably licensed blasting contractor; and	Not Applicable – no blasting proposed					
– Notification of surrounding landowners, emergency services site personnel of blasting activity 24 hours prior to such activity taking place on Site.	Not Applicable – no blasting proposed					

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

– The Contractor must keep noise level within acceptable limits, and restrict the use of sound amplification equipment for communication and emergency only;	Contractor	Ensure that noise limits do not exceed acceptable limits and avoid the use of amplification communication	During the Construction Phase	ECO	Monthly, and as and when required	No complaints registered in this regard. No amplification equipment is used.
– All vehicles and machinery must be fitted with appropriate silencing technology and must be properly maintained;	Contractor	Provide and implement silencing technology	During the Construction Phase	ECO	Monthly, and as and when required	No complaints registered in this regard. Silencing technology is utilised.
– 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;	cEO	Update complaints register. Provide daily transport to and from site for employees	During the Construction Phase	ECO	Monthly, and as and when required	Complaints register provided by the cEO and proof of transportation services provided
– 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.	cEO and Contractor in consultation with the ECO	Compile a Code of Conduct for staff. Appropriate operating hours must be identified for the project.	Pre-construction and Construction	ECO	Once, prior to the commencement of construction	No complaints registered in this regard.

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
– Designate smoking areas where the fire hazard could be regarded as insignificant;	cEO / Contractor	Identify and demarcate through signage for designated smoking areas	Pre-construction & Construction	ECO	Monthly	Photographic record of designated smoking area
– Firefighting equipment must be available on all vehicles located on site;	cEO / dEO in consultation with the Contractor	Provide all vehicles with firefighting equipment	Construction	ECO	Monthly	All vehicles are fitted with firefighting equipment and the details thereof are provided by the cEO
– The local Fire Protection Agency (FPA) must be informed of construction activities;	cEO in consultation with the ECO	Undertake formal consultation to inform the local FPA of the associated construction activities	Pre-construction	ECO	Once, during the commencement of the Construction Phase	Proof of consultation with the FPA
– Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site;	dEO / cEO / Contractor in consultation with the ECO	Develop environmental awareness training material which covers the contact numbers for the FPA and emergency services.	Pre-construction & Construction	ECO	Prior to the commencement of the environmental awareness training and once during the construction phase	Environmental awareness training material requirements checklist and photographic record of contact numbers on display

		Place the contact numbers for the FPA and emergency services at a visible and central location				
– Two-way swop of contact details between ECO and FPA.	ECO	Consultation between the ECO and FPA in order to exchange contact details	Pre-construction	Not Applicable		

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
– 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 and water bodies;	Contractor	Identify and demarcate an appropriate location for the storage of excavated materials	Pre-construction & Construction	ECO	Monthly	Excavated material is not stored within sensitive environmental areas
– All stockpiled material must be maintained and kept clear of weeds and alien vegetation growth by undertaking regular weeding and control methods;	Contractor	Implement appropriate and sufficient maintenance on stockpiled	During the Construction Phase	ECO	Bi-monhtly (every second month)	Stockpiled material is maintained sufficiently and is clear of weeds

		material regularly				and alien vegetation
– Topsoil stockpiles must not exceed 2 m in height;	Contractor	Enforce limitations for the height of topsoil stockpiles	During the Construction Phase	ECO	Bi-monthly (every second month)	Topsoil stockpiles do not exceed 2m in height
– During periods of strong winds and heavy rain, the stockpiles must be covered with appropriate material (e.g. cloth, tarpaulin etc.);	Contractor	Appropriate material must be provided in order to cover stockpiles when required	During the Construction Phase	ECO	Monthly	Contractor to provide proof of availability of appropriate material to cover stockpiles when required
– Where possible, sandbags (or similar) must be placed at the bases of the stockpiled material in order to prevent erosion of the material.	Contractor	Sandbags must be provided in order to prevent erosion of stockpiled materials	During the Construction Phase	ECO	Monthly	Contractor to provide proof of availability of sandbags to prevent erosion of stockpiled materials

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 person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– 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;	Contractor	Collect and retain topsoil for terracing	During the Construction Phase Rehabilitation	ECO	Weekly	Proof of collection and retaining of topsoil
– Areas to be rehabilitated include terrace embankments and areas outside the high voltage yards;	Contractor	Undertake rehabilitation of terrace embankments	During the Construction Phase Rehabilitation	ECO	Weekly	Photographic record of rehabilitation of terrace

		and areas outside of the high voltage yard where applicable				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;	Contractor	All disturbed slope areas must be stabilised	Rehabilitation	ECO	Weekly	Disturbed slopes are stabilised sufficiently
– 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;	Contractor	Stabilise slopes as per the design specifications	Pre-construction & Rehabilitation	ECO	Weekly	Slopes are stabilised as per the design specifications
– Rehabilitation of the disturbed areas must be managed in accordance with Section 5.35: Landscaping and rehabilitation;	Contractor	Undertaken rehabilitation of disturbed areas as per the requirements listed under section 5.35	Rehabilitation	ECO	Weekly	Rehabilitation of disturbed areas is undertaken in-line with the requirements of section 5.35
– All excess spoil generated during terracing activities must be disposed of in an appropriate manner and at a recognised landfill site; and	Contractor	Use a licensed waste disposal facility for the disposal of excess spoil	During the Construction Phase	ECO	Monthly	Certificates obtained for the disposal of excess spoil at a licensed waste disposal facility
– Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes.	Contractor	Spoil used for landscaping must be applied as per the listed requirements	Construction and Rehabilitation	ECO	Monthly	Photographic record of spoil used for landscaping purposes as well as feedback from the contractor

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
– 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;	Contractor	Use a licensed waste disposal facility for the disposal of excess spoil	During the Construction Phase	ECO	Monthly	Certificates obtained for the disposal of excess spoil at a licensed waste disposal facility
– Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes;	Contractor	Spoil used for landscaping must be applied as per the listed requirements	Construction and Rehabilitation	ECO	Monthly	Photographic record of spoil used for landscaping purposes as well as feedback from the contractor
– Management of equipment for excavation purposes must be undertaken in accordance with Section 5.18: Workshop, equipment maintenance and storage; and	Contractor	Undertake the management of equipment for excavation as per the requirements of section 5.18	During the Construction Phase	ECO	Monthly	Management of equipment is undertaken in line with the requirements of section 5.18
– Hazardous substances spills from equipment must be managed in accordance with Section 5.17: Hazardous substances.	Contractor	Undertake the management of hazardous substances spills from equipment as per the requirements of section 5.17	During the Construction Phase	ECO	Monthly	Management of hazardous substances spills from equipment is undertaken in line with the requirements of section 5.17

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**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Batching of cement to be undertaken in accordance with Section 5.19: Batching plants; and	Contractor	Undertake the batching of cement as per the requirements of section 5.19	During the Construction Phase	ECO	Monthly	Management of batching cement is undertaken in line with the requirements of section 5.19
– Residual solid waste must be disposed of in accordance with Section 5.8: Solid waste and hazardous management.	Contractor	Undertake the disposal of solid waste as per the requirements of section 5.8	During the Construction Phase	ECO	Monthly	The disposal of solid waste is undertaken in line with section 5.8.

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
– Management of dust must be conducted in accordance with Section 5. 20: Dust emissions;	Contractor	Manage dust as per the requirements of section5.20	During the Construction Phase	ECO	Weekly	The management of dust is undertaken as per the requirements of section 5.20

– Management of equipment used for installation must be conducted in accordance with Section 5.18: Workshop, equipment maintenance and storage;	Contractor	Undertake the management of equipment for installation as per the requirements of section 5.18	During the Construction Phase	ECO	Monthly	Management of equipment is undertaken in line with the requirements of section 5.18
– Management of hazardous substances and any associated spills must be conducted in accordance with Section 5.17: Hazardous substances; and	Contractor	Undertake the management of hazardous substances and associated spills as per the requirements of section 5.17	During the Construction Phase	ECO	Monthly	Management of hazardous substances and associated spills is undertaken in line with the requirements of section 5.17
– Residual solid waste must be recycled or disposed of in accordance with Section 5.8: Solid waste and hazardous management.	Contractor	Undertake the recycling or disposal of residual solid waste as per the requirements of section 5.8	During the Construction Phase	ECO	Monthly	The recycling or disposal of residual solid waste is undertaken in line with section 5.8.

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
– During assembly, care must be taken to ensure that no wasted/unused materials are left on site e.g. bolts and nuts	Contractor	Inspect areas where construction is being undertaken and	During the Construction Phase	ECO	Weekly	Contractor to provide proof of inspection and removal of waste/unused

		remove and appropriately dispose of wasted/unused materials				materials and the appropriate disposal thereof (i.e. disposal certificates)
– 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.	Contractor	Undertake emergency repairs of equipment as per the requirements of section 5.18 and 5.16	During the Construction Phase	ECO	Weekly	Emergency repairs of equipment is undertaken as per the requirements of section 5.18 and 5.16

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
– Residual solid waste (off cuts etc.) shall be recycled or disposed of in accordance with Section 5.8: Solid waste and hazardous Management;	Contractor	Undertake the recycling or disposal of residual solid waste as per the requirements of section 5.8	During the Construction Phase	ECO	Monthly	The recycling or disposal of residual solid waste is undertaken in line with section 5.8.
– Management of equipment used for installation shall be conducted in accordance with Section 5.18: Workshop, equipment maintenance and storage;	Contractor	Undertake the management of equipment for installation as per the requirements of section 5.18	During the Construction Phase	ECO	Monthly	Management of equipment for installation is undertaken in line with the requirements of section 5.18

– Management of hazardous substances and any associated spills shall be conducted in accordance with Section 5.17: Hazardous substances.	Contractor	Undertake the management of hazardous substances and associated spills as per the requirements of section 5.17	During the Construction Phase	ECO	Monthly	Management of hazardous substances and associated spills is undertaken in line with the requirements of section 5.17

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
– Residual solid waste must be recycled or disposed of in accordance with Section 5.8: Solid waste and hazardous management.	Contractor	Undertake the recycling or disposal of residual solid waste as per the requirements of section 5.8	During the Construction Phase	ECO	Monthly	The recycling or disposal of residual solid waste is undertaken in line with section 5.8.

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
– Develop and implement communication strategies to facilitate public participation;	dEO / cEO	Identify and implement appropriate strategies for communication	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly	Communication is undertaken as per the identified strategies and

		with the communities through consideration of the community needs			during the construction	no complaints are submitted regarding communication
– Develop and implement a collaborative and constructive approach to conflict resolution as part of the external stakeholder engagement process;	Contractor	Development and implement a Grievance Mechanism which considers the community needs and provides procedures for conflict resolution	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during the construction phase	Conflict resolution is undertaken in line with the requirements of the Grievance Mechanism. No complaints on conflict resolution is submitted by the community
– Sustain continuous communication and liaison with neighboring owners and residents	Contractor	Development and implement a Grievance Mechanism which provides procedures for communication / liaison with neighbouring landowners and residents	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during the construction phase	Communication / liaison with neighbouring landowners and residents are undertaken in line with the requirements of the Grievance Mechanism. No complaints on communication with neighbouring landowners and residents is submitted

– Create work and training opportunities for local stakeholders; and	Contractor	Develop and implement a "locals first" policy for the provision of employment opportunities	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during the construction phase	The "locals first" policy is considered in terms of the employment and training opportunities
– 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.	Not Applicable - no workers, other than security is proposed to stay on-site overnight.					

5.33 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**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– 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;	Contractor	Regular emptying of the bunds must be undertaken. This must be undertaken as per the requirements listed in sections 5.17 and 5.18	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Bunds are emptied as per the requirements listed under sections 5.17 and 5.18
– Hazardous storage areas must be well ventilated;	Contractor	Install appropriate ventilation in all hazardous storage areas	During the construction phase	ECO	Prior to site closure for more than 05 days	Effective ventilation is installed in hazardous storage areas

– Fire extinguishers must be serviced and accessible. Service records to be filed and audited at last service;	Contractor / cEO	Ensure fire extinguishers are serviced, as required and are easily accessible with appropriate signage indicating location. Ensure service records are kept up to date and filed	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Signage placed indicating location of fire extinguishers and service records
– Emergency and contact details displayed must be displayed;	Contractor / cEO	Place emergency and contact details which are readily available and easily accessible	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Photographic proof of contact details on display
– Security personnel must be briefed and have the facilities to contact or be contacted by relevant management and emergency personnel;	Contractor in consultation with the ECO	Hold a workshop with all security personnel to provide a brief of the project and security requirements. Provide facilities in order to contact management and emergency personnel	Pre-construction & construction	ECO	Prior to site closure for more than 05 days	Proof of the workshop held must be kept on file by the contractor.
– Night hazards such as reflectors, lighting, traffic signage etc. must have been checked;	Contractor	Regular checks of night hazards	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Proof of checks of night hazards must be

		must be undertaken				provided by the contractor
– Fire hazards identified and the local authority must have been notified of any potential threats e.g. large brush stockpiles, fuels etc.;	cEO / Contractor in consultation with the ECO	Identify any potential fire hazards and notify the relevant local authority	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Proof of notification of the fire hazards to the local authority must be provided by the Contractor
– Structures vulnerable to high winds must be secured;	Contractor	Ensure structures vulnerable to wind is secure prior to site closure	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Structures vulnerable to wind is secured prior to site closure
– Wind and dust mitigation must be implemented;	Contractor	Implement wind and dust mitigation prior to site closure	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Wind and dust mitigation is implemented prior to site closure
– Cement and materials stores must have been secured;	Contractor	Ensure cement and material stores are secured prior to site closure	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Cement and material stores are secured prior to site closure
– Toilets must have been emptied and secured;	Contractor	Ensure toilets are emptied and secured prior to site closure	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Toilets are emptied and secured prior to site closure
– Refuse bins must have been emptied and secured;	Contractor	Ensure refuse bins are emptied and secured prior to site closure	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Refuse bins are emptied and secured prior to site closure

– Drip trays must have been emptied and secured.	Contractor	Ensure drip trays are emptied and secured prior to site closure	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Drip trays are emptied and secured prior to site closure

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
– All old equipment removed during the project must be stored in such a way as to prevent pollution of the environment;	Contractor	Appropriately store old equipment in a manner which prevents pollution to the environment. This could include the construction of bunded areas	Decommissioning	ECO	Monthly	Photographic record of appropriate storage of old equipment
– Oil containing equipment must be stored to prevent leaking or be stored on drip trays;	Contractor	Appropriately store equipment containing oil through the use of drip trays or other suitable methods	Decommissioning	ECO	Monthly	Photographic record of appropriate storage of equipment containing oil
– All scrap steel must be stacked neatly and any disused and broken insulators must be stored in containers;	Contractor	Ensure all scrap steel is stacked neatly and store disused and	Decommissioning	ECO	Monthly	Photographic record of stacked scrap steel and

		broken insulators in appropriate containers				containers containing broken and disused insulators
– 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;	Contractor	Develop and implement a procedure for the dismantling and transportation of equipment containing pollution causing substances which prevents spillage and pollution of the environment	Decommissioning	ECO	Monthly	Proof from contractor that dismantling and transportation of equipment containing pollution causing substances has been undertaken in an appropriate manner
– The Contractor must also be equipped to contain and clean up any pollution causing spills; and	Contractor	Ensure sufficient spill kits are available for the clean-up of pollution causing spills	Decommissioning	ECO	Monthly	Sufficient spill kits are available on site
– Disposal of unusable material must be at a licensed waste disposal site.	Contractor	Make use of a licensed waste disposal site	Decommissioning	ECO	Monthly	Certificates obtained for the disposal 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
– 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;	Contractor	Develop and implement a rehabilitation plan for the rehabilitation of all disturbed areas. Dispose of all spoil and waste at a licensed waste disposal facility	Pre-construction & Rehabilitation	ECO	Weekly	Rehabilitation of the disturbed areas is undertaken as per the rehabilitation plan. All certificates of waste disposal at licensed facilities are available.
– 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	Contractor in consultation with the ECO	Assess all slopes and determine whether contouring is required	Rehabilitation	ECO	Weekly	All slopes are assessed and contoured as required
– 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;	Contractor in consultation with the ECO	Assess all slopes and determine whether terracing is required	Rehabilitation	ECO	Weekly	All slopes are assessed and terraced as required
– 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;	Contractor	Ensure all berms have a slope of 1:4 and is replanted with indigenous species and grasses	Rehabilitation	ECO	Weekly	All berms have a slope of 1:4 and is replanted with indigenous species and grasses

– 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;	Not applicable					
– Rehabilitation of access roads inside of farmland;	Not applicable					
– Indigenous species must be used for with species and/grasses to where it compliments or approximates the original condition;	Contractor	Make use of indigenous species for rehabilitation	Rehabilitation	ECO	Weekly	Indigenous species are used for rehabilitation
– Stockpiled topsoil must be used for rehabilitation (refer to Section 5.24: Stockpiling and stockpiled areas);	Contractor	Ensure stockpiled topsoil is used as per the requirements listed under section 5.24	Rehabilitation	ECO	Weekly	Stockpiled topsoil is used as per the requirements listed under section 5.24
– Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion;	Contractor	Ensure that topsoil is spread evenly	Rehabilitation	ECO	Weekly	Topsoil is spread evenly
– Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed;	Contractor	Remove all visible weeds from placement area and topsoil before spreading the topsoil	Rehabilitation	ECO	Weekly	No weeds are visible in the placement area or the topsoil
– Subsoil must be ripped before topsoil is placed;	Contractor	Undertake the ripping of subsoil prior to the spreading of topsoil	Rehabilitation	ECO	Weekly	Subsoil is ripped before topsoil is placed
– The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment;	Contractor	Plan the timeframe for rehabilitation in order to	Rehabilitation	ECO	At the start of rehabilitation to confirm the	Rehabilitation is undertaken during the optimal time

		undertake vegetation planting during the optimal time for vegetation establishment			correct timeframe	
– Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled;	Contractor	All disturbed slope areas must be stabilised	Rehabilitation	ECO	Weekly	Disturbed slopes are stabilised sufficiently
– 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;	Contractor	Stabilise slopes as per the design specifications	Pre-construction & Rehabilitation	ECO	Weekly	Slopes are stabilised as per the design specifications
– Spoil can be used for backfilling or landscaping, as long as it is covered by a minimum of 150 mm of topsoil.	Contractor	Spoil used for landscaping must be applied as per the listed requirements	Rehabilitation	ECO	Weekly	Photographic record of spoil used for landscaping purposes as well as feedback from the contractor
– 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: 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	Contractor in consultation with a suitably qualified specialist	Make use of a suitable vegetation seed mixture should enhancement be required	Rehabilitation	ECO	As and when required	Use of a suitable vegetation seed mixture if required

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:

Applicant Name	**Sutherland Wind Farm (Pty) Ltd/Rietrug Wind Farm (Pty) Ltd**[1]
Contact Person	Eugene Marais
Physical Address	4th Floor Mariendahl House, Newlands on Main, Corner Main and Campground Road, Claremont, Cape Town, 7708
Postal Address	PO Box 45063, Claremont, 7735
Telephone	021 657 4052
Fax	N/A
Cell	(073) 871 5781
Email Address	Eugene.Marais@mainstreamrp.com

7.1.2. Details and Expertise of Environmental Assessment Practitioner (EAP)

EAP Name	**Arlene Singh**
EAP Qualifications	B.Sc. (Hons.) Environmental Management
Professional Affiliation/Registration	SACNASP EAPASA
Physical Address	Waterfall, Cnr Old Main Road & Maxwell Drive, Johannesburg, 2090
Telephone	N/A
Fax	086 471 4190
Cell	084 277 7074
Email Address	arlene@veersgroup.com

Refer to **Appendix A** of the EMPr for the detailed experience of the EAP and the Project Team.

[1] The 400kV MTS supports both Sutherland and Rietrug WEFs, however, the EA was issued under Sutherland Wind Farm (Pty) Ltd (DFFE REF: 14/12/16/3/3/1/2077/AM2)

7.1.3. Project Details

Project Name:

DEVELOPMENT OF THE ELECTRICAL GRID INFRASTRUCTURE (**400KV KORING MAIN TRANSMISSION SUBSTATION)** AND ASSOCIATED INFRASTRUCTURE FOR THE AUTHORISED SUTHERLAND, SUTHERLAND 2 AND RIETRUG WIND ENERGY FACILITIES, WESTERN CAPE PROVINCE

7.1.4. Project Description

Sutherland Wind Farm (Pty) Ltd is proposing the development of the new **400kV Koring Main Transmission Station (MTS) (14/12/16/3/3/1/2077/AM2)** for the authorised Sutherland, Sutherland 2 and Rietrug Wind Energy Facilities (WEFs). The proposed MTS will include an Operation & Maintenance (O&M) building and laydown area, as well as associated infrastructure in order to facilitate connection to the national grid. The proposed Koring MTS will connect the authorised powerlines also associated with DFFE Reference: 14/12/16/3/3/2077/AM2 to the existing 400kV powerlines in the Western Cape Province. The Koring MTS will enable the evacuation of electricity generated at the authorised Sutherland, Rietrug and Sutherland 2 WEFs to the National Grid.

The developer has bid the above-mentioned WEFs and associated infrastructure into the Renewable Energy IPP Procurement Programme (REIPPPP) Bid Window 5 for the procurement of up to 1 600MW of onshore wind energy technologies, and has since been given preferred bidder status for the authorised Sutherland and Rietrug WEFs. This allocation is in accordance with the generation capacity required as specified in the Integrated Resource Plan (IRP) 2019 and accompanying ministerial determination from the Minister for the Department of Mineral Resources and Energy (DMRE).

The infrastructure and key components considered for this development includes:

- 400kV Main Transmission Substation (MTS), including an O&M Building (and Laydown area) as well as associated infrastructure in order to facilitate connection to the national grid.

Portion 7 of Farm Hamelkraal 16 has been identified for the proposed 400kV MTS and associated infrastructure for the authorised Sutherland, Sutherland 2 and Rietrug WEFs.

1) **400kV Main Transmission Substation (MTS)- Corner Co-ordinates (Laydown Area & O&M Building):**

400kV Main Transmission Substation (MTS)- Corner Co-ordinates	Latitude	Longitude
Corner 1	32°42'40.93"S	21°15'29.33"E
Corner 2	32°42'39.92"S	21°15'42.91"E
Corner 3	32°42'50.29"S	21°15'43.90"E

Corner 4	32°42'51.16"S	21°15'30.15"E

The scope of this generic EMPr is applicable to the development of the new **400kV Koring MTS** for the authorised Sutherland , Sutherland 2 and Rietrug WEFs, Western Cape Province.

This document forms a completed addendum to the **Approved** Environmental Management Programme (EMPr) (prepared by CSIR Environmental Management Services), as submitted with the Final Basic Assessment Report (BA Report) in December 201,9 and the addendum to the EMPr (prepared by NALA Environmental) for the Part 2 Amendment report associated with the relocation of the MTS (July 2021).

This section has been prepared by an Environmental Assessment Practitioner (EAP), with input from relevant specialists.

7.1.5. Project Location

Location details of the development of the substation:

Province	Western Cape
District Municipality	Central Karoo District Municipality
Local Municipality	Laingsburg Local Municipality
Nearest town(s)	Sutherland
Affected Properties: Farm name(s), number(s) and portion numbers (on-site substation)	Portion 7 of Farm Hamelkraal 16
SG 21 Digit Code (s)	C0430000000001600007
Current zoning and land use	Agriculture

7.1.6. Preliminary Technical Specifications of the 400kV MTS

Infrastructure	**Footprint, dimensions and details**
400kV Substation Capacity	Up to 400kV
400kV substation Development Footprint	11,4ha
O&M Building	The O&M Building will be located within the footprint of the MTS.
Laydown area	The laydown area will be located within the footprint of the MTS.

It should be noted that Eskom's requirements for work in or near Eskom servitudes should be adhered to.

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. 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.

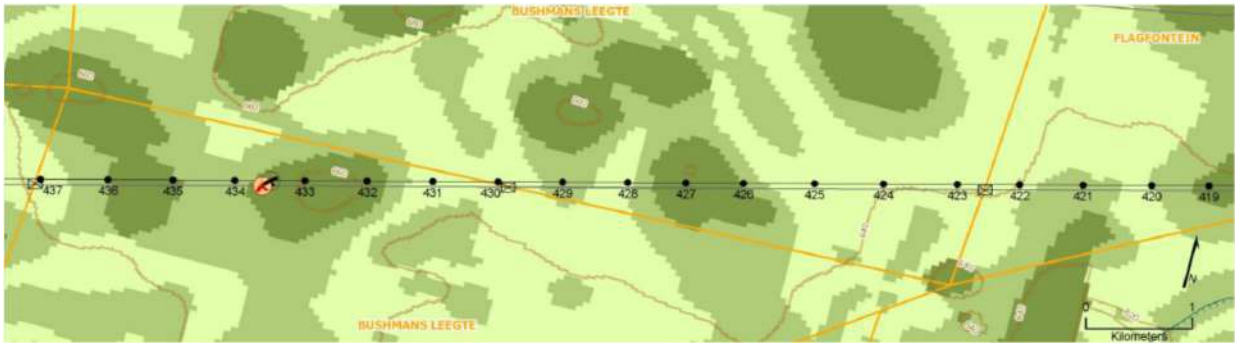


Figure 1: Example of an environmental sensitivity map in the context of a final overhead transmission and distribution profile

The national web-based environmental screening tool was utilised for this project and the grid connection corridor sensitivity maps can be seen in Figures 3 to 8. The site-specific environmental sensitivity map included in the BA Report is included as Figure 2.

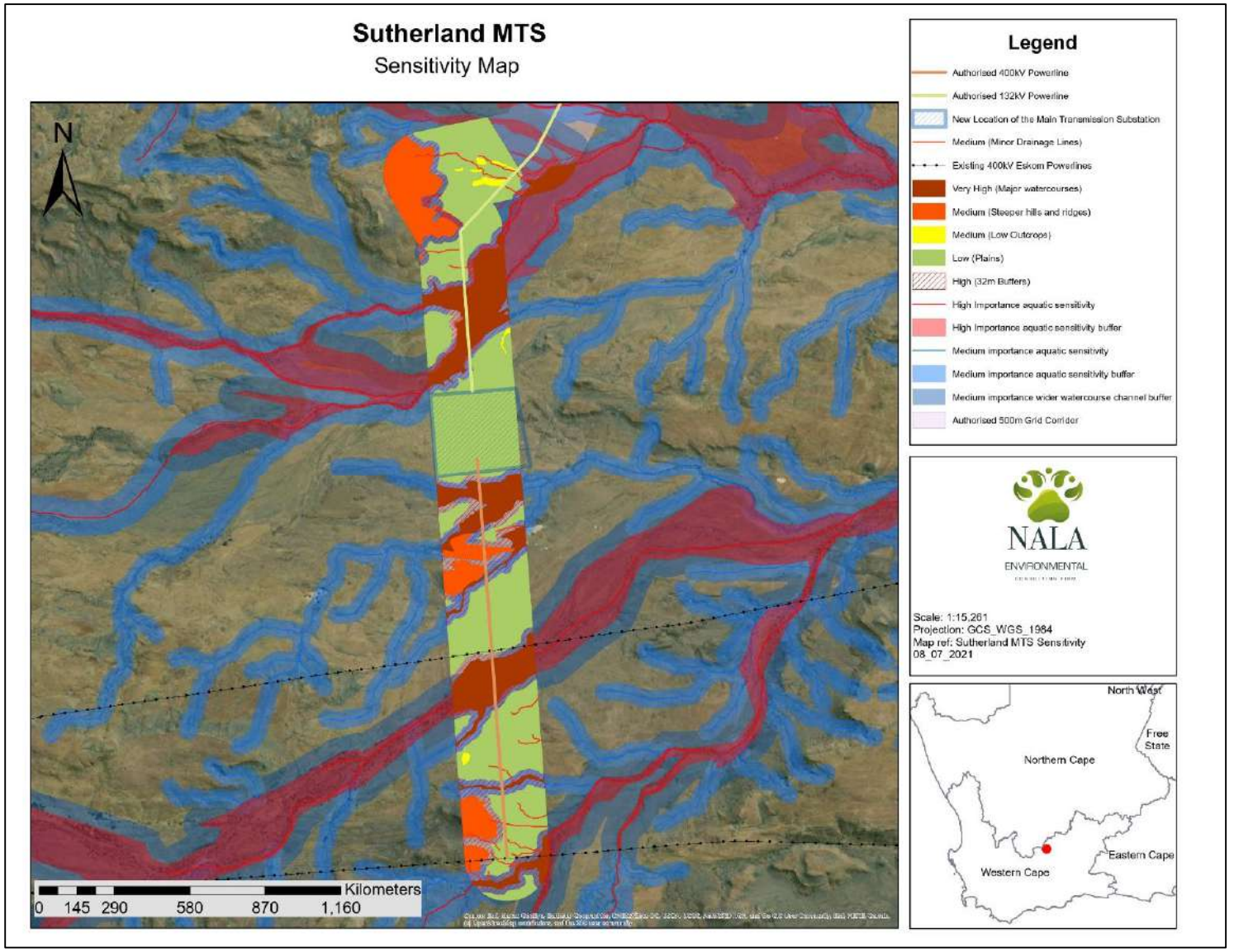


Figure 2: Environmental sensitivity map for the proposed 400kV MTS associated with the Sutherland and Rietrug WEFs.

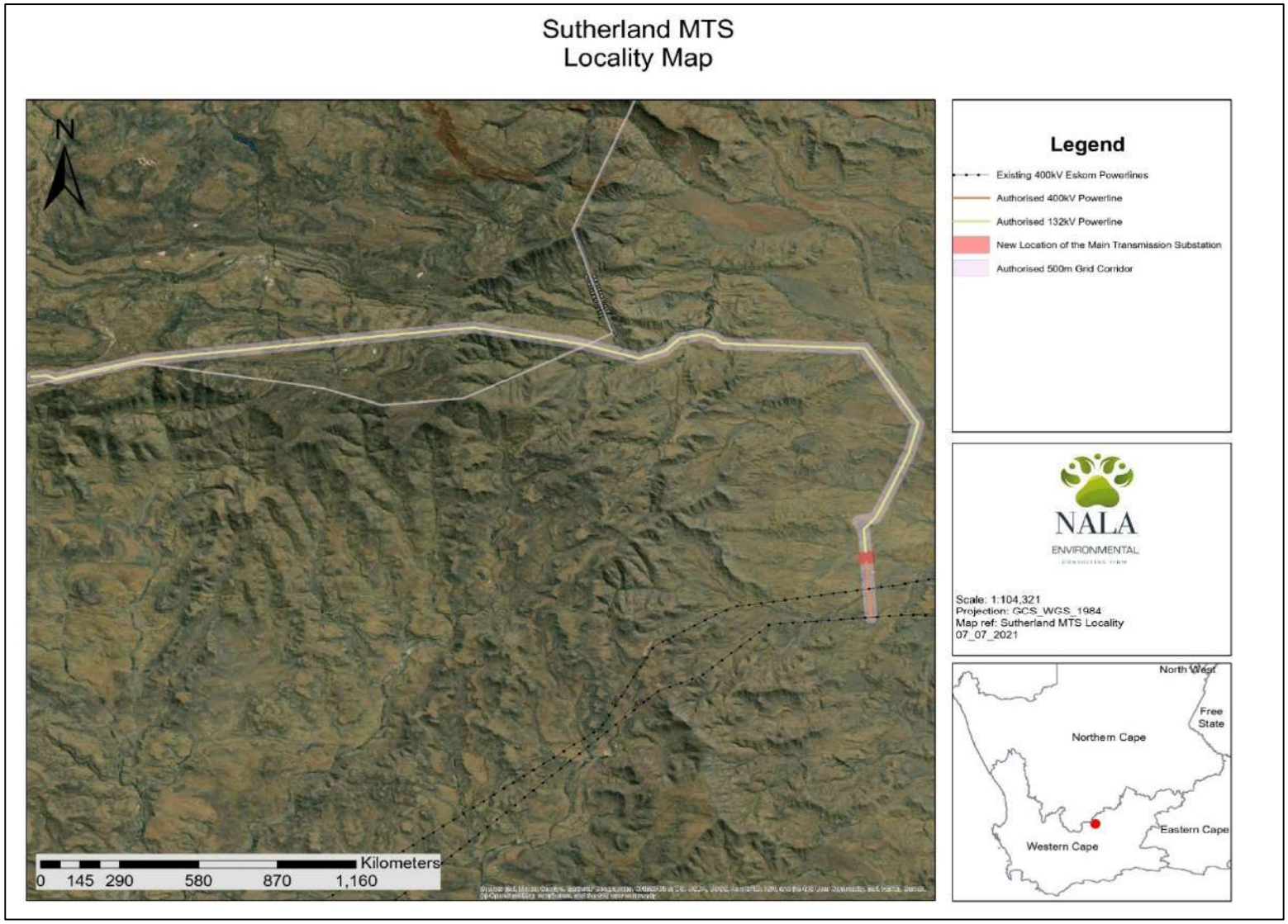


Figure 3: Locality map for the proposed 400kV MTS associated with the authorised Electrical Grid infrastructure to support the Sutherland, Sutherland 2 and Rietrug WEFS.

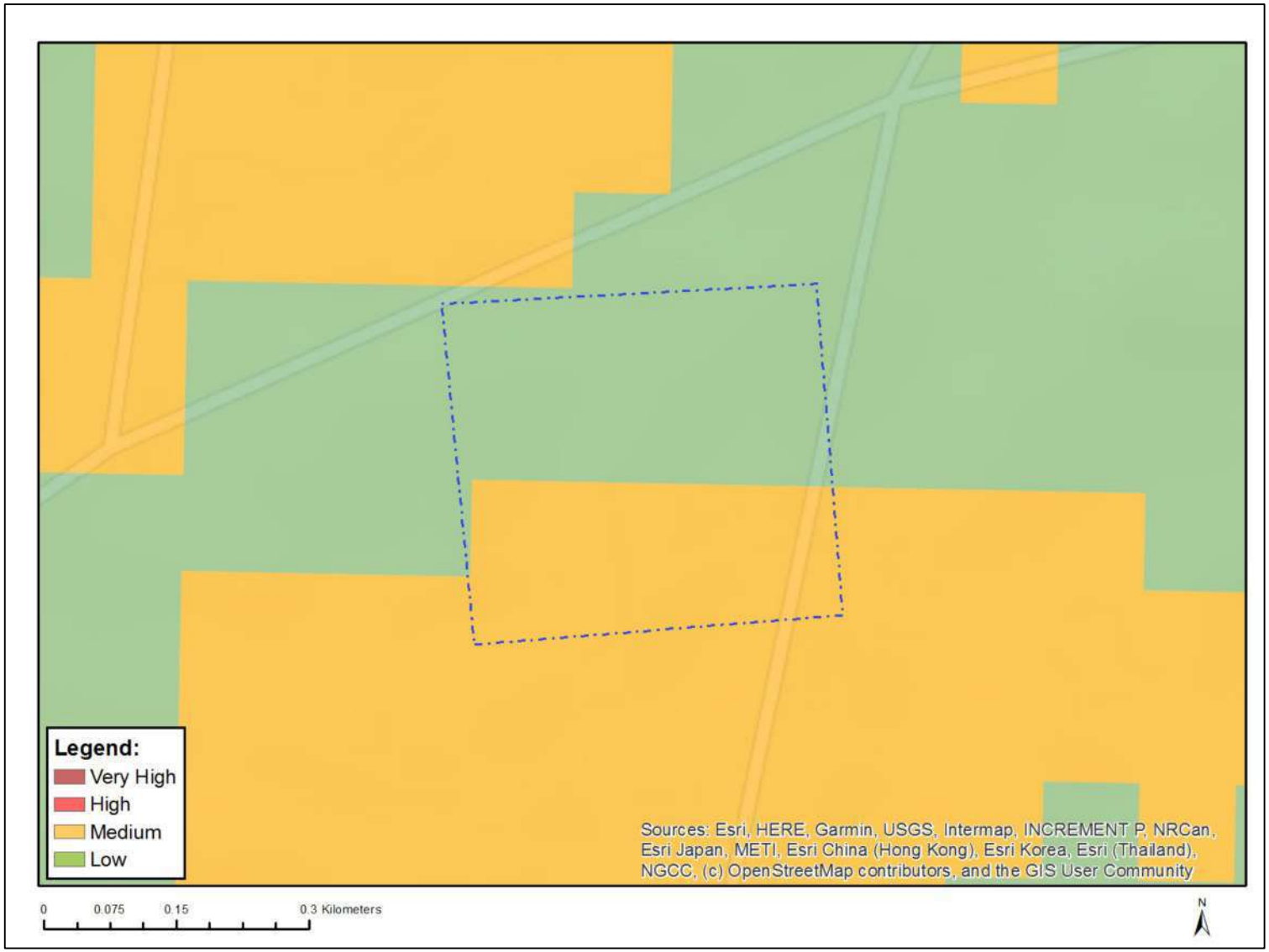


Figure 4: Map of Relative Agriculture Theme Sensitivity for the proposed 400kV MTS within the authorised Sutherland and Rietrug WEFs

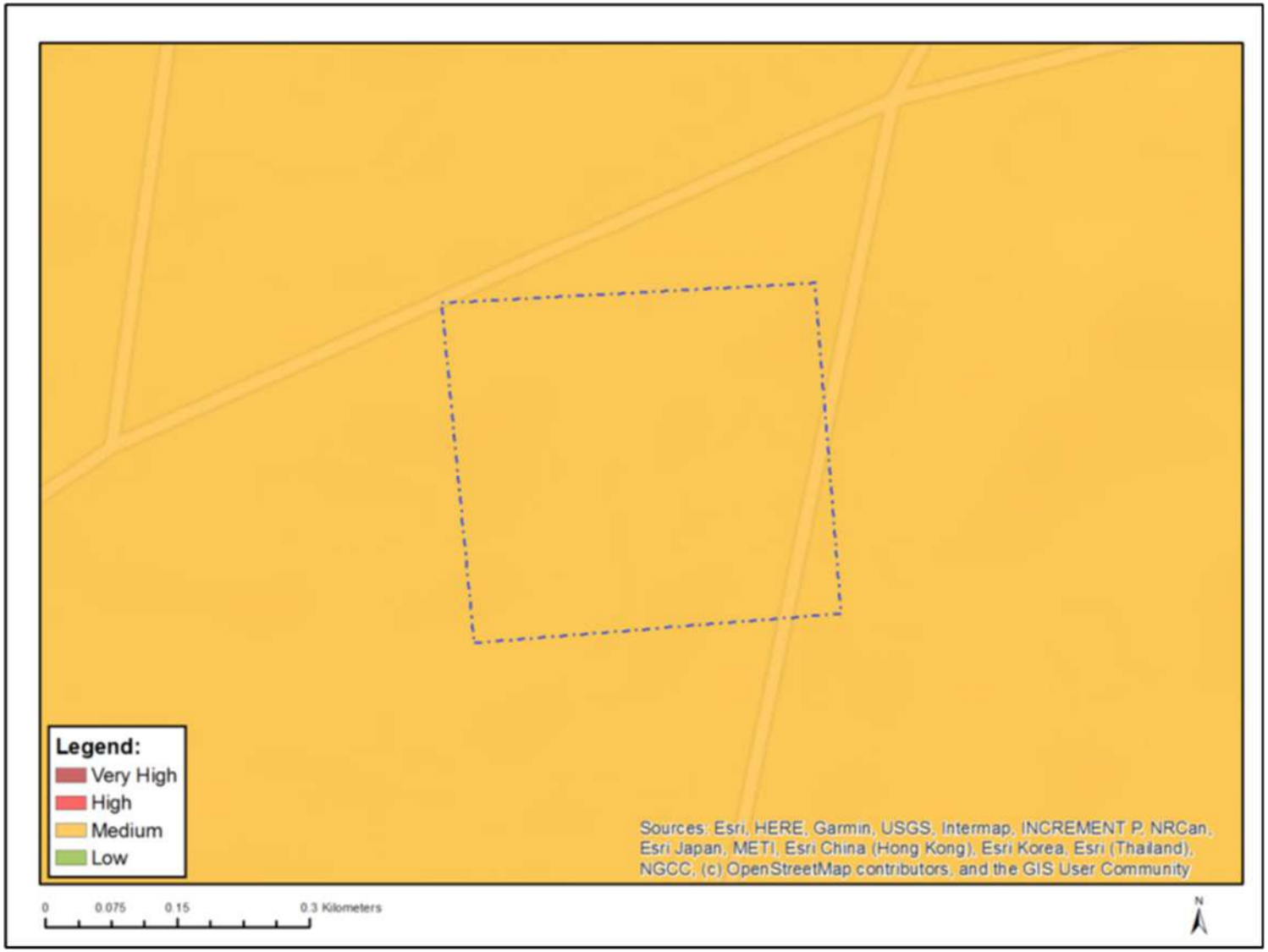


Figure 5: Map of Relative Animal Species Theme Sensitivity for the proposed 400kV MTS within the authorised Sutherland and Rietrug WEFs

