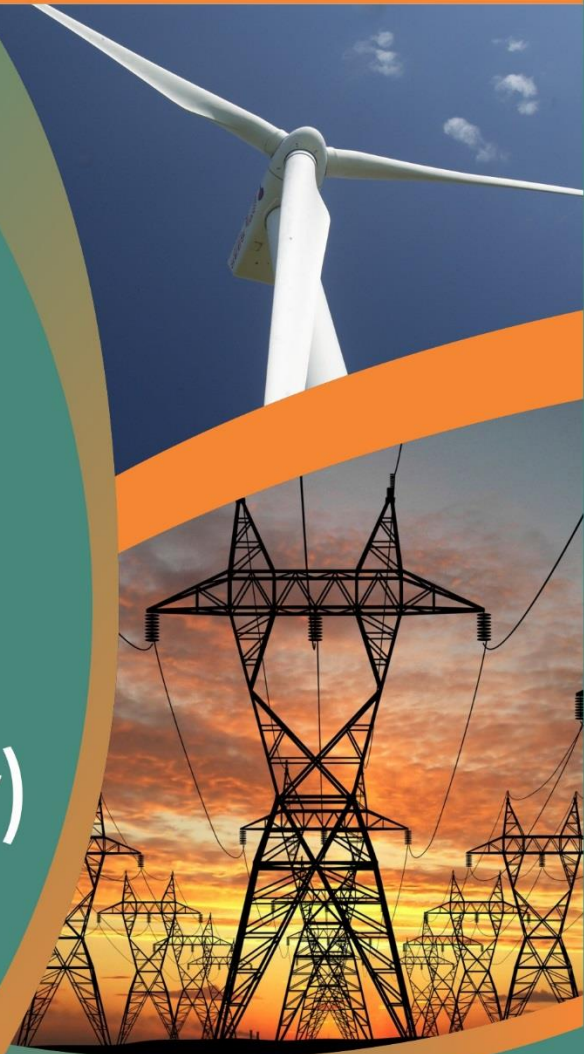


BASIC ASSESSMENT REPORT

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)



SECTION F: APPENDICES

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: DRAFT BASIC ASSESSMENT REPORT

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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 will be 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 will be submitted to the DEFF together with the Draft 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 Draft 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 support the proposed and authorised Rietrug,

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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 is being made available to I&APs, stakeholders and Organs of State, as part of the Draft BA Report that is currently being circulated for a 30-day review period. Comments received from stakeholders during this afore-mentioned review period will be 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 Draft 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.

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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 (<i>Pr. Sci. Nat.</i>)
Rohaida Abed	CSIR	Project Manager (<i>Pr. Sci. Nat.</i>)
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 Draft 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).

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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)	<ul style="list-style-type: none"> ▪ 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)	<ul style="list-style-type: none"> ▪ 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: <ul style="list-style-type: none"> ▪ 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.
Visual Impact Assessment (Appendix D.3 of the BA Report)	<ul style="list-style-type: none"> ▪ The power line passes within 1 km of the Waterval farmstead, within 320 m of the farm buildings on Farm Rheebockenfontein (4/1) and within 600 m of the farmstead on Farm Rheebockenfontein (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.

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Specialist Study	Key Environmental Features and Sensitive Areas
	<ul style="list-style-type: none"> ▪ 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.
<p style="text-align: center;">Heritage (Palaeontology, Archaeology and Cultural Landscape) (Appendix D.4 of the BA Report)</p>	<p><u>Palaeontology:</u></p> <ul style="list-style-type: none"> ▪ 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. <p><u>Archaeology:</u></p> <ul style="list-style-type: none"> ▪ 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: <ul style="list-style-type: none"> ○ <u>Waypoint 524</u> 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. ○ <u>Waypoint 546</u> 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 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. ○ <u>Waypoint 51</u> 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. ○ <u>Waypoint 614</u> 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.

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Specialist Study	Key Environmental Features and Sensitive Areas
	<ul style="list-style-type: none"> ○ 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.
<p style="text-align: center;">Avifauna Impact Assessment (Appendix D.5 of the BA Report)</p>	<ul style="list-style-type: none"> ▪ 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 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.
<p style="text-align: center;">Agricultural Impact Assessment (Appendix D.6 of the BA Report)</p>	<ul style="list-style-type: none"> ▪ 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.

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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 Draft 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	<p><u>Construction Phase:</u></p> <ul style="list-style-type: none"> ▪ 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. <p><u>Operational Phase:</u></p> <ul style="list-style-type: none"> ▪ 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. <p><u>Decommissioning Phase:</u></p> <ul style="list-style-type: none"> ▪ 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)	<p><u>Construction Phase:</u></p> <ul style="list-style-type: none"> ▪ 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. <p><u>Operational Phase:</u></p> <ul style="list-style-type: none"> ▪ 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. <p><u>Decommissioning Phase:</u></p> <ul style="list-style-type: none"> ▪ 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	<p><u>Construction Phase:</u></p> <ul style="list-style-type: none"> ▪ Potential visual intrusion of construction activities on existing views of sensitive visual receptors in the surrounding landscape.

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KEY IMPACT	IMPACTS IDENTIFIED
	<ul style="list-style-type: none"> ▪ 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). <p><u>Operational Phase:</u></p> <ul style="list-style-type: none"> ▪ 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. <p><u>Decommissioning Phase:</u></p> <ul style="list-style-type: none"> ▪ 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)	<p><u>Construction Phase, Operational and Decommissioning Phase</u></p> <ul style="list-style-type: none"> ▪ Destruction of archaeological remains; ▪ Destruction of palaeontological material; and ▪ Alteration of the cultural and natural landscape.
Heritage (Palaeontology)	<p><u>Construction Phase:</u></p> <ul style="list-style-type: none"> ▪ 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	<p><u>Construction Phase:</u></p> <ul style="list-style-type: none"> ▪ 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. <p><u>Operational Phase:</u></p> <ul style="list-style-type: none"> ▪ 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. <p><u>Decommissioning Phase:</u></p> <ul style="list-style-type: none"> ▪ Displacement of Red Data avifauna due to disturbance associated with the decommissioning activities.
Agricultural Impact Assessment	<p><u>Construction Phase:</u></p> <ul style="list-style-type: none"> ▪ Soil erosion and degradation as a result of land surface disturbance including vegetation removal, vehicle passage and excavation during construction activities. <p><u>Decommissioning Phase:</u></p> <ul style="list-style-type: none"> ▪ Displacement of Red Data avifauna due to disturbance associated with the decommissioning activities.

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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);
- 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.

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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.

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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):	<p><u>Qualifications:</u></p> <ul style="list-style-type: none"> ▪ M.Sc. (Botany), Stellenbosch University ▪ B.Sc. (Hons.) (Botany), University of the Western Cape ▪ B.Sc. (Education), University of the Western Cape <p><u>Experience:</u></p> <ul style="list-style-type: none"> ▪ Minnelise has more than 15 years of experience in environmental assessment and management. <p><u>Professional Registration and Affiliations:</u></p> <ul style="list-style-type: none"> ▪ Registered Professional Natural Scientist with the South African Council for Natural Scientific Professions (Registration Number: 117078). ▪ International Association for Impact Assessment, South African Affiliate. <p><u>Curriculum Vitae of Minnelise Levendal is included in Appendix B of this EMPr.</u></p>

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.
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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

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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.

