2016

DRAFT CONSTRUCTION AND OPERATION ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE PROPOSED ESKOM JUNO - GROMIS 400kV TRANSMISSION LINE IN THE NORTHERN AND WESTERN CAPE PROVINCES

Ref: 12/12/20/720

OCTOBER 2016

NSOVO ENVIRONMENTAL CONSULTING

DOCUMENT CONTROL

DRAFT CONSTRUCTION AND OPERATION ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE PROPOSED ESKOM JUNO - GROMIS 400kV TRANSMISSION LINE IN THE NORTHERN AND WESTERN CAPE PROVINCES.

Quality Control		
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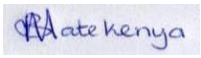
Construction Environmental Management Programme	B. Matekenya  _____	M. Rikhotso  _____

Authorisation
 Munyadziwa Rikhotso 20 October 2016 Full Names:_____ Date: _____Signature_____

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ACRONYMS	
CARA	Conservation of Agricultural Resources Act (Act 43 of 1983)
CEO	Contractor Environmental Officer
COEMPr	Construction and Operation Environmental Management Programme
DAFF	Department of Agriculture, Fisheries and Forestry
DEA	Department of Environmental Affairs
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
EA	Environmental Authorisation
ECA	Environment Conservation Act (Act 73 of 1989)
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
HSA	Hazardous Substance Act (Act 15 OF 1973)
HIA	Heritage Impact Assessment
KM	Kilometres
NEMA	National Environmental Management Act (Act 107 of 1998)
NEMWA	National Environmental Management Waste Act (Act 36 of 2008)
NEMAQA	National Environmental Air Quality Act (Act 39 of 2004)
NEMBA	National Environmental Management Biodiversity Act (Act 10 of 2004)
NHRA	National Heritage Resources Act (Act 25 of 1999)
NWA	National Water Act (Act 36 of 1998)
OHSA	Occupational Health and Safety Act (Act of 85 of 1993)
ROD	Record Of Decision
SACNASP	South African Council of Natural Scientist Profession
SAHRA	South African Heritage Resources Agency
TLB	Tractor Loader Backhoe
Tx	Transmission
WULA	Water Use Licence Application

1 INTRODUCTION

The construction of infrastructure can have a major impact on the natural environment. It is therefore imperative that precautions are taken to ensure that environmental degradation is minimised while the project is undertaken. This will take a concerted effort from the project team and proper planning is of utmost importance.

Nsovo Environmental Consulting has been appointed by Eskom Holdings SOC Limited (hereafter Eskom) to compile a Construction and Operational Environmental Management Programme (COEMPr) which will be a guideline for the mitigation and management measures to be implemented during the construction phase of the project as well as during the operational phase. This COEMPr is a living document that guides the day to day activities throughout the lifecycle of the project; it may from time to time, require revisions as may be dictated by the course of construction.

This COEMPr has been compiled in compliance with condition 3.3.3 of the Record of Decision (RoD) (currently known as the Environmental Authorisation) which was issued on the 6th of November 2007 in terms of section 22 (3) Environmental Conservation Act, 1989 (Act 73 of 1989).

The purpose of the COEMPr is to give effect to precautionary measures, which are to be put in place for controlling construction activities. It has been developed to ensure compliance with National legislative and regulatory requirements.

2 DETAILS AND EXPERTISE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

Nsovo is conversant with the definition and general requirements of an Environmental Assessment Practitioner (EAP) as defined in Section 1 of the National Environmental Management Act, 1998 (No 107 of 1998) (NEMA) and Regulation 13 of the Environmental Impact Assessment Regulations promulgated in December 2014. Nsovo is:

- Independent and Objective;
- Has expertise in conducting EIA's;
- Takes into account all relevant factors relating to the application; and
- Provides full disclosure to the applicant and the relevant environmental authority.