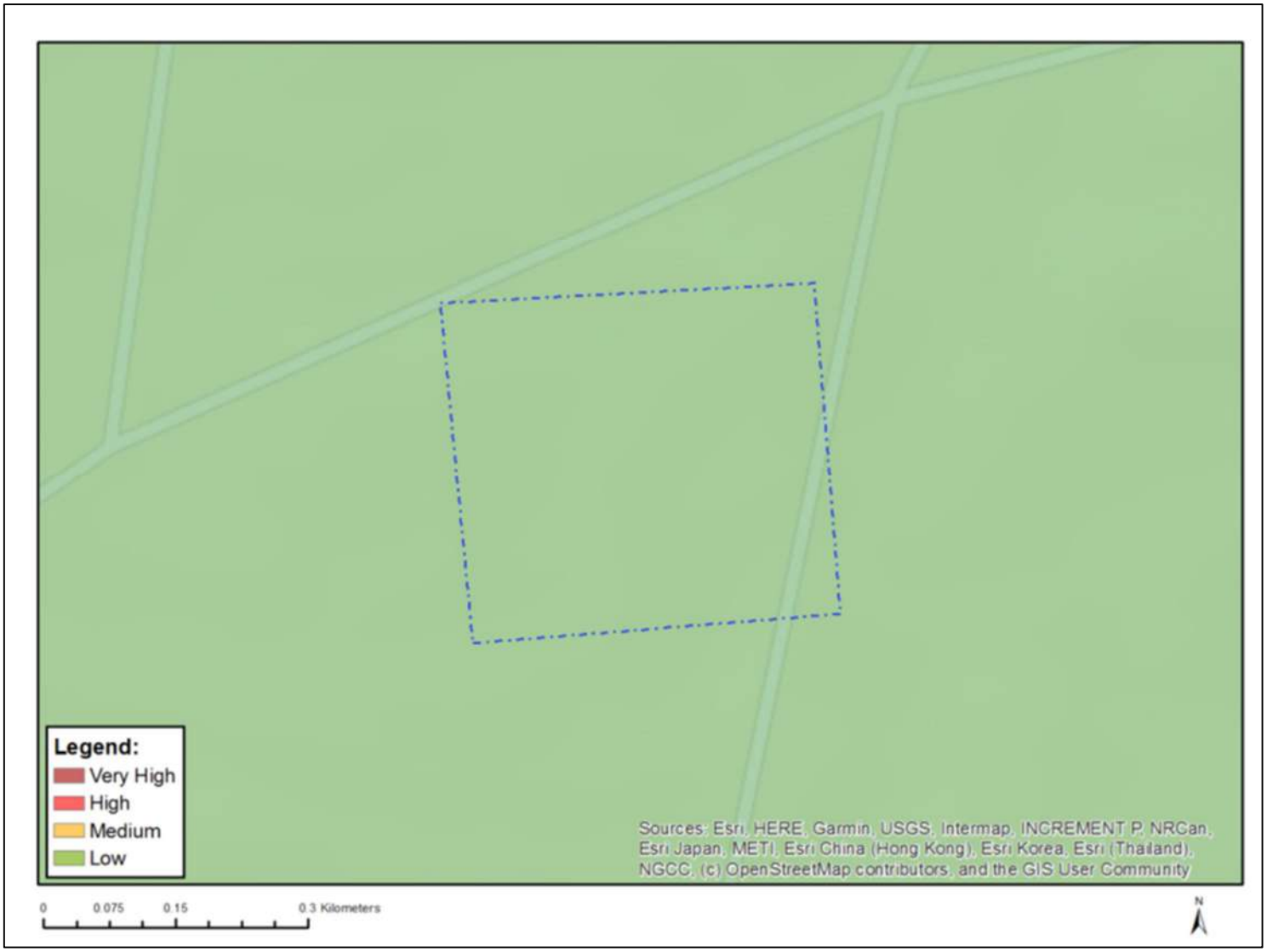


Figure 6: Map of Relative Aquatic Biodiversity Sensitivity for the proposed 400kV MTS within the authorised Sutherland and Rietrug WEFs

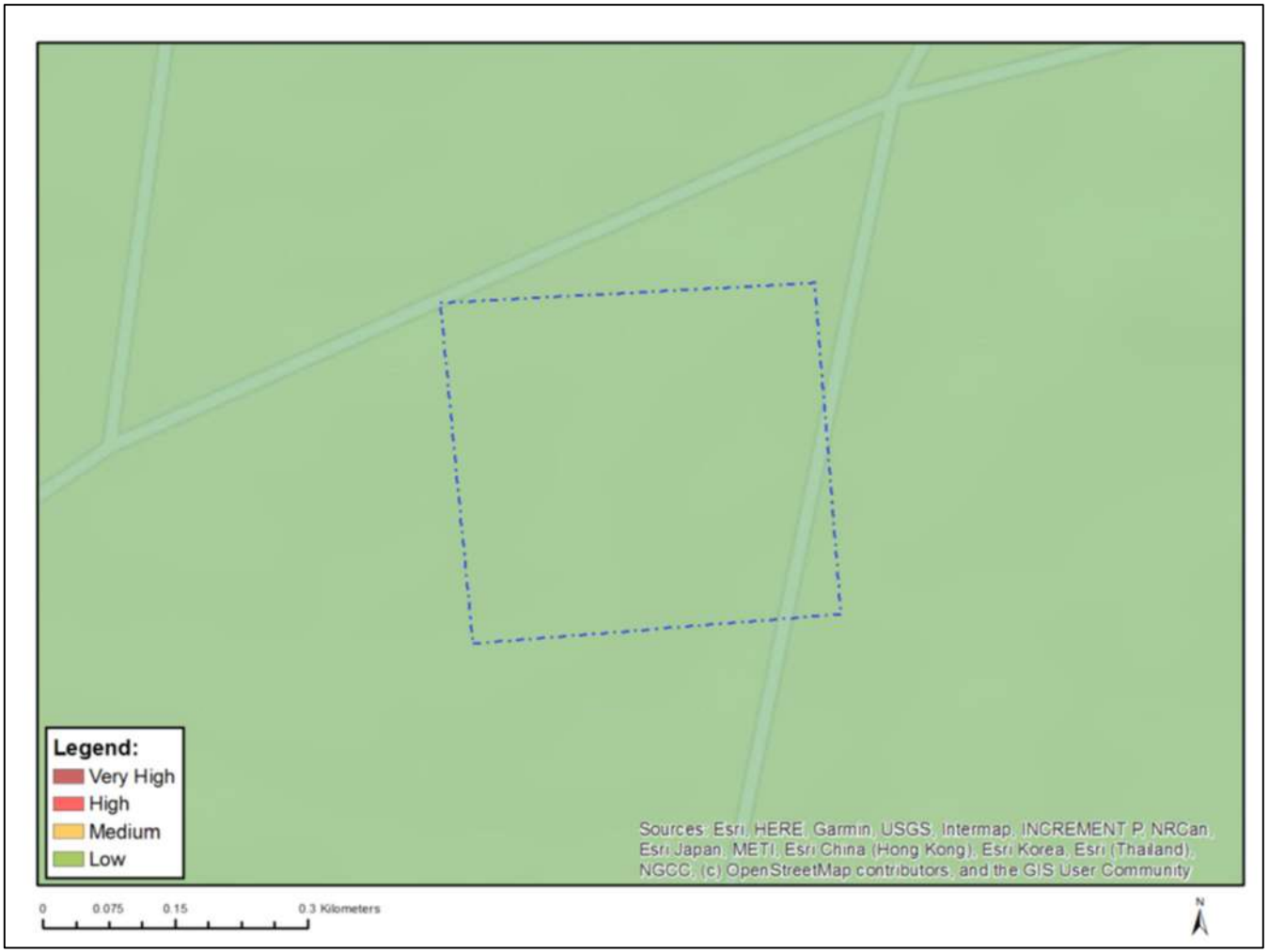


Figure 7: Map of Archaeological and Cultural Heritage Theme for the proposed 400kV MTS within the authorised Sutherland and Rietrug WEFs

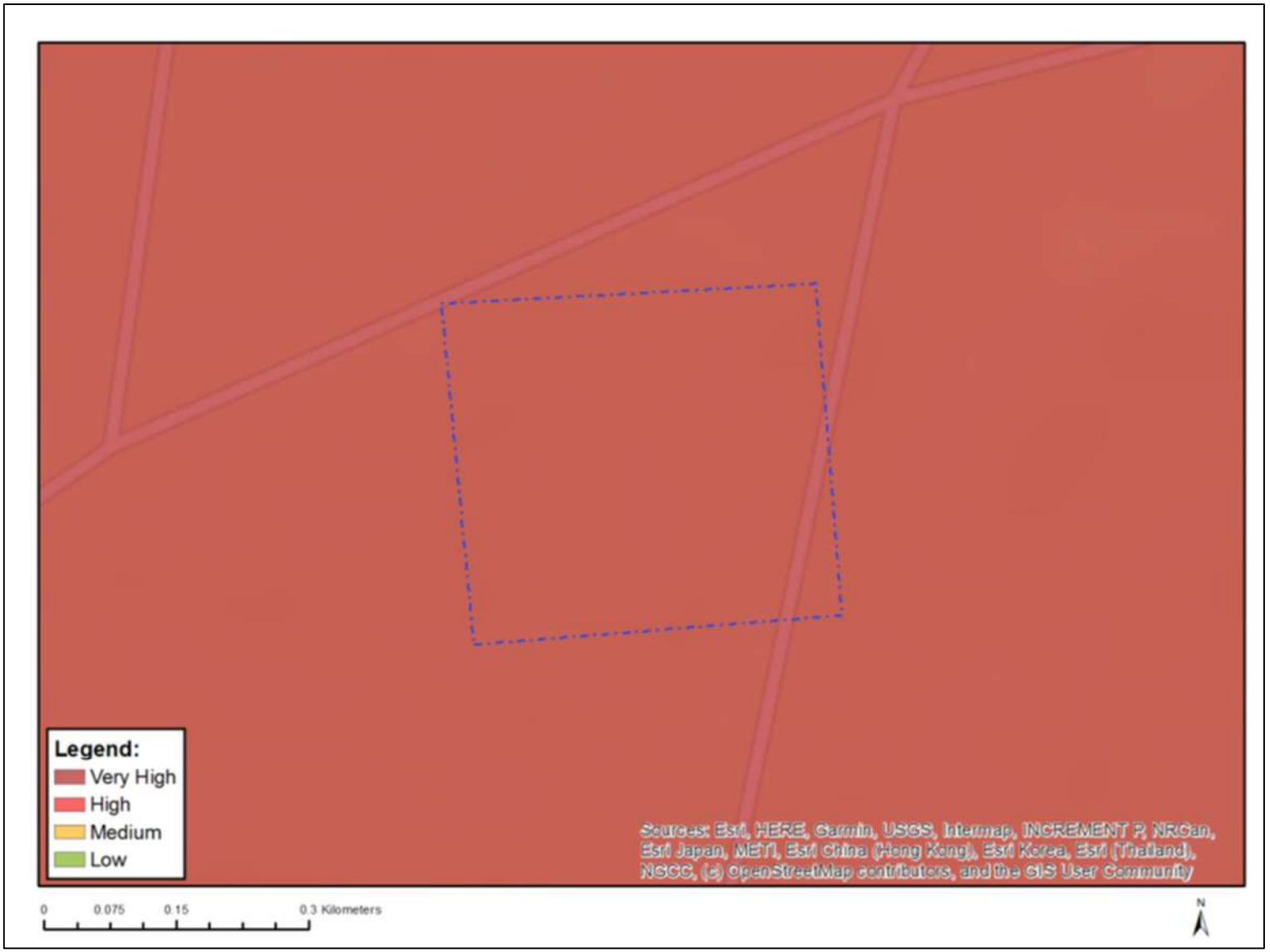


Figure 8: Map of Palaeontological Theme Sensitivity for the proposed 400kV MTS within the authorised Sutherland and Rietrug WEFs

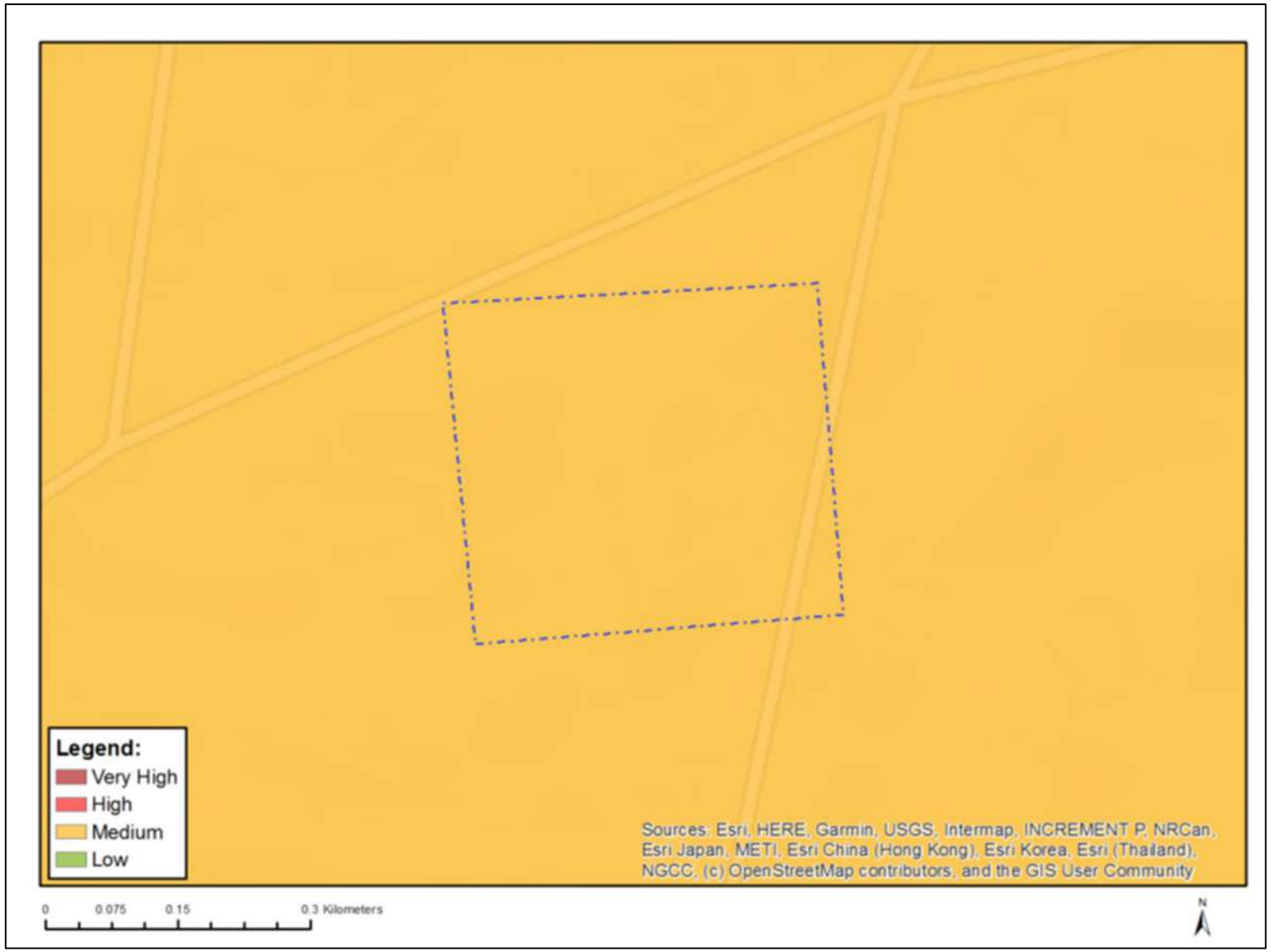


Figure 9: Map of Plant Species Theme Sensitivity for the proposed 400kV MTS within the authorised Sutherland and Rietrug WEFs

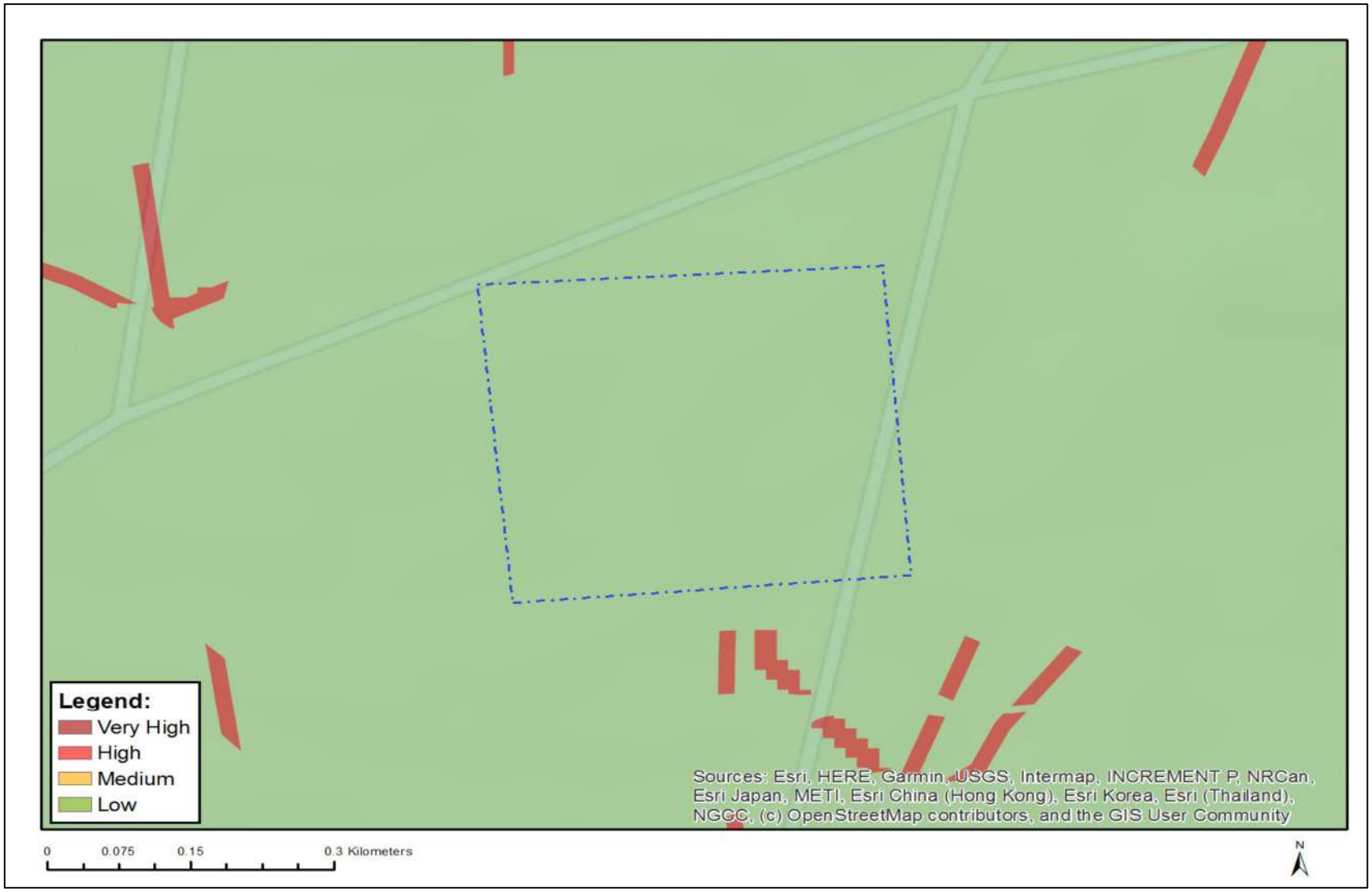
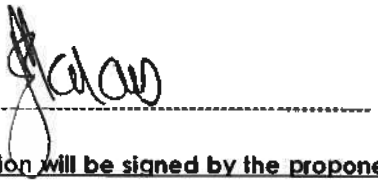


Figure 10: Map of Relative Terrestrial Biodiversity Theme Sensitivity for the proposed 400kV MTS within the authorised Sutherland and Rietrug WEFs

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:



2022/11/22

This declaration will be signed by the proponent/applicant/holder of the EA once the contractor is appointed and has provided inputs to this Generic EMPr as per the requirements of this template.

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.

8.1 Avifaunal Impacts

Impact management outcome: Reduce potential impact on avifauna						
Impact Management Action	**Implementation**			**Monitoring**		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
Minimise displacement due to disturbance and habitat transformation associated with the construction of the MTS and associated infrastructure.	Project Manager /ECO	» Construction activity should be restricted to the immediate footprint of the infrastructure. » An 800m all infrastructure exclusion zone must be implemented around the Black Harrier nest to prevent potential disturbance of the breeding pair » Access to the remainder of the site (i.e., areas where no construction activities are planned) should be strictly controlled to prevent unnecessary disturbance of priority species. » Removal of vegetation must be restricted to a minimum » Measures to control noise and dust should be applied according to current best practice in the industry.	During design & prior to the commencement of the construction activities.	ECO	Before Commencement and Ongoing	All activities constantly monitored for restriction into immediate footprint and prescribed access control

		» Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum. » Construction of new roads should only be considered if existing roads cannot be upgraded. » Vehicle and pedestrian access to the site should be controlled and restricted to access roads to prevent unnecessary disturbance of Species of Conservation Concern (SCC)				
Minimise electrocutions within the substation yard	Project Manager/ ECO	» The hardware within the proposed transmission substation yard is too complex to warrant any mitigation for electrocution at this stage. It is recommended that if on-going impacts are recorded once operational, site specific mitigation (i.e., insulation) be applied reactively. This is an acceptable approach because Red List priority species is unlikely to frequent the	For duration of project lifecycle	ECO	Ongoing (Monthly)	Record and monitor ongoing impacts

		substation and be electrocuted. » All internal 33kV medium voltage cables are to be buried, if technically possible. » As a minimum, post-construction monitoring should be undertaken for the first two years of operation, and then repeated again in Year 5, and again every five years thereafter for the operational lifetime of the facility. The exact scope and nature of the post-construction monitoring will be determined on an ongoing basis by the results of the monitoring through a process of adaptive management				
Minimise displacement due to disturbance associated with the decommissioning of the substation	ECO	» Decommissioning activity/activities should be restricted to the immediate footprint of the infrastructure. » Access to the remainder of the site (i.e., areas where no construction activities are planned)	Decommissioning phase	ECO	During the decommissioning phase	Footprint restriction and access control monitored and maintained during decommissioning.

		should be strictly controlled to prevent unnecessary disturbance of priority species. » Measures to control noise and dust should be applied according to current best practice in the industry. » Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum.				

8.2 Bat Impacts[2]

Impact management outcome: Minimise disturbance to bats						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
▪ Minimisation of light pollution and artificial habitat creation ▪ Keep artificial lighting to a minimum on the infrastructure (O&M buildings), while still adhering to safety and security requirements.	Relevant specialist in consultation with the Project Developer	» It must become mandatory to only use lights with low sensitivity motion sensors that switch off automatically	Operational phase	Project Developer	Once, prior to the commencement of construction and as and when required during operation .	Proof of installation of low motion sensors and their maintenance, as required

[2] Bat Assessments are not required for the MTS and were not assessed during the BA process for this grid infrastructure, however as the infrastructure was included in the walkthrough we have only included the general measures that would be applicable.

		when no persons are nearby, to prevent the creation of regular insect gathering pools, where practically possible without compromising security requirements » Aviation lights should remain as required by aviation regulations. » Bi-annual visits to the facility at night must be conducted for the operational lifetime of the facility by operational staff of the facility, to assess the lighting setup				

		and whether the passive motion sensors are functioning correctly. » The bat specialist conducting the operational bat mortality monitoring must conduct at least one visit to site during night-time to assess the placement and setup of outside lights on the facility. When lights are replaced and maintenance on lights is conducted, this Mitigation Action Plan must be consulted.				

8.3 Aquatic Ecology (Freshwater impacts)

Impact management outcome: Potential impact on aquatic (freshwater) resources						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
Reduce loss of riparian systems and disturbance of the alluvial water courses during the construction, operation and decommissioning phase	Project Manager/ECO	No direct impact or disturbance of riparian systems and alluvial water courses during the construction, operation and decommissioning phase, as such features are avoided.	N/A	ECO	N/A	N/A
Minimise the impact on freshwater resource systems through the increase in surface runoff on form and function during the operational and decommissioning phases	Project Manager/ECO	» Infrastructure footprint and associated area of disturbance should be minimised, as far as practically possible » Any storm-water within the substation site must be handled in a suitable manner, i.e. trap sediments, and reduce flow velocities	Construction, operation and decommissioning phase	ECO	Before commencement and Ongoing	Monitor and implement the methods of minimising the impacts. Implementation of mitigation measures

		» Stormwater from the substation and hardstand areas must be managed using appropriate channels and swales when located within steeper areas. » The runoff should be dissipated over a broad area covered by natural vegetation or managed using appropriate channels and swales. » Storm water run-off infrastructure must be maintained to mitigate both the flow and water quality impacts of any storm water				

		leaving the substation site. .				
Manage increase in sedimentation and erosion during the construction, operational and decommissioning phase	Project Manager/ECO	» Any erosion problems observed to be associated with the project infrastructure should be rectified as soon as possible and monitored thereafter to ensure that they do not re-occur. » All bare areas, as a result of the development, should be revegetated with locally occurring species, to bind the soil and limit erosion potential. » Site rehabilitation should aim to restore surface drainage patterns, natural soil and	Construction, operation and decommissioning phase	ECO	Before commencement and Ongoing	Monitor and implement the methods of minimising the impacts. Implementation of erosion control measures

		vegetation, as far as is feasible. » An erosion control management plan should be utilised to prevent erosion » There should be reduced activity at the site after large rainfall events when the soils are wet. No driving off of hardened roads should occur immediately following large rainfall events until soils have dried out and the risk of bogging down has decreased. » Any storm-water within the site must be handled in a suitable manner, i.e. trap sediments, and reduce flow velocities				

		» Stormwater from the substations and other hard stand areas, must be managed using appropriate channels and swales when located within steep areas. » Storm water run-off infrastructure must be maintained to mitigate both the flow and water quality impacts of any storm water leaving the substation site. » Stormwater from any access or internal roads must be managed so that this does not interfere with the regional hydrology and or create the potential for any erosion.				

		» Silt traps should be used where there is a danger of topsoil eroding and entering streams and other sensitive areas. » Construction of gabions and other stabilisation features to prevent erosion, if deemed necessary. » Store hydrocarbons off site where possible, or otherwise implement hydrocarbon storage using impermeable floors with appropriate bunding, sumps and roofing. » Handle hydrocarbons carefully to limit spillage.				

		» Ensure vehicles are regularly serviced so that hydrocarbon leaks are limited. » Designate a single location for refuelling and maintenance, outside of any freshwater resource features. » Keep a spill kit on site to deal with any hydrocarbon leaks. » Remove soil from the site which has been contaminated by hydrocarbon spillage.				
Reduce potential compromise ecological processes as well as ecological functioning of important freshwater resource habitats	Project Manager/ECO	» All highly sensitive major ephemeral washes and their associated buffer areas should be regarded as No-Go areas for all	Construction phase	ECO/ Landscape Architect/ Contractor	Before commencement and Ongoing	Monitor and implement the methods of minimising the impacts.

		construction activities. » The recommended buffer (namely 50m) areas between the delineated freshwater resource features and proposed project activities should be maintained. » Vegetation clearing to be kept to a minimum. No unnecessary vegetation to be cleared. » The potential stormwater impacts of the proposed developments areas should be mitigated on-site to address any erosion or water quality impacts. » Good housekeeping				

		measures, as stipulated in the EMPr for the project, should be in place where construction activities take place to prevent contamination of any freshwater features. » All construction materials, including fuels and oil, should be stored in demarcated areas that are contained within berms / bunds to avoid spread of any contamination. » Washing and cleaning of equipment should also be done in berms or bunds, in order to trap any cement and prevent				

		excessive soil erosion. » Mechanical plant and bowsers must not be refuelled or serviced within or directly adjacent to any channel. It is therefore suggested that all construction camps, lay down areas, batching plants or areas and any stores should be outside of any demarcated water courses » Disturbed areas should be rehabilitated through reshaping of the surface to resemble that prior to the disturbance, and vegetated with suitable local				

		indigenous vegetation. » All alien plant re-growth (mostly forbs) must be monitored, and should it occur, these plants should be eradicated. The scale of the operation does however not warrant the use of a Landscape Architect and / or Landscape Contractor				
Reduce impact on localized surface water quality during the construction, operation and decommissioning phase (chemical pollutants (hydrocarbons from equipment and vehicles, cleaning fluids, cement powder, wet concrete, shutter-oil, etc.) associated with site-clearing machinery and construction activities could be washed downslope into the freshwater resource features.)	Project Manager/ECO	» Implement appropriate measures to ensure strict use and management of all hazardous materials used on site » Implement appropriate measures to ensure strict management of potential sources of	construction, operation and decommissioning phase	ECO	Before commencement and Ongoing	Monitor and implement the methods of minimising the impacts. Implementation of pollution control measures

		pollutants (e.g. litter, hydrocarbons from vehicles and machinery, cement during construction, etc.) » Implement appropriate measures to ensure the containment of all contaminated water through careful run-off management on the development site. » Implement appropriate measures to ensure strict control over the behaviour of construction workers. » Working protocols incorporating pollution control measures (including				

		approved method statements by the Contractor) should be clearly set out in the Construction Environmental Management Plan (CEMP) for the project and strictly enforced. » Appropriate ablution facilities should be provided for construction workers during construction of the substation. » All construction materials, including fuels and oil, should be stored in demarcated areas that are contained within berms / bunds to avoid spread of any contamination.				

		» Washing and cleaning of equipment should also be done in berms or bunds, in order to trap any cement and prevent excessive soil erosion. » Mechanical plant and bowsers must not be refuelled or serviced within or directly adjacent to any channel. It is therefore suggested that all construction camps, lay down areas, batching plants or areas and any stores should be outside of any demarcated water courses.				

8.4 Terrestrial Ecology

Impact management outcome: Reduce potential impact on flora with the powerline corridor						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
Minimise potential impacts on vegetation and listed protected plant species	Project Manager /ECO	» Pre-construction walk-through of the MTS footprint to locate species of conservation concern that can be translocated or avoided. » A spring survey for red data and protected plants must be undertaken in order to finalise the applications for permits prior to the commencement of construction and site clearing activities.	During design & prior to the commencement of the construction activities.	ECO/ Specialist Ecologist	Before Commencement and Ongoing	Walkthrough reports of file (Appendix A1) and translocation evidence.
Minimise disturbance of sensitive areas	Project Manager/ECO	» On the rock sheets the *Mesembryanthemaceae, Colchicaceae, Crassulaceae* and *Apocynaceae* were present and therefore these areas are sensitive and must be avoided. It will be important to keep	Pre-construction and construction activities	ECO/ Specialist Ecologist	Before Commencement and Ongoing	Proof of buffers put in place and adhered to. Evidence of non-compliance as per ECO audit reports

		a 5m buffer around the outer edges to ensure no permanent damage results. No driving over these areas is permitted at any time. » The landscape, with the drainage features, have a number of small drainage lines that congregate into larger streams. These areas must be avoided as far as possible and limited crossing is recommended » It is very important to stay within the 8/10m corridor (final layout of the road system) for the roads during construction. » No activity must occur outside the road margins. » No driving over the sensitive bedrock sheets are allowed at any time during the construction, operational or decommissioning phases for this project. This include any driving into				

		the veld outside any demarcated corridors or footprint areas.				
Minimise erosion potential	Project Manager/ECO	» All hard surfaces (roads and turbine footprints) will contribute to the erosion potential and the accelerated flow velocities from roads, culverts and areas cleared of vegetation are of concern. » It will be important to monitor these areas regularly, especially downstream of these zones, as accelerated flows are the main concern related to increased erosion. » The exposed areas must be rehabilitated to prevent erosion and to ensure no alien plant species establish in these areas. As plants associated with the vegetation unit are slower to recover, the clearing footprint must be kept to an absolute minimum e.g. leave 300mm basal layer	Pre-construction and construction activities	ECO/ Specialist Ecologist	Before Commencement and Ongoing	No evidence of erosion

8.5 Heritage and Palaeontological Impacts

Impact management outcome: Potential impact on heritage and archaeological resources						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
Management of Impacts to archaeology and impacts to the cultural landscape.	Project Manager / dEO / cEO in consultation with the Contractor	» Develop and implement procedures for situations where archaeological sites or remains are uncovered » If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA or HWC Tel: 021 483 5959 Email: ceoheritage@westerncape.gov.za. » If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA or HWC , 3rd Floor Protea Assurance Building, 142 Longmarket Street, Green Market Square, Cape Town 8000. Tel: 021 483 5959 Email: ceoheritage@westerncape.gov.za.	During construction only (Archaeology impacts). During all development phases (cultural landscape impacts)	ECO/ dEO / cEO in consultation with the Contractor	Ongoing (Monthly)	Record and monitor ongoing impacts and proof of communication to SAHRA/HWC APM Unit and the required procedures followed in cases where material is discovered.

The sites identified for avoidance must be avoided (Western Cape); Any unsurveyed sections of the layout must be checked in the field in case of further small sites requiring recording or mitigation (Northern Cape and Western Cape);	Project Manager/ dEO / cEO in consultation with the Contractor	» Flagging of no-go areas is required for sites less than 30 m from the project footprint (Western Cape). This must be done before construction and the sites must be monitored for compliance during construction by the ECO (at least weekly while construction is busy in the relevant areas) (Sites that are not visually prominent and are located more than 30 m from the footprint should not be flagged, as it is preferable to not draw attention to them). All sites lying less than 30 m from the footprint are assumed to be at risk from construction work and should be flagged as no-go areas; » The possible grave at waypoint 503 (Koring MTS, Western Cape) must be carefully tested and, if found to be a grave, it must be closed up and, in consultation with HWC, the appropriate grave relocation process followed; » The suite of historical/recent engravings at waypoints 497-502 & 1154 (Koring MTS, Western Cape) must be fully recorded *in situ* and then moved to an appropriate location to be determined in consultation with HWC;	Pre-construction and during construction and as and when required	ECO/ dEO / cEO in consultation with the Contractor	Once before construction and as and when required	Proof of flagged no-go areas for sites less than 30m form the project footprint Evidence of waypoint 503 testing results Proof of demarcation and recording of waypoints 497-502 & 1154 Evidence of undisturbed heritage sites

		» Certain sites (waypoints 781, 806, 497) are impractical or unfeasible to mitigate and these must be avoided; » No stones may be removed from any heritage sites (Western Cape); » The historical/recent engraving at waypoint 506 (Koring MTS, Western Cape) must be fully recorded *in situ* and then protected;				Recording results of waypoint 506 in situ on file and demarcation as a no-go zone.
Management of Impacts to archaeology and impacts to the cultural landscape.	Project Manager/ dEO / cEO in consultation with the Contractor	All construction work must occur within the demarcated project footprints and vehicles may not move outside of these areas (Western Cape)	Pre-construction and during construction	ECO/ dEO / cEO in consultation with the Contractor	During construction and as and when required	Evidence of all construction work occurring within demarcated footprints
Compliance to permit requirements	Project Manager/ dEO / cEO in consultation with the Contractor	A Workplan application must be lodged with HWC for all mitigation required in the Western Cape;	Pre-construction and during construction	ECO/ dEO / cEO in consultation with the Contractor	During construction and as and when required	Proof of Workplan application lodged with HWC
Prevent impacts to scientifically valuable fossil material	Project Manager/ dEO / cEO in consultation with the professional palaeontologist	» The final, approved layouts of the Grid Connection Infrastructure must be cross-checked by a professional palaeontologist against the available palaeontological database prior to commencement of site clearing and excavation activities. Residual, potentially sensitive, unsurveyed sectors of the approved project footprint must be surveyed and mitigated in the Pre-construction	Pre-construction	Project Manager/ dEO in consultation with the professional palaeontologist	Pre-construction	Proof of appointment of professional palaeontologist

		Phase (prior to any site clearance and bedrock excavations) by a professional palaeontologist, with recording and judicious sampling or collection of scientifically valuable fossil material. » The palaeontologist responsible for any mitigation work in the Western Cape will need to submit a Work Plan for approval by Heritage Western Cape (HWC). All fieldwork and reporting should meet the standards of international best practice as well as those developed for PIA reports by SAHRA (2013) and Heritage Western Cape (2021). Fossil material collected must be safeguarded and curated within an approved palaeontological repository (e.g. museum or university collection) with full collection data.				Proof of submission and approval of Work Plan to HWC
Prevent impacts to scientifically valuable fossil material during construction activities	Project Manager/ dEO / cEO in consultation with the Contractor	» New fossil material encountered or exposed during the Construction Phase is best handled through the Chance Fossil Finds Protocol. » The Environmental Control Officer (ECO) / Environmental Site Officer (ESO) responsible for the WEF and grid connection developments should be made aware of the possibility of important fossil remains (vertebrate bones, teeth and burrows, petrified wood, plant-rich horizons etc.) being found or unearthed during the	Pre-construction and during construction	ECO/ dEO / cEO in consultation with the Contractor	During construction and as and when required	Proof of fossil finds as per ECO audit reporting.

		construction phase of the projects. Monitoring for fossil material of all major surface clearance (including access roads) and deeper (>1m) excavations by the ESO on an on-going basis during the construction phase is therefore recommended. » Significant fossil finds should be safeguarded, preferably in situ, and reported at the earliest opportunity to Heritage Western Cape (HWC) / SAHRA for recording and sampling by a professional palaeontologist. If triggered, these mitigation actions to conserve legally-protected fossil heritage are considered to be essential.				

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.

APPENDIX 2: CURRICULA VITAE

Kikuyu Waterfall
Cnr. Old Pretoria Main Road & Maxewell Drive
Johannesburg, South Africa

Email: arlene@veersgroup.com
Tel: +278 277 7074

CURRICULUM VITAE OF ARLENE SINGH

Profession: Environmental Assessment Practitioner (EAP) / Director

Specialisation: Environmental Assessments, report writing, report reviewing, development of project proposals for procuring new projects and project administration.

Work Experience: 9 years' experience in Environmental Assessments and 1 year in Sustainability Consulting.

VOCATIONAL EXPERIENCE

Professional execution of consulting services for projects in the environmental management field, specialising in Environmental Impact Assessment studies, environmental permitting, public participation, compilation of Environmental Management Plans and Programmes, environmental policy, and integrated environmental management. Responsibilities include report writing, project management, review of specialist studies and the identification and assessment of potential negative environmental impacts and benefits. Compilation of the reports for environmental studies is in accordance with all relevant environmental legislation.

Experience in conducting environmental impact assessments for infrastructure development projects (roads, stormwater, pipelines), Mixed Use Developments and Section 24G Applications for complex projects. She has extensive experience in managing and monitoring ECO functions and compliance on relevant projects. She has gained the ability to conduct sustainability assurance audits for non-financial environmental KPI's through her experience with listed mining corporations.

SKILLS BASE AND CORE COMPETENCIES

- Compilation of environmental impact assessment reports and environmental management programmes in accordance with relevant environmental legislative requirements;
- Identification and assessment of potential negative environmental impacts and benefits through the review of specialist studies;
- Key experience in the assessment of impacts associated with complex Section 24G Applications.
- Review of environmental impact assessment reports, impacts matrices and environmental management programme reports;
- Conducting of ECO audits, managing ECO staff, review of ECO reports and liaison with the client;
- Review of Carbon Footprint Analysis report and provision of recommendations for industry;
- Developing Business Development Plans, action plans and carrying out Business Development initiatives;
- Compilation of Integrated Reports in line with King IV;
- Conducting Mining Permit Applications with the DMR and the associated Basic Assessment process in line with the MPRDA;
- Extensive experience in compilation and submission of Tenders and Proposals;

EDUCATION AND PROFESSIONAL STATUS

Degrees:

- B.Sc. (Hons.) Environmental Management (2016), University of South Africa (UNISA);
- B.Sc. Environmental Science (2012), University of Kwa-Zulu Natal, Westville

Short Courses:

- Official DWS Section 21 (c) and (i) Water Use Authorisation Course (2018)- Dr Wietsche Roets, Specialist Scientist: (In Stream Water Use);
- SMME Green Building Face to Face Workshop (2018)- GBCSA hosted by JP Morgan;
- ArcGISBasic 10,3 (2016)- Esri South Africa
- Energy within Environmental Constraints (2020)- Harvard (Online)
- Becoming an Entrepreneur (2020)- Massachusetts Institute of Technology (Online)

Professional Society Affiliations:

- South African Council for Natural Scientific Professionals - Professional Natural Scientist: Environmental Scientist) – Reg No. 118872
- Environmental Assessment Practitioners Association of South Africa- Reg No: 2019/898

Other Relevant Skills:

- Compiling and submission of invoices on projects;
- Registration of Waste Management Facilities on GWIS

EMPLOYMENT

Date	Company	Roles and Responsibilities
16 December 2020- Current	Nala Environmental (Pty) Ltd	Environmental Assessment Practitioner / Director *Tasks include:* *Compilation of Environmental Impact Assessment (EIA) reports; Basic Assessment (BA) reports and Environmental Management Programmes; Environmental Screening reports; Co-ordination of the public participation process; Project management; project proposals and tenders; Client liaison and Marketing; Process EIA Applications. Business Development, Integrated reporting. Strategy, policy and procedure*

Date	Company	Roles and Responsibilities
		development. Planning of staff on engagements and Invoicing of clients.
08 April 2019- 15 December 2020:	Savannah Environmental (Pty) Ltd	Environmental Assessment Practitioner *<u>Tasks include</u>:* *Compilation of Environmental Impact Assessment (EIA) reports; Basic Assessment (BA) reports and Environmental Management Programmes; Environmental Screening reports; Co-ordination of the public participation process; Project management; project proposals and tenders; Client liaison and Marketing; Process EIA Applications.*
01 January 2016- 05 April 2019	Triplo4 Sustainable Solutions (Pty) Ltd	Environmental Consultant/Gauteng Office Manager *<u>Tasks included:</u>* *Review of Basic Assessment reports, Environmental Management Programme reports, Impact Matrices. Review of Environmental Control Officer functions, report and planning of site visits. Compiling Waste Management License Applications and Section 24G Application with reports for review by company Director. Review of specialist reports. Compilation of tenders, proposals and fee proposals. Co-ordinate public participation processes. Liaison with clients, stakeholders and competent authorities. Business Development, Integrated reporting. Strategy, policy and procedure development. Planning of staff on engagements and Invoicing of clients.*
01 October 2014 – 31 December 2015	PricewaterHouse Coopers (PwC)	Sustainability Consultant 2 *<u>Tasks included:</u>* *Non-financial auditing of Environmental KPI's (Primary water, Total Waste, Total Electricity, Total CDP Calc, Scope 1, 2 and 3 emissions, Total CSI spend, Total Environmental incidents and Total Rock waste generated) for listed mining companies. Role included, testing of controls, applications of audit standards and guidelines, preparation and conclusions of audit papers and files, reporting to management and preparation of audit reports.*

Date	Company	Roles and Responsibilities
01 January 2013- 30 September 2014	Triplo4 Sustainable Solutions (Pty) Ltd	Junior Environmental Consultant *Tasks included:* *Conducting Environmental Control Officer audits and drafting of ECO reports for review. Drafting of Basic Assessment (BA) reports, Environmental Management Programme reports for review by Environmental Consultant. Conducting public participation by liaison with competent authorities and stakeholders. Assisting with compiling of Basic Assessment documents.*

PROJECT EXPERIENCE

Arlene has extensive experience in conducting environmental impact assessments for infrastructure development projects (roads, stormwater, pipelines) and renewable energy projects (solar, wind, csp and hybrid projects), Mixed Use Developments and Section 24G Applications for complex projects and housing developments. She has extensive experience in managing and monitoring ECO functions and compliance on relevant projects. She has gained the ability to conduct sustainability assurance audits for non-financial environmental KPI's through her experience with listed mining corporations. She has also been involved in undertaking Part 2 Amendment Applications and impact assessments for Renewable Energy Projects in South Africa. She currently manages staff and undertakes project planning to ensure that projects are executed within the appropriate timeframes and within budget.