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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.

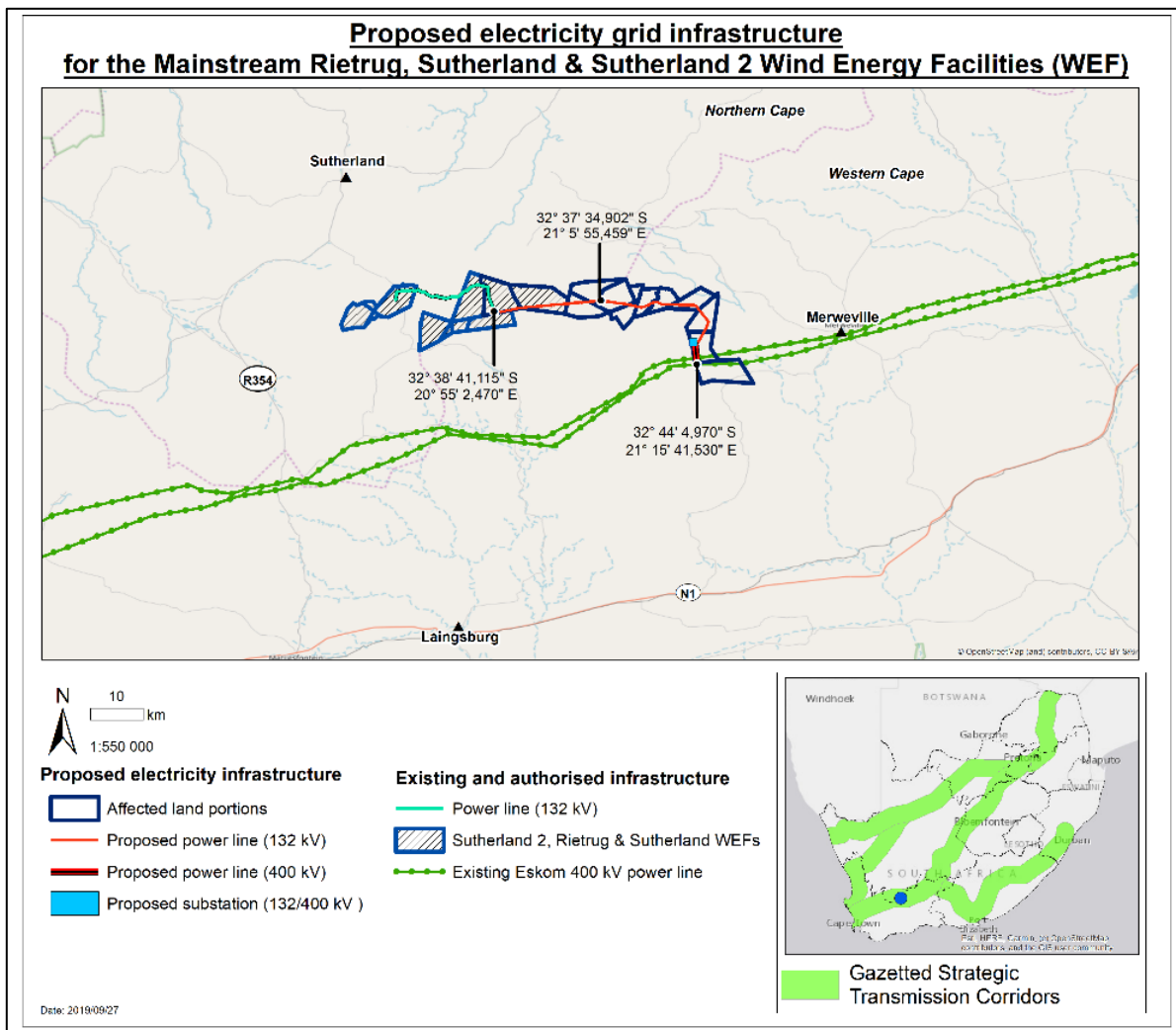


Figure 4: Locality map indicating the proposed Electrical Grid Infrastructure, including co-ordinate points. Note that existing and authorised components are also illustrated on this map.

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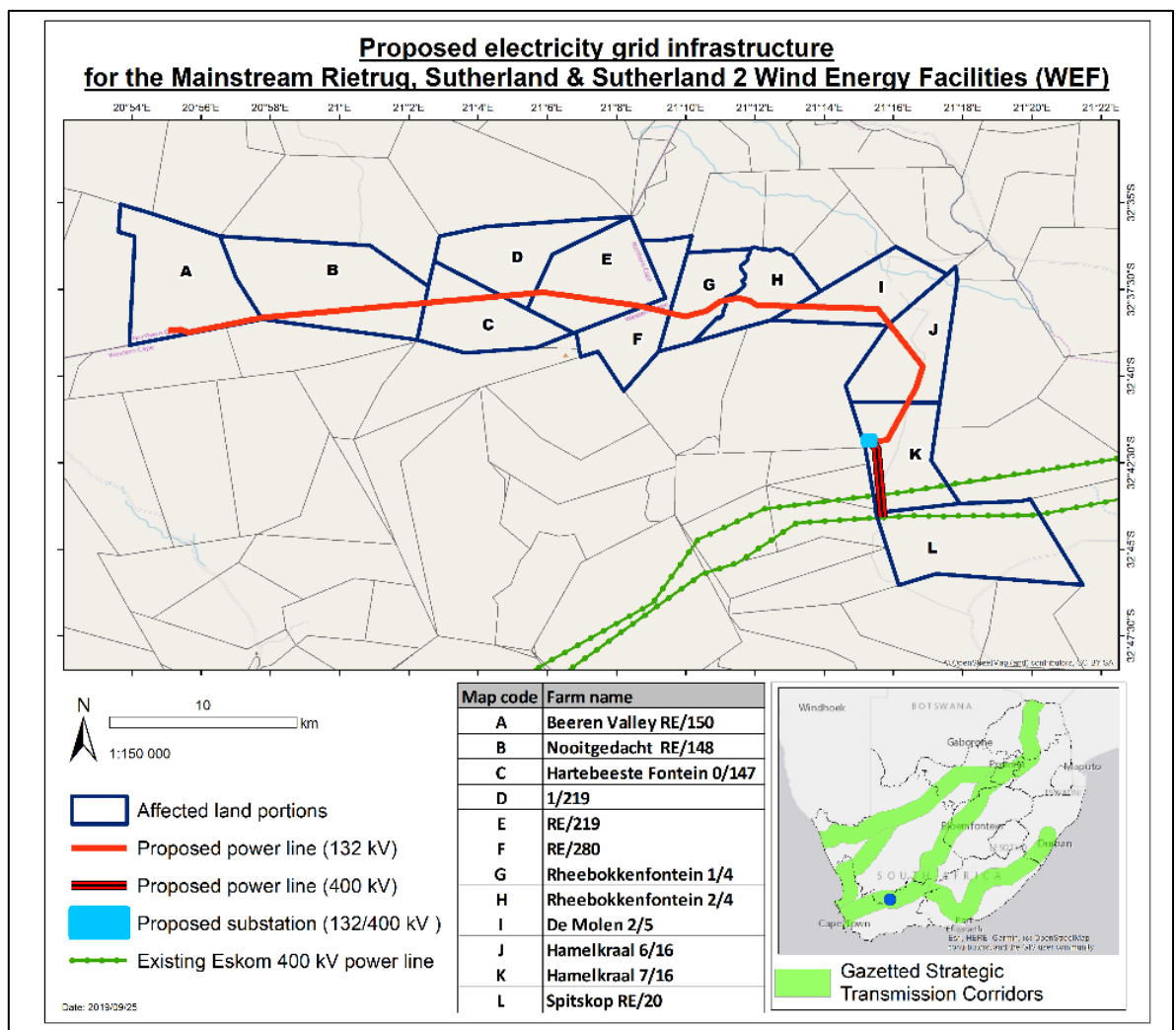


Figure 2: Map indicating the proposed Electrical Grid Infrastructure and the affected farm portions

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

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Project Component	Project Specifications
	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.