Table 1: Details of the EAP

Name of Company	Nsovo Environmental Consulting
Person Responsible	Beatrice Matekenya Cert.Sci.Nat.
Professional Registration	Registered with the South African Council for Natural Scientific Professions (SACNASP).
Postal Address	Postnet Suite 697 Private Bag X29 Gallo Manor 2052
Telephone Number	011 041 3689
Fax Number	086 602 8821
Email	beatrice@nsovo.co.za
Qualifications & Experience	• M.Sc. Environment and Society • B.Sc. Honors Geography and Environmental Studies • **9 years of experience**
Project Related Expertise	In terms of project related expertise the EAP has completed the following projects: • Environmental Impact Assessment for the proposed Eskom Vryheid Network Strengthening in Swellendam Local Municipality. • Environmental Impact Assessment Procedure for the establishment of new filling stations upgrades, knock and rebuild. • Environmental Impact Assessment Process for the establishment of cemeteries at Florence Park. • Basic Assessment for the development of Daveyton Taxi Rank in Ekurhuleni Municipality. • Environmental Impact Assessment for the construction of sewer pipeline and sewage treatment works at Brandvlei. • Environmental Control Officer – Kusile Power Station. Monitoring and undertaking audits on the Construction Environmental Management Plan, Record of Decision (RoD), S24g Environmental Authorisation, Waste Permit

	and other licences issued to the project. • Environmental Control Officer – Monitoring compliance with the construction of 88kV Lulamisa Bry-North powerline. • External audit – Environmental compliance audit for Rand water O6 Pipeline from Palmiet pumping station to Klipfontein Resevoir. • External audit – Closure of Rand water Zuikerbosch waste disposal facility. • Environmental Control Officer: Upgrading of Verwoerdburg Substation. Monitoring compliance of the Environmental Authorisation and Environmental Management Plan.

CV attached as Appendix E.

3 PROJECT DESCRIPTION

Most of the electricity supply to the greater Cape area is provided by coal-fired power stations on the Highveld mainly in Mpumalanga Province. As a result, a transmission network from Mpumalanga to the Cape has grown over the years as demand has increased. The proposed development is part of Eskom's new capacity installation programme and is intended to meet the future peak electricity demand. Further, the proposed transmission power line will provide more efficient and uninterrupted electricity to cater for the future growth in the greater Cape region.

Subsequently, to meet the demand, Eskom proposes to construct a 400kV transmission line that will start from Gromis substation and run along a new servitude to connect to the Western Grid at Juno substation near Vredendal. The total distance of the line is approximately 230km.

The aforementioned development triggered listed activities under Schedule 1, GN No. R1182: Activity 1(a) "***The construction, erection and the upgrading of facilities for commercial electricity generation with an output of at least 10 megawatts and infrastructure for bulk supply."*** Therefore a Record of Decision was issued by the Department of Environmental Affairs on 6 November 2007 in terms of section 22 (3) Environmental Conservation Act, (Act 73 of 1989). **For the purpose of this COEMPr the RoD will hereafter be referred to as the Environmental Authorisation (EA).**

3.1 DESCRIPTION OF LOCALITY

The proposed project will traverse various farms and the local municipalities which will be affected include Richtersveld, Nama Khoi, Hantam and Kamiesberg in the Northern Cape and Matzikama in the Western Cape Province of South Africa. The closest towns to the power line corridor are Springbok, Kleinsee, Kamieskroon, Koiingnaas, Garies, Hondeklipbaai, Bitterfontein, Nuwerus and Lutzville. The proposed line will require approximately 55 meter servitude.