MINING SECTOR PROJECTS

Environmental Impact Assessments and Environmental Management Programmes

Project Name & Location	*Client Name*	*Role*
Yzermyn Coal Mine EMPr, Piet Retief, Mpumalanga	*Atha Group*	*EAP*

Basic Assessments

Project Name & Location	*Client Name*	*Role*
Shaya Quarry Basic Assessment process, Empangeni, Kwazulu-Natal	*Mbavuza Minerals*	*Project Manager*
Umvoti River Sand Mining Basic Assessment process, Kwazulu-Natal	*Izimbiwe Minerals Pty Ltd*	*Project Manager*

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

Project Name & Location	*Client Name*	*Role*

Shaya Quarry Mining Permit Application, Empangeni, Kwazulu-Natal	*Mbavuza Minerals*	*Project Manager*
Umvoti River Sand Mining Mining Permit Application, Kwazulu-Natal	*Izimbiwe Minerals Pty Ltd*	*Project Manager*
Newark Quarry, Ilembe Municipality, Kwazulu-Natal	*iLembe Concrete Pty Ltd*	*Junior EAP*

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

Basic Assessments

Project Name & Location	***Client Name***	***Role***
Replacement of Nseleni Bridge- Empangeni, Kwazulu-Natal	*RHDHV*	*EAP*
Construction of the 60ML Ntuzuma Reservoir, Ntuzuma, Kwazulu-Natal	*eThekwini Metropolitan Municipality*	*Project Manager*
Upgrade of the Nyathikazi box culvert, Darnell, Kwazulu-Natal	*KwaDukuza Municipality*	*Junior EAP*
Upgrade and Expansion Provincial Main Road D887, Kwazulu-Natal	*RHDHV*	*Junior EAP*
Expansion of LOX and Diesel Storage at the Air Products Facility in Coega, Eastern Cape	*Air Products South Africa (Pty) Ltd*	*EAP*

Environmental Compliance, Auditing and ECO

Project Name & Location	***Client Name***	***Role***
ECO Monitoring for Construction of Offtake 1 Reservoir, KwaDukuza, Kwazulu-Natal	*KwaDukuza Municipality*	*Project Manager*
ECO Monitoring for Construction of Offtake 6A2, 6D, 8C, 8D, 9, 11D Pipelines, KwaDukuza, Kwazulu-Natal	*KwaDukuza Municipality*	*Project Manager*
ECO Monitoring for the Construction of the Jozini RCWSS Phase 1A, Jozini, Kwazulu-Natal	*RHDHV*	*ECO (1 year), Project Manager*
ECO Monitoring for the Greytown BWSS, Greytown, Kwazulu-Natal	*RHDHV*	*Project Manager*
ECO Monitoring for the Kranskop Water Supply Scheme, Kranskop, Kwazulu-Natal	*RHDHV*	*ECO*
ECO Monitoring for the Zulti South Access Road, Richards Bay, Kwazulu-Natal	*RHDHV*	*Project Manager*

Compliance Advice and ESAP reporting

Project Name & Location	***Client Name***	***Role***
Ethafeni Cemetery Environmental Assessment Report, KwaDukuza, Kwazulu-Natal	*KwaDukuza Municipality*	*EAP*

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

Project Name & Location	***Client Name***	***Role***
General Authorisation for the Replacement of the Nseleni Bridge, Empangeni, Kwzulu-Natal	*RHDHV*	*EAP*
Water Use Licence Amendment for Country Club Johannesburg	*Country Club Johannesburg*	*EAP*

HOUSING AND URBAN PROJECTS

Environmental Impact Assessments and Environmental Management Programmes

Project Name & Location	***Client Name***	***Role***
Ethafeni Precinct Project Section 24G Application- Groutville , Kwazulu- Natal.	*KwaDukuza Municipality*	*Project Manager/Lead Consultant*
Environmental Management Programme report Brettenwood Residential Development, Kwazulu-Natal.	*Brettenwood Coastal Estate*	*EAP*
Environmental Management Programme report for CTM Ballito, Ballito, Kwazulu-Natal	*CTM*	*EAP*

Basic Assessments

Project Name & Location	***Client Name***	***Role***
Upgrade of residential dwelling on Colwyn Drive, Salt Rock, Kwazulu-Natal	*Mike Graham*	*Junior EAP*
Ethafeni Precinct Project Basic Assessment, Groutville, Kwazulu-Natal	*KwaDukuza Municipality*	*Project Manager*
105 Nkwazi Drive Single Residential House Basic Assessment, Zinkwazi, Kwazulu-Natal	*Ituwiz Pty Ltd*	*Project Manager*

Environmental Compliance, Auditing and ECO

Project Name & Location	***Client Name***	***Role***
88 Compensation ECO Audits – Ballito, Kwazulu- Natal	*Imali Corp*	*Environmental Control Officer (ECO)*
Oceans Umhlanga Hotel & Residential Development, Umhlanga, Kwazulu-Natal	*Edison Property Group*	*Project Manager*
Inoxa Cookware Factory Warehouse, Woodmead Estate, Shakaskraal, Kwazulu-Natal	*Shree Property*	*Project Manager*
Woodmead Estate Warehousing, Gauteng	*Shree Property*	*Project Manager*
Ridgeside Commercial Development, Umhlanga, Kwazulu-Natal	*Shree Property*	*Project Manager*

Construction of Jozini Shopping Centre, Jozini, Kwazulu-Natal	*GK Projects*	*ECO*
Birdhaven Residential Development, Ballito, Kwazulu-Natal	*Mike Graham Trust*	*ECO*
Foxhill Church and Residential Development, Ballito, Kwazulu-Natal	*M&C Janigh Trust*	*ECO*
Beema Bamboo Plantation Site (Bamboo to Energy project, Kwazulu-Natal	*Green Grid Energy*	*ECO*

OTHER PROJECTS

Environmental Compliance, Auditing and ECO

Project Name & Location	***Client Name***	***Role***
Beema Bamboo Plantation Site (Bamboo to Energy project, Kwazulu-Natal	*Green Grid Energy*	*ECO*
Mkondeni Medical Waste External Waste Management License Audit , Pietermaritzburg	*Ecocyle Waste Solutions*	*Auditor*
Dube Tradeport External Audit, eThekwini	*Dube Tradeport Corporation*	*Junior Auditor*

Carbon Footprint Analysis

Project Name & Location	***Client Name***	***Role***
Carbon footprint analysis of Newcastle and Sasolburg Plants, (Kwazulu Natal & North West	*Karbochem Pty Ltd*	*EAP*
Measure Carbon Emissions and provide updated baseline that would enable DTPC to quantify, monitor and assess carbon footprint and its climate change impact for DTPC, eThekwini	*Dube Tradeport Corporation*	*Junior EAP*

Waste Management

Project Name & Location	***Client Name***	***Role***
Waste Classification Assessment for Karbochem Newcastle facility , Kwazulu-Natal	*Karbochem Pty Ltd*	*EAP*
Waste Management Licenses for Wadeville & Rosslyn Waste Management Facilities, Gauteng.	*Planet Care Pty Ltd*	*EAP*

Compliance Advice and ESAP reporting

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

Environmental Opinion and Enquiry for the Rosslyn Tyre Pyrolysis Plant, Gauteng	*Cosmic Energy*	*EAP*

Non-Financial Auditing

KPI'S Audited	***Client Name & Location***	***Role***
Total Primary Water Use, Total Electricity Used, Total Waste Generated, Scope 1, 2 & 3 Emissions and Total Number of Environmental Incidents.	*Anglo Platinum (South Africa)*	*Sustainability Consultant*
Total Primary Water Use, Total Waste Generate and Total Number of Environmental Incidents.	*De Beers (Namibia)*	*Sustainability Consultant*
Scope 1, 2 & 3 Emissions, Total Electricity Purchased, Total Primary Water Used.	*Harmony Gold (South Africa)*	*Sustainability Consultant*
Scope 1, 2 & 3 Emissions, Total Electricity Purchased, Total Primary Water Used and Total Rock Waste Generated.	*Exxaro (South Africa, Papua New Guinea)*	*Sustainability Consultant*
Total Corporate Social Investment fund spend by Barclays Group	*Barclays Group*	*Sustainability Consultant*
Audit Environmental and Social Risk Finance Projects - Equator Principles	*MTN (South Africa & Nigeria)*	*Sustainability Consultant*

Renewable Energy Projects

Part 2 Amendment Applications and Motivation Reports

Project Name & Location	***Client Name***	***Role***
Transalloys Coal-Fired Power Station near Emalahleni, Mpumalanga Province	*Transalloys (Pty) Ltd*	*EAP*
Zen Wind Energy Facility, Western Cape	*Energy Team (Pty) Ltd*	*EAP*
Hartebeest Wind Energy Facility, Western Cape	*juwi Renewable Energies (Pty) Ltd*	*EAP*
Khai-Ma and Korana Wind Energy Facilities	*Mainstream Renewable Power (Pty) Ltd*	*EAP*
Korana Solar PV facility	*Mainstream Renewable Power (Pty) Ltd*	*EAP*
Sutherland Wind Energy Facility	*Mainstream Renewable Power (Pty) Ltd*	*EAP*
Rietrug Wind Energy Facility	*Mainstream Renewable Power (Pty) Ltd*	*EAP*

Basic Assessments

Project Name & Location	*Client Name*	*Role*
Upilanga Solar Park, Northern Cape (x6 100MW PV's and x3 350MW PV Basic Assessments)	*Emvelo Capital Projects (Pty) Ltd*	*EAP*
Kolkies and Sadawa PV facilities and associated grid infrastructure	*Mainstream Renewable Power South Africa (Pty) Ltd*	*EAP*
Hyperion Overhead Powerline	*Red Rocket (Pty) Ltd*	*EAP*
132KkV Phinda Power underground transmission line	*Phinda Power Producers (Pty) Ltd*	*EAP*
Msenge Emoyeni Wind Energy Facility supporting infrastructure	*Windlab (Pty) Ltd*	*EAP*
Sutherland Wind Energy Facility Grid Infrastructure	*Mainstream Renewable Power South Africa (Pty) Ltd*	*EAP*
Rietrug Wind Energy Facility Grid Infrastructure	*Mainstream Renewable Power South Africa (Pty) Ltd*	*EAP*

Environmental Impact Assessments

Project Name & Location	*Client Name*	*Role*
Upilanga Solar Park, Northern Cape (350MW CSP Tower)	*Emvelo Capital Projects (Pty) Ltd*	*EAP*
350MW Risk Mitigation Power Plant (Gas to Power facility)	*Phinda Power Producers (Pty) Ltd*	*EAP*
75mw Thermal Dual Fuel Facility and associated infrastructure (Hybrid facility i.e. gas to power and solar pv)	*Red Rocket (Pty) Ltd*	*EAP*
Berg River Wind Energy Facility	*Energy Team (Pty) Ltd*	*EAP*

Section 54 Audits

Project Name & Location	*Client Name*	*Role*
Mulilo 20MW PV Facility, Prieska, Northern Cape	*Mulilo (Pty) Ltd*	*Auditor*
Mulilo 10MW PV Facility, De Aar, Northern Cape	*Mulilo (Pty) Ltd*	*Auditor*
Karoshoek CSP I Facility/ Solar One,, Upington, Northern Cape	*Karoshoek Solar One (Pty) Ltd*	*Audit*

Environmental Assessment Practitioners Association of South Africa

Registration No. 2019/898

Herewith certifies that

Arlene Singh

is registered as an

Environmental Assessment Practitioner

Registered in accordance with the prescribed criteria of Regulation 15. (1) of the Section 24H Registration Authority Regulations (Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).

Effective: 01 March 2022

Expires: 28 February 2023

Chairperson

Registrar

SAQA
SOUTH AFRICAN QUALIFICATIONS AUTHORITY

SACNASP

South African Council for Natural Scientific Professions

herewith certifies that

Arlene Singh

Registration Number: 118872

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following fields(s) of practice (Schedule 1 of the Act)

Environmental Science (Professional Natural Scientist)

Effective **6 June 2018** Expires **31 March 2023**

Chairperson

Chief Executive Officer

To verify this certificate scan this code

APPENDIX 3: CHANCE FIND FOSSIL PROCEDURE

<table>
<tr><th colspan="3">CHANCE FOSSIL FINDS PROCEDURE: Authorised Grid Connection Infrastructure, Western Cape Province</th></tr>
<tr><td>Province & region:</td><td colspan="2">Northern Cape, Sutherland & Laingsburg Districts</td></tr>
<tr><td>Responsible Heritage Resources Agency</td><td colspan="2">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
HWC, 3rd Floor Protea Assurance Building, 142 Longmarket Street, Green Market Square, Cape Town 8000. Private Bag X9067, Cape Town 8001. Tel: 021 483 5959 Email: ceoheritage@westerncape.gov.za</td></tr>
<tr><td>Rock unit(s)</td><td colspan="2">Abrahamskraal Formation (Lower Beaufort Group, Karoo Supergroup)
Late Caenozoic alluvium along water courses and calcrete hardpans</td></tr>
<tr><td>Potential fossils</td><td colspan="2">Petrified wood and other plant remains, skeletal remains of tetrapods (e.g. therapsids), trace fossils of invertebrates and vertebrates (fish / tetrapod burrows, trails & trackways) in Abrahamskraal Formation bedrocks.
Bones, teeth and horn cores of mammals, freshwater molluscs, calcretised termitaria and other trace fossils in older consolidated alluvium.</td></tr>
<tr><td rowspan="5">ECO protocol</td><td colspan="2">1. Once alerted to fossil occurrence(s): alert site foreman, stop work in area immediately (N.B. safety first!), safeguard site with security tape / fence / sand bags if necessary.</td></tr>
<tr><td colspan="2">2. Record key data while fossil remains are still in situ:
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) in situ with scale, from different angles, including images showing context (e.g. rock layering)</td></tr>
<tr><td>3. If feasible to leave fossils in situ:
Alert Heritage Resources Authority 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</td><td>3. If not feasible to leave fossils in situ (emergency procedure only):
Carefully remove fossils, as far as possible still enclosed within the original sedimentary matrix (e.g. 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</td></tr>
<tr><td colspan="2">4. If required by Heritage Resources Agency, ensure that a suitably-qualified specialist palaeontologist is appointed as soon as possible by the developer.</td></tr>
<tr><td colspan="2">5. Implement any further mitigation measures proposed by the palaeontologist and Heritage Resources Authority</td></tr>
<tr><td>Specialist palaeontologist</td><td colspan="2">Record, describe and judiciously sample fossil remains together with relevant contextual data (stratigraphy / sedimentology / taphonomy). Ensure that fossils are curated in an approved repository (e.g. 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 Authority minimum standards.</td></tr>
</table>

APPENDIX 4: EROSION CONTROL MANAGEMENT PLAN

EROSION MANAGEMENT PLAN

OBJECTIVES:

To ensure that erosion is managed during the operation of the facility.

TARGETS:

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

MEASURES:

- Regular inspection to assess erosion which may result from a loss in vegetation or cavitation from soil slumping;
- Continued watering to ensure wind erosion is limited at the construction sites until such time that the natural vegetation is effectively established; and
- Maintain and clean all drainage structures along roads within the project area

EROSION AND SEDIMENT CONTROL PRINCIPLES

The goal of erosion control during and after construction within the study area should be to:
– Protect the land surface from erosion;
– Intercept and safely direct run-off water from undisturbed upslope areas through the study area without allowing it to cause erosion within the site or become contaminated with sediment;
– Progressively re-vegetate or stabilise disturbed areas.

These goals can be achieved by applying the management practices outlined in the following sections.

1. PURPOSE

This Erosion Management Plan addresses the management and mitigation of potential impacts relating to soil erosion. The objective of the plan is to provide:

» A general framework for soil erosion and sediment control, which enables the Contractor to identify areas where erosion can occur and is likely to be accelerated by construction related activities.
» An outline of general methods to monitor, manage and rehabilitate erosion prone areas, ensuring that all erosion resulting from all phases of the development is addressed.

This plan must be updated and refined once the construction/ civil engineering plans have been finalised following detailed design.

2. RELEVANT ASPECTS OF THE STUDY AREA

According to Mucina and Rutherford (2006) the Roggeveld Shale Renosterveld (FRs 3) comprises of an undulating, slightly sloping plateau landscape, with low hills and broad shallow valleys (sandy soils). The natural vegetation is characterised by the moderately tall shrublands which is dominated by Elytropappus rhinocerotis and where the more moist and rocky habitats support a rich geophytic flora.

The broad geology of the vegetation unit overlies mudrocks and sandstones of the Adelaide Subgroup (Beaufort Group of the Karoo Supergroup), with some intrusions of the Karoo Dolerite Suite. The vegetation unit is regarded to have a moderate erosion potential (Mucina and Rutherford, 2006), but on sloped areas devoid of vegetation, the impact can be high.

It is noted that the study area forms part of the core zone of the Hantam Roggeveld Centre of Endemism (Mucina and Rutherford, 2006; van Wyk and Smith, 2001) where it is distributed across the Northern and Western Cape provinces. To the west it is on the edge of the Great Escarpment above the Tanqua Basin with the Hantam Plateau region to the south. Dispersed within the landscape one find numerous isolated high plateau areas.

During construction, there will be a lot of disturbed and loose soil within the development footprint which will render the area vulnerable to erosion. Erosion is one of the greater risk factors associated with the development and it is therefore critically important that proper erosion control structures are built and maintained over the lifespan of the project.

3. EROSION AND SEDIMENT CONTROL PRINCIPLES

These goals can be achieved by applying the management practices outlined in the following sections.

GENERAL EROSION CONTROL

The Contractor should take all reasonable measures to prevent soil erosion resulting from the construction activities as well as to prevent the restriction or increase in the flow of storm water caused by the presence of temporary / permanent works. Erosion prevention measures must be implemented to the satisfaction of the Engineer and the ESCO / ECO. Areas affected by construction related activities must be monitored regularly for evidence of erosion. Areas particularly susceptible to erosion include areas stripped of topsoil and soil stockpiles and steep slopes (gradients > 6 %). Where evidence of erosion appears, the construction of contour berms, cut-off drains or planting of grass sods may be necessary. Where soil erosion does occur, the Contractor shall reinstate such areas and areas damaged by the erosion, at his own cost and to the satisfaction of the Engineer and ESCO / ECO.

PREVENTATIVE MEASURES

The following prevention measures are recommended:

- The Contractor is to provide a method statement on erosion control showing clearly how cleared surfaces and stormwater will be managed on site during construction and rehabilitation;
- Wind screening and stormwater control will be undertaken to prevent soil loss from the study site;
- All erosion control mechanisms will be regularly maintained;
- Re-vegetation of disturbed surfaces will occur immediately after the construction activities are completed;
- In the case of existing surface wash-away and wind erosion, the Contractor shall implement remedial measures as soon as possible to prevent further erosion;
- During construction, the Contractor shall protect areas susceptible to erosion by installing necessary temporary and permanent drainage works as soon as possible and by taking other measures necessary to prevent the surface water from being concentrated in streams and from scouring the slopes, banks or other
  - areas; and
- Traffic and movement over stabilised areas is to be restricted and controlled, and damage to stabilised areas shall be repaired and maintained to the satisfaction of the ESCO / ECO.

EROSION AND SEDIMENT CONTROL MEASURES

The following precautionary measures must be implemented onsite to manage erosion and sediment control:

- Re-vegetate areas that have been disturbed as soon as possible;
- Cut and fill slopes must be made stable and be re-vegetated as soon as possible during the construction phase;
- Newly formed terraces within the facility must be vegetated to stabilise the soil;
- Where erosion and/or sedimentation, whether on or off the site, occurs despite the Contractor complying with the foregoing, rectification shall be carried out in accordance with details specified by the ESCO / ECO;
- Where erosion and/or sedimentation occur due to the fault of the Contractor, rectification shall be carried out to the reasonable requirements of the ESCO / ECO and at the expense of the Contractor;
- If the Site is closed for a period exceeding 5 days, the Contractor, in consultation with the ESCO / ECO, shall carry out the following checklist procedure:
- Excavated and filled slopes and stockpiles are at a stable angle and capable of accommodating normal expected water flows; and
- Re-vegetated areas have a watering schedule and the supply to such areas is secured.

3.1. On-Site Erosion Management

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

- Due to the sandy nature of soils in the study area, soil loss will be greater during dry periods as it is more prone to wind erosion. Therefore, precautions to prevent erosion should be present throughout the year.
- Soil loss will be greater on steeper slopes. Ensure that steep slopes are not de-vegetated unnecessarily and subsequently become hydrophobic (i.e. have increased runoff and a decreased infiltration rate) increasing the erosion potential.
- Soil loss is related to the length of time that soils are exposed prior to rehabilitation or stabilisation. Therefore, the gap between construction activities and rehabilitation should be minimised. Phased construction and progressive rehabilitation, where practically possible, are therefore important elements of the erosion control strategy.
- The extent of disturbance will influence the risk and consequences of erosion. Therefore, site clearing should be restricted to areas required for construction purposes only. As far as possible, large areas should not be cleared all at once, especially in areas where the risk of erosion is higher.
- Roads should be planned and constructed in a manner which minimises their erosion potential. Roads should therefore follow the natural contour as far as possible. Roads parallel to the slope direction should be avoided as far as possible.
- Where necessary, new roads constructed should include water diversion structures with energy dissipation features present to slow and disperse the water into the receiving area.
- Roads used for project-related activities and other disturbed areas should be regularly monitored for erosion. Any erosion problems recorded should be rectified as soon as possible and monitored thereafter to ensure that they do not re-occur.
- Runoff may have to be specifically channelled or storm water adequately controlled to prevent localised rill and gully erosion.
- Compacted areas should have adequate drainage systems to avoid pooling and surface flow. Heavy machinery should not compact those areas which are not intended to be compacted as this will result in compacted hydrophobic, water repellent soils which increase the erosion potential of the area. Where compaction does occur, the areas should be ripped.
- All bare areas should be revegetated with appropriate locally occurring species, to bind the soil and limit erosion potential.
- Silt fences should be used where there is a danger of topsoil or material stockpiles eroding and entering streams and other sensitive areas.

- Gabions and other stabilisation features must be used on steep slopes and other areas vulnerable to erosion to minimise erosion risk as far as possible.
- Activity at the site after large rainfall events when the soils are wet and erosion risk is increased should be reduced. No driving off of hardened roads should occur at any time, and particularly immediately following large rainfall events.
- Topsoil should be removed and stored in a designated area separately from subsoil and away from construction activities (as per the recommendations in the EMPr). Topsoil should be reapplied where appropriate as soon as possible in order to encourage and facilitate rapid regeneration of the natural vegetation in cleared areas.
- Regular monitoring of the site for erosion problems during construction (on-going) and operation (at least twice annually) is recommended, particularly after large summer thunderstorms have been experienced. The ECO will determine the frequency of monitoring based on the severity of the impacts in the erosion prone areas.

3.1.1. Erosion Control Mechanisms

The Contractor may use the following mechanisms (whichever proves more appropriate/ effective) to combat erosion when necessary:

- Reno mattresses;
- Slope attenuation;
- Hessian material;
- Shade catch nets;
- Gabion baskets;
- Silt fences;
- Storm water channels and catch pits;
- Soil bindings;
- Geofabrics;
- Hydro-seeding and/or re-vegetating;
- Mulching over cleared areas;
- Boulders and size varied rocks; and
- Tilling.

3.2. Engineering Specifications

A detailed engineering specifications Storm Water Management Plan describing and illustrating the proposed stormwater control measures must be prepared during the detailed design phase and should be based on the underlying principles of the Storm Water Management Plan (**Appendix G** of the WEF EMPr is also applicable to this grid infrastructure) and this should include erosion control measures. Requirements for project design include:

- Erosion control measures to be implemented before and during the construction period, including the final storm water control measures (post construction).
- All temporary and permanent water management structures or stabilisation methods must be indicated within the Storm water Management Plan.
- An on-site Engineer or Environmental Officer (EO)/ SHE Representative to be responsible for ensuring implementation of the erosion control measures on site during the construction period. The ECO should monitor the effectiveness of these measures on the interval agreed upon with the Site Manager and EO.

» The Contractor holds ultimate responsibility for remedial action in the event that the approved Storm Water Management Plan is not correctly or appropriately implemented and damage to the environment is caused.

APPENDIX 5: FIRE MANAGEMENT & EMERGENCY PREPARENESS PLAN

FIRE MANAGEMENT AND EMERGENCY PREPAREDNESS MANAGEMENT PLAN

1. PURPOSE

The purpose of the Emergency Preparedness, Response and Fire Management Plan is:

- To assist contractor personnel to prepare for and respond quickly and safely to emergency incidents, and to establish a state of readiness which will enable prompt and effective responses to possible events.
- To control or limit any effect that an emergency or potential emergency may have on site or on neighbouring areas.
- To facilitate emergency responses and to provide such assistance on the site as is appropriate to the occasion.
- To ensure communication of all vital information as soon as possible.
- To facilitate the reorganisation and reconstruction activities so that normal operations can be resumed.
- To provide for training so that a high level of preparedness can be continually maintained.

This plan outlines response actions for potential incidents of any size. It details response procedures that will minimise potential health and safety hazards, environmental damage, and clean-up efforts. The plan has been prepared to ensure quick access to all the information required in responding to an emergency event. The plan will enable an effective, comprehensive response to prevent injury or damage to the construction personnel, public, and environment during the project. Contractors are expected to comply with all procedures described in this document. A Method Statement should be prepared at the commencement of the construction phase detailing how this plan is to be implemented as well as details of relevant responsible parties for the implementation. The method statement must also reflect conditions of the IFC Performance Standard 1 and include the following:

- Identification of areas where accidents and emergency situations may occur;
- Communities and individuals that may be impacted;
- Response procedure;
- Provisions of equipment and resources;
- Designation of responsibilities;
- Communication; and
- Periodic training to ensure effective response to potentially affected communities.

2. PROJECT-SPECIFIC DETAILS

The authorised MTS is located in the Laingsburg Local Municipalities, Western Cape Province near the town of Sutherland. The project will comprise the following key infrastructure and components:

- Koring 400kV Main Transmission Substation (MTS) including O&M building and laydown area;
- Fencing of the proposed on-site substation;

Due to the scale and nature of this development, it is anticipated that the following risks could potentially arises during the construction and operation phases:

- Fires;
- Leakage of hazardous substances;
- Storage of flammable materials and substances;
- Flood events;
- Accidents; and
- Natural disasters.

3. EMERGENCY RESPONSE PLAN

There are three levels of emergency as follows:

- Local Emergency: An alert confined to a specific locality.
- Site Emergency: An alert that cannot be localised and which presents danger to other areas within the site boundary or outside the site boundary.
- Evacuation: An alert when all personnel are required to leave the affected area and assemble in a safe location.

If there is any doubt as to whether any hazardous situation constitutes an emergency, then it must be treated as an Evacuation.

Every effort must be made to control, reduce or stop the cause of any emergency, provided it is safe to do so. For example, in the event of a fire, isolate the fuel supply and limit the propagation of the fire by cooling the adjacent areas. Then confine and extinguish the fire (where appropriate) making sure that re-ignition cannot occur.

3.1. Emergency Scenario Contingency Planning

3.1.1. Scenario: Spill which would result in the contamination of land, surface or groundwater

OBJECTIVE: PREVENT AND MONITOR ACCIDENTAL LEAKAGES AND SPILLAGES

- All hazardous chemicals should be stored on bunded surfaces and no storage of such chemicals should be permitted within the riparian buffer zones
- It must be ensured that all hazardous storage containers and storage areas comply with the relevant SABS standards to prevent leakage. All vehicles must be regularly inspected for leaks. Refuelling must take place on a sealed surface area to prevent ingress of hydrocarbons into topsoil; and
- All spills, should they occur, should be immediately cleaned up and treated accordingly
- All vehicles and other equipment (generators etc.) must be regularly serviced to ensure they do not spill oil. Vehicles should be refuelled on paved (impervious) areas. If liquid product is being transported it must be ensured this does not spill during transit.
- Emergency measures and plans must be put in place and rehearsed in order to prepare for accidental spillage.
- Diesel fuel storage tanks must be above ground in a bunded area.
- Engines that stand in one place for an excessive length of time must have drip trays.
- Vehicle and washing areas must also be on paved surfaces and the by-products removed to an evaporative storage area or a hazardous waste disposal site (if the material is hazardous).
- Establish an effective record keeping system for accidental leakage/spillage incidents.
- Excess or spilled concrete should be confined within the work area and then removed to a licensed landfill site.
- Concrete shall be mixed on mortar boards, away from drainage channels and water courses.
- The visible remains of the mixing of concrete, either solid or from washings, shall be physically removed and disposed of as waste at a licensed landfill site.
- All excess aggregate shall also be removed from site.

i. Spill Prevention Measures

Preventing spills must be the top priority at all operations which have the potential of endangering the environment. The responsibility to effectively prevent and mitigate any scenario lies with the Contractor and the ECO. In order to reduce the risk of spills and associated contamination, the following principles should be considered during construction and operation activities:

- All equipment refuelling, servicing and maintenance activities should only be undertaken within appropriately sealed/contained or bunded designated areas.
- All maintenance materials, oils, grease, lubricants, etc. should be stored in a designated area in an appropriate storage container.
- No refuelling, storage, servicing, or maintenance of equipment should take place within sensitive environmental resources in order to reduce the risk of contamination by spills.
- No refuelling or servicing should be undertaken without absorbent material or drip pans properly placed to contain spilled fuel.
- Any fluids drained from the machinery during servicing should be collected in leak-proof containers and taken to an appropriate disposal or recycling facility.
- If these activities result in damage or accumulation of product on the soil, the contaminated soil must be disposed of as hazardous waste. Under no circumstances shall contaminated soil be added to a spoils pile and transported to a regular disposal site.
- Chemical toilets used during construction must be regularly cleaned. Chemicals used in toilets are also hazardous to the environment and must be controlled. Portable chemical toilets could overflow if not pumped regularly or they could spill if dropped or overturned during moving. Care and due diligence should be taken at all times.
- Contact details of emergency services and HazMat Response Contractors are to be clearly displayed on the site. All staff are to be made aware of these details and must be familiar with the procedures for notification in the event of an emergency.

ii. Procedures

The following action plan is proposed in the event of a spill:

1. Spill or release identified.
2. Assess person safety, safety of others and the environment.
3. Stop the spill if safely possible.
4. Contain the spill to limit entering surrounding areas.
5. Identify the substance spilled.
6. Quantify the spill (under or over guideline/threshold levels).
7. Notify the Site Manager and emergency response crew and authorities (in the event of major spill).
8. Inform users (and downstream users) of the potential risk.
9. Clean up of the spill using spill kit or by HazMat team.
10. Record of the spill incident on company database.

a) Procedures for containing and controlling the spill (i.e. on land or in water)

Measures can be taken to prepare for quick and effective containment of any potential spills. Each contractor must keep sufficient supplies of spill containment equipment at the construction sites, at all times during and after the construction phase. These should include specialised spill kits or spill containment equipment. Other spill containment measures include using drip pans underneath vehicles and equipment every time refuelling, servicing, or maintenance activities are undertaken.

Specific spill containment methods for land and water contamination are outlined below.

<u>Containment of Spills on Land</u>

Spills on land include spills on rock, gravel, soil and/or vegetation. It is important to note that soil is a natural sorbent, and therefore spills on soil are generally less serious than spills on water as contaminated soil can be more easily recovered. It is important that all measures be undertaken to avoid spills reaching open water bodies located outside of the development footprint. The following methods could be used:

- Dykes - Dykes can be created using soil surrounding a spill on land. These dykes are constructed around the perimeter or down slope of the spilled substance. A dyke needs to be built up to a size that will ensure containment of the maximum quantity of contaminant that may reach it. A plastic tarp can be placed on and at the base of the dyke such that the contaminant can pool up and subsequently be removed with sorbent materials or by pump into barrels or bags. If the spill is migrating very slowly, a dyke may not be necessary, and sorbents can be used to soak up contaminants before they migrate away from the source of the spill.
- Trenches - Trenches can be dug out to contain spills. Spades, pickaxes or a front-end loader can be used depending on the size of the trench required. Spilled substances can then be recovered using a pump or sorbent materials.

b) Procedures for transferring, storing, and managing spill related wastes

Used sorbent materials are to be placed in plastic bags for future disposal. All materials mentioned in this section are to be available in the spill kits. Following clean up, any tools or equipment used must be properly washed and decontaminated or replaced if this is not possible.

Spilled substances and materials used for containment must be placed into empty waste oil containers and sealed for proper disposal at an approved disposal facility.

c) Procedures for restoring affected areas

Criteria that may be considered include natural biodegradation of oil, replacement of soil and revegetation. Once a spill of reportable size has been contained, the ECO and the relevant Authority must be consulted to confirm that the appropriate clean up levels are met.

3.1.2. Scenario: Fire (and fire water handling)

Fire Management Plan

OBJECTIVE: REDUCE THE RISK OF FIRE IN THE GRASSLAND ENVIRONMENT

- Construct fire-breaks around the site/footprint area before any other construction begins.
- Prohibit smoking on-site or alternatively indicate designated smoking areas for staff.
- Prohibit open fires.
- Designate cooking areas for staff where fire hazard will be insignificant.
- Educate staff of the dangers of open and unattended fires.
- Educate staff as to proper fire safety.
- Enforce proper waste management including disposal of flammable material (e.g. cigarette butts and packaging).
- Place firefighting equipment at appropriate locations on site and ensure staff are aware of such equipment and associated procedure.
- No fires are allowed around the construction area.
- Welding, gas cutting or cutting of metal will only be permitted in an area designated as safe by the subcontractor.

i. Action Plan

The following action plan is proposed in the event of a fire:

1. Quantify risk.
2. Assess person safety, safety of others and the environment.
3. If safe – attempt to extinguish the fire using appropriate equipment.
4. If not safe to extinguish, contain fire.
5. Notify the Site Manager and emergency response crew and authorities.
6. Inform users of the potential risk of fire.
7. Record the incident on the company database or filing register.

ii. Procedures

Because large scale fires may spread very fast it is most advisable that the employee/contractor not put his/her life in danger in the case of an uncontrolled fire.

Portable firefighting equipment must be provided at strategic locations throughout the site, in line with the Building Code of South Africa and the relevant provincial building code. All emergency equipment including portable fire extinguishers, hose reels and hydrants must be maintained and inspected by a qualified contractor in accordance with the relevant legislation and national standards.

Current evacuation signs and diagrams for the building or site that are compliant to relevant state legislation must be provided in a conspicuous position, on each evacuation route. Contact details for the relevant emergency services should be clearly displayed on site and all employees should be aware of procedures to follow in the case of an emergency.

d) Procedures for initial actions

Persons should not fight the fire if any of the following conditions exist:

- They have not been trained or instructed in the use of a fire extinguisher.
- They do not know what is burning.
- The fire is spreading rapidly.
- They do not have the proper equipment.
- They cannot do so without a means of escape.
- They may inhale toxic smoke.

e) Reporting procedures

In terms of the requirements of NEMA, the responsible person must, within 14 days of the incident, report to the Director General, provincial head of department and municipality.

- Report fire immediately to the site manager, who will determine if it is to be reported to the relevant emergency services and authorities.
- The Site Manager must have copies of the Report form to be completed.

SUMMARY: RESPONSE PROCEDURE

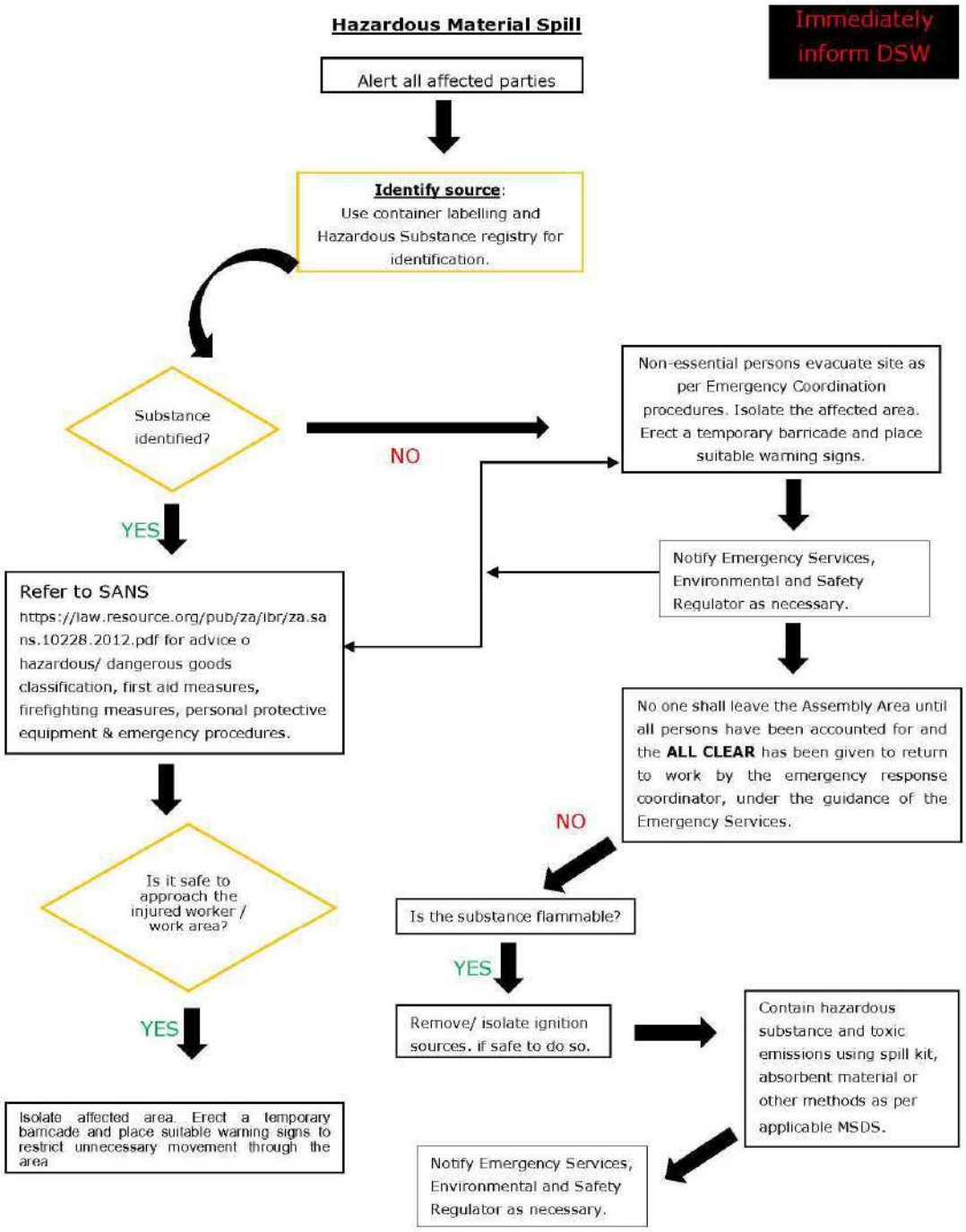


Figure 1: Hazardous Material Spill

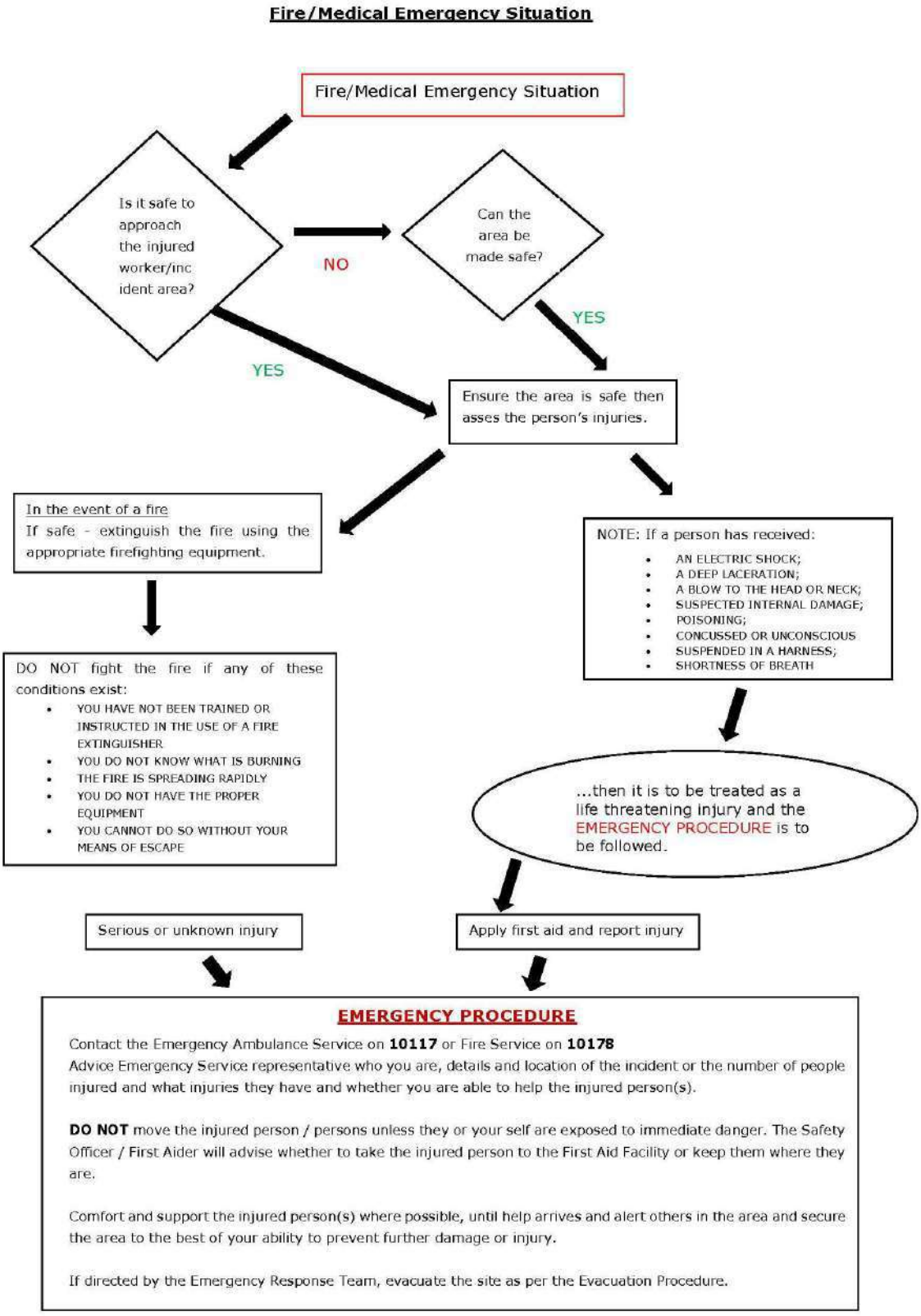


Figure 2: Emergency Fire/Medical

4. PROCEDURE RESPONSIBILITY

The Contractor's Safety, Health and Environment (SHE) Representative, employed by the Contractor, is responsible for managing the day-to-day on-site implementation of this Plan, and for the compilation of regular (usually weekly) Monitoring Reports. In addition, the SHE must act as liaison and advisor on all environmental and related issues.