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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 Draft 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 Draft BA Report.

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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 should Mainstream reach preferred bidder status / Final design. This is also dependent on Eskom's requirements.
Tower Height (lowest, mean and height)	Range: 26 m to 48 m
Conductor Attachment Height (mean)	To be confirmed should Mainstream reach preferred bidder status / Final design. This is also dependent on Eskom's requirements
Minimum Ground Clearance	
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 should Mainstream reach preferred bidder status / Final design
Tower Height (lowest, mean and height)	Maximum: 32 m
Conductor Attachment Height (mean)	To be confirmed should Mainstream reach preferred bidder status / Final design. This is also dependent on Eskom's requirements
Minimum Ground Clearance	

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 Draft BA Report). Individual feature maps for each specialist theme, where relevant, are also included in Part A of the Draft BA Report.

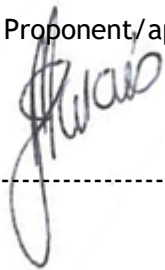
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6 APPLICANT DECLARATION

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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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 prior to any construction activities at the site.		<ul style="list-style-type: none"> ▪ Obtain clearing and translocation permits from the relevant authorities. 				Relevant permits from authorities in place. Report

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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
						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.		<ul style="list-style-type: none"> ▪ 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.		<ul style="list-style-type: none"> ▪ 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.						
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	<ul style="list-style-type: none"> ▪ 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 amounts of light pollution.	ECO or other suitably qualified person	<ul style="list-style-type: none"> ▪ ECO to monitor site clearing and staff activities on-site. ▪ Weekly and monthly reporting of activities, 	During construction when site clearing is taking place	ECO and Subcontractor	Daily	Report and record any non-compliance via site

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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
		offences and remedial actions.				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.	Management	<ul style="list-style-type: none"> ▪ 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.
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.						
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.	Management	<ul style="list-style-type: none"> ▪ 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.
Annual post-decommissioning site inspection for erosion or water flow regulation problems - with follow up remedial action where problems are identified.						

7.2 AQUATIC ECOLOGY AND FRESHWATER ECOSYSTEMS

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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						
<ul style="list-style-type: none"> ▪ 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: <ul style="list-style-type: none"> ○ The structure should not impede or concentrate the flow in the watercourse. ○ The structure should also be placed at the base level of the channel and be orientated in line with the channel. ○ Any rubble or waste associated with the construction works within the aquatic features should be removed once construction is complete; and ▪ Water consumption requirements for the site for the construction must be via an authorised water supply. 	Project Developer	<ul style="list-style-type: none"> ▪ 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.
CONSTRUCTION PHASE						

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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
<ul style="list-style-type: none"> ▪ 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. ▪ 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 	<p>Proponent, Contractor and ECO</p>	<ul style="list-style-type: none"> ▪ 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. 	<p>Ongoing during construction</p>	<p>Proponent, Contractor and ECO</p>	<p>Weekly</p>	<p>Carry out inspections and record and report any non-compliance.</p>
OPERATIONAL PHASE						
<p>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</p>	<p>Proponent/contractor</p>	<ul style="list-style-type: none"> ▪ Ongoing monitoring of invasive alien plants within the site should be undertaken 	<p>Ongoing during operation</p>	<p>Proponent/contractor</p>	<p>Weekly</p>	<p>Invasive alien monitoring</p>

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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
Programme. Monitoring and control measures should take place at least biannually for the first 3 years of the project.		according to an approved plan.				plan in place and audited.
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.		<ul style="list-style-type: none"> ▪ Once the construction activities have ceased, the frequency of the monitoring can be reduced. 	Monitoring and control measures should take place at least biannually for the first 3 years of the project.			
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.						
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	<ul style="list-style-type: none"> ▪ 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 decommission phase. ▪ Ongoing monitoring of invasive alien plants within the site should be undertaken according to an approved plan 	Ongoing during decommissioning	Proponent, Contractor and ECO	Daily	Carry out inspections and record and report any non-compliance.
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	<ul style="list-style-type: none"> ▪ 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.

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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
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	<ul style="list-style-type: none"> ▪ Ensure implementation with the Rehabilitation Plan. Topsoil stockpile areas must be monitored. 	Throughout the decommissioning phase	ECO	Weekly	Carry out inspections and record any non-compliance.
Control of invasive alien plants within the site should be undertaken according to the approved plan.	Contractor	<ul style="list-style-type: none"> ▪ Ensure implementation with the Alien Plant Management Plan. 	Throughout the decommissioning phase	ECO	Weekly	Carry out inspections and record any non-compliance.

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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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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: <ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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.

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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
<ul style="list-style-type: none"> ▪ (In discussion with the avifauna specialist) reduce the number of bird flappers / balls along the power line route. <p>Substation:</p> <ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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.

CONSTRUCTION PHASE

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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
Parking areas should be demarcated and strictly controlled so that vehicles are limited to specific areas only.	Contractor	<ul style="list-style-type: none"> ▪ 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.
<p>Where possible construction camps and laydown areas should be located (where sensitive visual receptors are least likely to be affected):</p> <ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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	<p>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.</p> <p>Record findings of visual inspections and take photographs as required.</p>
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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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.

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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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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 process.	Contractor	<ul style="list-style-type: none"> ▪ Ensure implementation with the Rehabilitation Plan. 	Throughout the construction phase	ECO	Weekly	Carry out inspections and record and report any non-compliance.

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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
Rehabilitate disturbed areas incrementally and as soon as possible, not necessarily waiting until completion of the Construction Phase.	Contractor	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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: <ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ Implement the various plans 	Throughout the construction phase	ECO	Weekly	Carry out inspections and record and report any non-compliance.
DECOMMISSIONING PHASE						
<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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): <ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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 inspections and take photographs as required.

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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
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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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 topsoil from the site is stripped, stockpiled, and stabilised before excavating earth.	Contractor	<ul style="list-style-type: none"> ▪ 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.

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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 vegetation material from vegetation removal is mulched and spread over fresh soil disturbances to aid in the rehabilitation process.	Contractor	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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: <ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ Implement the various plans 	Throughout the decommissioning phase	ECO	Weekly	Carry out inspections and record and report any non-compliance.