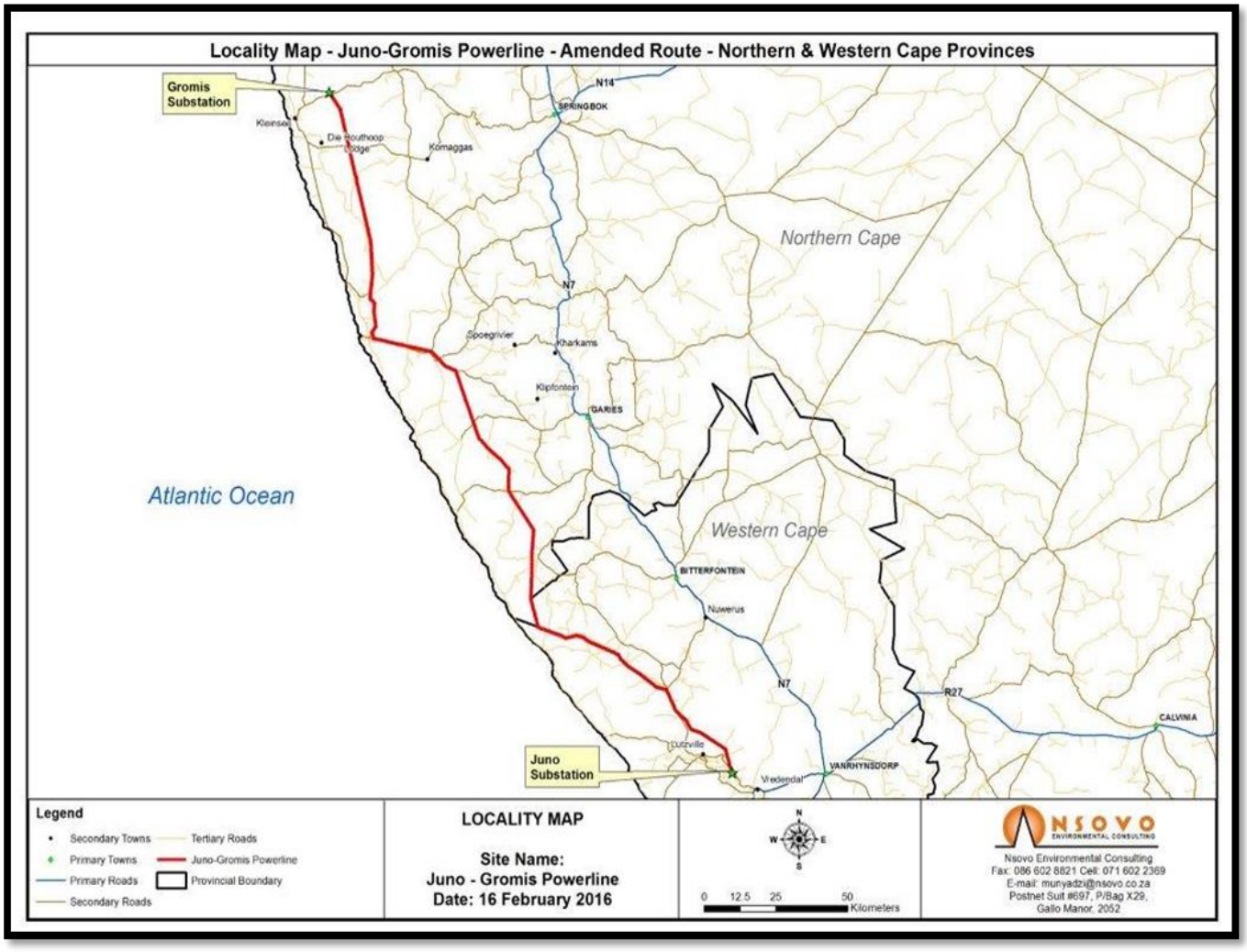


Figure 1: Locality Map - Juno-Gromis 400kV Transmission Line

Locality and sensitivity maps have been attached as Appendix A.

4 PURPOSE AND SCOPE OF THE CONSTRUCTION AND OPERATION EMPR

The COEMPr sets out general environmental specifications, which are applicable to the construction activities associated with the proposed project. This document serves as a guideline for the management of the site and provides specifications and

regulations that must in all instances be adhered to. It is the responsibility of all parties, including Contractors and sub-contractors, involved in the project to commit themselves to the implementation of the Construction and Operation EMPr in all phases of the project.

The objectives of the COEMPr are to:

- Ensure that the activity is undertaken in compliance with all statutory and regulatory requirements;
- Ensure that Eskom Transmission's Environmental Policy, TRMPBAAX3 Rev 3, is underwritten at all times;
- All Landowner special conditions are identified and taken into consideration as the proposed project is located within private properties;
- Ensure that all environmental conditions stipulated in the EA are implemented;
- Detail mitigation measures, time-frames and criteria for assessing the success or failure of each measure;
- Provide detailed monitoring programmes to ensure compliance;
- Provide input and strategies for environmental quality control and risk management;
- To preserve the natural environment by limiting destructive actions on site;
- Ensure appropriate restoration of areas affected by construction; and
- Prevent long term environmental degradation.

5 GENERAL ENVIRONMENTAL GUIDELINES FOR THE CONSTRUCTION PHASE

This COEMPr has been compiled in compliance with condition 3.3.3 of the EA which was issued on the 6th of November 2007 in terms of section 22 (3) Environmental Conservation Act, 1989 (Act 73 of 1989). In addition, the COEMPr has been compiled in fulfillment with requirements of Section 28 of the National Environmental Management Act, 1998, 1998 (Act 107 of 1998) and is therefore legally binding. This document serves as a guideline for the management of the site by the Authorisation holder (Eskom) and his/her Contractor and subcontractors, in order to minimise adverse environmental impacts. Eskom will be responsible for ensuring compliance of the Contractor with the COEMPr and will rely on the Environmental Control Officer (ECO) to monitor compliance. The Contractor must in turn monitor his employees to ensure compliance with the provisions of the COEMPr.