The local authorities will provide their assistance when deemed necessary, or when it has been requested and/or indicated in Section 30(8) of NEMA. The provincial authority will provide assistance and guidance where required and conduct awareness programmes.

APPENDIX 6: WASTE MANAGEMENT PLAN

WASTE MANAGEMENT PLAN

1. PURPOSE

A Waste Management Plan (WMP) plays a key role in achieving sustainable waste management throughout all phases of the project. The plan prescribes measures for the collection, temporary storage and safe disposal of the various waste streams associated with the project and includes provisions for the recovery, re-use and recycling of waste. The purpose of this plan is therefore to ensure that effective procedures are implemented for the handling, storage, transportation and disposal of waste generated from the project activities on site.

This WMP has been compiled as part of the project EMPr and is based on waste stream information available at the time of compilation. Construction and operation activities must be assessed on an ongoing basis in order to determine the efficacy of the plan and whether further revision of the plan is required. This plan should be updated once further detail regarding waste quantities and categorisation become available, during the construction and/or operation phases. This plan should be updated throughout the life cycle of the infrastructure established for the Wind Energy Facilities and associated grid infrastructure, as required in order to ensure that appropriate measures are in place to manage and control waste and to ensure compliance with relevant legislation.

Prior to the commencement of construction, a detailed Waste Management Method Statement for the site should be compiled by the Contractor.

OBJECTIVE: Promote proper waste disposal, waste reduction, re-use, and recycling opportunities

2. RELEVANT ASPECTS OF THE SITE

It is expected that the development of various infrastructure will generate construction solid waste, as well as general waste and hazardous waste during the lifetime of the grid connection infrastructure.

Waste generated on site, originates from various sources, including but not limited to:

- Concrete waste generated from spoil and excess concrete.
- Contaminated water, soil, rocks and vegetation due to hydrocarbon spills.
- Hazardous waste from vehicle, equipment and machinery parts and servicing, fluorescent tubes, used hydrocarbon containers, batteries situated in specially adapted shipping containers, and waste ink cartridges.
- Recyclable waste in the form of paper, glass, steel, aluminium, wood/ wood pallets, plastic (PET bottles, PVC, LDPE) and cardboard.
- Organic waste from food waste as well as alien and endemic vegetation removal.
- Sewage from portable toilets and septic tanks.
- Inert waste from spoil material from site clearance and trenching works.

3. LEGISLATIVE REQUIREMENTS

Waste in South Africa is currently governed by several regulations, including:

- National Environmental Management: Waste Act (NEM: WA), 2008 (Act 59 of 2008);
- National Environmental Management: Waste Amendment Act, 2014 (Act 26 of 2014);
- The South African Constitution (Act 108 of 1996);

» Hazardous Substances Act (Act 5 of 1973);
» Health Act (Act 63 of 1977);
» Environment Conservation Act (Act 73 of 1989);
» Occupational Health and Safety Act (Act 85 of 1993);
» National Water Act (Act 36 of 1998);
» The National Environmental Management Act (Act 107 of 1998) (as amended);
» Municipal Structures Act (Act 117 of 1998);
» Municipal Systems Act (Act 32 of 2000);
» Mineral and Petroleum Resources Development Act (Act 28 of 2002); and
» Air Quality Act (Act 39 of 2004).

Storage of waste must be conducted in accordance with the National Norms and Standards for the Storage of Waste, published in GNR 926.

4. WASTE MANAGEMENT PRINCIPLES

An integrated approach to waste management is needed on site. Such an approach is illustrated in Figure 1.

It is important to ensure that waste is managed with the following objectives in mind during all phases of the project:
» Reducing volumes of waste is the greatest priority;
» If reduction is not feasible, the maximum amount of waste is to be recycled; and
» Waste that cannot be recycled is to be disposed of in the most environmentally responsible manner.

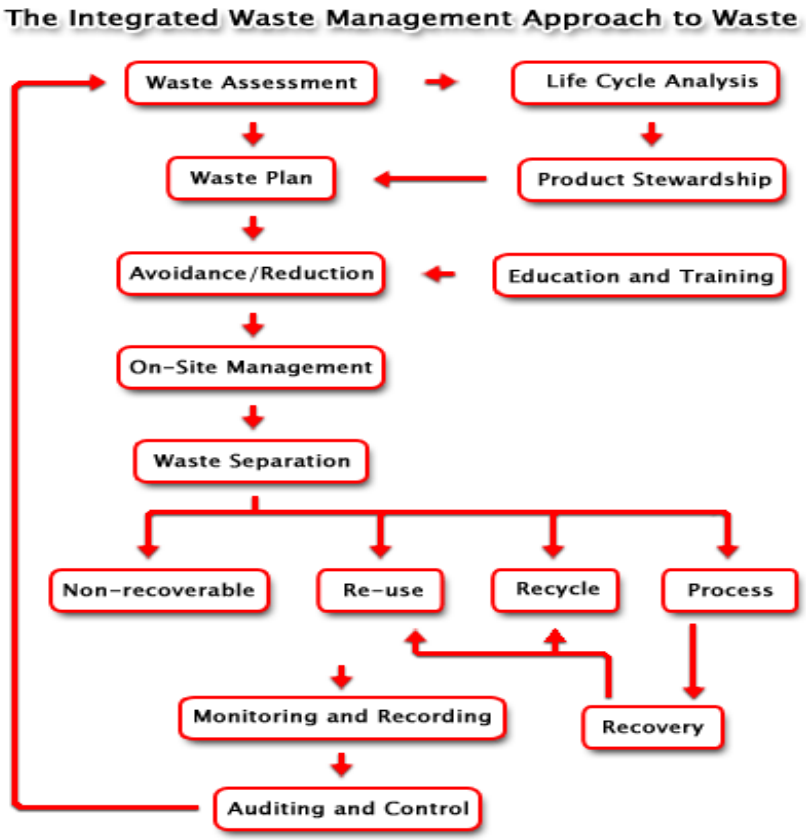


Figure 1: Integrated Waste Management Flow Diagram
(Source: http://www.enviroserv.co.za)

4.1. Construction phase

A plan for the management of waste during the construction phase is detailed below. A Method Statement detailing specific waste management practices during construction should be prepared by the Contractor prior to the commencement of construction, for approval by the Resident Engineer.

4.1.1. Waste Assessment / Inventory

» The Environmental Officer (EO), or designated staff member, must develop, implement and maintain a waste inventory reflecting all waste generated during construction for both general and hazardous waste streams.
» Construction methods and materials should be carefully considered in view of waste reduction, re-use, and recycling opportunities, to be pro-actively implemented.
» Once a waste inventory has been established, targets for the recovery of waste (minimisation, re-use, recycling) should be set.
» The EO must conduct waste classification and rating in terms of SANS 10288 and Government Notice 634 published under the NEM: WA.

4.1.2. Waste collection, handling and storage

» Off-cuts (steel, wood etc.) will be re-used or recycled, as far as possible.
» Vegetative material will be kept on site and mulched after construction to be spread over the disturbed areas to enhance rehabilitation of the natural vegetation.
» Waste separation is encouraged and therefore receptacles should be labelled to reflect the different waste types.
» Adequate containers for the cleaning of equipment and materials (paint, solvent) must be provided as to avoid spillages.
» Waste water from construction and painting activities must be collected in a designated container and disposed of at a suitable disposal point off site.
» Ensure an adequate and sustainable use of resources.
» A suitable area for the storage of waste must be selected (away from water courses) and included in the site layout plan.
» Ensuring that an adequate number of rubbish and "spill" bins are provided will also prevent litter and ensure the proper disposal of waste and spills
» It is the responsibility of the EO to ensure that each subcontractor implements their own waste recycling system, i.e. separate bins for food waste, plastics, paper, wood, glass cardboard, metals, etc. Such practises must be made contractually binding upon appointment of the subcontractors.
» Waste manifests and waste acceptance approvals (i.e. receipts) from designated waste facilities must be kept on file at the site office, in order to record and prove continual compliance for future auditing.
» Septic tanks and portable toilets must be monitored by the EO or responsible subcontractor and maintained regularly. Below ground storage of septic tanks must withstand the external forces of the surrounding environment. The area above the tank must be demarcated to prevent any vehicles or heavy machinery from moving around in the surrounding area.
» Waste collection bins and hazardous waste containers must be provided by the principal contractor and subcontractors and placed at strategic locations around the site for the storage of organic, recyclable and hazardous waste.
» A dedicated waste area must be established on site for the storage of all waste streams before removal from site. The storage period must not trigger listed waste activities as per the NEMWA, GN 921 of November 2013.
» Signage/ colour coding must be used to differentiate disposal areas for the various waste streams (i.e. paper, cardboard, metals, food waste, glass etc.).
» Hazardous waste must be stored within a bunded area constructed according to SABS requirements and must ensure complete containment of the spilled material in the event of a breach. As such, appropriate bunding material, design,

capacity and type must be utilised to ensure that no contamination of the surrounding environment will occur despite a containment breach. The net capacity of a bunded compound in a storage facility should be at least 120% of the net capacity of the largest tank.

» Take into consideration the capacity displaced by other tanks within the same bunded area and any foundations.
» Treat interconnected tanks as a single tank of equivalent total volume for the purposes of the bund design criteria.
» The location of all temporary waste storage areas must aim to minimise the potential for impact on the surrounding environment, including prevention of contaminated runoff, seepage, and vermin control, while being reasonably placed in terms of centrality and accessibility on site. Where required, an additional temporary waste storage area may be designated, provided identical controls are exercised for these locations.
» Waste storage shall be in accordance with all Regulations and best-practice guidelines and under no circumstances may waste be burnt on site.
» A dedicated waste management team must be appointed by the principal contractors' SHE Officer, who will be responsible for ensuring the continuous sorting of waste and maintenance of the area. The waste management team must be trained in all areas of waste management and monitored by the SHE Officer.
» All waste removed from site must be done by a registered/ licensed subcontractor, who must supply information regarding how waste recycling/ disposal will be achieved. The registered subcontractor must provide waste manifests for all removals at least once a month or for every disposal made, records of which must be kept on file at the site camp for the duration of the construction period.

4.1.3. Management of waste storage areas

» Control and implement waste management plans provided by contractors. Ensure that relevant legislative requirements are respected.
» Implement effective waste management in order to prevent construction related waste from entering the freshwater environments.
» Waste storage must be undertaken in accordance with the relevant Norms and Standards.
» The position of all waste storage areas must be located so as to ensure minimal degradation to the environment. The main waste storage area must have a suitable storm water system separating clean and contaminated storm water.
» Collection bins placed around the site and at subcontractors' camps (if at a different location than the main site camp) must be maintained and emptied on a regular basis by the principal contractor to avoid overflowing receptacles.
» Inspections and maintenance of the main waste storage area must be undertaken daily. Skips and storage containers must be clearly marked, or colour coded and well-maintained. Monitor for rodents and take corrective action if they become a problem.
» Waste must be stored in designated containers and not on the ground.
» Inspections and maintenance of bunds must be undertaken regularly. Bunds must be inspected for leaks or cracks in the foundation and walls.
» It is assumed that any rainwater collected inside the bund is contaminated and must be treated by oil/water separation (or similar method) prior to dewatering, or removed and stored as hazardous waste, and not released into the environment.
» If any leaks occur in the bund, these must be amended immediately.
» Bund systems must be designed to avoid dewatering of contaminated water, but to rather separate oil and hydrocarbons from water prior to dewatering.
» Following rainfall event bunds must always be dewatered in order to maintain a sufficient storage capacity in the event of a breach.
» No mixing of hazardous and general waste is allowed.

4.1.4. Disposal

» All operational waste (concrete, steel, rubbles etc.) to be removed from the site and waste hierarchy of prevention, as the preferred option, followed by reuse, recycling, recovery must be implemented, where possible.
» Other non-hazardous solid waste (e.g. packaging material) to be disposed of at a licensed landfill.
» All liquid waste (used oil, paints, lubricating compounds and grease) to be packaged and disposed of by appropriate means.
» The subcontractor shall not dispose of any waste and/or construction debris by burning or burying.
» Where solid waste disposal is to take place on site, ensure that only non-toxic materials which have no risk of polluting the groundwater, are buried in designated approved areas at acceptable depths below ground level.
» Waste generated on site must be removed on a regular basis. This frequency may change during construction depending on waste volumes generated at different stages of the construction process, however removal must occur prior to the storage capacity being reached to avoid overflow of containers and poor waste storage.
» Waste must be removed by a suitably qualified contractor and disposed of at an appropriately licensed landfill site. Proof of appropriate disposal must be provided by the contractor to the EO and ECO.

4.1.5. Record keeping

The success of the WMP is determined by measuring criteria such as waste volumes, cost recovery from recycling and 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.

» Documentation (waste manifest, certificate of issue or safe disposal) must be kept detailing the quantity, nature, and fate of any regulated waste for audit purposes.
» Waste management must form part of the monthly reporting requirements in terms of volumes generated, types, storage and final disposal.

4.1.6. Training

Training and awareness regarding waste management shall be provided to all employees and contractors as part of the toolbox talks or on-site awareness sessions with the EO and at the frequency as set out by the ECO.

4.2. Operation phase

It is expected that the operation phase will result in the production of limited amounts of general waste consisting mostly of cardboard, paper, plastic, tins, metals and a variety of synthetic compounds. Hazardous wastes (including grease, oils) will also be generated. All waste generated will be required to be temporarily stored at the facility in appropriately sealed containers prior to disposal at a permitted landfill site or other facilities.

The following waste management principles apply during the operation phase:
» The SHE Manager must develop, implement and maintain a waste inventory reflecting all waste generated during operation for both general and hazardous waste streams.
» Adequate waste collection bins at site must be supplied. Separate bins should be provided for general and hazardous waste.
» Recyclable waste must be removed from the waste stream and stored separately.
» All waste must be stored in appropriate temporary storage containers (separated between different operation wastes, and contaminated or wet waste).
» Waste storage shall be in accordance with all best-practice guidelines and under no circumstances may waste be burnt on site.

» Waste generated on site must be removed on a regular basis throughout the operation phase.
» Waste must be removed by a suitably qualified contractor and disposed of at an appropriately licensed landfill site. Proof of appropriate disposal must be provided by the contractor and kept on site.

5. Monitoring of Waste Management Activities

Records must be kept of the volumes/ mass of the different waste streams that are collected from the site throughout the life of the project. The appointed waste contractor is to provide monthly reports to the operator containing the following information:

» Monthly volumes/ mass of the different waste streams collected;
» Monthly volumes/ mass of the waste that is disposed of at a landfill site;
» Monthly volumes/ mass of the waste that is recycled;
» Data illustrating progress compared to previous months.

This report will aid in monitoring the progress and relevance of the waste management procedures that are in place. If it is found that the implemented procedures are not as effective as required, this WMP is to be reviewed and amended accordingly. This report must from part of the EO's reports to the ECO on a monthly basis.

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

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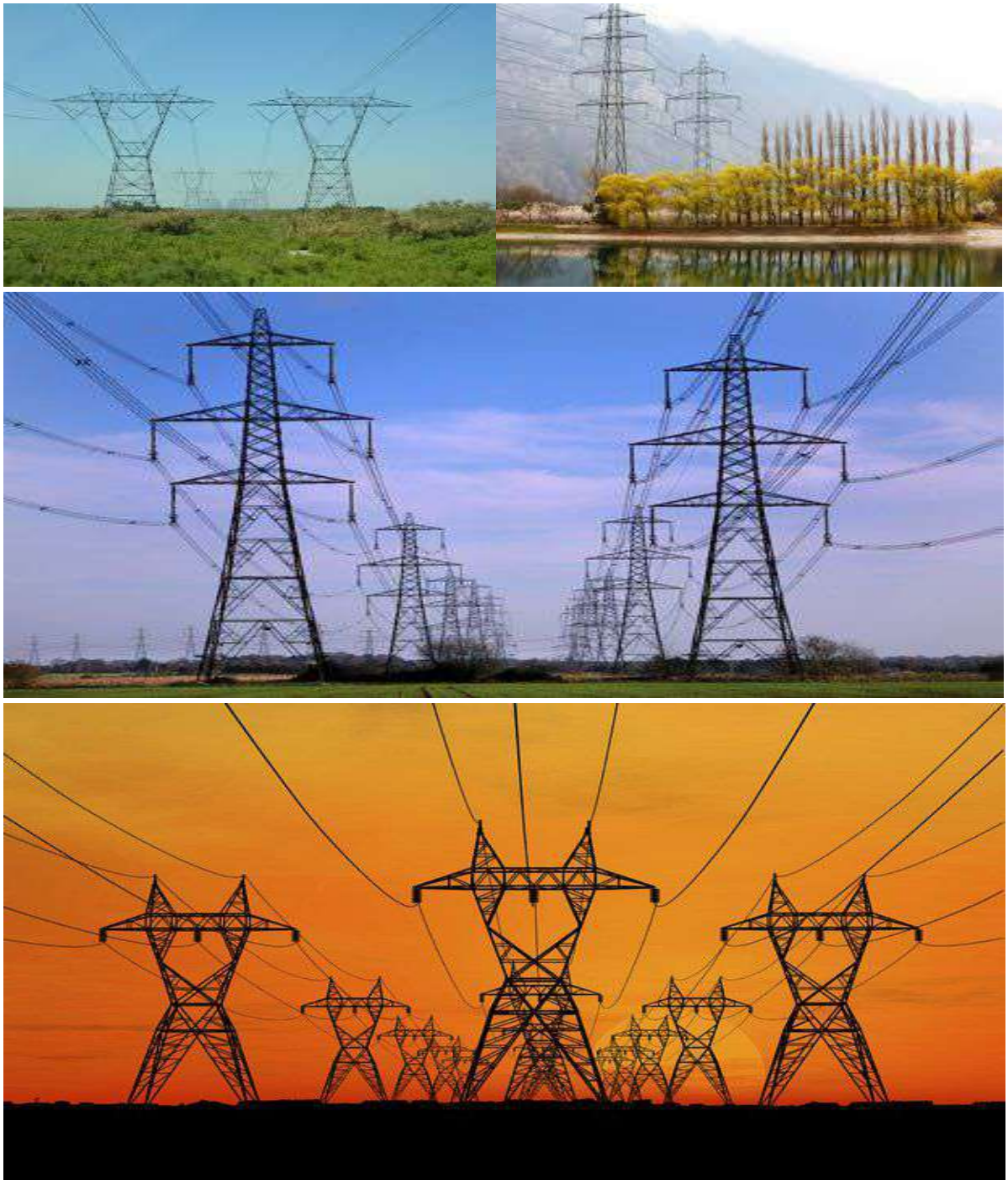

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

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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	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. 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. Where an impact management outcome is not relevant, the words "not applicable" can be inserted in the template under the "responsible persons" column. 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. 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.
	2	Site specific information	Contains preliminary infrastructure layout and a declaration that the applicant/holder of the EA

Part	Section	Heading	Content
			will comply with the pre-approved generic EMPr template contained in Part B: Section 1, 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 Part C. 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 Part B: section 2 not be submitted. Once approved, this Section forms part of the EMPr for the development and is legally binding.
C		Site specific sensitivities/ attributes	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 (Part B: section 1) This section will not be required should the site contain no specific environmental sensitivities or attributes. However, if Part C 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

Part	Section	Heading	Content
			expertise including a curriculum vitae. Once approved, Part C forms part of the EMPr for the site and is legally binding. 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 Part B: section 1.
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	Environment 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&APs	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)	<u>Role</u> 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. <u>Responsibilities</u> - 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)	Role 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. Responsibilities - 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)	Role 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. 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&APs), as required. Issues of non-compliance raised by the ECO must be taken up by the Project Manager and resolved with the Contractor as per the conditions of his contract. Decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e. those that are deemed to be a

Responsible Person (s)	Role and Responsibilities
	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. <u>Responsibilities</u> The responsibilities of the ECO will include the following: - 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;

Responsible Person (s)	Role and Responsibilities
	- 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 (dEO)	<u>Role</u> 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. <u>Responsibilities</u> - 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:

Responsible Person (s)	Role and Responsibilities
	- Reporting environmental incidents to the 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	<u>Role</u> 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 for overhead electricity transmission and distribution infrastructure activities. <u>Responsibilities</u> - 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;

Responsible Person (s)	Role and Responsibilities
	- 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)	Role 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: Responsibilities - 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 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 Substances;
- 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. Where0 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 contactor 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 understand 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**
– All staff must receive environmental awareness training prior to commencement of the activities;	ECO / cEO / dEO	Hold environmental awareness training workshops	Pre-construction Construction	ECO dEO	Monthly and as and when required	Attendance register and training minutes / notes for the record
– The Contractor must allow for sufficient sessions to train all personnel with no more than 20 personnel attending each course;	Contractor	Scheduling of sufficient sessions through consultation with the ECO / cEO / dEO	Pre-construction Construction	ECO dEO	Monthly and as and when required	Attendance register and training minutes / notes for the record
– Refresher environmental awareness training is available as and when required;	cEO / dEO in consultation with the ECO	Hold refresher environmental awareness training workshops	During the construction phase	ECO dEO	Monthly and as and when required	Attendance register and training minutes / notes for the record
– 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;	cEO / dEO	Hold training workshops and ensure that the EA and EMPr is readily available	During the construction phase	ECO dEO	Monthly and as and when required	Attendance register and training minutes / notes for the record
– The Contractor must erect and maintain information posters at key locations on site, and the posters must include the following information as a minimum: a) Safety notifications; and	Contractor	Develop and place appropriate	Pre-construction Construction	ECO dEO cEO	Monthly	Photographic record

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
b) No littering.		posters at key locations				
– Environmental awareness training must include as a minimum the following: 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 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.	cEO / dEO in consultation with the ECO	Develop environmental awareness training material which covers the minimum requirements	Pre-construction Construction	ECO dEO	Prior to the commencement of the environmental awareness training	Environmental awareness training material requirements checklist
– A record of all environmental awareness training courses undertaken as part of the EMPr must be available;	ECO / cEO / dEO	Filing system including all proof of training (i.e. attendance register and training minutes / notes for the record)	During the construction phase	ECO dEO	Monthly	Completed and up to date filing system with proof of training

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Educate workers on the dangers of open and/or unattended fires;	cEO / dEO in consultation with the ECO	Develop environmental awareness training material which covers the dangers of open and/or unattended fire	Pre-construction Construction	ECO dEO	Prior to the commencement of the environmental awareness training	Environmental awareness training material requirements checklist
– A staff attendance register of all staff to have received environmental awareness training must be available.	ECO / cEO / dEO	Filing system including all proof of training (i.e. attendance register)	During the construction phase	ECO dEO	Monthly	Completed and up to date filing system inclusive of all attendance registers
– Course material must be available and presented in appropriate languages that all staff can understand.	ECO / cEO / dEO	Develop environmental awareness training material in the required languages. Training material must by readily available to all staff	During the construction phase	ECO dEO	Monthly	Environmental awareness training material requirements checklist and the training register which must indicate the language of the training

5.2 Site Establishment Development

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

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– 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;	Contractor	Development of an appropriate method statement	Pre-construction	ECO dEO	Once, prior to construction	Availability of the method statement which complies with the minimum requirements listed
– Location of construction 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;	DPM	Place construction camps outside of sensitive areas identified in the Basic Assessment Report	Pre-construction Construction	ECO dEO	Once, prior to construction	Availability of a layout and sensitivity map indicating avoidance of sensitive areas

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Sites must be located where possible on previously disturbed areas;	DPM	Place site outside of sensitive areas and within previously disturbed areas identified in the authorised BA Report	Pre-construction	ECO dEO	Once, prior to construction	Availability of a layout and sensitivity map indicating avoidance of sensitive areas and placement within disturbed areas
– The camp must be fenced in accordance with ***Section 5.5: Fencing and gate installation***; and	DPM	Design and implementation of fencing as per the requirements of Section 5.5 of this EMPr	Pre-construction & Construction	ECO dEO	Once, prior to construction and once during the construction of the fencing	The camp is fenced in accordance with Section 5.5 of this EMPr
– The use of existing accommodation for contractor staff, where possible, is encouraged.	Not applicable – the development of new accommodation facilities will not be required. Staff will be accommodated in the nearby towns of Bedford and Cookhouse.					

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**
– Identification of access restricted areas is to be informed by the environmental assessment, site walk through and any additional areas identified during development;	dEO / cEO in consultation with the ECO	Spatially demarcate access restricted areas informed by the BA Report	Pre-construction	ECO	Once, prior to construction	Access restricted areas are identified and provided in a spatial format
– 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	dEO / cEO in consultation with the ECO	Erect appropriate temporary barriers around access restricted areas	At the commencement and for the duration of the construction phase	ECO	Monthly	Access restricted areas are closed-off through temporary barriers and barriers are maintained to a sufficient standard
– Unauthorised access and development related activity inside access restricted areas is prohibited.	Contractor / dEO / cEO	Erect appropriate temporary barriers around access restricted areas and	During the construction phase	ECO	Monthly, and as and when required	Photographic evidence and notes of compliance that no unauthorised access or

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		provide clear signage of restricted status				activities has taken place within the access restricted areas

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**
– Access to the servitude and tower positions must be negotiated with the relevant landowner and must fall within the assessed and authorised area;	DPM	Undertake negotiations for access to the servitude and tower positions with landowners affected by the grid connection corridor	Pre-construction Construction Operation	dEO	Ongoing throughout construction and operation	Proof of negotiations with affected landowners and requirements for access to the servitude and tower positions in the form of written and

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
						signed agreements
– An access agreement must be formalised and signed by the DPM, Contractor and landowner before commencing with the activities;	DPM Contractor	Develop access agreements with the affected landowners. Ensure that agreements are approved and signed	Pre-construction	dEO ECO	Once, prior to construction	Availability of approved and signed negotiations
– The access roads to tower positions must be signposted after access has been negotiated and before the commencement of the activities;	Contractor	Develop and install signs to indicate access for the project	Pre-construction	cEO / ECO	Once, prior to construction	Photographic record of signposted access roads and GPS co-ordinates of where these are placed
– 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	Contractor	Undertake maintenance activities on gravel roads used for construction as degradation takes place	During the construction phase	cEO / ECO	Weekly	Photographic record of the pre-construction condition and degradation of roads, and records of the implementation and

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
						effectiveness of maintenance activities
– All contractors must be made aware of all the access routes.	dEO / cEO	Develop a map illustrating all access routes associated with the project and present and provide the map to all contractors	Pre-construction Construction	ECO	Once, prior to construction	Access routes map readily available
– Any access route deviation from that in the written agreement must be closed and re-vegetated immediately, at the contractor's expense.	Contractor	All access routes developed that are not in-line with the access route agreements must be closed and re-habilitated to the pre-disturbance state	Construction and Rehabilitation	ECO	Bi-weekly (every two weeks)	Photographic record of the closure of access roads and re-vegetation
– Maximum use of both existing servitudes and existing roads must be made to minimise further disturbance through the development of new roads;	Contractor (and Eskom maintenance staff where	Existing access routes to be used must be specified and	Construction and operation	cEO Operation and maintenance team	Weekly	Implementation of the approved layout

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
	relevant to operation)	the development of new roads must be avoided as far as possible				
– 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;	dEO / cEO	Record the conditions of private roads to be used (prior to use) as per the requirements of section 4.9 and agree on the required condition of the roads with the landowner, DPM and contractor	During the construction phase	ECO	Prior to the use of private roads	Photographic record and proof of the road conditions agreed upon with the relevant parties
– Access roads in flattish areas must follow fence lines and tree belts to avoid fragmentation of vegetated areas or croplands.	DPM and Contractor	Design access roads to follow fence lines and avoid vegetated areas	Pre-construction	ECO	Once during the design and once prior to construction	Implementation of the approved layout
– Access roads must only be developed on pre-planned and approved roads.	Contractor	Construction of access roads only on pre-planned and	During the construction phase	ECO dEO	Once during the design and weekly during	Implementation of the approved layout

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		approved access roads			the construction of access roads	

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**
– Use existing gates provided to gain access to all parts of the area authorised for development, where possible.	Contractor	Identify and inform all relevant staff of the existing gates to be used	Pre-construction & Construction	dEO	Monthly	Existing gates are utilised on a frequent basis and only limited new access gates are developed
– Existing and new gates to be recorded and documented in accordance with section 4.9: photographic record.	dEO	Existing and new gates will be recorded and documented as per the	During the construction phase	ECO	Once, when the construction of all new gates has been completed	Photographic record of the existing and new gates as per the

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		requirements of section 4.9				requirements of section 4.9
– All gates must be fitted with locks and be kept locked at all times during the development phase, unless otherwise agreed with the landowner.	Contractor	Ensure all relevant gates are fitted with locks and are always locked	Construction and Operation	ECO Operation and maintenance team	Bi-weekly (every second week)	All gates are locked and no complaints from landowners are received in this regard
– At points where the line crosses an existing 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.	dEO	Install new gates where required with the approval of the affected landowner	During the construction phase	ECO	Once, prior to construction and during the construction phase, as and when required	New gates are installed where the power line crosses fences
– Care must be taken that the gates must be so erected that there is a gap of no more than 100mm between the bottom of the gate and the ground.	Contractor	Install gates in a manner so that there is a gap of no more than 100mm between the bottom of the gate and the ground	During the construction phase	cEO	Once, during the erection of the gates during the construction phase	New gates installed as per the requirement
– Where gates are installed in jackal proof fencing, a suitable reinforced concrete sill must be provided beneath the gate.	Contractor	Implement a reinforced concrete sill beneath gates	During the construction phase	cEO	Once, during the erection of the gates during the	New gates installed as per the requirement

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		installed for jackal proofing			construction phase	
– Original tension must be maintained in the fence wires.	Contractor	Maintain original tension of fences through required activities	During the construction phase	ECO	Monthly	No tension reduction on fence wires
– All gates installed in electrified fencing must be re-electrified.	Contractor	Electrify gates installed in electrified fencing	During the construction phase	ECO	Once, during the erection of the gates during the construction phase	Gates installed in electrified fencing is 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.	Contractor	Undertake maintenance activities on fences and barriers	During the construction phase	ECO	Monthly	Photographic record of maintained fences and barriers
– Fencing must be erected around the camp, batching plants, hazardous storage areas, and all designated access restricted areas, where appropriate and would not cause harm to the sensitive flora.	Contractor	Fence construction camps, batching plants, hazardous storage areas and access restricted areas. Avoid sensitive flora	During the construction phase	ECO	Once during the erection of fencing	Photographic record of fences erected

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Any temporary fencing to restrict the movement of livestock must only be erected with the permission of the landowner.	dEO/ cEO Contractor	Obtain written approval from the relevant landowner where temporary fencing is required to restrict livestock movement	During the construction phase	ECO	To be monitored as temporary fencing is required	Written approval to be provided by the dEO
– All fencing must be developed of high-quality material bearing the SABS mark.	Contractor	Make use of high-quality materials approved by SABS	During the construction phase	cEO	To be monitored as fencing is erected during the construction phase	Use of high-quality materials for fencing approved by SABS
– The use of razor wire as fencing must be avoided as far as possible.	Contractor	Razor wire must not be sourced or used for the erection of fencing	During the construction phase	ECO	To be monitored as fencing is erected during the construction phase	Fences erected do not make use of razor wire
– 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.	DSS and Contractor	Ensure fenced areas are locked as required through the implementation of a formalised process.	During the construction phase	cEO	Weekly and as and when required	Fences are locked and no complaints from landowners are received. A security

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		Appoint a security company				company is appointed
– On completion of the development phase all temporary fences are to be removed.	Contractor	Removal of all temporary fences	At the end of the Construction Phase	ECO dEO	Once, following the completion of the construction phase	No temporary fences associated with the project is present following the completion of the construction phase
– The contractor must ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but rather removed completely.	Contractor	Appropriate removal of all fence uprights	At the end of the Construction Phase	ECO dEO	Once, following the completion of the construction phase	No fence uprights associated with the project is present following the completion of the construction phase

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**
– 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.	DPM / Contractor / dEO / cEO in consultation with the ECO	The onsite borehole must be registered with the DWS prior to commencement of activities	Prior to commencement, during construction and operational phase	ECO / dEO	Registration of borehole once off prior commencement of construction and monitoring of abstraction volumes on a daily basis during construction and during operation.	Proof of registration of borehole from DWS and proof of daily records of abstraction volumes to be attached to monthly audit reports.
– The Contractor must ensure the following: 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 riverbed or banks and that the abstraction of water does not entail stream diversion activities; and	Not applicable - During the construction phase, water will be sourced from the local municipality or existing boreholes (if groundwater is available and if suitable). The exact details of water requirements will be confirmed during the detailed engineering phase. At this stage, no water is planned to be abstracted from or discharged to any surface water systems. During the operational phase of the proposed distribution line, water requirements are not applicable.					

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– c. All reasonable measures to limit pollution or sedimentation of the downstream watercourse are implemented.						
– Ensure water conservation is being practiced by: 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.	Contractor / dEO / cEO in consultation with the ECO	Implement the required water conservation measures throughout on-site construction processes	During the construction phase	ECO	Monthly, and as and when required	Successful implementation of water conservation

5.7 Storm and wastewater management

Impact management outcome: Impacts to the environment caused by stormwater 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**
– 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.	Contractor	Implement measures for the control and management of runoff	During the construction phase	ECO	Weekly	No mismanagement of runoff or contaminated water due to the temporary concrete batching plant
– 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.	Contractor and cEO	Obtain approved absorbent material and make use of licensed waste disposal facilities for disposal of oil	During the Construction Phase	ECO	Monthly	Availability of approved absorbent material at the construction site and proof of disposal of oil at licensed disposal facilities
– Natural stormwater 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.	DPM in consultation with the ECO	Consultation between the DPM and the ECO to determine if water can be	During the construction phase	ECO	As and when the need arises to discharge natural stormwater	Proof of consultation between the DPM and ECO and the outcomes thereof to be provided.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		discharged directly into water bodies (where present). The necessary water quality testing must be undertaken prior to discharge			runoff and clean water	Proof of water quality testing and the results thereof.
– 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.	DPM in consultation with the ECO	Consultation between the DPM and the ECO to determine if water can be discharged directly into water bodies (where present). The necessary water quality testing must be undertaken prior to discharge	During the construction phase	ECO	As and when the need arises to discharge water	Proof of consultation between the DPM and ECO and the outcomes thereof to be provided. Proof of water quality testing and the results thereof.

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**
– All measures regarding waste management must be undertaken using an integrated waste management approach.	Contractor	Develop and implement a waste management plan	During the construction phase	ECO	Monthly	Implementation of the waste management plan and proof of waste management through proof of responsible disposal
– Sufficient, covered waste collection bins (scavenger and weatherproof) must be provided.	Contractor	Provision of appropriate waste collection bins strategically placed throughout the site	During the construction phase	ECO	Weekly	Appropriate waste collection bins are available throughout the site
– A suitably positioned and clearly demarcated waste collection site must be identified and provided.	DPM and Contractor	Identify an appropriate location for the waste collection site which must be clearly demarcated through signage and temporary fencing	Design and Construction Phase	ECO	Once, prior to the commencement of construction	A waste collection site is appropriately placed and demarcated
– The waste collection site must be maintained in a clean and orderly manner.	Contractor	Regular collection of waste and maintenance of	During the Construction Phase	ECO	Weekly	The waste collection site is maintained and clean

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		the area must be undertaken as per the waste requirements for the project during construction				
– Waste must be segregated into separate bins and clearly marked for each waste type for recycling and safe disposal.	Contractor	Provide separate and marked bins for the different waste types associated with the construction phase	During the Construction Phase	cEO	Weekly	Separate waste bins are available on site and waste generated is separated into the relevant bins
– Staff must be trained in waste segregation.	cEO / dEO	Include waste segregation as part of the environmental awareness training material.	Pre-construction Construction	ECO	Monthly, and as and when required	Environmental awareness training material requirements checklist
– Bins must be emptied regularly.	Contractor cEO	Bins must be emptied before reaching total capacity and on a regular basis as required for the project	During the construction phase	ECO	Monthly	No mismanagement of bins.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– General waste produced onsite must be disposed of at registered waste disposal sites/ recycling company.	Contractor cEO	Disposal of general waste at licensed waste disposal facilities must be undertaken as per the waste management plan	During the construction phase	ECO	Monthly	Disposal certificates of disposal at licensed facilities to be provided
– Hazardous waste must be disposed of at a registered waste disposal site.	Contractor cEO	Disposal of hazardous waste at licensed waste disposal facilities must be undertaken as per the waste management plan	During the construction phase	ECO	Monthly	Disposal certificates of disposal at licensed facilities to be provided
– Certificates of safe disposal for general, hazardous and recycled waste must be maintained.	Contractor cEO	Obtain certificates for safe disposal of waste	During the construction phase	ECO	Monthly	Disposal certificates of disposal at licensed facilities to be provided and filed as part of the filing system

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**
– 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.	Contractor and cEO	Contractor to undertake activities which can cause spills of pollutants outside of watercourses	During the construction phase	ECO	Weekly	No incidents reported of spillage of pollutants into watercourses
– In the event of a spill, prompt action must be taken to clear the polluted or affected areas.	Contractor and cEO	Develop a management plan or process for implementation should a spill take place	During the construction phase	ECO	Weekly	Feedback must be provided by the contractor in terms of how the spill was handled and photographic evidence of the feedback must be provided and kept on record
– Where possible, no development equipment must traverse any seasonal or permanent wetland.	Contractor and cEO	Contractor to ensure that movement of equipment is undertaken outside the	During the construction phase	ECO	Weekly	No incidents of the movement of equipment within the wetlands or their riparian habitat.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		footprint and riparian habitat of the wetlands identified within the area.				
– No return flow into the estuaries must be allowed and no disturbance of the Estuarine Functional Zone should occur.	Not applicable – no estuaries were identified within the grid connection corridor.					
– Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to tower position is available.	Contractor and cEO	Ensure that only existing roads or tracks are used to access construction areas within the vicinity of watercourses (including wetlands). No new access roads/tracks should be constructed to provide access to construction areas within the vicinity of watercourses and wetlands within the grid connection	During the construction phase	ECO	Weekly	Ensure that permanent crossings are developed if there is no alternative.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		corridor/servitude.				
– There must not be any impact on the long-term morphological dynamics of watercourses or estuaries.	DPM Contractor cEO	Develop a management plan or process for implementation should morphological changes be visible within the watercourses and the wetlands within the grid connection corridor	During the construction and operation phase	ECO dEO	For all phases of the project life cycle (i.e. construction, operation, decommissioning)	No incidents reported of spillage of pollutants into watercourses
– Existing crossing points must be favoured over the creation of new crossings (including temporary access).	DPM Contractor cEO	Develop a management plan or process for implementation should a spill take place within a watercourse and ensure	During the pre-construction and construction phase	ECO dEO	During the construction phase of the project.	Existing crossing points utilised as opposed to new ones created and no incidents reported of spillage of pollutants into watercourses

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		continuous monitoring Existing crossing points to be used must be identified and personnel within the construction must be aware of these crossings for their use.				
– When working in or near any watercourse or estuary, the following environmental controls and consideration must be taken: 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	Contractor cEO	Activities undertaken near watercourses must be in-line with and consider the specified environmental controls	During the construction phase	ECO	Monthly, and as and when required	No degradation of the watercourses and no incidents of destruction reported

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
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.						