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7.4 HERITAGE: ARCHAEOLOGY, PALAEOLOGY 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	<ul style="list-style-type: none"> 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.
<p>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.</p> <p>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.</p>	Project Developer	<ul style="list-style-type: none"> 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. 	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.
CONSTRUCTION AND DECOMMISSIONING PHASES						
The ECO should be aware of the potential for fossils to be uncovered during excavations. Excavations should be monitored by the ECO during construction and if any fossils are uncovered they should be protected <i>in situ</i> and immediately reported to a palaeontologist in order to plan a way forward. It is understood	Project Developer	<ul style="list-style-type: none"> Ensure that the ECO receives adequate training from a professional specialist to be able to 	During the construction phase (and as applicable during the	ECO	During excavation work during the construction phase (and as applicable during the	Undertake inspections and record all findings and document

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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
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.		identify fossils during excavations.	decommissioning phase)		decommissioning phase)	the inspection process
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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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.

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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:	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.
<ul style="list-style-type: none"> ▪ The minimum footprint areas for infrastructure should be used wherever possible, including road widths and lengths. 	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.
<ul style="list-style-type: none"> ▪ 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.

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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
<ul style="list-style-type: none"> ▪ 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.
<ul style="list-style-type: none"> ▪ 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.
<ul style="list-style-type: none"> ▪ 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.
<ul style="list-style-type: none"> ▪ 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.

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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 of the buffer area and verify if	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.

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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 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.
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.	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.
		Environmental Manager to verify appointment of specialist and monitor the frequency of monitoring by auditing signed reports and minutes of meetings.				
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.	During operational phase.	Avifaunal specialist and facility manager	Quarterly	Records of bird mortalities in operational monitoring programme. Conduct audits and record and
		Environmental Manager to verify appointment of specialist and monitor the frequency of monitoring by				

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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
		auditing signed reports and minutes of meetings.				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 any non-compliance.

7.6 AGRICULTURE

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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	<ul style="list-style-type: none"> ▪ 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 construction phase	ECO	Monthly	Records and findings of site inspection. Records of correction action must be in place.
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	<ul style="list-style-type: none"> ▪ 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 	During Operational phase	Facility Environmental Manager	Bi-Annually	Records and findings of site inspection. Records of correction action must be in place.

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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
		control system in the event of any erosion occurring.				
DECOMMISSIONING PHASE						
<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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	<p>Records and findings of site inspection.</p> <p>Records of correction action must be in place.</p>

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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 contractor and the holder of the EA. This template, once signed and dated, is legally binding. The holder of the EA will remain responsible for its implementation.

5.1 Environmental awareness training

Impact management outcome: All onsite staff are aware and understands the individual responsibilities in terms of this EMPr.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All staff must receive environmental awareness training prior to commencement of the activities; - The Contractor must allow for sufficient sessions to train all personnel with no more than 20 personnel attending each course; - Refresher environmental awareness training is available as and when required; - All staff are aware of the conditions and controls linked to the EA and within the EMPr and made aware of their individual roles and responsibilities in achieving compliance with the EA and EMPr; - The Contractor must erect and maintain information posters at key locations on site, and the posters must include the following information as a minimum: <ul style="list-style-type: none"> a) Safety notifications; and b) No littering. - Environmental awareness training must include as a minimum the following: 						

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Impact management outcome: All onsite staff are aware and understands the individual responsibilities in terms of this EMPr.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> – A record of all environmental awareness training courses undertaken as part of the EMPr must be available; – Educate workers on the dangers of open and/or unattended fires; – A staff attendance register of all staff to have received environmental awareness training must be available. – Course material must be available and presented in appropriate languages that all staff can understand. 						

5.2. Site Establishment development

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

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Impact management outcome: Impacts on the environment are minimised during site establishment and the development footprint are kept to demarcated development area.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Sites must be located where possible on previously disturbed areas; - The camp must be fenced in accordance with <i>Section 5.5: Fencing and gate installation</i>; and - The use of existing accommodation for contractor staff, where possible, is encouraged. 						

5.3. Access restricted areas

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

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5.4. Access roads

Impact management outcome: Minimise impact to the environment through the planned and restricted movement of vehicles on site.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Access to the servitude and tower positions must be negotiated with the relevant landowner and must fall within the assessed and authorised area; - An access agreement must be formalised and signed by the DPM, Contractor and landowner before commencing with the activities; - 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 <i>section 4.9: photographic record</i>; 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
<ul style="list-style-type: none"> - Use existing gates provided to gain access to all parts of the area authorised for development, where possible; - Existing and new gates to be recorded and documented in accordance with <i>section 4.9: photographic record</i>; - 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; 						

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Impact management outcome: Minimise impact to the environment and ensure safe and controlled access to the site through the erection of fencing and gates where required.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - 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. 						

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5.6. Water Supply Management

Impact management outcome: Undertake responsible water usage.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All abstraction points or bore holes must be registered with the DWS and suitable water meters installed to ensure that the abstracted volumes are measured on a daily basis; - The Contractor must ensure the following: <ul style="list-style-type: none"> a. The vehicle abstracting water from a river does not enter or cross it and does not operate from within the river; b. No damage occurs to the river bed or banks and that the abstraction of water does not entail stream diversion activities; and c. All reasonable measures to limit pollution or sedimentation of the downstream watercourse are implemented. - Ensure water conservation is being practiced by: <ul style="list-style-type: none"> a. Minimising water use during cleaning of equipment; b. Undertaking regular audits of water systems; and c. Including a discussion on water usage and conservation during environmental awareness training. d. The use of grey water is encouraged. 						

5.7. Storm and waste water management

Impact management outcome: Impacts to the environment caused by storm water and wastewater discharges during construction are avoided.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Runoff from the cement/ concrete batching areas must be strictly controlled, and contaminated water must be collected, stored and either treated or disposed of off-site, at a location approved by the project manager; - All spillage of oil onto concrete surfaces must be controlled by the use of an approved absorbent material and the used absorbent material disposed of at an appropriate waste disposal facility; - Natural storm water runoff not contaminated during the development and clean water can be discharged directly to watercourses and water bodies, subject to the Project Manager's approval and support by the ECO; - Water that has been contaminated with suspended solids, 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 						

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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
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
<ul style="list-style-type: none"> - All measures regarding waste management must be undertaken using an integrated waste management approach; - Sufficient, covered waste collection bins (scavenger and weatherproof) must be provided; - A suitably positioned and clearly demarcated waste collection site must be identified and provided; - The waste collection site must be maintained in a clean and orderly manner; - Waste must be segregated into separate bins and clearly marked for each waste type for recycling and safe disposal; - Staff must be trained in waste segregation; - Bins must be emptied regularly; - General waste produced onsite must be disposed of at registered waste disposal sites/ recycling company; - Hazardous waste must be disposed of at a registered waste disposal site; - Certificates of safe disposal for general, hazardous and recycled waste must be maintained. 						

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5.9. Protection of watercourses and estuaries

Impact management outcome: Pollution and contamination of the watercourse environment and or estuary erosion are prevented.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All watercourses must be protected from direct or indirect spills of pollutants such as solid waste, sewage, cement, oils, fuels, chemicals, aggregate tailings, wash and contaminated water or organic material resulting from the Contractor's activities; - In the event of a spill, prompt action must be taken to clear the polluted or affected areas; - Where possible, no development equipment must traverse any seasonal or permanent wetland - No return flow into the estuaries must be allowed and no disturbance of the Estuarine Functional Zone should occur; - Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to tower position is available; - There must not be any impact on the long term morphological dynamics of watercourses or estuaries; - Existing crossing points must be favored over the creation of new crossings (including temporary access) - When working in or near any watercourse or estuary, the following environmental controls and consideration must be taken: <ul style="list-style-type: none"> a) Water levels during the period of construction; 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. 						