The main Contractor shall receive a copy of the COEMPr from Eskom on which he / she will be given the opportunity to clear any misconceptions and uncertainties. The COEMPr will form part of the contract and will therefore be a legally binding document. In the event of discrepancy with regard to environmental matters or environmental specifications this document shall take precedence.

6 APPLICABLE LEGISLATION

This list is not intended as an exhaustive analysis of the applicable environmental legislations but provides a guideline to the relevant aspects of each Act.

Table 2: **Legislation pertaining to the proposed project**

Aspect	Relevant Legislation	Brief Description
Environment	National Environmental Management: Act 1998, (Act No. 107 of 1998)	The overarching principles of sound environmental responsibility are reflected in the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), The principles set out in the National Environmental Management Act, 1998 (Act No. 107 of 1998), hereafter, referred to as NEMA, apply to all listed projects. Construction and operation have to be conducted in line with the generally accepted principles of sustainable development, integrating social, economic and environmental factors.
Biodiversity	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	The purpose of the National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) is to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA and the protection of species and ecosystems that warrant national protection. As part of its implementation strategy, the National Spatial Biodiversity Assessment was developed.
Protected Areas	National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)	The purpose of this Act is to provide for the protection, conservation and management of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes.
Heritage Resources	National Heritage Resources Act, 1999 (Act No. 25 of 1999)	The National Heritage Resources Act, 1999 (Act No. 25 of 1999) legislates the necessity for cultural and heritage impact assessment in areas earmarked for development, which exceed 0.5 ha. The Act makes provision for the potential destruction to existing sites, pending the archaeologist's recommendations through permitting procedures. Permits are administered by the South African Heritage Resources Agency (SAHRA).

Aspect	Relevant Legislation	Brief Description
Air quality management and control	National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004)	The object of the Act is to protect the environment by providing reasonable measures for the protection and enhancement of the air quality and to prevent air pollution. Section 32 of The National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004) deals with dust control measures in respect of dust control. Whilst none are promulgated at present, it provides that the Minister or MEC may prescribe measures for the control of dust in specified places or areas, either in general or by specified machinery or in specified instances, the steps to be taken to prevent nuisance by dust or other measures aimed at the control of dust.
Noise Management and Control	Noise Control Regulations in terms of the Environmental Conservation, 1989 (Act 73 of 1989)	The assessment of impacts relating to noise pollution management and control, where appropriate, must form part of the COEMPr. Applicable laws regarding noise management and control refer to the National Noise Control Regulations issued in terms of the Environment Conservation , 1989 (Act 73 of 1989).
Water	National Water Act, 1998 (Act 36 of 1998)	This Act provides for fundamental reform of law relating to water resources and use[1]. The preamble to the Act recognizes that the ultimate aim of water resource management is to achieve sustainable use of water for the benefit of all users and that the protection of the quality of water resources is necessary to ensure sustainability of the nation's water resources in the interests of all water users.
Agricultural Resources	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	The Act aims to provide for control over the utilization of natural agricultural resources in order to promote the conservation of the soil, water resources and vegetation and to combat weeds and invader plants. Section 6 of the Act makes provision for control measures to be applied in order to achieve the objectives of the Act.

Aspect	Relevant Legislation	Brief Description
Human	The Constitution of South Africa, 1996 (Act No. 108 of 1996	The Constitution of South Africa, 1996 (Act No. 108 of 1996) provides for an environmental right (contained in the Bill of Rights, Chapter 2). In terms of Section 7, the state is obliged to respect, promote and fulfill the rights in the Bill of Rights. The environmental right states that: "Everyone has the right - a) To an environment that is not harmful to their health or well-being; and b) To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that - -Prevent pollution and ecological degradation; -Promote conservation; and -Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."

6.1 STANDARD ESKOM POLICIES TO BE COMPLIED WITH

In addition to the approved COEMPr, the EA and other permits and licenses, the construction activities must also comply with the standard Eskom documents listed below. It is the responsibility of all parties involved in the implementation of the COEMPr to ensure that the **most recently updated** Eskom policies/documents are used.