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**
General:						
– Indigenous vegetation which does not interfere with the development must be left undisturbed.	cEO and Contractor	Demarcate areas of indigenous vegetation to be avoided before clearance is undertaken	Construction and operation (i.e. for maintenance purposes)	ECO Operation and maintenance team	Weekly, and as and when required	No unnecessary clearance of indigenous vegetation is undertaken
– Protected or endangered species may occur on or near the development site. Special care should be taken not to damage such species.	Contractor cEO	Demarcate areas containing protected or endangered species to be	During the Construction Phase	ECO	Weekly, and as and when required	No clearance of protected or endangered species other than those

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		avoided by construction activities				permitted to be removed
– 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.	Relevant specialist in consultation with the Contractor	Develop and implement a Plant Search and Rescue Plan	Pre-construction & Construction	ECO	Weekly, and as and when required	Implementation of the Plant Search and Rescue Plan and photographic evidence and notes of the implementation of the plan
– Permits for removal must be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF) and the Northern Cape Department of Environment and Nature Conservation (DENC) prior to the cutting or clearing of the affected species, and they must be filed.	DPM dEO	Undertake the permitting process in order to obtain the relevant permits for the removal of protected species. Permits must be kept on file	Pre-construction	ECO	Once, prior to the commencement of the construction phase and removal of the protected species	DAFF and DENC permits on file
– 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.	ECO	Ensure that the audit report indicates all species rescued and replanted and provides feedback in terms of	During the Construction Phase and following the completion of the Construction Phase	ECO	Once off or as and when required	ECO confirmed rescued and replanted programme implemented correctly.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		compliance with the conditions of permits for replanting				
– Trees felled due to construction must be documented and form part of the Environmental Audit Report.	ECO	Ensure that the audit report documents the details of trees felled	During the Construction Phase and following the completion of the Construction Phase	CA permits on file		
– Rivers and watercourses must be kept clear of felled trees, vegetation cuttings and debris.	Contractor cEO	Felled trees, vegetation cuttings and debris must be disposed of at a licensed waste disposal facility	During the Construction Phase	ECO	Monthly	No felled trees, vegetation cuttings and debris are dumped in inappropriate locations and disposal certificates are available as proof of responsible disposal
– 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 that is appropriately trained.	DPM dEO Contractor cEO and Eskom maintenance staff where	A suitably qualified pest control operator must be appointed	Construction and Operation	ECO	As and when the use of herbicides is required	Only registered pest control operators must be appointed and proof of their registration

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
	relevant to operation)					must be provided
– A daily register must be kept of all relevant details of herbicide usage.	Contractor cEO	Develop a daily register for the documentation of the details of herbicide usage	During the construction phase	ECO	Monthly	Daily register provided by the pest control operator
– No herbicides must be used in estuaries.	Not applicable -no estuaries were identified within the grid connection corridor.					
– 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**.	Contractor, cEO in consultation with the dEO	Spatially demarcate protected species and sensitive vegetation and implement appropriate fencing where required as per section 5.3	During the construction phase	ECO	Once, during the undertaking of the demarcation of the areas and the erection of the fencing	Demarcation and fencing is undertaken in-line with the requirements of section 5.3
Servitude:						
– 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.	Contractor, cEO in consultation with the DPM and Eskom maintenance staff where relevant to operation)	Identify areas of vegetation not to be trimmed.	Construction and Operation	ECO Operation and maintenance team	Monthly	An indication of the areas where vegetation has not been trimmed or where vegetation has been removed from access

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
						roads must be provided.
– 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 landowner and the EA holder.	Contractor cEO and Eskom maintenance staff where relevant to operation)	Clearing for access must be undertaken as per the requirements provided by the landowner and the EA holder	During the construction phase	ECO	Monthly, and as and when required	Proof must be provided that only agreed upon areas have been cleared
– 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.	Contractor cEO	Undertake removal of alien invasive vegetation in accordance with the relevant guideline relevant to the project area and ensure the vegetation is disposed of at a licensed waste disposal facility	Construction and Operation	ECO Operation and maintenance team	Monthly, and as and when required	Proof must be provided that alien invasive vegetation has been cleared in accordance to the relevant guideline and that the vegetation was disposed of at a licensed 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.	Contractor cEO and Eskom maintenance staff where relevant to operation)	Develop a procedure for the trimming of vegetation in terms of the	Construction and operation	ECO Operation and maintenance team	Monthly, and as and when required	Proof must be provided that vegetation is trimmed in accordance

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		listed requirements				with the listed requirements
– 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.	Contractor cEO and Eskom maintenance staff where relevant to operation)	Dispose of the debris in accordance with the waste management plan	Construction and operation	ECO Operation and maintenance team	Monthly, and as and when required	Proof must be provided that the debris has been disposed of at a licensed waste disposal facility or retained by the landowners.
– 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 purposes only and no vehicle access must be cleared along the "trace-line". Alternative methods of stringing that limit impact to the environment must always be considered.	Contractor cEO and Eskom maintenance staff where relevant to operation)	Develop a procedure for the cutting of vegetation for stringing purposes	Pre-construction & Construction	ECO	Once, prior to the commencement of construction	Proof of implementation of the procedure for the cutting of vegetation for stringing purposes

5.11 Protection of fauna

Impact management outcome: Minimise disturbance to fauna and avifauna.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– No interference with livestock must occur without the landowner's written consent and with the landowner or a person representing the landowner being present.	dEO / cEO Contractor	Develop a procedure for dealing with livestock within the affected properties	Pre-construction and during the construction phase	ECO	Once, prior to the commencement of construction and as and when required during the construction phase	Written consent provided by the landowner and proof of representation of the landowner during interference
– The breeding sites of raptors and other wild bird species must be taken into consideration during the planning of the development programme.	dEO / cEO in consultation with the Contractor	Ensure that the planning and development programme considers breeding sites for raptors and wild bird species	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and as and when required	The planning and development programme includes the consideration of breeding sites for wild bird species
– 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.	dEO / cEO in consultation with the Contractor and Eskom maintenance staff where	Avoid breeding sites and ensure that special care is taken in the presence of nestlings and fledglings	During the Construction Phase Operation Phase	ECO Operation and maintenance team	Weekly, and as an when required during the construction. Monthly, and as and when	Photographic record of intact breeding sites

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
	relevant to operation)				required during operation	
– Nesting sites on existing parallel lines must documented.	dEO / cEO and Eskom maintenance staff where relevant to operation)	Walk-downs of the existing lines located parallel to the project must be undertaken and nests and the details thereof documented	During the Construction Phase Operation Phase	ECO Operation and maintenance team	Quarterly, and as and when required	Details of walk-downs undertaken must be noted and kept on file and photographic records of nesting sites must be kept
– Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds.	dEO / cEO in consultation with the Contractor and Eskom maintenance staff where relevant to operation)	All mitigation measures recommended by the avifauna specialist must be implemented	During the Construction Phase Operation Phase	ECO Operation and maintenance team	Weekly during construction and monthly during operation	Photographic record of compliance and successful implementation of the recommended measures
– Bird guards and diverters must be installed on the new line as per the recommendations of the specialist.	dEO / cEO in consultation with the Contractor and Eskom maintenance staff where relevant to operation)	Recommendations made by the specialist for the installation of bird guards and diverters must be adhered to and implemented as appropriate. Bird guards and	During the Construction Phase Operation Phase	ECO Operation and maintenance team	Monthly, and as and when required	Photographic record of implementation and maintenance of bird guards and diverters

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		diverters must be maintained				
– 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.	dEO / cEO in consultation with the Contractor	All site staff must be informed of this requirement during the Environmental Awareness Training and the consequences of not adhering to the requirement. These areas must be demarcated as Access Restricted Areas	During the Construction Phase	ECO	Monthly, and as and when required	No instances of poaching are reported
– No deliberate or intentional killing of fauna is allowed.	dEO / cEO in consultation with the Contractor	All site staff must be informed of this requirement during the Environmental Awareness Training and the consequences of not adhering to the requirement. These areas must	During the Construction Phase	ECO	Monthly, and as and when required	No instances of deliberate or intentional killing is reported

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		be demarcated as Access Restricted Areas				
– In areas where snakes are abundant, snake deterrents are to be deployed on the pylons to prevent snakes climbing up, being electrocuted and causing power outages; and	dEO / cEO in consultation with the Contractor and Eskom maintenance staff where relevant to operation)	Implement and maintain snake deterrents on pylons in areas where snakes are abundant	During the Construction Phase Operation Phase	ECO Operation and maintenance team	Once, during the construction of the pylons and as and when required. Monthly during operation	Photographic record of the implementation and maintenance of snake deterrents
– 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.	DPM in consultation with the dEO	Undertake a permitting process to obtain the required permits	Pre-construction	ECO	Once, prior to the commencement of construction and as and when required	Permits for removal and/relocation must be kept on file and be readily available

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**
– 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;	DPM and a suitably qualified specialist dEO / cEO in consultation with the Contractor	Undertake a Heritage Walk-through Survey Spatially identify and demarcate areas of heritage significance as per the Heritage Walk-through Report and as per the requirements of section 5.3	Pre-construction	ECO	Once, prior to the commencement of construction	Proof of avoidance of sensitive heritage features through details of avoidance and photographic records
– Carry out general monitoring of excavations for potential fossils, artefacts and material of heritage importance;	Suitably qualified specialist in consultation with the dEO / cEO	Appoint a suitably qualified specialist to carry out the monitoring of excavations for fossils, artefacts and important heritage material	During the Construction Phase	ECO	During the undertaking of excavations of fossils, artefacts and heritage material	Proof of appointment of a suitably qualified specialist and photographic record of required monitoring by the specialist

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– -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.	dEO / cEO in consultation with the Contractor and ECO	Develop and implement procedures for situations where human remains, archaeological, palaeontological or historical material are uncovered. If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage	During the Construction Phase	ECO	Weekly, during the construction phase and as and when required	Proof of work ceased and the required procedures followed in cases where material is discovered.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
		resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA or HWC Tel: 021 483 5959 Email: ceoheritage@westerncape.gov.za. If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490), must be alerted				

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		immediately as per section 36(6) of the NHRA or HWC , 3rd Floor Protea Assurance Building, 142 Longmarket Street, Green Market Square, Cape Town 8000. Tel: 021 483 5959 Email: ceoheritage@westerncape.gov.za.				

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**
– 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.;	cEO in consultation with the Contractor	Develop an Emergency Preparedness, Response and Fire Management Plan specific to the project	Pre-construction Construction	ECO	Once, prior to the commencement of construction and weekly during the construction phase	Compliance with the Emergency Preparedness, Response and Fire Management Plan
– All unattended open excavations must be adequately fenced or demarcated;	Contractor	Ensure that all excavations undertaken is fenced and demarcated within a reasonable timeframe and in instances where excavations will be open for long-periods of time	During the Construction Phase	ECO	Weekly	Excavations are fenced where required and photographic proof can be provided
– Adequate protective measures must be implemented to prevent unauthorised access to and climbing of partly constructed towers and protective scaffolding;	Contractor	All staff must be easily identifiable and the climbing of towers and scaffolding must be undertaken by authorised	During the construction phase	ECO	Monthly, and as and when required	No incidents of unauthorised climbing is reported

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		personnel as managed by the Contractor				
– Ensure structures vulnerable to high winds are secured; and	Contractor	Ensure that sufficient stabilisation measures are implemented to secure structures vulnerable to high winds	During the construction phase	ECO	Weekly, and as and when required	No incidents of unstable structures due to high winds is reported
– Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged.	cEO	Compile and regularly update as incidents and complaints are submitted from the public and indicate the actions taken to resolve the complaint	During the construction phase	ECO	Monthly, and as and when required	The incidents and complaints register is complete and provides all the required details

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**
– Mobile chemical toilets are installed onsite if no other ablution facilities are available;	Contractor	Mobile chemical toilets must be placed appropriately and in areas that avoid environmental sensitivities	During the Construction Phase	ECO	Weekly	Mobile toilets are installed and avoid environmental sensitivities
– 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;	Contractor in consultation with the cEO	All site staff must be informed of this requirement during the Environmental Awareness Training and the consequences of not adhering to the requirement.	Pe-construction & Construction	ECO	Monthly, and as and when required	No evidence of non-compliance identified
– Where mobile chemical toilets are required, the following must be ensured: a) Toilets are located no closer than 100m 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	Contractor in consultation with the cEO	The installation of the toilets by the Contractor must be as per the listed requirements	During the Construction Phase	ECO	Weekly	No evidence of non-compliance identified

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
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; and 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.	Contractor	Certificates obtained from the licensed waste disposal facility with the emptying of the toilets must be kept on file	During the Construction Phase	ECO	Monthly, and as and when required	Certificates for waste disposal from the licensed waste disposal facility

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**
– Undertake environmentally friendly pest control in the camp area;	Contractor	Only environmentally-friendly pest control must be used, when required	During the Construction Phase	ECO	As and when pest control is required for the project	Contractor to provide proof of pest control used being environmentally-friendly
– Ensure that the workforce is sensitised to the effects of sexually transmitted diseases, especially HIV/ AIDS;	cEO / Contractor	The effects of sexually transmitted diseases and HIV/ AIDS must be covered in the Environmental Awareness Training	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during construction	Environmental awareness training material requirements checklist
– The Contractor must ensure that information posters on HIV/ AIDS are displayed in the Contractor Camp area;	Contractor	Develop and place information posters on HIV/ AIDS	During the Construction Phase	ECO	Weekly	Photographic evidence of poster placement

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Information and education relating to sexually transmitted diseases to be made available to both construction workers and local community, where applicable;	cEO / Contractor	Information and education of sexually transmitted diseases must be covered in the Environmental Awareness Training.	Pre-construction & Construction	ECO	Monthly	Environmental awareness training material requirements checklist
– Free condoms must be made available to all staff on site at central points;	Contractor	Placement of free condoms in mobile toilets and at the construction camps	During the Construction Phase	ECO	Monthly	Proof of placement of free condoms by the contractor to be provided
– Medical support must be made available; and	dEO / cEO in consultation with the Contractor	Ensure that designated personnel with first aid training are available on site and that first aid kits to provide medical support is readily available	Construction and Operations	ECO	Monthly	Check the availability of first aid trained personnel and medical kits (including if these are complete in terms of supplies)
– Provide access to Voluntary HIV Testing and Counselling Services.	Contractor	Compile a HIV testing schedule and provide counselling	During the Construction Phase	ECO	Quarterly, and as and when required	Voluntary testing schedules and proof of counselling

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		services where required				(where undertaken)

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**
– Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the proposed project;	Contractor	Develop an Emergency Preparedness, Response and Fire Management Plan specific to the project	Pre-construction	ECO	Once, prior to the commencement of construction	Emergency Preparedness, Response and Fire Management Plan compiled
– The Emergency Plan must deal with accidents, potential spillages and fires in line with relevant legislation;	Contractor	Develop an Emergency Preparedness, Response and Fire Management Plan specific to the project	Pre-construction	ECO	Once, prior to the commencement of construction	Emergency Preparedness, Response and Fire Management Plan includes required specifications

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		which covers accidents, potential spillages and fires				
– All staff must be made aware of emergency procedures as part of environmental awareness training;	cEO / dEO	Develop environmental awareness training material which covers the relevant emergency procedures	Pre-construction	ECO	Prior to the commencement of the environmental awareness training	Environmental awareness training material requirements checklist
– The relevant local authority must be made aware of a fire as soon as it starts; and	Contractor	Develop and include a procedure in the Emergency Preparedness, Response and Fire Management Plan for the event of a fire and the procedure to be followed for informing the local authority	Construction	ECO	As and when a fire occurs	The local authority was informed as per the relevant procedure set out in the Emergency Preparedness, Response and Fire Management Plan

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– In the event of emergency, necessary mitigation measures to contain the spill or leak must be implemented (see **Hazardous Substances section 5.17**).	Contractor and Eskom maintenance staff where relevant to operation)	Implement the required mitigation measures in the event of a spill or leak as per the requirements of Section 5.17.	Construction and Operations	ECO	As and when a spill or leak occurs	The mitigation measures included under Section 5.17 have been adhered to

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**
– The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives substituted where possible;	cEO in consultation with the Contractor	Develop a strategy of how hazardous substances can be and should be minimised	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during the construction phase	Contractor to provide evidence of substances used for proof of compliance
– All hazardous substances must be stored in suitable containers as defined in the Method Statement;	Contractor	Develop a Method Statement for the storage of hazardous substances in suitable containers	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during the construction phase	Photographic proof that hazardous substances are stored in suitable containers as per the requirements of the relevant Method Statements
– Containers must be clearly marked to indicate contents, quantities and safety requirements;	Contractor	Where hazardous waste is stored these must be clearly marked	During the Construction Phase	ECO	Monthly	Photographic proof that containers are marked as per the requirements

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		indicating the required details of the contents				
– All storage areas must be bunded. The bunded area must be of sufficient capacity to contain a spill / leak from the stored containers;	Contractor	Ensure that storage areas are sufficiently bunded which are of sufficient capacity to contain a spill / leak from the stored containers	During the Construction Phase	ECO	Monthly during the Construction Phase	Photographic proof that storage areas are bunded and proof that the bund areas are of sufficient capacity to contain a spill / leak from the stored containers
– Bunded areas to be suitably lined with a SABS approved liner;	Contractor	Ensure that bunded storage areas are suitably lined	During the Construction Phase	ECO	Once, during the Construction Phase	Photographic proof that bunded storage areas are suitably lined
– An Alphabetical Hazardous Chemical Substance (HCS) control sheet must be drawn up and kept up to date on a continuous basis;	cEO / Contractor	Compile and update an Alphabetical Hazardous Chemical Substance (HCS) control sheet specific to the project	During the Construction Phase	ECO	Monthly, and as and when required	Complete and up to date control sheet provided by the Contractor

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– All hazardous chemicals that will be used on site must have Material Safety Data Sheets (MSDS);	cEO / Contractor	Keep a record of all hazardous chemicals and the respective MSDS	During the Construction Phase	ECO	Monthly, and as and when required	Record of hazardous chemicals and the respective MSDS
– All employees working with HCS must be trained in the safe use of the substance and according to the safety data sheet;	cEO / Contractor	Provide training for personnel working with HCS	Pre-construction	ECO	Once, prior to the commencement of construction and as and when required	Record of training provided to personnel working with HCS
– 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;	cEO / Contractor	Develop environmental awareness training material which covers the relevant impacts and safety measures. Provide appropriate training and personal protective equipment for the relevant personnel handling hazardous	Pre-construction & Construction	ECO	Prior to the commencement of the environmental awareness training and monthly during the construction phase for personal protective equipment	Environmental awareness training material requirements checklist and all relevant personnel have undergone appropriate training and have access to personal protective equipment

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		substances and materials				
– The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowsers;	Contractor	Appropriate storage facilities must be constructed or obtained for the storing of diesel, other liquid fuel, oil and hydraulic fluid	During the Construction Phase	ECO	Monthly, and as and when required	Storage tanks for the project are appropriate and no incidents are reported in this regard
– 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);	Contractor	Appropriate storage facilities must be constructed or obtained for tanks as per the requirements listed	During the Construction Phase	ECO	Monthly, and as and when required	Storage areas for the tanks/ bowsers for the project are appropriate and no incidents are reported in this regard
– The floor of the bund must be sloped, draining to an oil separator;	Contractor	Appropriate storage facilities must be constructed as per the requirements listed	During the Construction Phase	ECO	Once, during construction	Bunded storage areas are constructed according to the requirements
– Provision must be made for refuelling at the storage area by protecting the soil with an impermeable groundcover. Where dispensing equipment is used, a	Contractor	Appropriately constructed refuelling facility must be	During the Construction Phase	ECO cEO	Monthly Weekly	Soils at the refuelling facility are protected as required and

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
drip tray must be used to ensure small spills are contained;		developed as per the requirements. Drip trays must be provided for use				drip trays are provided and used
– All empty externally dirty drums must be stored on a drip tray or within a bunded area;	Contractor	Ensure that empty dirty drums are stored appropriately as per the requirements	During the Construction Phase	ECO cEO	Monthly Weekly	Drip trays or bunded areas are used for the storage of dirty drums
– No unauthorised access into the hazardous substances storage areas must be permitted;	Contractor	Ensure through the implementation of procedures that no unauthorised access is undertaken into the storage areas	During the Construction Phase	ECO	Monthly	Proof of the implementation of the relevant procedure must be provided by the contractor
– No smoking must be allowed within the vicinity of the hazardous storage areas;	Contractor	Inform all employees of the requirement and develop and place relevant signage in the relevant areas	During the Construction Phase	ECO cEO	Monthly Weekly	Photographic record of the signage placed must be provided

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Adequate fire-fighting equipment must be made available at all hazardous storage areas;	Contractor	Hazardous storage areas must be fitted with adequate fire-fighting equipment	During the Construction Phase	ECO	Monthly	Adequate fire-fighting equipment is available and has been serviced
– Where refuelling away from the dedicated refuelling station is required, a mobile refuelling unit must be used. Appropriate ground protection such as drip trays must be used;	Contractor	Provide a mobile refuelling unit as well as suitable ground protection, where required	During the Construction Phase	ECO	Monthly, and as and when required	A mobile refuelling unit and suitable ground protection is available for use
– 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;	Contractor	Provide an appropriate spill kit for the project for the use of hazardous substances	During the Construction Phase	ECO	Monthly, and as and when required	Appropriate spill kits are available for use
– The responsible operator must have the required training to make use of the spill kit in emergency situations;	cEO and Contractor	Provide training on the use of spill kits to the relevant employees	Pre-construction	ECO	Once, prior to the commencement of construction	Proof of training to be provided by the contractor
– An appropriate number of spill kits must be available and must be located in all areas where activities are being undertaken; and	cEO and Contractor	Provide an appropriate number of spill kits in relevant areas	During the Construction Phase	ECO	Monthly	Proof of appropriate number of spill kits in appropriate areas to be

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
						provided by the contractor
– 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 wastewater management and 5.8 for solid and hazardous waste management.	cEO and Contractor	Storage and disposal of contaminated soil must be in accordance with the National Environmental Management: Waste Act and sections 5.7 and 5.8 of this EMPr	During the Construction Phase	ECO	Monthly, and as and when required	Proof of storage and disposal in terms of the National Environmental Management: Waste Act must be provided. Certificates of disposal at licensed waste disposal facilities must be provided

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**
– Where possible and practical all maintenance of vehicles and equipment must take place in the workshop area;	Contractor	Demarcate specific areas for the maintenance of vehicles and equipment	During the Construction Phase	ECO	Monthly	A dedicated area for the maintenance of vehicles and machinery is used.
– 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.	Contractor	Ensure that a drip tray is available for any emergency repairs required	During the Construction Phase	ECO	Monthly	Contractor to provide evidence of drip tray use for emergency repairs
– Leaking equipment must be repaired immediately or be removed from site to facilitate repair;	Contractor	Ensure that where leaking equipment is identified it is repaired immediately or removed from site for repairs	During the Construction Phase	ECO	Monthly	Contractor to provide details of equipment repaired or removed from site
– Workshop areas must be monitored for oil and fuel spills;	cEO	Undertake regular inspections of the workshop	During the Construction Phase	ECO	Monthly	Updated register of inspection

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		areas for oil and fuel spills and keep an updated register of inspection on site				
– Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place must be available;	Contractor	Provide an appropriate spill kit for the project	During the Construction Phase	ECO	Monthly, and as and when required	Appropriate spill kits are available for use
– 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;	Contractor	Ensure that the workshop area is sufficiently bunded in accordance with the required specification	During the Construction Phase	ECO	Once, during the Construction Phase and as and when required	Workshop area is bunded in accordance with the required specification
– Water drainage from the workshop must be contained and managed in accordance with Section 5.7: storm and wastewater management.	Contractor	Ensure that water drainage from workshop area is managed as per the requirements of section 5.7	During the Construction Phase	ECO	Monthly	Workshop drainage is managed in accordance with the requirements

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**
– Concrete mixing must be carried out on an impermeable surface;	Contractor	Provide impermeable surface for the mixing of concrete	During the Construction Phase	ECO	Weekly	No concrete mixing is undertaken on open ground
– Batching plants areas must be fitted with a containment facility for the collection of cement laden water.	Contractor	Ensure batching plant used on site contains a containment facility for the collection of cement laden water.	During the Construction Phase	ECO	Weekly	No run-off cement laden water is released into the surrounding area from the batching plant.
– Dirty water from the batching plant must be contained to prevent soil and groundwater contamination	Contractor	Dirty water from the batching plant is safely stored.	During the Construction Phase	ECO	Weekly	No leaks of dirty water from the batching plant into the surrounding area is reported.
– Bagged cement must be stored in an appropriate facility and at least 10m away from any water courses, gullies and drains;	Contractor	Demarcate and provide a storage area for bagged cement in-line with the	During the Construction Phase	ECO	Weekly	Photographic proof of bagged cement stored within the

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		listed requirements				demarcated area
– A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted;	Contractor	Provide a washout facility for the washing of associated equipment. Enforce limitations on water use for washing of equipment	During the Construction Phase	ECO	Weekly	No cement laden water is released into the environment. Only minimal water is used for washing
– Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licensed disposal facility;	Contractor cEO	Make use of hardened concrete where possible or dispose of concrete in a suitable manner	During the Construction Phase	ECO	Monthly	Certificates of disposal of concrete at licensed waste disposal facility
– Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site;	Contractor cEO	Bind empty cement bags and temporarily store it in an appropriate area on site	During the Construction Phase	ECO	Monthly	Proof of binding of empty cement bags and storage in an appropriate area on site to be provided by the Contractor

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to Section 5.20: Dust emissions)	Contractor	Ensure that sand and aggregates are kept damp or otherwise protected from dust generation	During the Construction Phase	ECO	Monthly	Proof of damping (or alternative dust suppression) of sand and aggregates must be provided by the Contractor
– 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; and	Contractor	Ensure that all excess sand, stone and cement is removed or reused	At the completion of the Construction Phase	ECO	Once, with the completion of construction	Certificates for the disposal of sand, stone and cement at licensed waste disposal facilities or proof of reuse must be provided
– Temporary fencing must be erected around batching plants in accordance with Section 5.5: Fencing and gate installation.	Contractor	Installation of fencing around the batching plant.	Prior to commencement of construction activities	ECO	Weekly	Fencing is installed around the footprint of the batching plant.

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**
– Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO;	Contractor cEO	Apply appropriate dust suppressant	During the Construction Phase	ECO	Weekly	Contractor to provide proof of use of appropriate dust suppressants
– 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;	Contractor cEO	Proper planning for vegetation removal must be undertaken as well as for the associated rehabilitation	During the Construction Phase and Rehabilitation	ECO	Weekly	Plan for implementation must be provided by the Contractor
– Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present;	Contractor cEO	Ensure that specific limitations are placed on the transport and handling of erodible materials during high wind conditions or when a visible	During the Construction Phase	ECO	Bi-weekly (every second week)	No complaints submitted in this regard

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		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;	ECO	ECO to provide adequate recommendations	During the Construction Phase	Not Applicable		
– Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind;	Contractor cEO	Place soil stockpiles in areas less affected by wind	During the Construction Phase	ECO	Bi-weekly (every second week)	Soil stockpiles are not exposed to wind and have not been eroded
– Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of the ECO;	Contractor in consultation with the ECO	Contractor to implement erosion control measures as recommended and agreed with the ECO	During the Construction Phase	ECO	Weekly, until erosion is no longer a problem	Recommendations made by the ECO have been implemented by the Contractor
– Vehicle speeds must not exceed 40km/h along dust roads or 20km/h when traversing unconsolidated and non-vegetated areas;	cEO / dEO / contractor and Eskom maintenance staff where relevant to operation)	Inform all drivers of speed limits and place appropriate signage along the relevant roads	During the Construction Phase Operation Phase	ECO Operation and Maintenance team	Monthly	No complaints from community members are submitted

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Straw stabilisation must be applied at a rate of one bale/10m² and harrowed into the top 100mm of top material, for all completed earthworks;	Contractor	Ensure that straw stabilisation is undertaken as per the listed requirements	During the Construction Phase	ECO	Monthly	Photographic record of all straw stabilisation undertaken
– For significant areas of excavation or exposed ground, dust suppression measures must be used to minimise the spread of dust.	Contractor	Appropriate dust suppressant measures are implemented	During the Construction Phase	ECO	Weekly	Photographic record of measures being implemented and the results thereof

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**
– Any blasting activity must be conducted by a suitably licensed blasting contractor; and	Not Applicable – no blasting will be required for the project.					
– 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: 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**
– The Contractor must keep noise level within acceptable limits. Restrict the use of sound amplification equipment for communication and emergency only;	Contractor	Ensure that noise limits do not exceed acceptable limits and avoid the use of amplification communication	During the Construction Phase	ECO	Monthly, and as and when required	No complaints registered in this regard. No amplification equipment is used.
– All vehicles and machinery must be fitted with appropriate silencing technology and must be properly maintained;	Contractor cEO	Provide and implement silencing technology	During the Construction Phase	ECO	Monthly, and as and when required	No complaints registered in this regard. Silencing technology is utilised.
– 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;	Contractor cEO	Update complaints register. Provide daily transport to and from site for employees	During the Construction Phase	ECO	Monthly, and as and when required	Complaints register provided by the cEO and proof of transportation services provided
– Develop a Code of Conduct for the construction phase in terms of behaviour of construction staff. Operating hours as determined by the environmental	Contractor cEO	Compile a Code of Conduct for staff.	Pre-construction and Construction	ECO	Once, prior to the	No complaints registered in this regard.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
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.		Appropriate operating hours must be identified for the project.			commencement of construction	

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**
– Designate smoking areas where the fire hazard could be regarded as insignificant;	cEO / Contractor	Identify and demarcate through signage designated smoking areas	Pre-construction & Construction	ECO	Monthly	Photographic record of designated smoking area
– Firefighting equipment must be available on all vehicles located on site;	cEO / dEO in consultation with the Contractor	Provide all vehicles with firefighting equipment	Construction	ECO	Monthly	All vehicles are fitted with firefighting equipment and the details thereof are provided by the cEO
– The local Fire Protection Agency (FPA) must be informed of construction activities;	cEO	Undertake formal consultation to inform the local FPA of the associated construction activities	Pre-construction	ECO	Once, during the commencement of the Construction Phase	Proof of consultation with the FPA
– Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site;	dEO / cEO / Contractor	Develop environmental awareness	Pre-construction & Construction	ECO	Prior to the commencement of the	Environmental awareness training material

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		training material which covers the contact numbers for the FPA and emergency services. Place the contact numbers for the FPA and emergency services at a visible and central location			environmental awareness training and once during the construction phase	requirements checklist and photographic record of contact numbers on display
– Two-way swop of contact details between ECO and FPA.	ECO	Consultation between the ECO and FPA in order to exchange contact details	Pre-construction	Not Applicable		

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**
– 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 and water bodies;	Contractor	Identify and demarcate an appropriate location for the storage of excavated materials	Pre-construction & Construction	ECO	Monthly	Excavated material is not stored within sensitive environmental areas
– All stockpiled material must be maintained and kept clear of weeds and alien vegetation growth by undertaking regular weeding and control methods;	Contractor	Implement appropriate and sufficient maintenance on stockpiled material regularly	During the Construction Phase	ECO	Bi-weekly (every second week)	Stockpiled material is maintained sufficiently and is clear of weeds and alien vegetation
– Topsoil stockpiles must not exceed 2m in height;	Contractor	Enforce limitations for the height of topsoil stockpiles	During the Construction Phase	ECO	Bi-weekly (every second week)	Topsoil stockpiles do not exceed 2m in height
– During periods of strong winds and heavy rain, the stockpiles must be covered with appropriate material (e.g. cloth, tarpaulin etc.);	Contractor	Appropriate material must be provided in order to cover stockpiles when required	During the Construction Phase	ECO	Monthly	Contractor to provide proof of availability of appropriate material to

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
						cover stockpiles when required
– Where possible, sandbags (or similar) must be placed at the bases of the stockpiled material in order to prevent erosion of the material.	Contractor	Sandbags must be provided in order to prevent erosion of stockpiled materials	During the Construction Phase	ECO	Monthly	Contractor to provide proof of availability of sandbags to prevent erosion of stockpiled materials

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 person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– No vegetation clearing must occur during survey and pegging operations;	Contractor	Implement restrictions in terms of vegetation clearing during the survey and pegging operations	Pre-construction	ECO	Weekly	Contractor to provide photographic proof that no vegetation has been cleared
– No new access roads must be developed to facilitate access for survey and pegging purposes;	Contractor	Restrict the development of	Pre-construction	ECO	Weekly	Contractor to provide

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		new access roads for survey and pegging purposes				photographic proof that no new roads have been developed
– Project manager, botanical specialist and contractor to agree on final tower positions based on survey within assessed and approved areas;	DPM, Suitably Qualified Specialist and Contractor	Undertake consultation between the relevant responsible people and finalise the tower positions for the power line	Pre-construction	ECO	Once the final tower positions have been finalised and agreed upon	Provision of final tower positions to the ECO
– 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.	Surveyor in consultation with the ECO	Undertake consultation between the surveyor and the ECO	Pre-construction	ECO	Weekly	Consultation with the ECO regarding the distribution of pegs.

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**
– 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;	Contractor	Use a licensed waste disposal facility for the disposal of excess spoil	During the Construction Phase	ECO	Monthly	Certificates obtained for the disposal of excess spoil at a licensed waste disposal facility
– Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes;	Contractor	Spoil used for landscaping must be applied as per the listed requirements	Construction and Rehabilitation	ECO	Monthly	Photographic record of spoil used for landscaping purposes as well as feedback from the contractor
– Management of equipment for excavation purposes must be undertaken in accordance with Section 5.18: Workshop equipment maintenance and storage; and	Contractor	Undertake the management of equipment for excavation as per the requirements of section 5.18	During the Construction Phase	ECO	Monthly	Management of equipment is undertaken in line with the requirements of section 5.18
– Hazardous substances spills from equipment must be managed in accordance with Section 5.17: Hazardous substances.	Contractor	Undertake the management of hazardous	During the Construction Phase	ECO	Monthly	Management of hazardous substances spills

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		substances spills from equipment as per the requirements of section 5.17				from equipment is undertaken in line with the requirements of section 5.17
– Batching of cement to be undertaken in accordance with Section 5.19: Batching plants;	Contractor	Undertake the batching of cement as per the requirements of section 5.19.	During the Construction Phase	ECO	Monthly	Management of the batching of cement in accordance with the requirements of section 5.19.
– Residual cement must be disposed of in accordance with Section 5.8: Solid and hazardous waste management.	Contractor	Undertake the disposal of residual cement as per the requirements of section 5.8	During the Construction Phase	ECO	Monthly	The disposal of residual cement is undertaken in line with section 5.8.

5.27 Assembly and erecting towers

Impact management outcome: No environmental degradation occurs as a result of assembly and erecting of towers.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Prior to erection, assembled towers and tower sections must be stored on elevated surfaces (suggest wooden blocks) to minimise damage to the underlying vegetation;	Contractor	Provide the necessary materials for the elevated surface, where towers are to be placed on indigenous vegetation	During the Construction Phase	ECO	Weekly	Implementation of elevated surface and photographic record thereof
– In sensitive areas, tower assembly must take place off-site or away from sensitive positions;	Contractor in consultation with the cEO	Identify sensitive areas, including buffers, to be avoided by tower assembly and ensure that the areas are not infringed upon	Pre-construction & Construction	ECO	Weekly	Tower assembly is undertaken outside of sensitive areas
– The crane used for tower assembly must be operated in a manner which minimises impact to the environment;	Contractor in consultation with the cEO	Ensure that no impact to the environment is imposed during the operation of the crane	Pre-construction & Construction	ECO	Weekly	No environmental damages incurred as a result of the crane.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– The number of crane trips to each site must be minimised;	Contractor in consultation with the cEO	Ensure that the utilisation of the crane is maximised when on site.	Pre-construction & Construction	ECO	Weekly	Few crane trips to each site observed.
– Wheeled cranes must be utilised in preference to tracked cranes;	Contractor	Ensure wheeled cranes are utilised.	Pre-construction & Construction	ECO	Weekly	Wheeled cranes observed on site.
– Consideration must be given to erecting towers by helicopter or by hand where it is warranted to limit the extent of environmental impact;	Contractor	Contractor to undertaken erecting of towers in an environmentally acceptable manner	During the Construction Phase	ECO	Monthly	No unacceptable environmental impacts occur with the erecting of the towers
– Access to tower positions to be undertaken in accordance with access requirements specified in **Section 5.4: Access Roads**;	Contractor	Undertake access to tower positions as per the requirements of section 5.4	During the Construction Phase	ECO	Monthly	Access to tower positions are undertaken as per the requirements of section 5.4
– Vegetation clearance to be undertaken in accordance with general vegetation clearance requirements specified in **Section 5.10: Vegetation clearing**;	Contractor	Undertake vegetation clearance as per the requirements of section 5.10	During the Construction Phase	ECO	Weekly	Vegetation clearance is undertaken as per the requirements of section 5.10

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– No levelling at tower sites must be permitted unless approved by the Development Project Manager or Developer Site Supervisor;	Contractor in consultation with the DPM and DSS	Written permission for levelling at tower sites, if required, must be obtained from the DPM and DSS prior to the undertaking of any levelling activities	During the Construction Phase	ECO	Monthly, and as and when required	Written permission from the DPM and DSS provided to the Contractor
– Topsoil must be removed separately from subsoil material and stored for later use during rehabilitation of such tower sites;	Contractor	Implement appropriate measures to ensure that topsoil is removed from subsoil material	Construction and Rehabilitation	ECO	Weekly, and as and when required	Proof of appropriate measures implemented must be provided by the Contractor
– Topsoil must be stored in heaps not higher than 2m to prevent destruction of the seed bank within the topsoil;	Contractor	Implement the listed requirements for the storage of topsoil	During the Construction Phase	ECO	Weekly	Topsoil is stored as per the listed requirements
– Excavated slopes must be no greater that 1:3, but where this is unavoidable, appropriate measures must be undertaken to stabilise the slopes;	Contractor	Implement the listed requirements for the excavation of slopes	During the Construction Phase	ECO	Weekly	Excavation of slopes is undertaken as per the listed requirements

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– 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;	Not Applicable - no blasting activities will be required for the project.					
– Only existing disturbed areas are utilised as spoil areas;	Contractor	Identify, demarcate and use existing disturbed areas for spoil areas	Pre-construction & Construction	ECO	Weekly	Only identified disturbed areas are used as spoil areas
– Drainage is provided to control groundwater exit gradient with the spill areas such that migration of fires is kept to a minimum;	Not Applicable					
– Surface water runoff is appropriately channelled through or around spoil areas;	DPM and Contractor	Design and implement appropriate surface runoff measures for spoil areas	Pre-construction & Construction	ECO	Once, during the construction of the surface runoff measures	Implementation of surface runoff measures through and/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;	Contractor	Develop and implement backfilling procedures which ensures that topsoil is not placed at the bottom of foundations.	Pre-construction & Construction	ECO	Weekly	Backfilling operations are undertaken as per the procedures developed
– The surface of the spoil is appropriately rehabilitated in accordance with the requirements specified in Section 5.29: Landscaping and rehabilitation;	Contractor	Rehabilitation of the surface spoil must be	Rehabilitation	ECO	Weekly	Rehabilitation of the surface spoil is undertaken as

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		undertaken in accordance with the requirements of section 5.29				per the requirements of section 5.29
– 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.	Contractor	Ensure that topsoil is spread evenly and compacted appropriately. This must be undertaken outside of the start of the dry season	Rehabilitation	ECO	Weekly	Proof that topsoil has been spread evenly and compacted correctly must be provided by the Contractor/ cEO. Proof that the activities were undertaken outside of the start of the dry season must be provided by the Contractor

5.28 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**
– 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;	Contractor	Identify and demarcate areas appropriate for the siting of winch and tensioner stations which does not infringe on access restricted areas or environmentally sensitive areas	Pre-construction & Construction	ECO	Weekly	Winch and tensioner stations are located outside of identified 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;	Contractor	Provide sufficient drip trays	During the Construction Phase	ECO	Weekly	Sufficient drip trays are available for the winch and tensioner stations and no spills occur
– Refuelling of the winch and tensioner stations must be undertaken in accordance with **Section 5.17: Hazardous substances;**	Contractor	The refuelling of winch and tensioner	During the Construction Phase	ECO	Monthly	The refuelling of winch and tensioner

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		stations must be undertaken as per the requirements of section 5.17				stations is undertaken as per the requirements of section 5.17
– 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 handheld implements, with vegetation being cut off at ground level. No tracked or wheeled mechanised equipment must be used;	Contractor	Develop and implement procedures for implementation for vegetation clearing during stringing in line with the specification.	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and weekly during stringing	Implementation of the procedures put in place and proof thereof from the Contractor
– Alternative methods of stringing which limit impact to the environment must always be considered e.g. by hand or by using a helicopter;	Contractor	Identify and implement the stringing method with the least environmental impact	During the Construction Phase	ECO	Weekly	Implementation of identified method of stringing with the least environmental impact
– 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;	Contractor	Identify prior to construction areas where protection measures will be required during stringing. Where access is to be restricted	Pre-construction & Construction	ECO	Monthly, and as and when required	Proof of implementation of protection measures and proof of written notice to affected parties must be

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		timeous written notice must be provided to the affected parties				provided by the Contractor
– 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;	Contractor in consultation with the cEO	Avoid the damaging or disturbance of existing services. Where services will be disrupted timeous notice must be provided to the affected parties	During the Construction Phase	ECO	Monthly, and as and when required	No disruption of services occurs. Where disruption occurs proof of written notice to affected parties must be provided by the Contractor
– Where stringing operations cross cultivated land, damage to crops is restricted to the minimum required to conduct stringing operations, and reasonable notice (10 workdays minimum), in writing, must be provided to the landowner;	Not Applicable - no cultivated land is present within the grid connection corridor.					
– Necessary scaffolding protection measures must be installed to prevent damage to the structures supporting certain high value agricultural areas such as vineyards, orchards, nurseries.	Not Applicable – no high value agricultural areas are present within the grid connection corridor.					