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5.10. Vegetation clearing

Impact management outcome: Vegetation clearing is restricted to the authorised development footprint of the proposed infrastructure.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>General:</p> <ul style="list-style-type: none"> - Indigenous vegetation which does not interfere with the development must be left undisturbed; - Protected or endangered species may occur on or near the development site. Special care should be taken not to damage such species; - Search, rescue and replanting of all protected and endangered species likely to be damaged during project development must be identified by the relevant specialist and completed prior to any development or clearing; - Permits for removal must be obtained from the Department of Agriculture, Forestry and Fisheries prior to the cutting or clearing of the affected species, and they must be filed; - The Environmental Audit Report must confirm that all identified species have been rescued and replanted and that the location of replanting is compliant with conditions of approvals; - Trees felled due to construction must be documented and form part of the Environmental Audit Report; - Rivers and watercourses must be kept clear of felled trees, vegetation cuttings and debris; - Only a registered pest control operator may apply herbicides on a commercial basis and commercial application must be carried out under the supervision of a registered pest control operator, supervision of a registered 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 <i>Section 5.3: Access restricted areas</i>. <p>Servitude:</p> <ul style="list-style-type: none"> - Vegetation that does not grow high enough to cause interference with overhead transmission and distribution infrastructures, or cause a fire hazard to any plantation, must not be cut or trimmed unless it is growing in the road access area, and then only at the discretion of the Project Manager; - Where clearing for access purposes is essential, the maximum width to be cleared within the servitude must be in accordance to distance as agreed between the land owner and the EA holder - Alien invasive vegetation must be removed according to a plan (in line with relevant municipal and provincial procedures, guidelines and recommendations) and disposed of at a recognised waste disposal facility; 						

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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
<ul style="list-style-type: none"> - 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
<ul style="list-style-type: none"> - No interference with livestock must occur without the landowner’s written consent and with the landowner or a person representing the landowner being present; - The breeding sites of raptors and other wild birds species must be taken into consideration during the planning of the development programme; - Breeding sites must be kept intact and disturbance to breeding birds must be avoided. Special care must be taken where nestlings or fledglings are present; - Nesting sites on existing parallel lines must be documented; - Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds; - Bird guards and diverters must be installed on the new line as per the recommendations of the specialist; - No poaching must be tolerated under any circumstances. All animal dens in close proximity to the works areas must be marked as Access restricted areas; - No deliberate or intentional killing of fauna is allowed; - In areas where snakes are abundant, snake deterrents to be deployed on the pylons to prevent snakes climbing up, being electrocuted and causing power outages; and - No Threatened or Protected species (ToPs) and/or protected fauna as listed according NEMBA (Act No. 10 of 2004) and relevant provincial ordinances may be removed and/or relocated without appropriate authorisations/permits. 						

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5.12. Protection of heritage resources

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

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5.13. Safety of the public

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

5.14. Sanitation

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

5.15. Prevention of disease

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

5.16. Emergency procedures

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

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5.17. Hazardous substances

Impact management outcome: Safe storage, handling, use and disposal of hazardous substances.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives 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 refueling unit must be used. Appropriate ground protection such as drip trays must be used; 						

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Impact management outcome: Safe storage, handling, use and disposal of hazardous substances.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - 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 <i>Section 5.7</i> for procedures concerning <i>storm and waste water management</i> and <i>5.8</i> for <i>solid and hazardous waste management</i>. 						

5.18. Workshop, equipment maintenance and storage

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

5.19. Batching plants

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Impact management outcome: Minimise spillages and contamination of soil, surface water and groundwater.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Concrete mixing must be carried out on an impermeable surface; - Batching plants areas must be fitted with a containment facility for the collection of cement laden water. - Dirty water from the batching plant must be contained to prevent soil and groundwater contamination - Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains; - A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted; - Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility; - Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site; - Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to <i>Section 5.20: Dust emissions</i>) - 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 <i>Section 5.5: Fencing and gate installation</i>. 						

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5.20. Dust emissions

Impact management outcome: Dust prevention measures are applied to minimise the generation of dust.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO; - Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces must be re- vegetated or stabilised as soon as is practically possible; - Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present; - During high wind conditions, the ECO must evaluate the situation and make recommendations as to whether dust-damping measures are adequate, or whether working will cease altogether until the wind speed drops to an acceptable level; - Where possible, soil stockpiles must be located in sheltered 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
<ul style="list-style-type: none"> - Any blasting activity must be conducted by a suitably licensed blasting contractor; and - Notification of surrounding landowners, emergency services site personnel of blasting activity 24 hours prior to such activity taking place on Site. 						

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5.22. Noise

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

5.23. Fire prevention

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

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5.24. Stockpiling and stockpile areas

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

5.25. Finalising tower positions

Impact management outcome: No environmental degradation occurs as a result of the survey and pegging operations.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - No vegetation clearing must occur during survey and pegging operations; - No new access roads must be developed to facilitate access for survey and pegging purposes; - Project manager, botanical specialist and contractor to agree on final tower positions based on survey within assessed and approved areas; - The surveyor is to demarcate (peg) access roads/tracks in consultation with ECO. No deviations will be allowed without the prior written consent from the ECO. 						

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5.26. Excavation and Installation of foundations

Impact management outcome: No environmental degradation occurs as a result of excavation or installation of foundations.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All excess spoil generated during foundation excavation must be disposed of in an appropriate manner and at a recognised disposal site, if not used for backfilling purposes; - Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes; - Management of equipment for excavation purposes must be undertaken in accordance with <i>Section 5.18: Workshop equipment maintenance and storage</i>; and - Hazardous substances spills from equipment must be managed in accordance with <i>Section 5.17: Hazardous substances</i>. - Batching of cement to be undertaken in accordance with <i>Section 5.19 : Batching plants</i>; - Residual cement must be disposed of in accordance with <i>Section 5.8: Solid and hazardous waste management</i>. 						

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
<ul style="list-style-type: none"> - Prior to erection, assembled towers and tower sections must be stored on elevated surface (suggest wooden blocks) to minimise damage to the underlying vegetation; - In sensitive areas, tower assembly must take place off-site or away from sensitive positions; - The crane used for tower assembly must be operated in a manner which minimises impact to the environment; - The number of crane trips to each site must be minimised; - Wheeled cranes must be utilised in preference to tracked cranes; - Consideration must be given to erecting towers by helicopter or by hand where it is warranted to limit the extent of environmental impact; - Access to tower positions to be undertaken in accordance with access requirements in specified in <i>Section 8.4: Access Roads</i>; - Vegetation clearance to be undertaken in accordance with general vegetation clearance requirements specified in <i>Section 8.10: Vegetation clearing</i>; - No levelling at tower sites must be permitted unless approved by the Development Project Manager or Developer Site Supervisor; 						

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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
<ul style="list-style-type: none"> - Topsoil must be removed separately from subsoil material and stored for later use during rehabilitation of such tower sites; - Topsoil must be stored in heaps not higher than 1m to prevent destruction of the seed bank within the topsoil; - Excavated slopes must be no greater than 1:3, but where this is unavoidable, appropriate measures must be undertaken to stabilise the slopes; - Fly rock from blasting activity must be minimised and any pieces greater than 150 mm falling beyond the Working Area, must be collected and removed; - Only existing disturbed areas are utilised as spoil areas; - Drainage is provided to control groundwater exit gradient with the spill areas such that migration of fines is kept to a minimum; - Surface water runoff is appropriately channeled through or around spoil areas; - During backfilling operations, care must be taken not to dump the topsoil at the bottom of the foundation and then put spoil on top of that; - The surface of the spoil is appropriately rehabilitated in 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
<ul style="list-style-type: none"> - Where possible, previously disturbed areas must be used for the siting of winch and tensioner stations. In all other instances, the siting of the winch and tensioner must avoid Access restricted areas and other sensitive areas; - The winch and tensioner station must be equipped with drip trays in order to contain any fuel, hydraulic fuel or oil spills and leaks; - Refueling of the winch and tensioner stations must be undertaken in accordance with Section 5.17: Hazardous substances; - 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". 						