- Standard for bush clearance and the maintenance of overhead power lines (ESKASABG3);
- Eskom Procedure for Vegetation Clearance and Maintenance within overhead Power line Servitude and on Eskom owned Land (EPC 32-247):
- Guidelines for weed eradication at Eskom substations using herbicides (TRR/S.92/034);
- Oil spill clean-up and rehabilitation (ESKAGAAD7):
- Eskom Environmental Waste Management Procedure (EPC 32 – 245):
- Eskom Environmental Liaison Committee (ELC) Performance Indicator Reporting Procedure (EPC 32 -249)
- Transmission Environmental Management System Manual (TMN 41 – 417):
- Transmission Emergency Preparedness and response procedure. In accordance with ISO 14001:2004 clause 4.4.7 (TPC 41 – 460):

- Transmission Environmental Aspects and Management Programmes / Plans requirements procedure (TPC 41 – 213):
- Transmission Environmental Legal, other requirements and evaluation of compliance procedure (TPC 41 -505):
- The Standard for the construction of overhead power lines (TRMSCAAC5):
- Transmission Environmental monitoring and measurement procedure (TPC 41 – 118); and
- Transmission Vegetation Management Guideline (TGL 41 – 334).

6.2 METHOD STATEMENTS FOR THE ACTIVITIES TO BE CARRIED OUT

The following Method Statements (MS) must be prepared and signed by Eskom's construction team, ECO and the Contractor prior to commencement of activities on site:

- Vegetation clearing;
- Fauna and flora management;
- Excavations for construction of substation and installation of pylons;
- Chemical/hazardous substance storage;
- Cement/concrete use;
- Logistics of the environmental awareness training;
- Fire management;
- Emergency Response;
- Storm water and soil erosion management;
- Waste management;
- Access road(s);
- Contaminated water management;
- Site establishment and site layout plan;
- Use of herbicides/pesticides;
- Temporary site closure;
- Site Rehabilitation;
- Blasting;
- Alien plants removal and use of herbicides and pesticides; and
- Dust suppression.

This list has not exhausted all the activities/aspects that may require MS prior to commencement of the work. The ECO may require more MSs to be submitted as the project progresses.

7 PROJECT TEAM

7.1 ROLES AND RESPONSIBILITIES OF THE PROJECT TEAM

7.1.1 Environmental Control Officer

An independent Environmental Control Officer (ECO) must be appointed to assist the Contractor(s) on site regarding environmental matters. The primary role of the ECO is as follows:

- To provide an on-site environmental management service to Eskom to ensure effective implementation of EA, Construction and Operation EMPr and landowner conditions.
- To ensure implementation and compliance with any Eskom site procedures and requirements.
- Be responsible for the planning and management of all environmental activities for this position, but more specifically the following:

7.1.1.1 Communication Services

- To liaise closely with the Eskom and Contractor's Environmental Officer (CEO)
- To ensure that the landowners agreed General and Special Conditions are implemented.
- To negotiate the Access Plan between landowners and Contractor and to ensure its implementation, so as to provide timeous servitude access to the Contractor to carry out its duties with as little interference/objections as possible.
- ECO must identify if any large turning circles are required for large machinery, before this access is negotiated.
- To agree with landowners where gates are to be installed at fence crossings, before the Contractor gains entry to the properties for construction activities.
- To agree with landowners on the bush clearing method.
- To assist the CEO in conflict resolution.
- Measuring and evaluating crop damage and other related claims, resulting from the construction activities, in conjunction with the landowner and submitting the relevant forms to the Project Manager for payment to the landowner (but not where the Contractor was negligent). This to be done equitably and timeously.
- To ensure that the Contractor rehabilitates any damage caused during construction.

- To indicate where bird guards, bird diverters, bird lights and aviation warning spheres are to be installed as specified in the COEMPr, EA conditions and or the line profile.
- After the final rehabilitation has been completed on a property, to obtain the immediate release from the landowner.