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**
– Develop and implement communication strategies to facilitate public participation;	dEO / cEO	Identify and implement appropriate strategies for communication with the communities through consideration of the community needs	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during the construction	Communication is undertaken as per the identified strategies and no complaints are submitted regarding communication
– Develop and implement a collaborative and constructive approach to conflict resolution as part of the external stakeholder engagement process;	Contractor	Development and implement a Grievance Mechanism which considers the community needs and provides procedures for conflict resolution	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during the construction phase	Conflict resolution is undertaken in line with the requirements of the Grievance Mechanism. No complaints on conflict resolution is submitted by the community

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Sustain continuous communication and liaison with neighbouring owners and residents	Contractor	Development and implement a Grievance Mechanism which provides procedures for communication / liaison with neighbouring landowners and residents	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during the construction phase	Communication / liaison with neighbouring landowners and residents are undertaken in line with the requirements of the Grievance Mechanism. No complaints on communication with neighbouring landowners and residents is submitted
– Create work and training opportunities for local stakeholders; and	Contractor	Develop and implement a "locals first" policy for the provision of employment opportunities	Pre-construction & Construction	ECO	Once, prior to the commencement of construction and monthly during the construction phase	The "locals first" policy is considered in terms of the employment and training opportunities
– 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.	Not Applicable - no workers, other than security is proposed to stay on-site overnight.					

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		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– 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**;	Contractor	Regular emptying of the bunds must be undertaken. This must be undertaken as per the requirements listed in sections 5.17 and 5.18	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Bunds are emptied as per the requirements listed under sections 5.17 and 5.18
– Hazardous storage areas must be well ventilated;	Contractor	Install appropriate ventilation in all hazardous storage areas	During the construction phase	ECO	Prior to site closure for more than 05 days	Effective ventilation is installed in hazardous storage areas
– Fire extinguishers must be serviced and accessible. Service records to be filed and audited at last service;	Contractor / cEO	Ensure fire extinguishers are serviced, as required and are easily accessible with appropriate signage indicating location. Ensure	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Signage placed indicating location of fire extinguishers and service records

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		service records are kept up to date and filed				
– Emergency and contact details must be displayed;	Contractor / cEO	Place emergency and contact details which are readily available and easily accessible	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Photographic proof of contact details on display
– Security personnel must be briefed and have the facilities to contact or be contacted by relevant management and emergency personnel;	Contractor	Hold a workshop with all security personnel to provide a brief of the project and security requirements. Provide facilities in order to contact management and emergency personnel	Pre-construction & construction	ECO	Prior to site closure for more than 05 days	Proof of the workshop held must be kept on file by the contractor.
– Night hazards such as reflectors, lighting, traffic signage etc. must have been checked;	Contractor	Regular checks of night hazards must be undertaken	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Proof of checks of night hazards must be provided by the contractor

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Fire hazards identified and the local authority must have been notified of any potential threats e.g. large brush stockpiles, fuels etc.;	cEO / Contractor	Identify any potential fire hazards and notify the relevant local authority	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Proof of notification of the fire hazards to the local authority must be provided by the Contractor
– Structures vulnerable to high winds must be secured;	Contractor	Ensure structures vulnerable to wind are secure prior to site closure	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Structures vulnerable to wind are secured prior to site closure
– Wind and dust mitigation must be implemented;	Contractor	Implement wind and dust mitigation prior to site closure	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Wind and dust mitigation is implemented prior to site closure
– Cement and materials stores must have been secured;	Contractor	Ensure cement and material stores are secured prior to site closure	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Cement and material stores are secured prior to site closure
– Toilets must have been emptied and secured;	Contractor	Ensure toilets are emptied and secured prior to site closure	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Toilets are emptied and secured prior to site closure
– Refuse bins must have been emptied and secured;	Contractor	Ensure refuse bins are emptied and secured	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Refuse bins are emptied and

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		prior to site closure				secured prior to site closure
– Drip trays must have been emptied and secured.	Contractor	Ensure drip trays are emptied and secured prior to site closure	During the Construction Phase	ECO	Prior to site closure for more than 05 days	Drip trays are emptied and secured prior to site closure

5.31 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**
– 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;	Contractor	Develop and implement a rehabilitation plan for the rehabilitation of all disturbed areas. Dispose of all spoil and waste at a licensed	Pre-construction & Rehabilitation	ECO	Weekly	Rehabilitation of the disturbed areas is undertaken as per the rehabilitation plan. All certificates of waste disposal at licensed facilities are available.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		waste disposal facility				
– 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	Contractor	Assess all slopes and determine whether contouring is required	Rehabilitation	ECO	Weekly	All slopes are assessed and contoured as required
– 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;	Contractor	Assess all slopes and determine whether terracing is required	Rehabilitation	ECO	Weekly	All slopes are assessed and terraced as required
– 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;	Contractor	Ensure all berms have a slope of 1:4 and is replanted with indigenous species and grasses	Rehabilitation	ECO	Weekly	All berms have a slope of 1:4 and is replanted with indigenous species and grasses
– 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;	Contractor	The upper 10cm of soil which was stripped and stockpiled from the entire area where levelling has been conducted	Rehabilitation	ECO	Weekly	Topsoil is spread evenly

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
		should be re-spread over the disturbed surface during rehabilitation: If no levelling was done on a particular area, it is not necessary to strip topsoil from that area.				
– Rehabilitation of tower sites and access roads outside of farmland;	Contractor	Ensure stockpiled topsoil is used as per the requirements listed under section 5.24	Rehabilitation	ECO	Weekly	Topsoil is spread evenly
– Indigenous species must be used for with species and/grasses to where it compliments or approximates the original condition;	Contractor	Make use of indigenous species for rehabilitation	Rehabilitation	ECO	Weekly	Indigenous species are used for rehabilitation
– Stockpiled topsoil must be used for rehabilitation (refer to **Section 5.24: Stockpiling and stockpiled areas**);	Contractor	Ensure stockpiled topsoil is used as per the requirements listed under section 5.24	Rehabilitation	ECO	Weekly	Stockpiled topsoil is used as per the requirements listed under section 5.24

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion;	Contractor	Ensure that topsoil is spread evenly	Rehabilitation	ECO	Weekly	Topsoil is spread evenly
– Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed;	Contractor	Remove all visible weeds from placement area and topsoil before spreading the topsoil	Rehabilitation	ECO	Weekly	No weeds are visible in the placement area or the topsoil
– Subsoil must be ripped before topsoil is placed;	Contractor	Undertake the ripping of subsoil prior to the spreading of topsoil	Rehabilitation	ECO	Weekly	Subsoil is ripped before topsoil is placed
– The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment;	Contractor	Plan the timeframe for rehabilitation in order to undertake vegetation planting during the optimal time for vegetation establishment	Rehabilitation	ECO	At the start of rehabilitation to confirm correct timeframe	Rehabilitation is undertaken during the optimal time
– Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled;	Contractor	All disturbed slope areas must be stabilised	Rehabilitation	ECO	Weekly	Disturbed slopes are stabilised sufficiently

Impact Management Actions	Implementation			Monitoring		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
– 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;	Contractor	Stabilise slopes as per the design specifications	Pre-construction & Rehabilitation	ECO	Weekly	Slopes are stabilised as per the design specifications
– Spoil can be used for backfilling or landscaping as long as it is covered by a minimum of 150mm of topsoil.	Contractor	Spoil used for landscaping must be applied as per the listed requirements	Rehabilitation	ECO	Weekly	Photographic record of spoil used for landscaping purposes as well as feedback from the contractor
– 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: 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	Contractor in consultation with a suitably qualified specialist	Make use of a suitable vegetation seed mixture should enhancement be required	Rehabilitation	ECO	As and when required	Use of a suitable vegetation seed mixture if required

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 Contact details and description of the project

7.1.1. Details of the Applicant

Applicant Name	Sutherland Wind Farm (Pty) Ltd/Rietrug Wind Farm (Pvt) Ltd[1]
Contact Person	Eugene Marais
Physical Address	4th Floor Mariendahl House, Newlands on Main, Corner Main and Campground Road, Claremont, Cape Town, 7708
Postal Address	PO Box 45063, Claremont, 7735
Telephone	021 657 4052
Fax	N/A
Cell	(073) 871 5781
Email Address	Eugene.Marais@mainstreamrp.com

7.1.2. Details and Expertise of Environmental Assessment Practitioner (EAP)

EAP Name	Arlene Singh
EAP Qualifications	B.Sc. (Hons.) Environmental Management
Professional Affiliation/Registration	SACNASP EAPASA
Physical Address	Waterfall, Cnr Old Main Road & Maxwell Drive, Johannesburg, 2090
Telephone	N/A
Fax	086 471 4190
Cell	084 277 7074
Email Address	arlene@veersgroup.com

Refer to **Appendix A** of the EMPr for the detailed experience of the EAP and the Project Team.

[1] The 400kV Powerline supports both Sutherland and Rietrug Wind Energy Facilities (WEFs) t however the EA was issued under Sutherland Wind Farm (Pty) Ltd (DFFE REF: 14/12/16/3/3/1/2077/AM2)

7.1.3. Project Details

Project Name: ESTABLISHMENT OF THE ELECRTICAL GRID INFRASTRUTCURE (400KV POWERLINE), AND ASSOCIATED INFRASTRUCTURE TO SUPPORT THE AUTHORISED SUTHERLAND, SUTHERLAND 2 AND RIETRUG WIND ENERGY FACILITIES, WESTERN CAPE PROVINCE

7.1.4. Project Description

Sutherland Wind Farm (Pty) Ltd, is proposing the development of a **400kV powerline** (14/12/16/3/3/1/2077/AM2) the authorised Sutherland, Sutherland 2 and Rietrug Wind Energy Facilities (WEFs). The proposed overhead 400kV powerline, approximately 2,4km, will connect to the proposed 400kV Koring MTS to the existing 400kV Eskom powerline located in the Western Cape Province.

The developer has bid the wind energy facilities and associated infrastructure into the Renewable Energy IPP Procurement Programme (REIPPPP) Bid Window 5 for the procurement of up to 1 600MW of onshore wind energy technologies and has since been granted preferred bidder status for the Sutherland and Rietrug Wind Energy Facilities. This allocation is in accordance with the generation capacity required as specified in the Integrated Resource Plan (IRP) 2019 and accompanying ministerial determination from the Minister for the Department of Mineral Resources and Energy (DMRE).

The infrastructure and key components considered for this development includes:

- A new 400kV powerline that will be located on Portion 7 of Farm Hamelkraal 16 and Remainder of Spitzkop Fram 20.
- The length of the proposed powerline is approximately 2,4km long with a 500m assessment corridor.
- The proposed new 400kV powerline will connect to the proposed 400kV Koring MTS and to the existing 400kV Eskom powerline located in the Western Cape Province
- Development of access tracks up to 4m to 6m wide within the powerline corridor to enable construction and maintenance activities.

POWERLINE CO-ORDINATES:

400kV Powerline :

The design of the power line is required to conform to Eskom's technical standards as it will form part of the national electricity supply network and must therefore be in-line with the existing network systems, technology and infrastructure.

Co-ordinates	Latitude	Longitude
Start	32°42'50.24"S	21°15'41.14"E

End	32°44'5.33"S	21°15'47.48"E

Alternative 1 (preferred alternative) has been authorised as per DFFE Ref:. : 14/12/16/3/3/1/2077/AM2)

This Generic EMPr is applicable to the establishment of the new 400kV powerline and associated infrastructure to support the authorised the Sutherland and Rietrug WEFs, Northern Cape Province

This document forms a completed addendum to the Approved Environmental Management Programme (EMPr) (prepared by CSIR Environmental Management Services) as submitted with the Final Basic Assessment Report (BA Report) in December 2019. and the addendum to the EMPr (prepared by NALA Environmental) for the Part 2 Amendment report associated with the relocation of the MTS (July 2021).

This section has been prepared by an Environmental Assessment Practitioner (EAP), with input from relevant specialists.

7.1.5. Project Location

Location details of the development of the powerline:

Province	Western Cape
District Municipality	Central Karoo District Municipality
Local Municipality	Laingsburg Local Municipality
Nearest town(s)	Sutherland
Affected Properties: Farm name(s), number(s) and portion numbers (on-site substation)	» Portion 7 of Farm Hamelkraal 16; » Remainder of Spitzkop Farm 20
SG 21 Digit Code (s)	» C0430000000000001600007 » C0430000000000002000000
Current zoning and land use	Agriculture

7.1.6. Preliminary Technical Specifications of the 400kV powerline

Infrastructure	**Footprint, dimensions and details**
Powerline capacity	400kV
Powerline Servitude Width	36m
Powerline length (alternative 1 or 2)	4km
Powerline corridor	500m (250m on either side)
Tower Spacing	Up to 1km
Height of the Towers	Up to 32m
Connection to the Proposed Third Party Substation	The proposed new 400kV powerline will connect to the proposed 400kV Koring MTS and the existing 400kV Eskom powerline in the Western Cape Province.

It should be noted that Eskom's requirements for work in or near Eskom servitudes should be adhered to.

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.

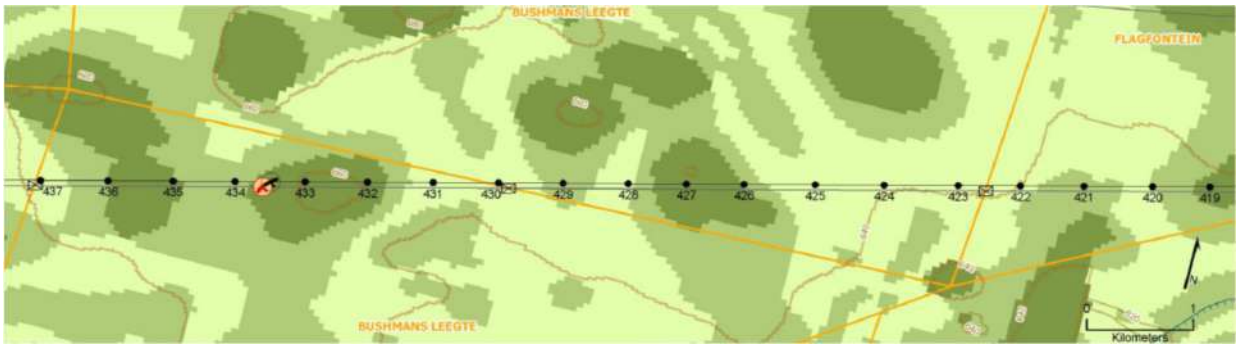


Figure 1: Example of an environmental sensitivity map in the context of a final overhead transmission and distribution profile

The national web-based environmental screening tool was utilised for this project and the grid connection corridor sensitivity maps can be seen in Figures 3 to 7. The site-specific environmental sensitivity map included in the BA Report is included as Figure 2.

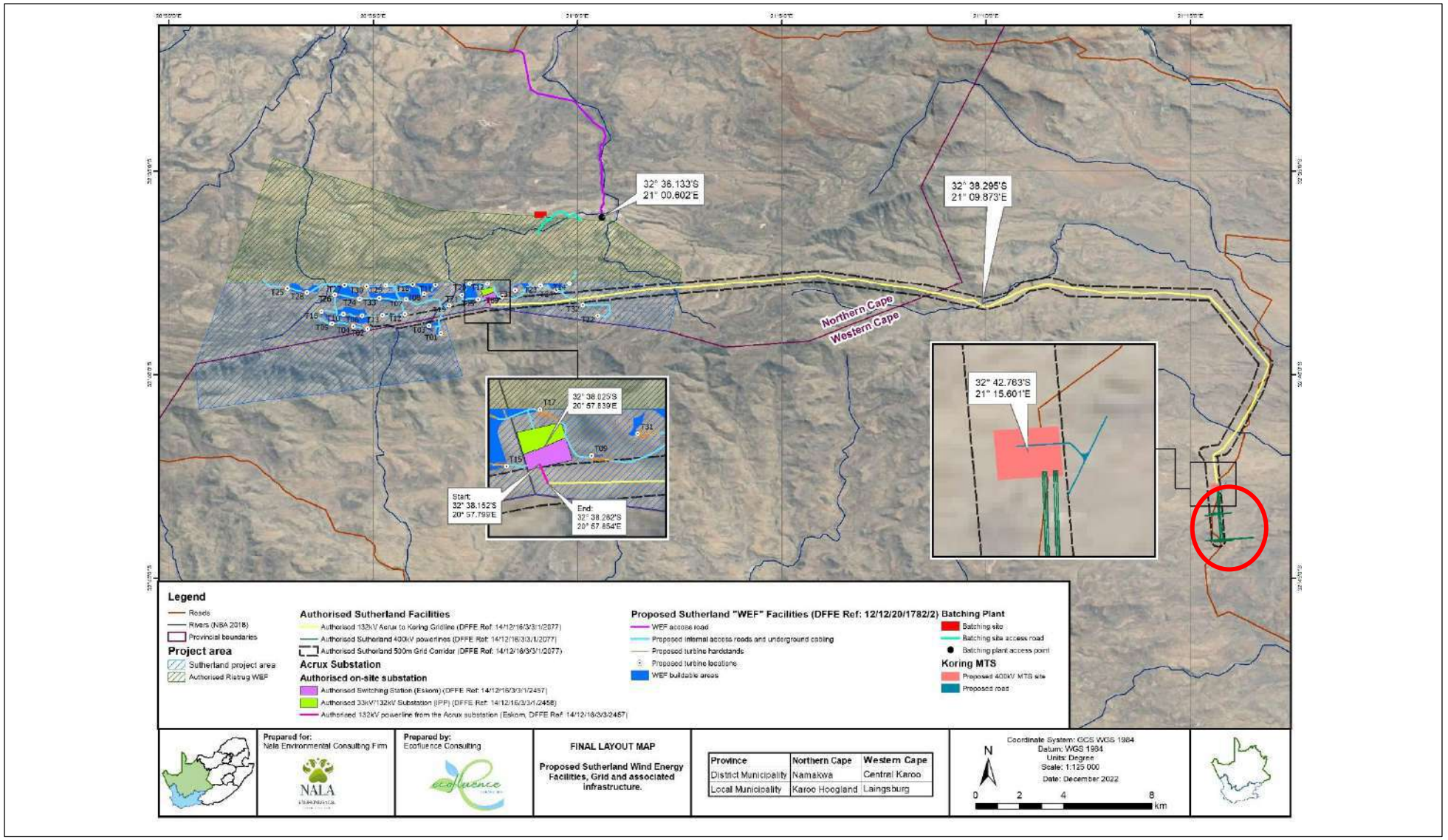


Figure 2: Layout Map for the proposed 400kV powerline that will tie into the existing 400kV powerlines (circled in red)

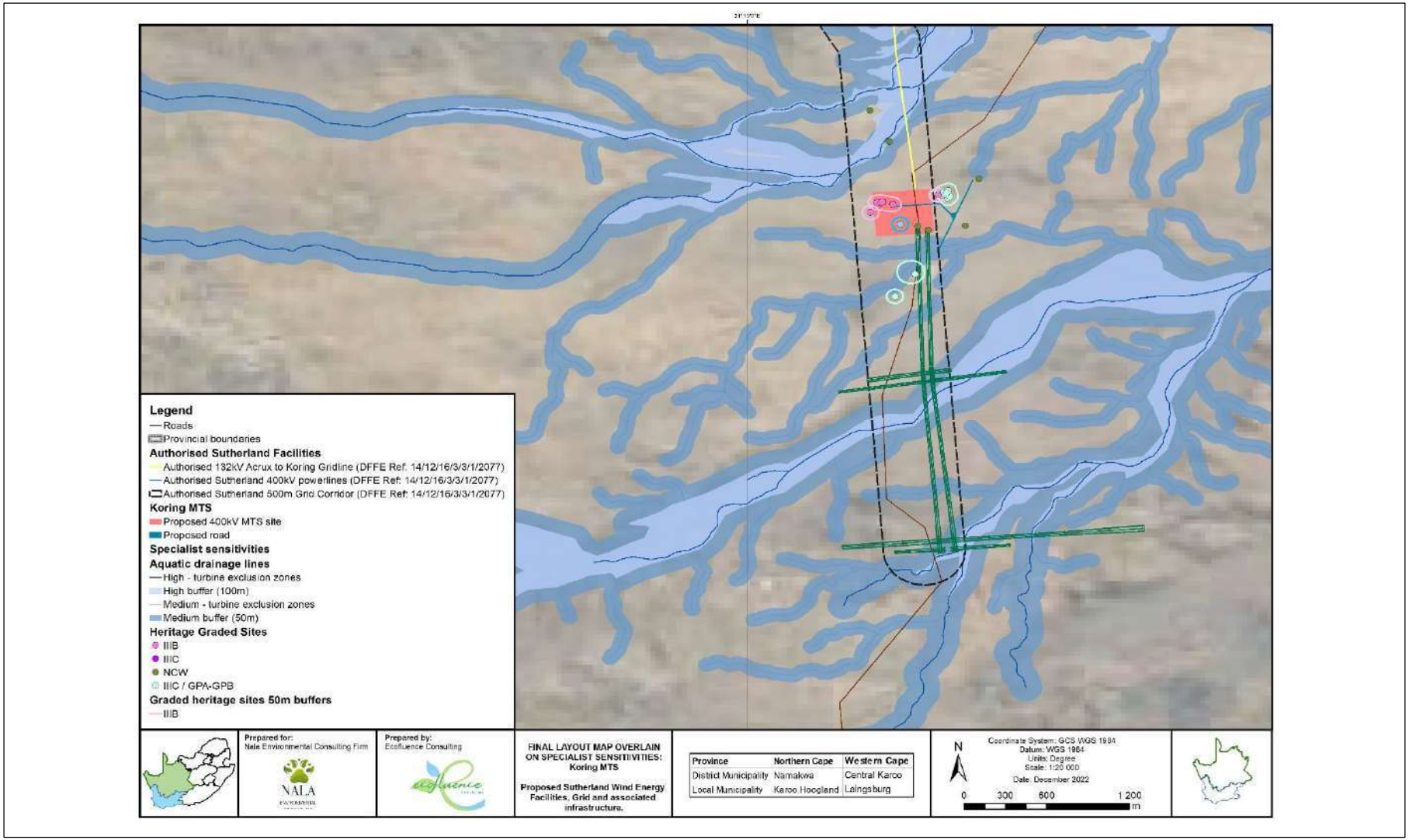


Figure 3: Sensitivity map for the proposed 400 KV Powerline and associated with the authorised Sutherland and Rietrug Wind Energy Facilities.

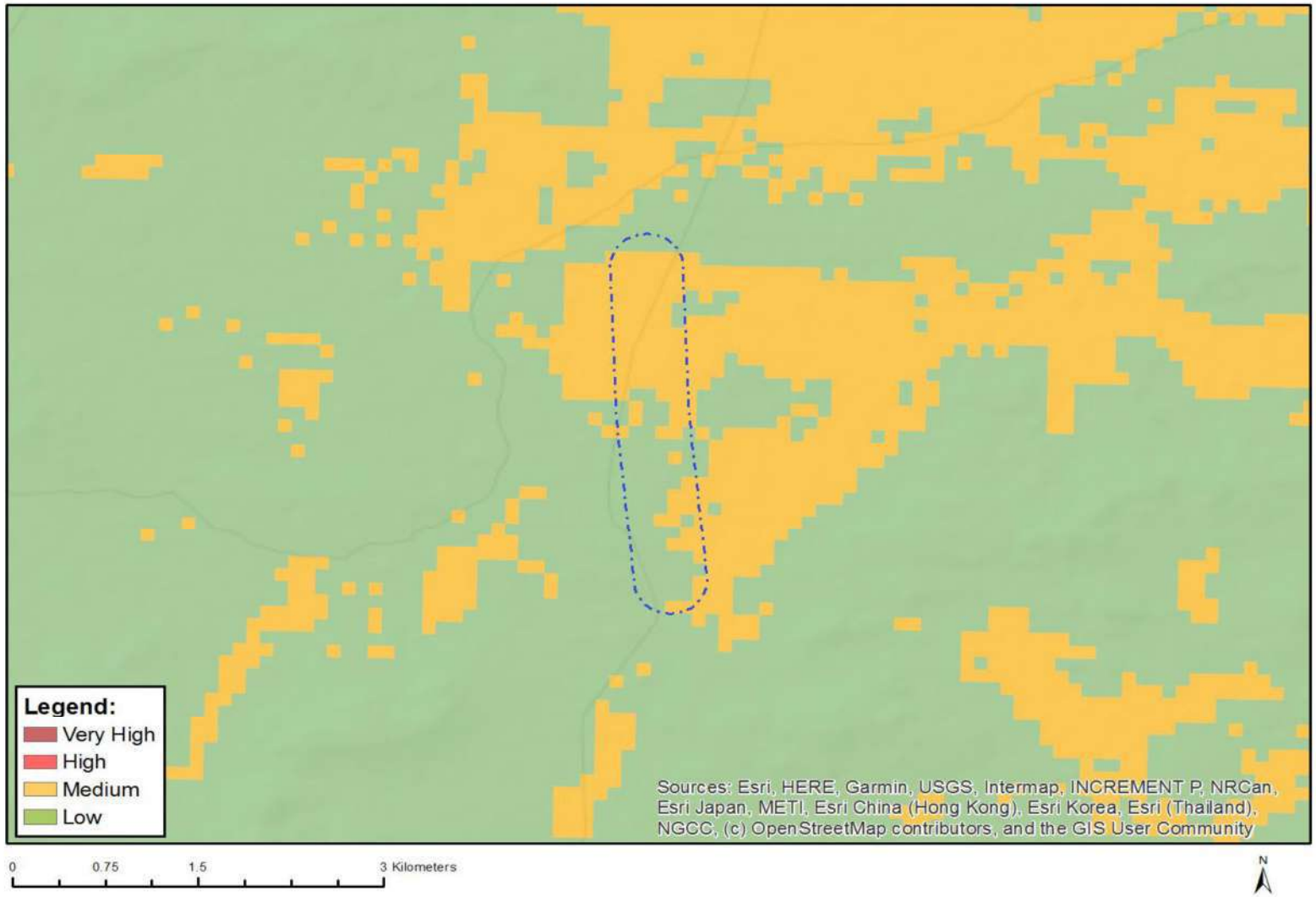


Figure 4: Map of Relative Agriculture Theme Sensitivity

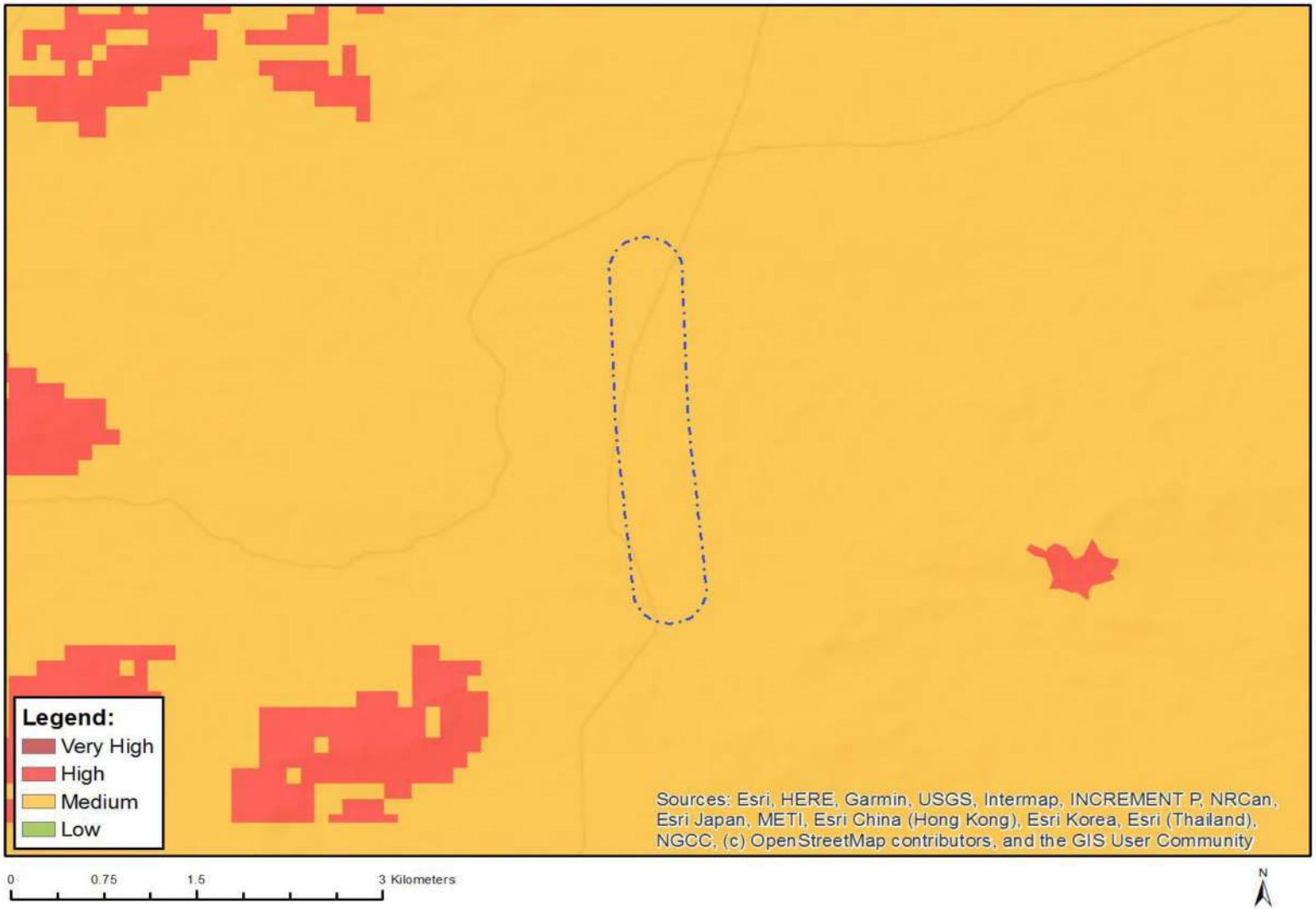


Figure 5: Map of Animal Species Theme Sensitivity

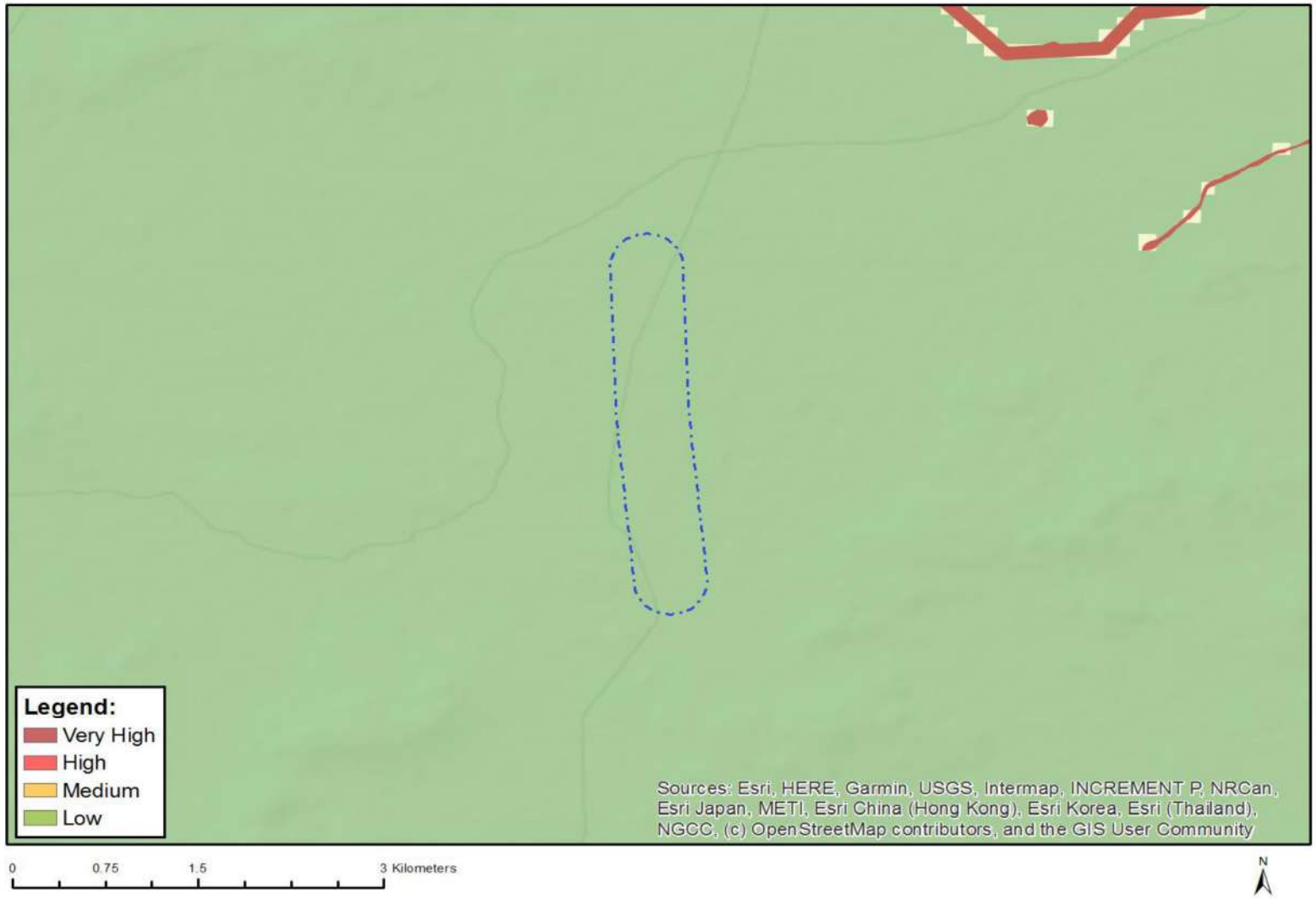


Figure 6: Map of Aquatic Biodiversity Theme Sensitivity

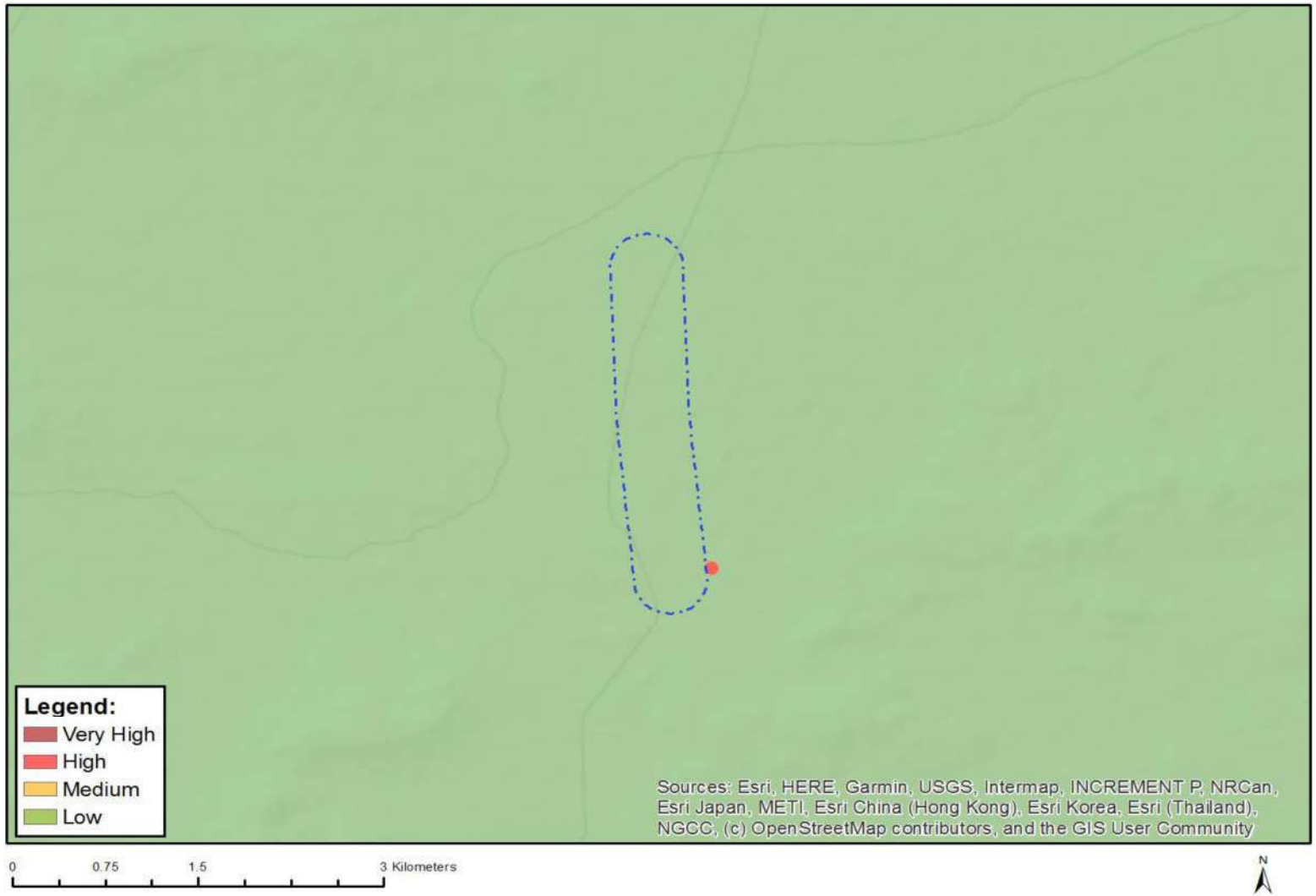


Figure 7: Map of Archaeological and Cultural Heritage Species Theme Sensitivity

Figure 8: Map of Relative Palaeontology Theme Sensitivity

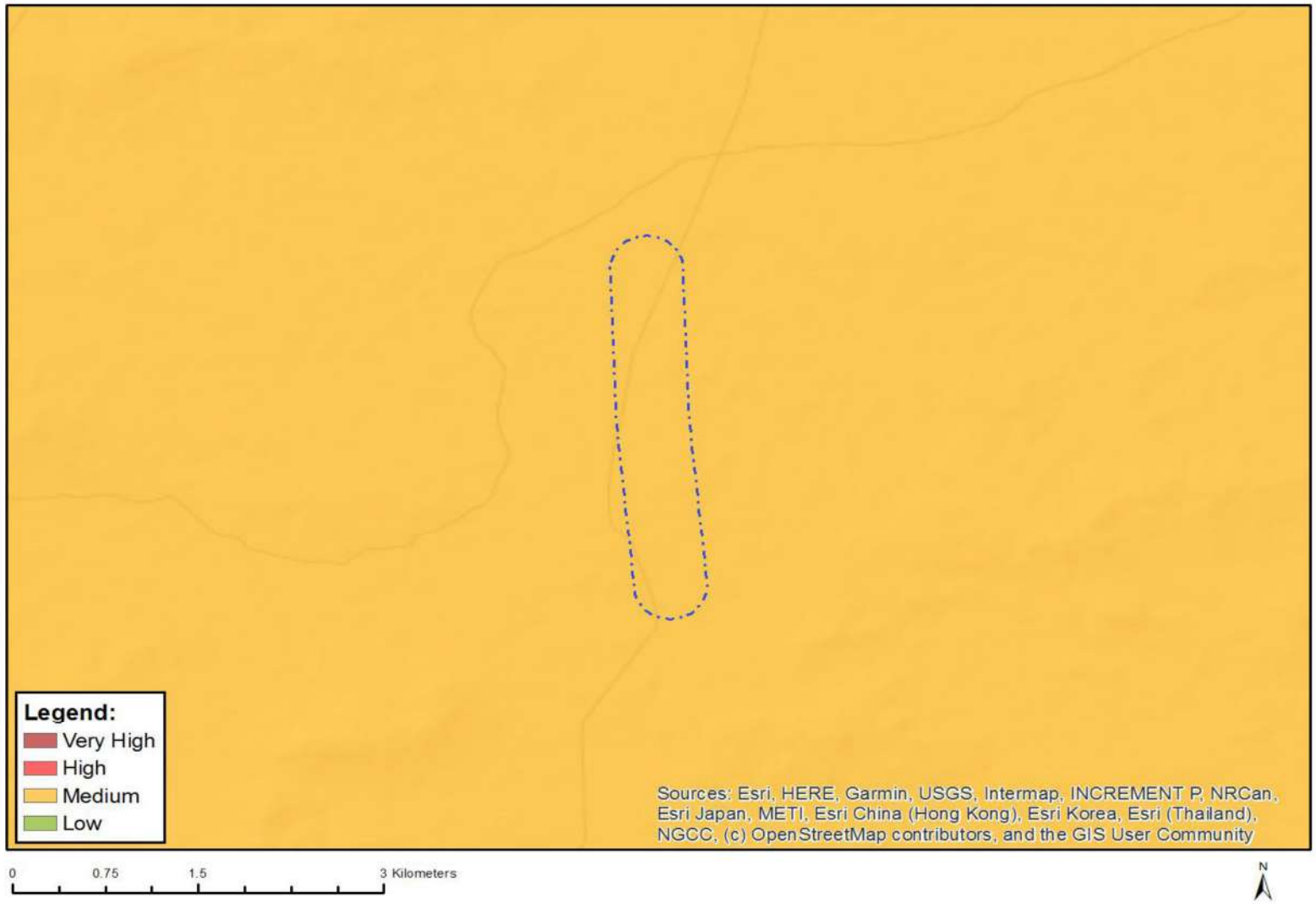


Figure 9: Map of Relative Plant Species Theme Sensitivity.