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

5.30. Temporary closure of site

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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
<ul style="list-style-type: none"> - Bunds must be emptied (where applicable) and need to be undertaken in accordance with the impact management actions included in <i>sections 5.17: management of hazardous substances</i> and <i>5.18 workshop, equipment maintenance and storage</i>; - 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. 						

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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
<ul style="list-style-type: none"> - All areas disturbed by construction activities must be subject to landscaping and rehabilitation; All spoil and waste must be disposed to a registered waste site and certificates of disposal provided; - All slopes must be assessed for contouring, and to contour only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983 - All slopes must be assessed for terracing, and to terrace only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983; - Berms that have been created must have a slope of 1:4 and be replanted with indigenous species and grasses that approximates the original condition; - Where new access roads have crossed cultivated farmlands, that lands must be rehabilitated by ripping which must be agreed to by the holder of the EA and the landowners; - Rehabilitation of tower sites and access roads outside of farmland; - Indigenous species must be used for with species and/grasses to where it compliments or approximates the original condition; - Stockpiled topsoil must be used for rehabilitation (refer to Section 5.24: <i>Stockpiling and stockpiled areas</i>); - Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion; - Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed; - Subsoil must be ripped before topsoil is placed; - The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment; - Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled ; - Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; - Spoil can be used for backfilling or landscaping as long as it is covered by a minimum of 150 mm of topsoil. - Where required, re-vegetation including hydro-seeding can be enhanced using a vegetation seed mixture as described below. A mixture of seed can be used provided the mixture is carefully selected to ensure the following: <ul style="list-style-type: none"> a) Annual and perennial plants are chosen; b) Pioneer species are included; 						

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Impact management outcome: Areas disturbed during the development phase are returned to a state that approximates the original condition.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
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.

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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 contractor and the holder of the EA. This template, once signed and dated, is legally binding. The holder of the EA will remain responsible for its implementation.

5.1. Environmental awareness training

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

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Impact management outcome: All onsite staff are aware and understands the individual responsibilities in terms of this EMPr.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> e) Procedures to be followed when working near or within sensitive areas; f) Wastewater management procedures; g) Water usage and conservation; h) Solid waste management procedures; i) Sanitation procedures; j) Fire prevention; and k) Disease prevention. <ul style="list-style-type: none"> – A record of all environmental awareness training courses undertaken as part of the EMPr must be available; – Educate workers on the dangers of open and/or unattended fires; – A staff attendance register of all staff to have received environmental awareness training must be available. – Course material must be available and presented in appropriate languages that all staff can understand. 						

5.2. Site Establishment development

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

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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
– The use of existing accommodation for contractor staff, where possible, is encouraged.						

5.3. Access restricted areas

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

5.4. Access roads

Impact management outcome: Minimise impact to the environment through the planned and restricted movement of vehicles on site.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – An access agreement must be formalised and signed by the DPM, Contractor and landowner before commencing with the activities; – All private roads used for access to the servitude must be maintained and upon completion of the works, be left in at least the original condition – All contractors must be made aware of all these access routes. – 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; 						

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Impact management outcome: Minimise impact to the environment through the planned and restricted movement of vehicles on site.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Access 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
<ul style="list-style-type: none"> – Use existing gates provided to gain access to all parts of the area authorised for development, where possible; – Existing and new gates to be recorded and documented in accordance with section 4.9: photographic record; – All gates must be fitted with locks and be kept locked at all times during the development phase, unless otherwise agreed with the landowner; – At points where the line crosses a fence in which there is no suitable gate within the extent of the line servitude, on the instruction of the DPM, a gate must be installed at the approval of the landowner; – Care must be taken that the gates must be so erected that there is a gap of no more than 100 mm between the bottom of the gate and the ground; – Where gates are installed in jackal proof fencing, a suitable reinforced concrete sill must be provided beneath the gate; – Original tension must be maintained in the fence wires; – All gates installed in electrified fencing must be re-electrified; – All demarcation fencing and barriers must be maintained in good working order for the duration of the development activities; – Fencing must be erected around the camp, batching plants, hazardous storage areas, and all designated access restricted areas, where applicable; – Any temporary fencing to restrict the movement of life-stock must only be erected with the permission of the land owner. – All fencing must be developed of high quality material bearing the SABS mark; – The use of razor wire as fencing must be avoided; – Fenced areas with gate access must remain locked after hours, during weekends and on holidays if staff is away from site. Site security will be required at all times; – On completion of the development phase all temporary fences are to be removed; – The contractor must ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but rather removed completely. 						

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5.6. Water Supply Management

Impact management outcome: Undertake responsible water usage.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All abstraction points or bore holes must be registered with the DWS and suitable water meters installed to ensure that the abstracted volumes are measured on a daily basis; - The Contractor must ensure the following: <ul style="list-style-type: none"> a. The vehicle abstracting water from a river does not enter or cross it and does not operate from within the river; b. No damage occurs to the river bed or banks and that the abstraction of water does not entail stream diversion activities; and c. All reasonable measures to limit pollution or sedimentation of the downstream watercourse are implemented. - Ensure water conservation is being practiced by: <ul style="list-style-type: none"> a. Minimising water use during cleaning of equipment; b. Undertaking regular audits of water systems; and c. Including a discussion on water usage and conservation during environmental awareness training. d. The use of grey water is encouraged. 						

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5.7. Storm and waste water management

Impact management outcome: Impacts to the environment caused by storm water and wastewater discharges during construction are avoided.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Runoff from the cement/ concrete batching areas must be strictly controlled, and contaminated water must be collected, stored and either treated or disposed of off-site, at a location approved by the project manager; - All spillage of oil onto concrete surfaces must be controlled by the use of an approved absorbent material and the used absorbent material disposed of at an appropriate waste disposal facility; - Natural storm water runoff not contaminated during the development and clean water can be discharged directly to watercourses and water bodies, subject to the Project Manager's approval and support by the ECO; - Water that has been contaminated with suspended solids, 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
<ul style="list-style-type: none"> - All measures regarding waste management must be undertaken using an integrated waste management approach; - Sufficient, covered waste collection bins (scavenger and weatherproof) must be provided; - A suitably positioned and clearly demarcated waste collection site must be identified and provided; - The waste collection site must be maintained in a clean and orderly manner; - Waste must be segregated into separate bins and clearly marked for each waste type for recycling and safe disposal; - Staff must be trained in waste segregation; - Bins must be emptied regularly; - 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; 						

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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
– 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
<ul style="list-style-type: none"> – All watercourses must be protected from direct or indirect spills of pollutants such as solid waste, sewage, cement, oils, fuels, chemicals, aggregate tailings, wash and contaminated water or organic material resulting from the Contractor’s activities; – In the event of a spill, prompt action must be taken to clear the polluted or affected areas; – Where possible, no development equipment must traverse any seasonal or permanent wetland – No return flow into the estuaries must be allowed and no disturbance of the Estuarine functional Zone should occur; – Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to tower position is available; – There must not be any impact on the long term morphological dynamics of watercourses or estuaries; – Existing crossing points must be favored over the creation of new crossings (including temporary access) – When working in or near any watercourse or estuary, the following environmental controls and consideration must be taken: <ul style="list-style-type: none"> a) Water levels during the period of construction; 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 						

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

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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
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
<ul style="list-style-type: none"> - No interference with livestock must occur without the landowner's written consent and with the landowner or a person representing the landowner being present; - The breeding sites of raptors and other wild birds species must be taken into consideration during the planning of the development programme; - Breeding sites must be kept intact and disturbance to breeding birds must be avoided. Special care must be taken where nestlings or fledglings are present; - Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds; - No poaching must be tolerated under any circumstances. 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. 						

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5.12. Protection of heritage resources

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

5.13. Safety of the public

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

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5.14. Sanitation

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

5.15. Prevention of disease

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

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5.16. Emergency procedures

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

5.17. Hazardous substances

Impact management outcome: Safe storage, handling, use and disposal of hazardous substances.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives 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 banded. The banded area must be of sufficient capacity to contain a spill / leak from the stored containers; - Banded 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; 						

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Impact management outcome: Safe storage, handling, use and disposal of hazardous substances.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - The 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 in a central location and disposed of according to the National Environmental Management: Waste Act 59 of 2008. Refer to <i>Section 5.7</i> for procedures concerning <i>storm and waste water management</i> and <i>5.8</i> for <i>solid and hazardous waste management</i>. 						

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

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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: DRAFT BASIC ASSESSMENT REPORT

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

Impact management outcome: Minimise spillages and contamination of soil, surface water and groundwater.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Concrete mixing must be carried out on an impermeable surface; - Batching plants areas must be fitted with a containment facility for the collection of cement laden water. - Dirty water from the batching plant must be contained to prevent soil and groundwater contamination - Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains; - A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted; - Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility; - Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site; - Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to Section 5.20: Dust emissions) - Any excess sand, stone and cement must be removed or 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
<ul style="list-style-type: none"> - Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO; - Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces must be re- vegetated or stabilised as soon as is practically possible; - Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present; - During high wind conditions, the ECO must evaluate the situation and make recommendations as to whether dust-damping measures are adequate, or whether working will cease altogether until the wind speed drops to an acceptable level; - Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind; 						

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Impact management outcome: Dust prevention measures are applied to minimise the generation of dust.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - 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
<ul style="list-style-type: none"> - Any blasting activity must be conducted by a suitably licensed blasting contractor; and - Notification of surrounding landowners, emergency services site personnel of blasting activity 24 hours prior to such activity taking place on Site. 						

5.22. Noise

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

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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
must be ensured that development activities must still meet the impact management outcome related to noise management.						

5.23. Fire prevention

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

5.24. Stockpiling and stockpile areas

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

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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
<ul style="list-style-type: none"> - Where terracing is required, topsoil must be collected and retained for the purpose of re-use later to rehabilitate disturbed areas not covered by yard stone; - Areas to be rehabilitated include terrace embankments and areas outside the high voltage yards; - Where required, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled; - These areas can be stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; - Rehabilitation of the disturbed areas must be managed in accordance with Section 5.35: Landscaping and rehabilitation; - All excess spoil generated during terracing activities must be disposed of in an appropriate manner and at a recognised landfill site; and - Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes. 						

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5.26. Excavation of foundation, cable trenching and drainage systems

Impact management outcome: No environmental degradation occurs as a result of excavation of foundation, cable trenching and drainage systems.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All excess spoil generated during foundation excavation must be disposed of in an appropriate manner and at a licensed landfill site, if not used for backfilling purposes; - Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes; - Management of equipment for excavation purposes must be undertaken in accordance with Section 5.18: Workshop, equipment maintenance and storage; and - Hazardous substances spills from equipment must be managed in accordance with Section 5.17: Hazardous substances. 						

5.27. Installation of foundations, cable trenching and drainage systems

Impact management outcome: No environmental degradation occurs during the installation of foundation, cable trenching and drainage system.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Batching of cement to be undertaken in accordance with Section 5.19: Batching plants; and - Residual solid waste must be disposed of in accordance with Section 5.8: Solid waste and hazardous management. 						

5.28. Installation of equipment (circuit breakers, current Transformers, Isolators, Insulators, surge arresters, voltage transformers, earth switches)

Impact management outcome: No environmental degradation occurs as a result of installation of equipment.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Management of dust must be conducted in accordance with Section 5. 20: Dust emissions; - Management of equipment used for installation must be conducted in accordance with Section 5.18: Workshop, equipment maintenance and storage; - Management hazardous substances and any associated spills must be conducted in accordance with Section 5.17: Hazardous substances; and 						

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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
– Residual solid waste must be recycled or disposed of in accordance with Section 5.8: Solid waste and hazardous management.						

5.29. Steelwork Assembly and Erection

Impact management outcome: No environmental degradation occurs as a result of steelwork assembly and erection.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – During assembly, care must be taken to ensure that no wasted/unused materials are left on site e.g. bolts and nuts – Emergency repairs due to breakages of equipment must be managed in accordance with Section 5.18: Workshop, equipment maintenance and storage and Section 5.16: Emergency procedures. 						

5.30. Cabling and Stringing

Impact management outcome: No environmental degradation occurs as a result of stringing.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – Residual solid waste (off cuts etc.) shall be recycled or disposed of in accordance with Section 6.8: Solid waste and hazardous Management; – Management of equipment used for installation shall be conducted in accordance with Section 5.18: Workshop, equipment maintenance and storage; – Management hazardous substances and any associated spills shall be conducted in accordance with Section 5.17: Hazardous substances. 						

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5.31. Testing and Commissioning (all equipment testing, earthing system, system integration)

Impact management outcome: No environmental degradation occurs as a result of Testing and Commissioning.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– Residual solid waste must be recycled or disposed of in accordance with Section 5.8: Solid waste and hazardous management.						

5.32. Socio-economic

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

5.33. Temporary closure of site

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
<ul style="list-style-type: none"> – Bunds must be emptied (where applicable) and need to be undertaken in accordance with the impact management actions included in sections 5.17: Hazardous substances and 5.18: Workshop, equipment maintenance and storage; – Hazardous storage areas must be well ventilated; – Fire extinguishers must be serviced and accessible. Service records to be filed and audited at last service; – Emergency and contact details displayed must be displayed; – Security personnel must be briefed and have the facilities to contact or be contacted by relevant management and emergency personnel; 						

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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
<ul style="list-style-type: none"> - Night hazards such as reflectors, lighting, traffic signage etc. must have been checked; - Fire hazards identified and the local authority must have been notified of any potential threats e.g. large brush stockpiles, fuels etc.; - Structures vulnerable to high winds must be secured; - Wind and dust mitigation must be implemented; - Cement and materials stores must have been secured; - Toilets must have been emptied and secured; - Refuse bins must have been emptied and secured; - Drip trays must have been emptied and secured. 						