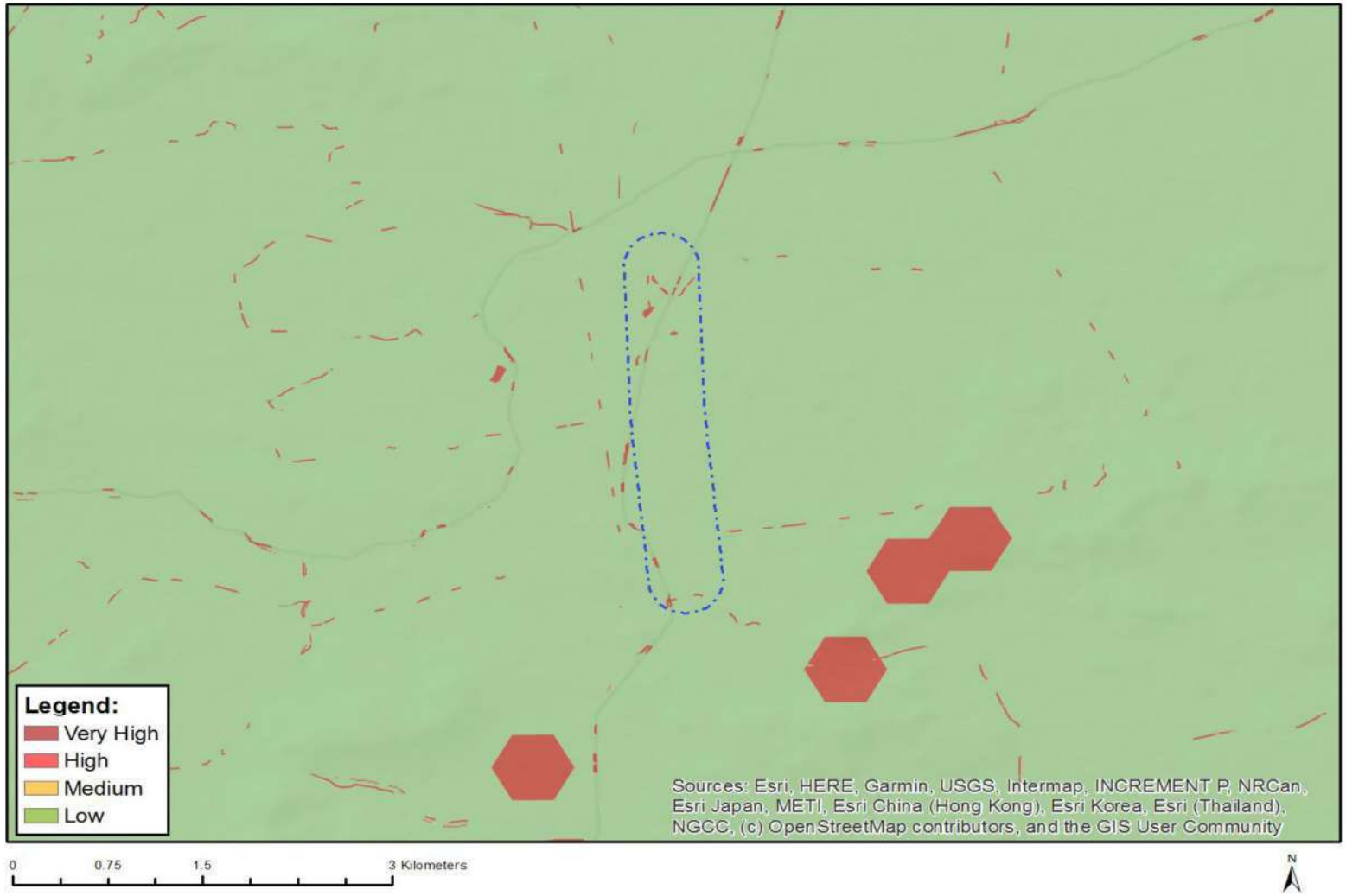
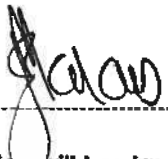


Figure 10: Map of Relative Terrestrial Biodiversity Theme Sensitivity

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:



2022/11/22

This declaration will be signed by the proponent/applicant/holder of the EA once the contractor is appointed and has provided inputs to this Generic EMPr as per the requirements of this template.

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.

8.1 Avifaunal Impacts

Impact management outcome: Reduce potential impact on avifauna						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
Minimise displacement due to disturbance associated with the construction of the 400kV powerline. Minimise displacement due to habitat transformation associated with the construction of the 400kV powerline.	Project Manager /ECO	» Construction activity should be restricted to the immediate footprint of the infrastructure. » An 800m all infrastructure exclusion zone must be implemented around the Black Harrier nest to prevent potential disturbance of the breeding pair. » Access to the remainder of the site (i.e. areas where no construction activities are planned should be strictly controlled to prevent unnecessary disturbance of Species of Conservation Concern (SCC) » Removal of vegetation must be restricted to a minimum. » Measures to control noise and dust should be	During design & prior to the commencement of the construction activities.	ECO	Before Commencement and Ongoing	All activities constantly monitored for restriction into immediate footprint and prescribed access control

		applied according to current best practice in the industry. » Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum. » Construction of new roads should only be considered if existing roads cannot be upgraded. » Vehicle and pedestrian access to the site should be controlled and restricted to access roads to prevent unnecessary disturbance of Species of Conservation Concern (SCC).				
Minimise Collisions with the 400kV powerline. This in only applicable to the application for the 400kV powerline	Project Manager /ECO	» The bird flight diverters should be installed on the whole line, for the full span length on the earthwire (according to Eskom guidelines - five metres apart). Light and dark colour devices must be alternated to provide contrast against both dark and light backgrounds	During design & prior to the commencement of the construction activities and operational phase	ECO	Before Commencement and Ongoing	Monitor installation of bird flight diverters

		respectively. These devices must be installed as soon as the conductors are strung. » As a minimum, post-construction monitoring should be undertaken for the first two years of operation, and then repeated again in Year 5, and again every five years thereafter for the operational lifetime of the facility. The exact scope and nature of the post-construction monitoring will be determined on an ongoing basis by the results of the monitoring through a process of adaptive management				
Minimise displacement due to disturbance associated with the decommissioning of the powerline.	ECO	» Decommissioning activity/activities should be restricted to the immediate footprint of the infrastructure. » Access to the remainder of the site (i.e., areas where no construction activities are planned) should be strictly controlled to prevent	Decommissioning phase	ECO	During the decommissioning phase	Footprint restriction and access control monitored and maintained during decommissioning.

		unnecessary disturbance of priority species. » Measures to control noise and dust should be applied according to current best practice in the industry. » Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum.				

8.2 Bat *Impacts*[2]

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

[2] Bat Assessments are not required for the powerline and were not assessed during the BA process for this powerline, however as the infrastructure was included in the walkthrough we have only included the general measures that would be applicable.

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

8.3 Aquatic Ecology (Freshwater impacts)

Impact management outcome: Potential impact on aquatic (freshwater) resources						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
Reduce loss of riparian systems and disturbance of the alluvial water courses during the	Project Manager/ECO	No direct impact or disturbance riparian systems and alluvial water courses during the construction,	N/A	ECO	N/A	N/A

construction, operation and decommissioning phase		operation and decommissioning phase as such features are avoided.				
Minimise the impact on freshwater resource systems through the increase in surface runoff on form and function during the operational and decommissioning phases	Project Manager/ECO	Infrastructure footprint and associated area of disturbance should be minimised as far as practically possible	Construction, operation and decommissioning phase	ECO	Before commencement and Ongoing	Monitor and implement the methods of minimising the impacts. Implementation of mitigation measures
Manage increase in sedimentation and erosion during the construction, operational and decommissioning phase	Project Manager/ECO	» Any erosion problems observed to be associated with the powerline infrastructure should be rectified as soon as possible and monitored thereafter to ensure that they do not re-occur. » All bare areas, as a result of the development, should be revegetated with locally occurring species, to bind the soil and limit erosion potential. » An erosion control management plan should be utilised to prevent erosion	Construction, operation and decommissioning phase	ECO	Before commencement and Ongoing	Monitor and implement the methods of minimising the impacts. Implementation of erosion control measures

		» Silt traps should be used where there is a danger of topsoil eroding and entering streams and other sensitive areas. » Ensure vehicles are regularly serviced so that hydrocarbon leaks are limited. » Keep a spill kit on site to deal with any hydrocarbon leaks. » Remove soil from the site which has been contaminated by hydrocarbon spillage.				
Reduce potential compromise ecological processes as well as ecological functioning of important freshwater resource habitats	Project Manager/ECO	» All highly sensitive major ephemeral washes and their associated buffer areas should be regarded as No-Go areas for all construction activities. » The recommended buffer (namely 50m) areas between the delineated freshwater resource features and proposed project activities should be maintained. » Vegetation clearing to be kept to a minimum. No unnecessary vegetation to be cleared.	Construction phase	ECO / Landscape Architect/ Contractor	Before commencement and Ongoing	Monitor and implement the methods of minimising the impacts.

		» Good housekeeping measures as stipulated in the EMPr for the project should be in place where construction activities take place to prevent contamination of any freshwater features. » All construction materials including fuels and oil should be stored in demarcated areas that are contained within berms / bunds to avoid spread of any contamination. Washing and cleaning of equipment should also be done in berms or bunds, in order to trap any cement and prevent excessive soil erosion. » Mechanical plant and bowsers must not be refuelled or serviced within or directly adjacent to any channel. It is therefore suggested that all construction camps, lay down areas, batching plants or areas and any stores should be outside of any demarcated water courses.				

		» Disturbed areas should be rehabilitated through reshaping of the surface to resemble that prior to the disturbance and vegetated with suitable local indigenous vegetation. » All alien plant re-growth (mostly forbs) must be monitored, and should it occur, these plants should be eradicated. The scale of the operation does however not warrant the use of a Landscape Architect and / or Landscape Contractor				

8.4 Terrestrial Ecology

Impact management outcome: Reduce potential impact on flora with the powerline corridor						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
Minimise potential impacts on vegetation and listed protected plant species	Project Manager /ECO	» Pre-construction walk-through of the approved power line route/corridor to locate species of	During design & prior to the commencement of the	ECO/ Specialist Ecologist	Before Commencement and Ongoing	Walkthrough reports of file (Appendix A1) and

		conservation concern that can be translocated or avoided. » It is important that a spring survey of the approved powerline footprint must be conducted in order to finalise the applications for permits (red data and protected species) prior to the commencement of construction and site clearing activities.	construction activities.			translocation evidence.
Minimise disturbance of sensitive areas	Project Manager/ECO	» On the rock sheets the *Mesembryanthemaceae, Colchicaceae, Crassulaceae* and *Apocynaceae* were present and therefore these areas are sensitive and must be avoided. It will be important to keep a 5m buffer around the outer edges to ensure no permanent damage results. No driving over these areas are permitted at any time. » The landscape, with the drainage features, have a	Pre-construction and construction activities	ECO/ Specialist Ecologist	Before Commencement and Ongoing	Proof of buffers put in place and adhered to. Evidence of non-compliance as per ECO audit reports

		number of small drainage lines that congregate into larger streams. These areas must be avoided as far as possible and limited crossing is recommended. It is very important to stay within the 8/10m corridor (final layout of the road system) for the roads during construction. » No activity must occur outside the road margins. » No driving over the sensitive bedrock sheets are allowed at any time during the construction, operational or decommissioning phases for this project. This include any driving into the veld outside any demarcated corridors or footprint areas.				
Minimise erosion potential	Project Manager/ECO	» All hard surfaces (roads footprints) will contribute to the erosion potential and the accelerated flow velocities from roads, culverts and areas	Pre-construction and construction activities	ECO/ Specialist Ecologist	Before Commencement and Ongoing	No evidence of erosion

		cleared of vegetation are of concern. It will be important to monitor these areas regularly, especially downstream of these zones, as accelerated flows are the main concern related to increased erosion. » The exposed areas must be rehabilitated to prevent erosion and to ensure no alien plant species establish in these areas. As plants associated with the vegetation unit are slower to recover , the clearing footprint must be kept to an absolute minimum e.g. leave 300mm basal layer.				

8.5 Heritage and Palaeontological Impacts

Impact management outcome: Potential impact on heritage and archaeological resources		
	Implementation	**Monitoring**

Impact Management Actions	Responsible person	**Method of implementation**	**Timeframe for implementation**	**Responsible person**	**Frequency**	**Evidence of compliance**
Management of Impacts to archaeology and impacts to the cultural landscape.	Project Manager / dEO / cEO in consultation with the Contractor	» Develop and implement procedures for situations where archaeological sites or remains are uncovered » If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA or HWC Tel: 021 483 5959 Email: ceoheritage@westerncape.gov.za » If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA or HWC 3rd Floor Protea Assurance Building, 142 Longmarket Street, Green Market Square, Cape Town 8000. Tel: 021 483 5959 Email: ceoheritage@westerncape.gov.za	During construction only (Archaeology impacts). During all development phases (cultural landscape impacts)	ECO/ dEO / cEO in consultation with the Contractor	Ongoing (Monthly)	Record and monitor ongoing impacts and proof of communication to SAHRA APM Unit and the required procedures followed in cases where material is discovered.

The sites identified for avoidance must be avoided (Northern Cape and Western Cape); As yet unsurveyed sections of the layout must be checked in the field in case of further small sites requiring recording or mitigation (Northern Cape and Western Cape);	Project Manager/ dEO / cEO in consultation with the Contractor	» Flagging of no-go areas is required for sites less than 30 m from the project footprint (Western Cape). This must be done before construction and the sites must be monitored for compliance during construction by the ECO (at least weekly while construction is busy in the relevant areas) (Sites that are not visually prominent and are located more than 30 m from the footprint should not be flagged, as it is preferable to not draw attention to them).All sites lying less than 30 m from the footprint are assumed to be at risk from construction work and should be flagged as no-go areas; » The possible grave at waypoint 503 (Koring MTS, Western Cape) must be carefully tested and, if found to be a grave, it must be closed up and, in consultation with HWC, the appropriate grave relocation process followed; » The suite of historical/recent engravings at waypoints 497-502 & 1154 (Koring MTS, Western Cape) must be fully recorded *in situ* and then moved to an appropriate location to be determined in consultation with HWC; » Certain sites (namely waypoints 781, 806, 497) are impractical or	Pre-construction and during construction and as and when required	ECO/ dEO / cEO in consultation with the Contractor	Once before construction and as and when required	Proof of flagged no-go areas for sites less than 30m form the project footprint Evidence of waypoint 503 testing results Proof of recording of waypoints 497-502 & 1154

		unfeasible to mitigate and these must be avoided; » As large a buffer as possible must be incorporated between the road and waypoint 556 at the Nooitgedacht Farmstead; » No stones may be removed from any heritage sites (Northern Cape and Western Cape); » The historical/recent engraving at waypoint 506 (Koring MTS, Western Cape) must be fully recorded *in situ* and then protected;				Evidence of undisturbed heritage sites Recording results of waypoint 506 in situ
Management of Impacts to archaeology and impacts to the cultural landscape.	Project Manager/ dEO / cEO in consultation with the Contractor	All construction work must occur within the demarcated project footprints and vehicles may not move outside of these areas (Western Cape)	Pre-construction and during construction	ECO/ dEO / cEO in consultation with the Contractor	During construction and as and when required	Evidence of all construction work occurring within demarcated footprints
Compliance to permit requirements	Project Manager/ dEO / cEO in consultation with the Contractor	A Workplan application must be lodged with HWC for all mitigation required in Western Cape	Pre-construction and during construction	ECO/ dEO / cEO in consultation with the Contractor	During construction and as and when required	Proof of Workplan application lodged with HWC

Minimise impacts to scientifically valuable fossil material	Project Manager/ dEO / cEO in consultation with the Contractor / professional palaeontologist	The final, approved layouts of the Grid Connection Infrastructure must be cross-checked by a professional palaeontologist against the available palaeontological database prior to commencement of site clearing and excavation activities. Residual, potentially sensitive, unsurveyed sectors of the approved project footprint must be surveyed and mitigated in the Pre-construction Phase (prior to any site clearance and bedrock excavations) by a professional palaeontologist, with recording and judicious sampling or collection of scientifically valuable fossil material. New fossil material encountered or exposed during the Construction Phase is best handled through the Chance Fossil Finds Protocol. The Environmental Control Officer (ECO) / Environmental Site Officer (ESO) responsible for the WEF and grid connection developments should be made aware of the possibility of important fossil remains (vertebrate bones, teeth and burrows, petrified wood, plant-rich horizons etc.) being found or unearthed during the construction phase of the projects. Monitoring for fossil material of all major surface clearance (including access roads) and deeper (>1m) excavations by the Environmental Site Officer on an on-going basis during the construction phase is therefore recommended.	Pre-construction	ECO/ dEO / cEO in consultation with the appointed palaeontologist	Once-off prior to commencement of construction On-going during construction	Proof of appointment of profession Palaeontologist. Evidence of fossil finds as per ECO audit reporting. Proof of Chance find

		Significant fossil finds should be safeguarded, preferably in situ, and reported at the earliest opportunity to Heritage Western Cape for recording and sampling by a professional palaeontologist. If triggered, these mitigation actions to conserve legally-protected fossil heritage are considered to be essential. The palaeontologist responsible for any mitigation work in the Western Cape will need to submit a Work Plan for approval by Heritage Western Cape (HWC). All fieldwork and reporting should meet the standards of international best practice as well as those developed for PIA reports by SAHRA (2013) and Heritage Western Cape (2021). Fossil material collected must be safeguarded and curated within an approved palaeontological repository (e.g. museum or university collection) with full collection data.			On-going during construction	procedure developed for use (Appendix 3) and proof of work plan submitted HWC Proof of approved Work Plan on file and appointment of a professional palaeontologist.

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

APPENDIX 2: CURRICULA VITAE

Kikuyu Waterfall
Cnr. Old Pretoria Main Road & Maxewell Drive
Johannesburg, South Africa

Email: arlene@veersgroup.com
Tel: +278 277 7074

CURRICULUM VITAE OF ARLENE SINGH

Profession: Environmental Assessment Practitioner (EAP) / Director

Specialisation: Environmental Assessments, report writing, report reviewing, development of project proposals for procuring new projects and project administration.

Work Experience: 9 years' experience in Environmental Assessments and 1 year in Sustainability Consulting.

VOCATIONAL EXPERIENCE

Professional execution of consulting services for projects in the environmental management field, specialising in Environmental Impact Assessment studies, environmental permitting, public participation, compilation of Environmental Management Plans and Programmes, environmental policy, and integrated environmental management. Responsibilities include report writing, project management, review of specialist studies and the identification and assessment of potential negative environmental impacts and benefits. Compilation of the reports for environmental studies is in accordance with all relevant environmental legislation.

Experience in conducting environmental impact assessments for infrastructure development projects (roads, stormwater, pipelines), Mixed Use Developments and Section 24G Applications for complex projects. She has extensive experience in managing and monitoring ECO functions and compliance on relevant projects. She has gained the ability to conduct sustainability assurance audits for non-financial environmental KPI's through her experience with listed mining corporations.

SKILLS BASE AND CORE COMPETENCIES

- Compilation of environmental impact assessment reports and environmental management programmes in accordance with relevant environmental legislative requirements;
- Identification and assessment of potential negative environmental impacts and benefits through the review of specialist studies;
- Key experience in the assessment of impacts associated with complex Section 24G Applications.
- Review of environmental impact assessment reports, impacts matrices and environmental management programme reports;
- Conducting of ECO audits, managing ECO staff, review of ECO reports and liaison with the client;
- Review of Carbon Footprint Analysis report and provision of recommendations for industry;
- Developing Business Development Plans, action plans and carrying out Business Development initiatives;
- Compilation of Integrated Reports in line with King IV;
- Conducting Mining Permit Applications with the DMR and the associated Basic Assessment process in line with the MPRDA;
- Extensive experience in compilation and submission of Tenders and Proposals;

EDUCATION AND PROFESSIONAL STATUS

Degrees:

- B.Sc. (Hons.) Environmental Management (2016), University of South Africa (UNISA);
- B.Sc. Environmental Science (2012), University of Kwa-Zulu Natal, Westville

Short Courses:

- Official DWS Section 21 (c) and (i) Water Use Authorisation Course (2018)- Dr Wietsche Roets, Specialist Scientist: (In Stream Water Use);
- SMME Green Building Face to Face Workshop (2018)- GBCSA hosted by JP Morgan;
- ArcGISBasic 10,3 (2016)- Esri South Africa
- Energy within Environmental Constraints (2020)- Harvard (Online)
- Becoming an Entrepreneur (2020)- Massachusetts Institute of Technology (Online)

Professional Society Affiliations:

- South African Council for Natural Scientific Professionals - Professional Natural Scientist: Environmental Scientist) – Reg No. 118872
- Environmental Assessment Practitioners Association of South Africa- Reg No: 2019/898

Other Relevant Skills:

- Compiling and submission of invoices on projects;
- Registration of Waste Management Facilities on GWIS

EMPLOYMENT

Date	Company	Roles and Responsibilities
16 December 2020- Current	Nala Environmental (Pty) Ltd	Environmental Assessment Practitioner / Director *Tasks include:* *Compilation of Environmental Impact Assessment (EIA) reports; Basic Assessment (BA) reports and Environmental Management Programmes; Environmental Screening reports; Co-ordination of the public participation process; Project management; project proposals and tenders; Client liaison and Marketing; Process EIA Applications. Business Development, Integrated reporting. Strategy, policy and procedure*

Date	Company	Roles and Responsibilities
		development. Planning of staff on engagements and Invoicing of clients.
08 April 2019- 15 December 2020:	Savannah Environmental (Pty) Ltd	Environmental Assessment Practitioner *<u>Tasks include</u>:* *Compilation of Environmental Impact Assessment (EIA) reports; Basic Assessment (BA) reports and Environmental Management Programmes; Environmental Screening reports; Co-ordination of the public participation process; Project management; project proposals and tenders; Client liaison and Marketing; Process EIA Applications.*
01 January 2016- 05 April 2019	Triplo4 Sustainable Solutions (Pty) Ltd	Environmental Consultant/Gauteng Office Manager *<u>Tasks included:</u>* *Review of Basic Assessment reports, Environmental Management Programme reports, Impact Matrices. Review of Environmental Control Officer functions, report and planning of site visits. Compiling Waste Management License Applications and Section 24G Application with reports for review by company Director. Review of specialist reports. Compilation of tenders, proposals and fee proposals. Co-ordinate public participation processes. Liaison with clients, stakeholders and competent authorities. Business Development, Integrated reporting. Strategy, policy and procedure development. Planning of staff on engagements and Invoicing of clients.*
01 October 2014 – 31 December 2015	PricewaterHouse Coopers (PwC)	Sustainability Consultant 2 *<u>Tasks included:</u>* *Non-financial auditing of Environmental KPI's (Primary water, Total Waste, Total Electricity, Total CDP Calc, Scope 1, 2 and 3 emissions, Total CSI spend, Total Environmental incidents and Total Rock waste generated) for listed mining companies. Role included, testing of controls, applications of audit standards and guidelines, preparation and conclusions of audit papers and files, reporting to management and preparation of audit reports.*

Date	Company	Roles and Responsibilities
01 January 2013- 30 September 2014	Triplo4 Sustainable Solutions (Pty) Ltd	Junior Environmental Consultant *Tasks included:* *Conducting Environmental Control Officer audits and drafting of ECO reports for review. Drafting of Basic Assessment (BA) reports, Environmental Management Programme reports for review by Environmental Consultant. Conducting public participation by liaison with competent authorities and stakeholders. Assisting with compiling of Basic Assessment documents.*

PROJECT EXPERIENCE

Arlene has extensive experience in conducting environmental impact assessments for infrastructure development projects (roads, stormwater, pipelines) and renewable energy projects (solar, wind, csp and hybrid projects), Mixed Use Developments and Section 24G Applications for complex projects and housing developments. She has extensive experience in managing and monitoring ECO functions and compliance on relevant projects. She has gained the ability to conduct sustainability assurance audits for non-financial environmental KPI's through her experience with listed mining corporations. She has also been involved in undertaking Part 2 Amendment Applications and impact assessments for Renewable Energy Projects in South Africa. She currently manages staff and undertakes project planning to ensure that projects are executed within the appropriate timeframes and within budget.

MINING SECTOR PROJECTS

Environmental Impact Assessments and Environmental Management Programmes

Project Name & Location	*Client Name*	*Role*
Yzermyn Coal Mine EMPr, Piet Retief, Mpumalanga	*Atha Group*	*EAP*

Basic Assessments

Project Name & Location	*Client Name*	*Role*
Shaya Quarry Basic Assessment process, Empangeni, Kwazulu-Natal	*Mbavuza Minerals*	*Project Manager*
Umvoti River Sand Mining Basic Assessment process, Kwazulu-Natal	*Izimbiwe Minerals Pty Ltd*	*Project Manager*

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

Project Name & Location	*Client Name*	*Role*

Shaya Quarry Mining Permit Application, Empangeni, Kwazulu-Natal	*Mbavuza Minerals*	*Project Manager*
Umvoti River Sand Mining Mining Permit Application, Kwazulu-Natal	*Izimbiwe Minerals Pty Ltd*	*Project Manager*
Newark Quarry, Ilembe Municipality, Kwazulu-Natal	*iLembe Concrete Pty Ltd*	*Junior EAP*

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

Basic Assessments

Project Name & Location	***Client Name***	***Role***
Replacement of Nseleni Bridge- Empangeni, Kwazulu-Natal	*RHDHV*	*EAP*
Construction of the 60ML Ntuzuma Reservoir, Ntuzuma, Kwazulu-Natal	*eThekwini Metropolitan Municipality*	*Project Manager*
Upgrade of the Nyathikazi box culvert, Darnell, Kwazulu-Natal	*KwaDukuza Municipality*	*Junior EAP*
Upgrade and Expansion Provincial Main Road D887, Kwazulu-Natal	*RHDHV*	*Junior EAP*
Expansion of LOX and Diesel Storage at the Air Products Facility in Coega, Eastern Cape	*Air Products South Africa (Pty) Ltd*	*EAP*

Environmental Compliance, Auditing and ECO

Project Name & Location	***Client Name***	***Role***
ECO Monitoring for Construction of Offtake 1 Reservoir, KwaDukuza, Kwazulu-Natal	*KwaDukuza Municipality*	*Project Manager*
ECO Monitoring for Construction of Offtake 6A2, 6D, 8C, 8D, 9, 11D Pipelines, KwaDukuza, Kwazulu-Natal	*KwaDukuza Municipality*	*Project Manager*
ECO Monitoring for the Construction of the Jozini RCWSS Phase 1A, Jozini, Kwazulu-Natal	*RHDHV*	*ECO (1 year), Project Manager*
ECO Monitoring for the Greytown BWSS, Greytown, Kwazulu-Natal	*RHDHV*	*Project Manager*
ECO Monitoring for the Kranskop Water Supply Scheme, Kranskop, Kwazulu-Natal	*RHDHV*	*ECO*
ECO Monitoring for the Zulti South Access Road, Richards Bay, Kwazulu-Natal	*RHDHV*	*Project Manager*

Compliance Advice and ESAP reporting

Project Name & Location	***Client Name***	***Role***
Ethafeni Cemetery Environmental Assessment Report, KwaDukuza, Kwazulu-Natal	*KwaDukuza Municipality*	*EAP*

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

Project Name & Location	***Client Name***	***Role***
General Authorisation for the Replacement of the Nseleni Bridge, Empangeni, Kwzulu-Natal	*RHDHV*	*EAP*
Water Use Licence Amendment for Country Club Johannesburg	*Country Club Johannesburg*	*EAP*

HOUSING AND URBAN PROJECTS

Environmental Impact Assessments and Environmental Management Programmes

Project Name & Location	***Client Name***	***Role***
Ethafeni Precinct Project Section 24G Application- Groutville , Kwazulu- Natal.	*KwaDukuza Municipality*	*Project Manager/Lead Consultant*
Environmental Management Programme report Brettenwood Residential Development, Kwazulu-Natal.	*Brettenwood Coastal Estate*	*EAP*
Environmental Management Programme report for CTM Ballito, Ballito, Kwazulu-Natal	*CTM*	*EAP*

Basic Assessments

Project Name & Location	***Client Name***	***Role***
Upgrade of residential dwelling on Colwyn Drive, Salt Rock, Kwazulu-Natal	*Mike Graham*	*Junior EAP*
Ethafeni Precinct Project Basic Assessment, Groutville, Kwazulu-Natal	*KwaDukuza Municipality*	*Project Manager*
105 Nkwazi Drive Single Residential House Basic Assessment, Zinkwazi, Kwazulu-Natal	*Ituwiz Pty Ltd*	*Project Manager*

Environmental Compliance, Auditing and ECO

Project Name & Location	***Client Name***	***Role***
88 Compensation ECO Audits – Ballito, Kwazulu- Natal	*Imali Corp*	*Environmental Control Officer (ECO)*
Oceans Umhlanga Hotel & Residential Development, Umhlanga, Kwazulu-Natal	*Edison Property Group*	*Project Manager*
Inoxa Cookware Factory Warehouse, Woodmead Estate, Shakaskraal, Kwazulu-Natal	*Shree Property*	*Project Manager*
Woodmead Estate Warehousing, Gauteng	*Shree Property*	*Project Manager*
Ridgeside Commercial Development, Umhlanga, Kwazulu-Natal	*Shree Property*	*Project Manager*

Construction of Jozini Shopping Centre, Jozini, Kwazulu-Natal	*GK Projects*	*ECO*
Birdhaven Residential Development, Ballito, Kwazulu-Natal	*Mike Graham Trust*	*ECO*
Foxhill Church and Residential Development, Ballito, Kwazulu-Natal	*M&C Janigh Trust*	*ECO*
Beema Bamboo Plantation Site (Bamboo to Energy project, Kwazulu-Natal	*Green Grid Energy*	*ECO*

OTHER PROJECTS

Environmental Compliance, Auditing and ECO

Project Name & Location	***Client Name***	***Role***
Beema Bamboo Plantation Site (Bamboo to Energy project, Kwazulu-Natal	*Green Grid Energy*	*ECO*
Mkondeni Medical Waste External Waste Management License Audit , Pietermaritzburg	*Ecocyle Waste Solutions*	*Auditor*
Dube Tradeport External Audit, eThekwini	*Dube Tradeport Corporation*	*Junior Auditor*

Carbon Footprint Analysis

Project Name & Location	***Client Name***	***Role***
Carbon footprint analysis of Newcastle and Sasolburg Plants, (Kwazulu Natal & North West	*Karbochem Pty Ltd*	*EAP*
Measure Carbon Emissions and provide updated baseline that would enable DTPC to quantify, monitor and assess carbon footprint and its climate change impact for DTPC, eThekwini	*Dube Tradeport Corporation*	*Junior EAP*

Waste Management

Project Name & Location	***Client Name***	***Role***
Waste Classification Assessment for Karbochem Newcastle facility , Kwazulu-Natal	*Karbochem Pty Ltd*	*EAP*
Waste Management Licenses for Wadeville & Rosslyn Waste Management Facilities, Gauteng.	*Planet Care Pty Ltd*	*EAP*

Compliance Advice and ESAP reporting

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

Environmental Opinion and Enquiry for the Rosslyn Tyre Pyrolysis Plant, Gauteng	*Cosmic Energy*	*EAP*

Non-Financial Auditing

KPI'S Audited	***Client Name & Location***	***Role***
Total Primary Water Use, Total Electricity Used, Total Waste Generated, Scope 1, 2 & 3 Emissions and Total Number of Environmental Incidents.	*Anglo Platinum (South Africa)*	*Sustainability Consultant*
Total Primary Water Use, Total Waste Generate and Total Number of Environmental Incidents.	*De Beers (Namibia)*	*Sustainability Consultant*
Scope 1, 2 & 3 Emissions, Total Electricity Purchased, Total Primary Water Used.	*Harmony Gold (South Africa)*	*Sustainability Consultant*
Scope 1, 2 & 3 Emissions, Total Electricity Purchased, Total Primary Water Used and Total Rock Waste Generated.	*Exxaro (South Africa, Papua New Guinea)*	*Sustainability Consultant*
Total Corporate Social Investment fund spend by Barclays Group	*Barclays Group*	*Sustainability Consultant*
Audit Environmental and Social Risk Finance Projects - Equator Principles	*MTN (South Africa & Nigeria)*	*Sustainability Consultant*

Renewable Energy Projects

Part 2 Amendment Applications and Motivation Reports

Project Name & Location	***Client Name***	***Role***
Transalloys Coal-Fired Power Station near Emalahleni, Mpumalanga Province	*Transalloys (Pty) Ltd*	*EAP*
Zen Wind Energy Facility, Western Cape	*Energy Team (Pty) Ltd*	*EAP*
Hartebeest Wind Energy Facility, Western Cape	*juwi Renewable Energies (Pty) Ltd*	*EAP*
Khai-Ma and Korana Wind Energy Facilities	*Mainstream Renewable Power (Pty) Ltd*	*EAP*
Korana Solar PV facility	*Mainstream Renewable Power (Pty) Ltd*	*EAP*
Sutherland Wind Energy Facility	*Mainstream Renewable Power (Pty) Ltd*	*EAP*
Rietrug Wind Energy Facility	*Mainstream Renewable Power (Pty) Ltd*	*EAP*

Basic Assessments

Project Name & Location	*Client Name*	*Role*
Upilanga Solar Park, Northern Cape (x6 100MW PV's and x3 350MW PV Basic Assessments)	*Emvelo Capital Projects (Pty) Ltd*	*EAP*
Kolkies and Sadawa PV facilities and associated grid infrastructure	*Mainstream Renewable Power South Africa (Pty) Ltd*	*EAP*
Hyperion Overhead Powerline	*Red Rocket (Pty) Ltd*	*EAP*
132KkV Phinda Power underground transmission line	*Phinda Power Producers (Pty) Ltd*	*EAP*
Msenge Emoyeni Wind Energy Facility supporting infrastructure	*Windlab (Pty) Ltd*	*EAP*
Sutherland Wind Energy Facility Grid Infrastructure	*Mainstream Renewable Power South Africa (Pty) Ltd*	*EAP*
Rietrug Wind Energy Facility Grid Infrastructure	*Mainstream Renewable Power South Africa (Pty) Ltd*	*EAP*

Environmental Impact Assessments

Project Name & Location	*Client Name*	*Role*
Upilanga Solar Park, Northern Cape (350MW CSP Tower)	*Emvelo Capital Projects (Pty) Ltd*	*EAP*
350MW Risk Mitigation Power Plant (Gas to Power facility)	*Phinda Power Producers (Pty) Ltd*	*EAP*
75mw Thermal Dual Fuel Facility and associated infrastructure (Hybrid facility i.e. gas to power and solar pv)	*Red Rocket (Pty) Ltd*	*EAP*
Berg River Wind Energy Facility	*Energy Team (Pty) Ltd*	*EAP*

Section 54 Audits

Project Name & Location	*Client Name*	*Role*
Mulilo 20MW PV Facility, Prieska, Northern Cape	*Mulilo (Pty) Ltd*	*Auditor*
Mulilo 10MW PV Facility, De Aar, Northern Cape	*Mulilo (Pty) Ltd*	*Auditor*
Karoshoek CSP I Facility/ Solar One,, Upington, Northern Cape	*Karoshoek Solar One (Pty) Ltd*	*Audit*

Environmental Assessment Practitioners Association of South Africa

Registration No. 2019/898

Herewith certifies that

Arlene Singh

is registered as an

Environmental Assessment Practitioner

Registered in accordance with the prescribed criteria of Regulation 15. (1) of the Section 24H Registration Authority Regulations (Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).

Effective: 01 March 2022

Expires: 28 February 2023

Chairperson

Registrar

SAQA
SOUTH AFRICAN QUALIFICATIONS AUTHORITY

SACNASP

South African Council for Natural Scientific Professions

herewith certifies that

Arlene Singh

Registration Number: 118872

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following fields(s) of practice (Schedule 1 of the Act)

Environmental Science (Professional Natural Scientist)

Effective **6 June 2018** Expires **31 March 2023**

Chairperson

Chief Executive Officer

To verify this certificate scan this code

APPENDIX 3: CHANCE FIND FOSSIL PROCEDURE

<table>
<tr><th colspan="3">CHANCE FOSSIL FINDS PROCEDURE: Authorised Grid Connection Infrastructure, Northern and Western Cape Provinces</th></tr>
<tr><td>Province & region:</td><td colspan="2">Northern Cape, Sutherland & Laingsburg Districts</td></tr>
<tr><td>Responsible Heritage Resources Agency</td><td colspan="2">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
HWC, 3rd Floor Protea Assurance Building, 142 Longmarket Street, Green Market Square, Cape Town 8000. Private Bag X9067, Cape Town 8001. Tel: 021 483 5959 Email: ceoheritage@westerncape.gov.za</td></tr>
<tr><td>Rock unit(s)</td><td colspan="2">Abrahamskraal Formation (Lower Beaufort Group, Karoo Supergroup)
Late Caenozoic alluvium along water courses and calcrete hardpans</td></tr>
<tr><td>Potential fossils</td><td colspan="2">Petrified wood and other plant remains, skeletal remains of tetrapods (e.g. therapsids), trace fossils of invertebrates and vertebrates (fish / tetrapod burrows, trails & trackways) in Abrahamskraal Formation bedrocks.
Bones, teeth and horn cores of mammals, freshwater molluscs, calcretised termitaria and other trace fossils in older consolidated alluvium.</td></tr>
<tr><td rowspan="5">ECO protocol</td><td colspan="2">1. Once alerted to fossil occurrence(s): alert site foreman, stop work in area immediately (N.B. safety first!), safeguard site with security tape / fence / sand bags if necessary.</td></tr>
<tr><td colspan="2">2. Record key data while fossil remains are still in situ:
• 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) in situ with scale, from different angles, including images showing context (e.g. rock layering)</td></tr>
<tr><td>3. If feasible to leave fossils in situ:
• Alert Heritage Resources Authority 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</td><td>3. If not feasible to leave fossils in situ (emergency procedure only):
• Carefully remove fossils, as far as possible still enclosed within the original sedimentary matrix (e.g. 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</td></tr>
<tr><td colspan="2">4. If required by Heritage Resources Agency, ensure that a suitably-qualified specialist palaeontologist is appointed as soon as possible by the developer.</td></tr>
<tr><td colspan="2">5. Implement any further mitigation measures proposed by the palaeontologist and Heritage Resources Authority</td></tr>
<tr><td>Specialist palaeontologist</td><td colspan="2">Record, describe and judiciously sample fossil remains together with relevant contextual data (stratigraphy / sedimentology / taphonomy). Ensure that fossils are curated in an approved repository (e.g. 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 Authority minimum standards.</td></tr>
</table>

APPENDIX 4: EROSION CONTROL MANAGEMENT PLAN

EROSION MANAGEMENT PLAN

OBJECTIVES:

To ensure that erosion is managed during the operation of the facility.

TARGETS:

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

MEASURES:

- Regular inspection to assess erosion which may result from a loss in vegetation or cavitation from soil slumping;
- Continued watering to ensure wind erosion is limited at the construction sites until such time that the natural vegetation is effectively established; and
- Maintain and clean all drainage structures along roads within the project area

EROSION AND SEDIMENT CONTROL PRINCIPLES

The goal of erosion control during and after construction within the study area should be to:
– Protect the land surface from erosion;
– Intercept and safely direct run-off water from undisturbed upslope areas through the study area without allowing it to cause erosion within the site or become contaminated with sediment;
– Progressively re-vegetate or stabilise disturbed areas.

These goals can be achieved by applying the management practices outlined in the following sections.

1. PURPOSE

This Erosion Management Plan addresses the management and mitigation of potential impacts relating to soil erosion. The objective of the plan is to provide:

» A general framework for soil erosion and sediment control, which enables the Contractor to identify areas where erosion can occur and is likely to be accelerated by construction related activities.
» An outline of general methods to monitor, manage and rehabilitate erosion prone areas, ensuring that all erosion resulting from all phases of the development is addressed.

This plan must be updated and refined once the construction/ civil engineering plans have been finalised following detailed design.

2. RELEVANT ASPECTS OF THE STUDY AREA

According to Mucina and Rutherford (2006) the Roggeveld Shale Renosterveld (FRs 3) comprises of an undulating, slightly sloping plateau landscape, with low hills and broad shallow valleys (sandy soils). The natural vegetation is characterised by the moderately

tall shrublands which is dominated by Elytropappus rhinocerotis and where the more moist and rocky habitats support a rich geophytic flora.

The broad geology of the vegetation unit overlies mudrocks and sandstones of the Adelaide Subgroup (Beaufort Group of the Karoo Supergroup), with some intrusions of the Karoo Dolerite Suite. The vegetation unit is regarded to have a moderate erosion potential (Mucina and Rutherford, 2006), but on sloped areas devoid of vegetation, the impact can be high.

It is noted that the study area forms part of the core zone of the Hantam Roggeveld Centre of Endemism (Mucina and Rutherford, 2006; van Wyk and Smith, 2001) where it is distributed across the Northern and Western Cape provinces. To the west it is on the edge of the Great Escarpment above the Tanqua Basin with the Hantam Plateau region to the south. Dispersed within the landscape one find numerous isolated high plateau areas.

During construction, there will be a lot of disturbed and loose soil within the development footprint which will render the area vulnerable to erosion. Erosion is one of the greater risk factors associated with the development and it is therefore critically important that proper erosion control structures are built and maintained over the lifespan of the project.

3. EROSION AND SEDIMENT CONTROL PRINCIPLES

These goals can be achieved by applying the management practices outlined in the following sections.

GENERAL EROSION CONTROL

The Contractor should take all reasonable measures to prevent soil erosion resulting from the construction activities as well as to prevent the restriction or increase in the flow of storm water caused by the presence of temporary / permanent works. Erosion prevention measures must be implemented to the satisfaction of the Engineer and the ESCO / ECO. Areas affected by construction related activities must be monitored regularly for evidence of erosion. Areas particularly susceptible to erosion include areas stripped of topsoil and soil stockpiles and steep slopes (gradients > 6 %). Where evidence of erosion appears, the construction of contour berms, cut-off drains or planting of grass sods may be necessary. Where soil erosion does occur, the Contractor shall reinstate such areas and areas damaged by the erosion, at his own cost and to the satisfaction of the Engineer and ESCO / ECO.

PREVENTATIVE MEASURES

The following prevention measures are recommended:

- The Contractor is to provide a method statement on erosion control showing clearly how cleared surfaces and stormwater will be managed on site during construction and rehabilitation;
- Wind screening and stormwater control will be undertaken to prevent soil loss from the study site;
- All erosion control mechanisms will be regularly maintained;
- Re-vegetation of disturbed surfaces will occur immediately after the construction activities are completed;
- In the case of existing surface wash-away and wind erosion, the Contractor shall implement remedial measures as soon as possible to prevent further erosion;

- During construction, the Contractor shall protect areas susceptible to erosion by installing necessary temporary and permanent drainage works as soon as possible and by taking other measures necessary to prevent the surface water from being concentrated in streams and from scouring the slopes, banks or other
- areas; and
- Traffic and movement over stabilised areas is to be restricted and controlled, and damage to stabilised areas shall be repaired and maintained to the satisfaction of the ESCO / ECO.

EROSION AND SEDIMENT CONTROL MEASURES

The following precautionary measures must be implemented onsite to manage erosion and sediment control:

- Re-vegetate areas that have been disturbed as soon as possible;
- Cut and fill slopes must be made stable and be re-vegetated as soon as possible during the construction phase;
- Newly formed terraces within the facility must be vegetated to stabilise the soil;
- Where erosion and/or sedimentation, whether on or off the site, occurs despite the Contractor complying with the foregoing, rectification shall be carried out in accordance with details specified by the ESCO / ECO;
- Where erosion and/or sedimentation occur due to the fault of the Contractor, rectification shall be carried out to the reasonable requirements of the ESCO / ECO and at the expense of the Contractor;
- If the Site is closed for a period exceeding 5 days, the Contractor, in consultation with the ESCO / ECO, shall carry out the following checklist procedure:
- Excavated and filled slopes and stockpiles are at a stable angle and capable of accommodating normal expected water flows; and
- Re-vegetated areas have a watering schedule and the supply to such areas is secured.

3.1. On-Site Erosion Management

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

- Due to the sandy nature of soils in the study area, soil loss will be greater during dry periods as it is more prone to wind erosion. Therefore, precautions to prevent erosion should be present throughout the year.
- Soil loss will be greater on steeper slopes. Ensure that steep slopes are not de-vegetated unnecessarily and subsequently become hydrophobic (i.e. have increased runoff and a decreased infiltration rate) increasing the erosion potential.
- Soil loss is related to the length of time that soils are exposed prior to rehabilitation or stabilisation. Therefore, the gap between construction activities and rehabilitation should be minimised. Phased construction and progressive rehabilitation, where practically possible, are therefore important elements of the erosion control strategy.
- The extent of disturbance will influence the risk and consequences of erosion. Therefore, site clearing should be restricted to areas required for construction purposes only. As far as possible, large areas should not be cleared all at once, especially in areas where the risk of erosion is higher.
- Roads should be planned and constructed in a manner which minimises their erosion potential. Roads should therefore follow the natural contour as far as possible. Roads parallel to the slope direction should be avoided as far as possible.
- Where necessary, new roads constructed should include water diversion structures with energy dissipation features present to slow and disperse the water into the receiving area.
- Roads used for project-related activities and other disturbed areas should be regularly monitored for erosion. Any erosion problems recorded should be rectified as soon as possible and monitored thereafter to ensure that they do not re-occur.
- Runoff may have to be specifically channelled or storm water adequately controlled to prevent localised rill and gully erosion.

- Compacted areas should have adequate drainage systems to avoid pooling and surface flow. Heavy machinery should not compact those areas which are not intended to be compacted as this will result in compacted hydrophobic, water repellent soils which increase the erosion potential of the area. Where compaction does occur, the areas should be ripped.
- All bare areas should be revegetated with appropriate locally occurring species, to bind the soil and limit erosion potential.
- Silt fences should be used where there is a danger of topsoil or material stockpiles eroding and entering streams and other sensitive areas.
- Gabions and other stabilisation features must be used on steep slopes and other areas vulnerable to erosion to minimise erosion risk as far as possible.
- Activity at the site after large rainfall events when the soils are wet and erosion risk is increased should be reduced. No driving off of hardened roads should occur at any time, and particularly immediately following large rainfall events.
- Topsoil should be removed and stored in a designated area separately from subsoil and away from construction activities (as per the recommendations in the EMPr). Topsoil should be reapplied where appropriate as soon as possible in order to encourage and facilitate rapid regeneration of the natural vegetation in cleared areas.
- Regular monitoring of the site for erosion problems during construction (on-going) and operation (at least twice annually) is recommended, particularly after large summer thunderstorms have been experienced. The ECO will determine the frequency of monitoring based on the severity of the impacts in the erosion prone areas.

3.1.1. Erosion Control Mechanisms

The Contractor may use the following mechanisms (whichever proves more appropriate/ effective) to combat erosion when necessary:

- Reno mattresses;
- Slope attenuation;
- Hessian material;
- Shade catch nets;
- Gabion baskets;
- Silt fences;
- Storm water channels and catch pits;
- Soil bindings;
- Geofabrics;
- Hydro-seeding and/or re-vegetating;
- Mulching over cleared areas;
- Boulders and size varied rocks; and
- Tilling.

3.2. Engineering Specifications

A detailed engineering specifications Storm Water Management Plan describing and illustrating the proposed stormwater control measures must be prepared during the detailed design phase and should be based on the underlying principles of the Storm Water Management Plan (**Appendix G** of the WEF EMPr is also applicable to this grid infrastructure) and this should include erosion control measures. Requirements for project design include:

- Erosion control measures to be implemented before and during the construction period, including the final storm water control measures (post construction).
- All temporary and permanent water management structures or stabilisation methods must be indicated within the Storm water Management Plan.
- An on-site Engineer or Environmental Officer (EO)/ SHE Representative to be responsible for ensuring implementation of the erosion control measures on site during the construction period. The ECO should monitor the effectiveness of these measures on the interval agreed upon with the Site Manager and EO.
- The Contractor holds ultimate responsibility for remedial action in the event that the approved Storm Water Management Plan is not correctly or appropriately implemented and damage to the environment is caused.

APPENDIX 5: FIRE MANAGEMENT & EMERGENCY PREPARENESS PLAN

FIRE MANAGEMENT AND EMERGENCY PREPAREDNESS MANAGEMENT PLAN

1. PURPOSE

The purpose of the Emergency Preparedness, Response and Fire Management Plan is:

- To assist contractor personnel to prepare for and respond quickly and safely to emergency incidents, and to establish a state of readiness which will enable prompt and effective responses to possible events.
- To control or limit any effect that an emergency or potential emergency may have on site or on neighbouring areas.
- To facilitate emergency responses and to provide such assistance on the site as is appropriate to the occasion.
- To ensure communication of all vital information as soon as possible.
- To facilitate the reorganisation and reconstruction activities so that normal operations can be resumed.
- To provide for training so that a high level of preparedness can be continually maintained.

This plan outlines response actions for potential incidents of any size. It details response procedures that will minimise potential health and safety hazards, environmental damage, and clean-up efforts. The plan has been prepared to ensure quick access to all the information required in responding to an emergency event. The plan will enable an effective, comprehensive response to prevent injury or damage to the construction personnel, public, and environment during the project. Contractors are expected to comply with all procedures described in this document. A Method Statement should be prepared at the commencement of the construction phase detailing how this plan is to be implemented as well as details of relevant responsible parties for the implementation. The method statement must also reflect conditions of the IFC Performance Standard 1 and include the following:

- Identification of areas where accidents and emergency situations may occur;
- Communities and individuals that may be impacted;
- Response procedure;
- Provisions of equipment and resources;
- Designation of responsibilities;
- Communication; and
- Periodic training to ensure effective response to potentially affected communities.

2. PROJECT-SPECIFIC DETAILS

The authorised powerline is located in the Laingsburg Local Municipality, Western Cape Province near the town of Sutherland. The project will comprise the following key infrastructure and components:

- Overhead 400kV powerline connecting to the proposed 400kV Koring MTS and an existing 400kV Eskom powerline; and
- Service roads will be constructed below the powerline (jeep tracks)

Due to the scale and nature of this development, it is anticipated that the following risks could potentially arises during the construction and operation phases:

- Fires;
- Leakage of hazardous substances;
- Storage of flammable materials and substances;

- Flood events;
- Accidents; and
- Natural disasters.

3. EMERGENCY RESPONSE PLAN

There are three levels of emergency as follows:

- Local Emergency: An alert confined to a specific locality.
- Site Emergency: An alert that cannot be localised and which presents danger to other areas within the site boundary or outside the site boundary.
- Evacuation: An alert when all personnel are required to leave the affected area and assemble in a safe location.

If there is any doubt as to whether any hazardous situation constitutes an emergency, then it must be treated as an Evacuation.

Every effort must be made to control, reduce or stop the cause of any emergency, provided it is safe to do so. For example, in the event of a fire, isolate the fuel supply and limit the propagation of the fire by cooling the adjacent areas. Then confine and extinguish the fire (where appropriate) making sure that re-ignition cannot occur.

3.1. Emergency Scenario Contingency Planning

3.1.1. Scenario: Spill which would result in the contamination of land, surface or groundwater

OBJECTIVE: PREVENT AND MONITOR ACCIDENTAL LEAKAGES AND SPILLAGES

- All hazardous chemicals should be stored on bunded surfaces and no storage of such chemicals should be permitted within the riparian buffer zones
- It must be ensured that all hazardous storage containers and storage areas comply with the relevant SABS standards to prevent leakage. All vehicles must be regularly inspected for leaks. Refuelling must take place on a sealed surface area to prevent ingress of hydrocarbons into topsoil; and
- All spills, should they occur, should be immediately cleaned up and treated accordingly
- All vehicles and other equipment (generators etc.) must be regularly serviced to ensure they do not spill oil. Vehicles should be refuelled on paved (impervious) areas. If liquid product is being transported it must be ensured this does not spill during transit.
- Emergency measures and plans must be put in place and rehearsed in order to prepare for accidental spillage.
- Diesel fuel storage tanks must be above ground in a bunded area.
- Engines that stand in one place for an excessive length of time must have drip trays.
- Vehicle and washing areas must also be on paved surfaces and the by-products removed to an evaporative storage area or a hazardous waste disposal site (if the material is hazardous).
- Establish an effective record keeping system for accidental leakage/spillage incidents.
- Excess or spilled concrete should be confined within the work area and then removed to a licensed landfill site.
- Concrete shall be mixed on mortar boards, away from drainage channels and water courses.
- The visible remains of the mixing of concrete, either solid or from washings, shall be physically removed and disposed of as waste at a licensed landfill site.
- All excess aggregate shall also be removed from site.

i. Spill Prevention Measures

Preventing spills must be the top priority at all operations which have the potential of endangering the environment. The responsibility to effectively prevent and mitigate any scenario lies with the Contractor and the ECO. In order to reduce the risk of spills and associated contamination, the following principles should be considered during construction and operation activities:

- All equipment refuelling, servicing and maintenance activities should only be undertaken within appropriately sealed/contained or bunded designated areas.
- All maintenance materials, oils, grease, lubricants, etc. should be stored in a designated area in an appropriate storage container.
- No refuelling, storage, servicing, or maintenance of equipment should take place within sensitive environmental resources in order to reduce the risk of contamination by spills.
- No refuelling or servicing should be undertaken without absorbent material or drip pans properly placed to contain spilled fuel.
- Any fluids drained from the machinery during servicing should be collected in leak-proof containers and taken to an appropriate disposal or recycling facility.
- If these activities result in damage or accumulation of product on the soil, the contaminated soil must be disposed of as hazardous waste. Under no circumstances shall contaminated soil be added to a spoils pile and transported to a regular disposal site.
- Chemical toilets used during construction must be regularly cleaned. Chemicals used in toilets are also hazardous to the environment and must be controlled. Portable chemical toilets could overflow if not pumped regularly or they could spill if dropped or overturned during moving. Care and due diligence should be taken at all times.
- Contact details of emergency services and HazMat Response Contractors are to be clearly displayed on the site. All staff are to be made aware of these details and must be familiar with the procedures for notification in the event of an emergency.

ii. Procedures

The following action plan is proposed in the event of a spill:

1. Spill or release identified.
2. Assess person safety, safety of others and the environment.
3. Stop the spill if safely possible.
4. Contain the spill to limit entering surrounding areas.
5. Identify the substance spilled.
6. Quantify the spill (under or over guideline/threshold levels).
7. Notify the Site Manager and emergency response crew and authorities (in the event of major spill).
8. Inform users (and downstream users) of the potential risk.
9. Clean up of the spill using spill kit or by HazMat team.
10. Record of the spill incident on company database.

a) Procedures for containing and controlling the spill (i.e. on land or in water)

Measures can be taken to prepare for quick and effective containment of any potential spills. Each contractor must keep sufficient supplies of spill containment equipment at the construction sites, at all times during and after the construction phase. These should

include specialised spill kits or spill containment equipment. Other spill containment measures include using drip pans underneath vehicles and equipment every time refuelling, servicing, or maintenance activities are undertaken.

Specific spill containment methods for land and water contamination are outlined below.

Containment of Spills on Land

Spills on land include spills on rock, gravel, soil and/or vegetation. It is important to note that soil is a natural sorbent, and therefore spills on soil are generally less serious than spills on water as contaminated soil can be more easily recovered. It is important that all measures be undertaken to avoid spills reaching open water bodies located outside of the development footprint. The following methods could be used:

- Dykes - Dykes can be created using soil surrounding a spill on land. These dykes are constructed around the perimeter or down slope of the spilled substance. A dyke needs to be built up to a size that will ensure containment of the maximum quantity of contaminant that may reach it. A plastic tarp can be placed on and at the base of the dyke such that the contaminant can pool up and subsequently be removed with sorbent materials or by pump into barrels or bags. If the spill is migrating very slowly, a dyke may not be necessary, and sorbents can be used to soak up contaminants before they migrate away from the source of the spill.
- Trenches - Trenches can be dug out to contain spills. Spades, pickaxes or a front-end loader can be used depending on the size of the trench required. Spilled substances can then be recovered using a pump or sorbent materials.

b) Procedures for transferring, storing, and managing spill related wastes

Used sorbent materials are to be placed in plastic bags for future disposal. All materials mentioned in this section are to be available in the spill kits. Following clean up, any tools or equipment used must be properly washed and decontaminated or replaced if this is not possible.

Spilled substances and materials used for containment must be placed into empty waste oil containers and sealed for proper disposal at an approved disposal facility.

c) Procedures for restoring affected areas

Criteria that may be considered include natural biodegradation of oil, replacement of soil and revegetation. Once a spill of reportable size has been contained, the ECO and the relevant Authority must be consulted to confirm that the appropriate clean up levels are met.

3.1.2. Scenario: Fire (and fire water handling)

Fire Management Plan

OBJECTIVE: REDUCE THE RISK OF FIRE IN THE GRASSLAND ENVIRONMENT

- Construct fire-breaks around the site/footprint area before any other construction begins.
- Prohibit smoking on-site or alternatively indicate designated smoking areas for staff.
- Prohibit open fires.

- » Designate cooking areas for staff where fire hazard will be insignificant.
- » Educate staff of the dangers of open and unattended fires.
- » Educate staff as to proper fire safety.
- » Enforce proper waste management including disposal of flammable material (e.g. cigarette butts and packaging).
- » Place firefighting equipment at appropriate locations on site and ensure staff are aware of such equipment and associated procedure.
- » No fires are allowed around the construction area.
- » Welding, gas cutting or cutting of metal will only be permitted in an area designated as safe by the subcontractor.

i. Action Plan

The following action plan is proposed in the event of a fire:

1. Quantify risk.
2. Assess person safety, safety of others and the environment.
3. If safe – attempt to extinguish the fire using appropriate equipment.
4. If not safe to extinguish, contain fire.
5. Notify the Site Manager and emergency response crew and authorities.
6. Inform users of the potential risk of fire.
7. Record the incident on the company database or filing register.

ii. Procedures

Because large scale fires may spread very fast it is most advisable that the employee/contractor not put his/her life in danger in the case of an uncontrolled fire.

Portable firefighting equipment must be provided at strategic locations throughout the site, in line with the Building Code of South Africa and the relevant provincial building code. All emergency equipment including portable fire extinguishers, hose reels and hydrants must be maintained and inspected by a qualified contractor in accordance with the relevant legislation and national standards.

Current evacuation signs and diagrams for the building or site that are compliant to relevant state legislation must be provided in a conspicuous position, on each evacuation route. Contact details for the relevant emergency services should be clearly displayed on site and all employees should be aware of procedures to follow in the case of an emergency.

d) Procedures for initial actions

Persons should not fight the fire if any of the following conditions exist:

- » They have not been trained or instructed in the use of a fire extinguisher.
- » They do not know what is burning.
- » The fire is spreading rapidly.
- » They do not have the proper equipment.
- » They cannot do so without a means of escape.
- » They may inhale toxic smoke.

e) Reporting procedures

In terms of the requirements of NEMA, the responsible person must, within 14 days of the incident, report to the Director General, provincial head of department and municipality.

- Report fire immediately to the site manager, who will determine if it is to be reported to the relevant emergency services and authorities.
- The Site Manager must have copies of the Report form to be completed.

SUMMARY: RESPONSE PROCEDURE

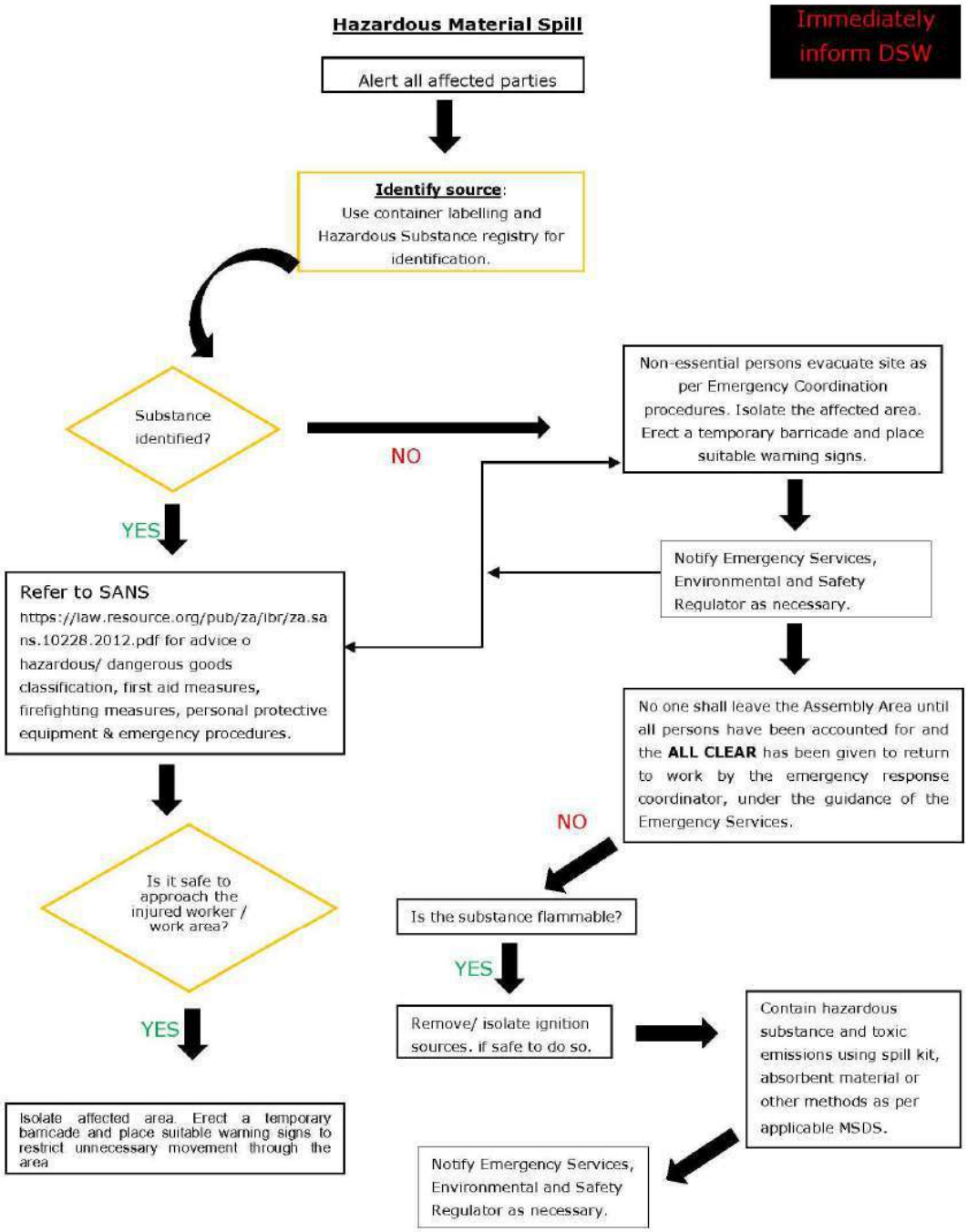


Figure 1: Hazardous Material Spill

Fire/Medical Emergency Situation

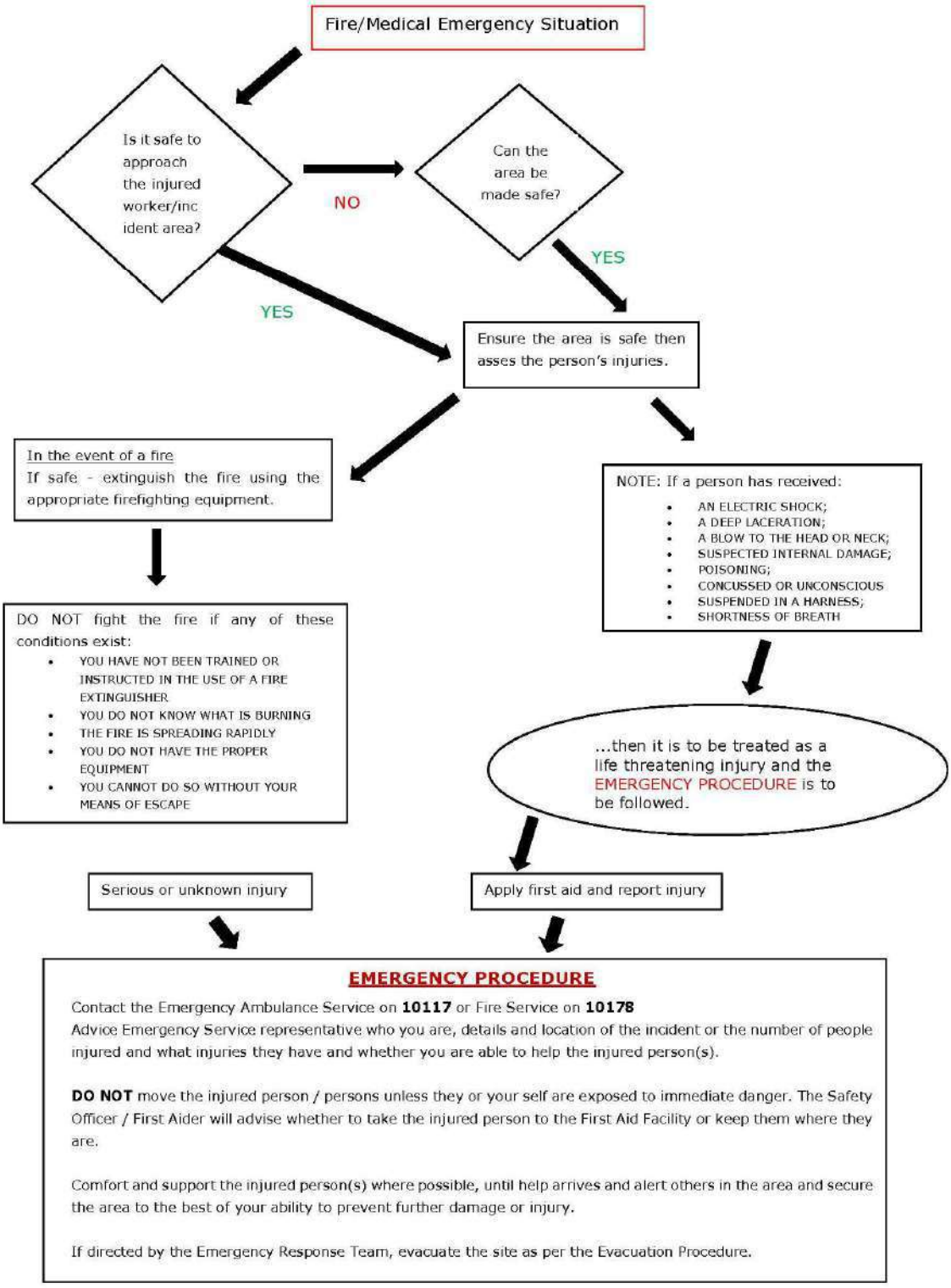


Figure 2: Emergency Fire/Medical

4. PROCEDURE RESPONSIBILITY

The Contractor's Safety, Health and Environment (SHE) Representative, employed by the Contractor, is responsible for managing the day-to-day on-site implementation of this Plan, and for the compilation of regular (usually weekly) Monitoring Reports. In addition, the SHE must act as liaison and advisor on all environmental and related issues.

The local authorities will provide their assistance when deemed necessary, or when it has been requested and/or indicated in Section 30(8) of NEMA. The provincial authority will provide assistance and guidance where required and conduct awareness programmes.

APPENDIX 6: WASTE MANAGEMENT PLAN

WASTE MANAGEMENT PLAN

1. PURPOSE

A Waste Management Plan (WMP) plays a key role in achieving sustainable waste management throughout all phases of the project. The plan prescribes measures for the collection, temporary storage and safe disposal of the various waste streams associated with the project and includes provisions for the recovery, re-use and recycling of waste. The purpose of this plan is therefore to ensure that effective procedures are implemented for the handling, storage, transportation and disposal of waste generated from the project activities on site.

This WMP has been compiled as part of the project EMPr and is based on waste stream information available at the time of compilation. Construction and operation activities must be assessed on an ongoing basis in order to determine the efficacy of the plan and whether further revision of the plan is required. This plan should be updated once further detail regarding waste quantities and categorisation become available, during the construction and/or operation phases. This plan should be updated throughout the life cycle of the infrastructure established for the Wind Energy Facilities and associated grid infrastructure, as required in order to ensure that appropriate measures are in place to manage and control waste and to ensure compliance with relevant legislation.

Prior to the commencement of construction, a detailed Waste Management Method Statement for the site should be compiled by the Contractor.

OBJECTIVE: Promote proper waste disposal, waste reduction, re-use, and recycling opportunities

2. RELEVANT ASPECTS OF THE SITE

It is expected that the development of various infrastructure will generate construction solid waste, as well as general waste and hazardous waste during the lifetime of the grid connection infrastructure.

Waste generated on site, originates from various sources, including but not limited to:

- Concrete waste generated from spoil and excess concrete.
- Contaminated water, soil, rocks and vegetation due to hydrocarbon spills.
- Hazardous waste from vehicle, equipment and machinery parts and servicing, fluorescent tubes, used hydrocarbon containers, batteries situated in specially adapted shipping containers, and waste ink cartridges.
- Recyclable waste in the form of paper, glass, steel, aluminium, wood/ wood pallets, plastic (PET bottles, PVC, LDPE) and cardboard.
- Organic waste from food waste as well as alien and endemic vegetation removal.
- Sewage from portable toilets and septic tanks.
- Inert waste from spoil material from site clearance and trenching works.

3. LEGISLATIVE REQUIREMENTS

Waste in South Africa is currently governed by several regulations, including:

- National Environmental Management: Waste Act (NEM: WA), 2008 (Act 59 of 2008);
- National Environmental Management: Waste Amendment Act, 2014 (Act 26 of 2014);
- The South African Constitution (Act 108 of 1996);
- Hazardous Substances Act (Act 5 of 1973);
- Health Act (Act 63 of 1977);
- Environment Conservation Act (Act 73 of 1989);
- Occupational Health and Safety Act (Act 85 of 1993);
- National Water Act (Act 36 of 1998);
- The National Environmental Management Act (Act 107 of 1998) (as amended);
- Municipal Structures Act (Act 117 of 1998);
- Municipal Systems Act (Act 32 of 2000);
- Mineral and Petroleum Resources Development Act (Act 28 of 2002); and
- Air Quality Act (Act 39 of 2004).

Storage of waste must be conducted in accordance with the National Norms and Standards for the Storage of Waste, published in GNR 926.

4. WASTE MANAGEMENT PRINCIPLES

An integrated approach to waste management is needed on site. Such an approach is illustrated in Figure 1.

It is important to ensure that waste is managed with the following objectives in mind during all phases of the project:

- Reducing volumes of waste is the greatest priority;
- If reduction is not feasible, the maximum amount of waste is to be recycled; and
- Waste that cannot be recycled is to be disposed of in the most environmentally responsible manner.

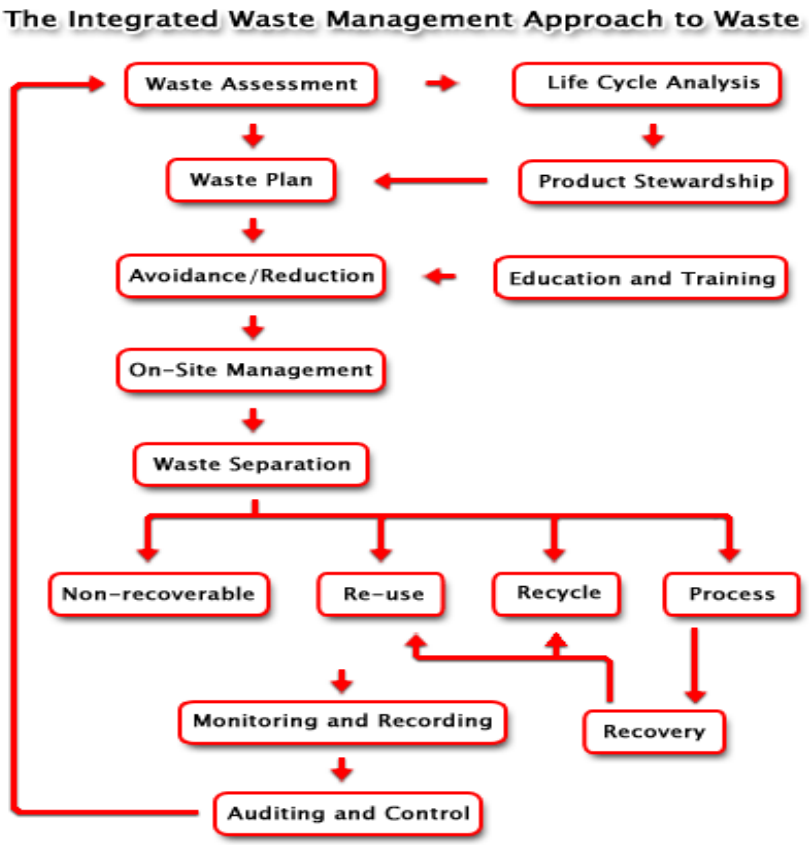


Figure 1: Integrated Waste Management Flow Diagram
(Source: http://www.enviroserv.co.za)

4.1. Construction phase

A plan for the management of waste during the construction phase is detailed below. A Method Statement detailing specific waste management practices during construction should be prepared by the Contractor prior to the commencement of construction, for approval by the Resident Engineer.

4.1.1. Waste Assessment / Inventory

» The Environmental Officer (EO), or designated staff member, must develop, implement and maintain a waste inventory reflecting all waste generated during construction for both general and hazardous waste streams.
» Construction methods and materials should be carefully considered in view of waste reduction, re-use, and recycling opportunities, to be pro-actively implemented.
» Once a waste inventory has been established, targets for the recovery of waste (minimisation, re-use, recycling) should be set.
» The EO must conduct waste classification and rating in terms of SANS 10288 and Government Notice 634 published under the NEM: WA.

4.1.2. Waste collection, handling and storage

» Off-cuts (steel, wood etc.) will be re-used or recycled, as far as possible.
» Vegetative material will be kept on site and mulched after construction to be spread over the disturbed areas to enhance rehabilitation of the natural vegetation.
» Waste separation is encouraged and therefore receptacles should be labelled to reflect the different waste types.

- Adequate containers for the cleaning of equipment and materials (paint, solvent) must be provided as to avoid spillages.
- Waste water from construction and painting activities must be collected in a designated container and disposed of at a suitable disposal point off site.
- Ensure an adequate and sustainable use of resources.
- A suitable area for the storage of waste must be selected (away from water courses) and included in the site layout plan.
- Ensuring that an adequate number of rubbish and "spill" bins are provided will also prevent litter and ensure the proper disposal of waste and spills
- It is the responsibility of the EO to ensure that each subcontractor implements their own waste recycling system, i.e. separate bins for food waste, plastics, paper, wood, glass cardboard, metals, etc. Such practises must be made contractually binding upon appointment of the subcontractors.
- Waste manifests and waste acceptance approvals (i.e. receipts) from designated waste facilities must be kept on file at the site office, in order to record and prove continual compliance for future auditing.
- Septic tanks and portable toilets must be monitored by the EO or responsible subcontractor and maintained regularly. Below ground storage of septic tanks must withstand the external forces of the surrounding environment. The area above the tank must be demarcated to prevent any vehicles or heavy machinery from moving around in the surrounding area.
- Waste collection bins and hazardous waste containers must be provided by the principal contractor and subcontractors and placed at strategic locations around the site for the storage of organic, recyclable and hazardous waste.
- A dedicated waste area must be established on site for the storage of all waste streams before removal from site. The storage period must not trigger listed waste activities as per the NEMWA, GN 921 of November 2013.
- Signage/ colour coding must be used to differentiate disposal areas for the various waste streams (i.e. paper, cardboard, metals, food waste, glass etc.).
- Hazardous waste must be stored within a bunded area constructed according to SABS requirements and must ensure complete containment of the spilled material in the event of a breach. As such, appropriate bunding material, design, capacity and type must be utilised to ensure that no contamination of the surrounding environment will occur despite a containment breach. The net capacity of a bunded compound in a storage facility should be at least 120% of the net capacity of the largest tank.
- Take into consideration the capacity displaced by other tanks within the same bunded area and any foundations.
- Treat interconnected tanks as a single tank of equivalent total volume for the purposes of the bund design criteria.
- The location of all temporary waste storage areas must aim to minimise the potential for impact on the surrounding environment, including prevention of contaminated runoff, seepage, and vermin control, while being reasonably placed in terms of centrality and accessibility on site. Where required, an additional temporary waste storage area may be designated, provided identical controls are exercised for these locations.
- Waste storage shall be in accordance with all Regulations and best-practice guidelines and under no circumstances may waste be burnt on site.
- A dedicated waste management team must be appointed by the principal contractors' SHE Officer, who will be responsible for ensuring the continuous sorting of waste and maintenance of the area. The waste management team must be trained in all areas of waste management and monitored by the SHE Officer.
- All waste removed from site must be done by a registered/ licensed subcontractor, who must supply information regarding how waste recycling/ disposal will be achieved. The registered subcontractor must provide waste manifests for all removals at least once a month or for every disposal made, records of which must be kept on file at the site camp for the duration of the construction period.

4.1.3. Management of waste storage areas

- Control and implement waste management plans provided by contractors. Ensure that relevant legislative requirements are respected.

- » Implement effective waste management in order to prevent construction related waste from entering the freshwater environments.
- » Waste storage must be undertaken in accordance with the relevant Norms and Standards.
- » The position of all waste storage areas must be located so as to ensure minimal degradation to the environment. The main waste storage area must have a suitable storm water system separating clean and contaminated storm water.
- » Collection bins placed around the site and at subcontractors' camps (if at a different location than the main site camp) must be maintained and emptied on a regular basis by the principal contractor to avoid overflowing receptacles.
- » Inspections and maintenance of the main waste storage area must be undertaken daily. Skips and storage containers must be clearly marked, or colour coded and well-maintained. Monitor for rodents and take corrective action if they become a problem.
- » Waste must be stored in designated containers and not on the ground.
- » Inspections and maintenance of bunds must be undertaken regularly. Bunds must be inspected for leaks or cracks in the foundation and walls.
- » It is assumed that any rainwater collected inside the bund is contaminated and must be treated by oil/water separation (or similar method) prior to dewatering, or removed and stored as hazardous waste, and not released into the environment.
- » If any leaks occur in the bund, these must be amended immediately.
- » Bund systems must be designed to avoid dewatering of contaminated water, but to rather separate oil and hydrocarbons from water prior to dewatering.
- » Following rainfall event bunds must always be dewatered in order to maintain a sufficient storage capacity in the event of a breach.
- » No mixing of hazardous and general waste is allowed.

4.1.4. Disposal

- » All operational waste (concrete, steel, rubbles etc.) to be removed from the site and waste hierarchy of prevention, as the preferred option, followed by reuse, recycling, recovery must be implemented, where possible.
- » Other non-hazardous solid waste (e.g. packaging material) to be disposed of at a licensed landfill.
- » All liquid waste (used oil, paints, lubricating compounds and grease) to be packaged and disposed of by appropriate means.
- » The subcontractor shall not dispose of any waste and/or construction debris by burning or burying.
- » Where solid waste disposal is to take place on site, ensure that only non-toxic materials which have no risk of polluting the groundwater, are buried in designated approved areas at acceptable depths below ground level.
- » Waste generated on site must be removed on a regular basis. This frequency may change during construction depending on waste volumes generated at different stages of the construction process, however removal must occur prior to the storage capacity being reached to avoid overflow of containers and poor waste storage.
- » Waste must be removed by a suitably qualified contractor and disposed of at an appropriately licensed landfill site. Proof of appropriate disposal must be provided by the contractor to the ED and ECO.

4.1.5. Record keeping

The success of the WMP is determined by measuring criteria such as waste volumes, cost recovery from recycling and 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.

- » Documentation (waste manifest, certificate of issue or safe disposal) must be kept detailing the quantity, nature, and fate of any regulated waste for audit purposes.

» Waste management must form part of the monthly reporting requirements in terms of volumes generated, types, storage and final disposal.

4.1.6. Training

Training and awareness regarding waste management shall be provided to all employees and contractors as part of the toolbox talks or on-site awareness sessions with the EO and at the frequency as set out by the ECO.

4.2. Operation phase

It is expected that the operation phase will result in the production of limited amounts of general waste consisting mostly of cardboard, paper, plastic, tins, metals and a variety of synthetic compounds. Hazardous wastes (including grease, oils) will also be generated. All waste generated will be required to be temporarily stored at the facility in appropriately sealed containers prior to disposal at a permitted landfill site or other facilities.

The following waste management principles apply during the operation phase:

» The SHE Manager must develop, implement and maintain a waste inventory reflecting all waste generated during operation for both general and hazardous waste streams.
» Adequate waste collection bins at site must be supplied. Separate bins should be provided for general and hazardous waste.
» Recyclable waste must be removed from the waste stream and stored separately.
» All waste must be stored in appropriate temporary storage containers (separated between different operation wastes, and contaminated or wet waste).
» Waste storage shall be in accordance with all best-practice guidelines and under no circumstances may waste be burnt on site.
» Waste generated on site must be removed on a regular basis throughout the operation phase.
» Waste must be removed by a suitably qualified contractor and disposed of at an appropriately licensed landfill site. Proof of appropriate disposal must be provided by the contractor and kept on site.

5. Monitoring of Waste Management Activities

Records must be kept of the volumes/ mass of the different waste streams that are collected from the site throughout the life of the project. The appointed waste contractor is to provide monthly reports to the operator containing the following information:

» Monthly volumes/ mass of the different waste streams collected;
» Monthly volumes/ mass of the waste that is disposed of at a landfill site;
» Monthly volumes/ mass of the waste that is recycled;
» Data illustrating progress compared to previous months.

This report will aid in monitoring the progress and relevance of the waste management procedures that are in place. If it is found that the implemented procedures are not as effective as required, this WMP is to be reviewed and amended accordingly. This report must from part of the EO's reports to the ECO on a monthly basis.