5.34. Dismantling of old equipment

Impact management outcome: Impact to the environment to be minimised during the dismantling, storage and disposal of old equipment commissioning.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All old equipment removed during the project must be stored in such a way as to prevent pollution of the environment; - Oil containing equipment must be stored to prevent leaking or be stored on drip trays; - All scrap steel must be stacked neatly and any disused and broken insulators must be stored in containers; - Once material has been scrapped and the contract has been placed for removal, the disposal Contractor must ensure that any equipment containing pollution causing substances is dismantled and transported in such a way as to prevent spillage and pollution of the environment; - The Contractor must also be equipped to contain and clean up any pollution causing spills; and - Disposal of unusable material must be at a licensed waste disposal site. 						

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5.35. Landscaping and rehabilitation

Impact management outcome: Areas disturbed during the development phase are returned to a state that approximates the original condition.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - All areas disturbed by construction activities must be subject to landscaping and rehabilitation; All spoil and waste must be disposed of to a registered waste site; - All slopes must be assessed for contouring, and to contour only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983 - All slopes must be assessed for terracing, and to terrace only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983; - Berms that have been created must have a slope of 1:4 and be replanted with indigenous species and grasses that approximates the original condition; - Where new access roads have crossed cultivated farmlands, that lands must be rehabilitated by ripping which must be agreed to by the holder of the EA and the landowners; - Rehabilitation of access roads outside of farmland; - Indigenous species must be used for with species and/grasses to where it compliments or approximates the original condition; - Stockpiled topsoil must be used for rehabilitation (refer to Section 5.24: Stockpiling and stockpiled areas); - Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion; - Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed; - Subsoil must be ripped before topsoil is placed; - The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment; - Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled; - Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; - Spoil can be used for backfilling or landscaping as long as it is covered by a minimum of 150 mm of topsoil. - Where required, re-vegetation including hydro-seeding can be enhanced using a vegetation seed mixture as described below. A mixture of seed can be used provided the mixture is carefully selected to ensure the following: <ul style="list-style-type: none"> a) Annual and perennial plants are chosen; b) Pioneer species are included; 						

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Impact management outcome: Areas disturbed during the development phase are returned to a state that approximates the original condition.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
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.

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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).

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- 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 Kleinsee 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 Sutherland 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 Kleinsee in the Northern Cape	Project Leader and EAP	ENERTRAG South Africa (Pty) Ltd
2019	BA for the proposed Komass wind farm near Kleinsee 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 Kleinsee in the Northern Cape	Project Leader and EAP	ENERTRAG South Africa (Pty) Ltd
2019	BA for the proposed electrical infrastructure for the Komass wind farm near Kleinsee 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 Kleinsee in the Northern Cape	Project Leader and EAP	juwi Renewable Energies (Pty) Ltd
2018	BA for the proposed electrical infrastructure to support the proposed Kap Vley Wind Energy Facility near Kleinsee 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	Basic Assessment for the erection of two wind monitoring	Project Manager	Windcurrent (Pty) Ltd

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Completion Date	Project description	Role	Client
(complete)	masts near Jeffrey's Bay in the Eastern Cape		
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 (<i>Panthera leo</i>)	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

	<i>Speaking</i>	<i>Reading</i>	<i>Writing</i>
Afrikaans	Excellent	Excellent	Excellent
English	Excellent	Excellent	Excellent

MLevendal

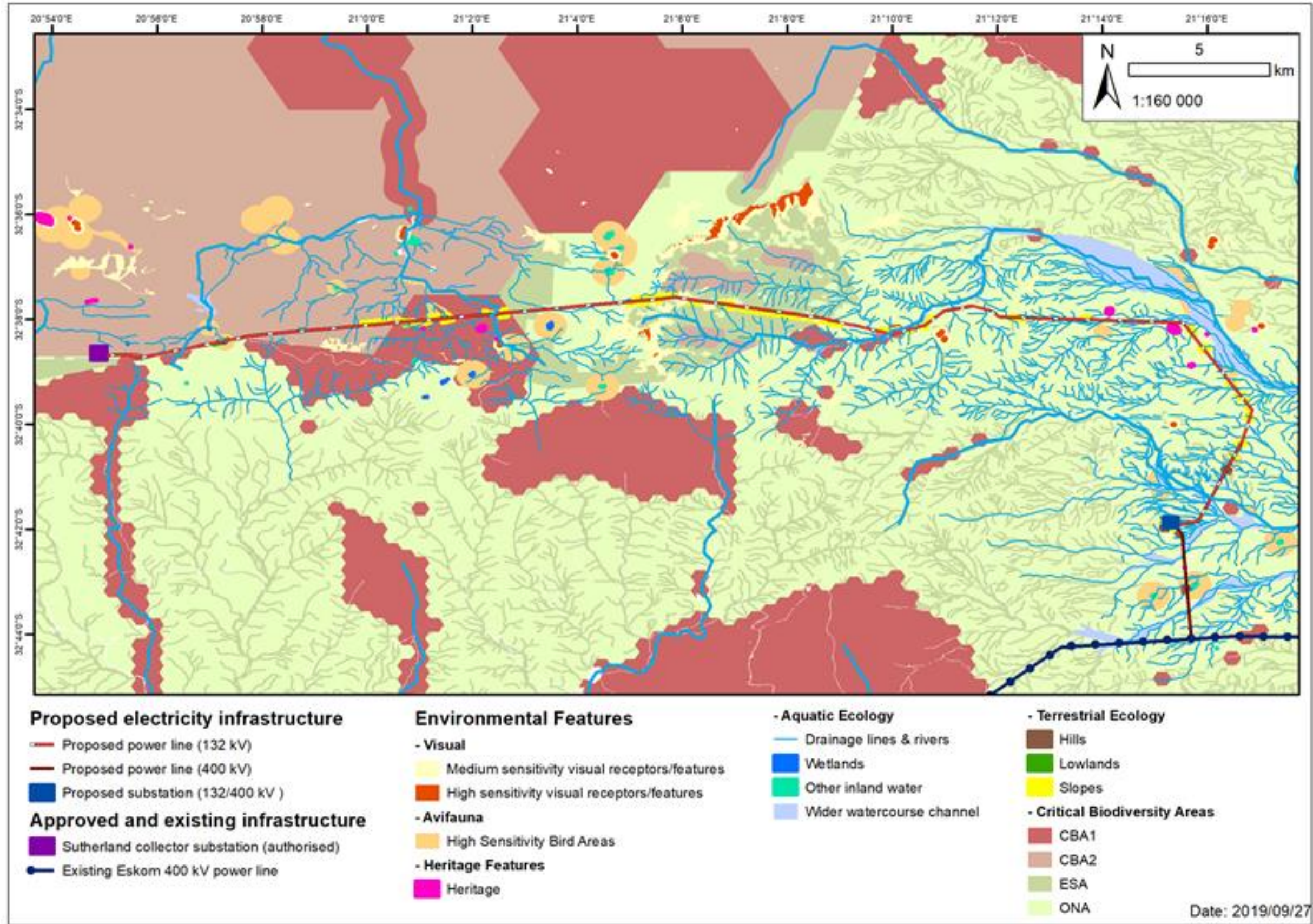
Minnelise Levendal
September 2019

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