7.1.1.2 Environmental Management

- Monitoring of site environmental progress in respect of time, deliverables and quality.
- Liaison between Project Manager, SHEQ/SHE/Environmental Manage, Senior Environmental Advisor, Site Supervisor, CEO, affected and interested parties, authorities and stakeholders on environmental matters.
- Recommending COEMPr modifications to the Project/SHEQ/SHE/Environmental Manager as and when the particular site conditions warrant it.
- Communicating changes of the COEMPr to all relevant parties.
- Maintaining climatic data on an ECO register using Eskom/Contractor EO readings.
- Issuing Contractors Communications and Site Instructions via the Site Supervisor or delegated person as delegated by the Project Manager.
- Monitoring performance of Contractor and sub-contractors to ensure compliance with environmental and statutory requirements.
- Validating the regular site inspection reports prepared by the CEO.
- Checking the CEO's record of environmental incidents (spills, impacts, legal transgressions, etc.) as well as corrective and preventive actions taken.
- Checking the CEO's complaints register in which all complaints are recorded, as well as actions taken.
- Assisting in the resolution of environmental related conflicts.
- Compiling and completing the environmental management related component of the handing-over documentation and any other related documents.
- Timeously identifying any sensitive site issues which may affect environmental aspects and the reporting of this to the Project/SHEQ/SHE/Environmental Manager.
- Monitoring that good housekeeping practices are followed and maintained by the Contractor.
- Monitoring that the ground rehabilitation is initiated on time, complying with the EA, COEMPr and to the satisfaction of the landowner.
- Assisting the Contractor and Eskom EO with the environmental awareness training course to all site staff, targeted at the level of the workers so that they have a basic understanding of the environment that they are working in. The Contractor will provide an interpreter if needed.
- Monitoring that sensitive areas are demarcated within or alongside the construction areas i.e. sites identified in the COEMPr, EA. All personnel are to be informed of such sites and the reason the site is demarcated.

7.1.1.3 Monitoring

- Validating the site environmental monitoring plan.
- Validating the "Punch List/daily pre-warning" and reporting all defects and non-conformances as per the Control of Nonconformity Procedure.
- Carrying out environmental surveillances.
- Validating and recording of certificates proving the legal disposal of waste streams.

7.1.1.4 Reporting

- To complete a daily diary, bi-weekly and monthly (completed by the 24th of each month) reporting to Land and Rights and the Project/SHEQ/SHE/Environmental.
- To prepare monthly monitoring reports to be submitted to the DEA, Environmental Compliance Section.
- Manager on the compliance of the Contractor according to the environmental authorization, environmental management plan and landowner conditions. The reports are to include photographic images of special occurrences taking place during the reporting period.
- To attend site meetings as required.
- To inform Land Development and Management and the Project/SHEQ/SHE/Environmental Manager of any activity that is not in accordance with the EA and respective Conditions, the COEMPr and Landowners' agreed general and special conditions or detrimental to the environment.

7.1.1.5 Administration

- To assure a proper site ECO administration function to cater for all environmental site related correspondence.
- To execute your environmental responsibilities as per Eskom's Risk Management System.
- To promote and maintain sound relationships with landowners, community, contractors and suppliers.

7.1.2 Contractor

- To provide all necessary supervision during the execution of the project. He/ She must be available on site at all times.
- To appoint a competent Contractor Environmental Officer (CEO).
- To implement the projects as per the approved project plan.
- To ensure that implementation is conducted in an environmentally acceptable manner.
- To fulfil all obligations as per the agreed contract.
- To comply with special conditions as stipulated by Landowners during the negotiation process.
- To inform and educate all employees about the environmental risks associated with the different construction activities and lessen significant impacts to the environment.

- Eskom Environmental Representative to implement and integrate environmental management systems by ensuring compliance to ISO 14001 & monitoring performance.
- Report environmental incidents.
- Provides environmental training.
- Ensures compliance with pertinent environmental legislations and other legally binding documents.

7.1.3 Authorising Department

The role of the Authority is to enforce compliance with the EA and the COEMPr.

8 DESCRIPTION OF MITIGATION MEASURES

This section of the COEMPr serves to prescribe mitigation measures to prevent, reduce, eliminate or compensate for impacts, to acceptable/insignificant levels.

9 PRE- CONSTRUCTION MANAGEMENT PROGRAMME

The pre-construction management programme is to be used as a guide during the planning, design and detailing of the development components. This part of the programme is to be referenced by all involved in decision making during the planning and design phases.

9.1 NEGOTIATIONS WITH AFFECTED LANDOWNERS

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
To ensure that landowners are aware of activities taking place within their properties.	• Ensure that all affected landowners are negotiated with prior to construction. • Ensure that landowner special conditions are recorded and implemented.	• Signed landowner consent forms.	Eskom	Prior commencement of construction activities

9.2 COMMISSIONING OF TENDER

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
Ensure that proper environmental conditions are established prior to commencing with construction by informing all parties of appropriate environmental protection measures.	• The successful tendering Contractors will be made aware of the contents of this COEMPr and any penalties arising from noncompliance prior to the commencement of work. • All tendering Contractors will be made aware of the audit and monitoring requirements as stipulated in this COEMPr. • Appoint an Environmental Control Officer (ECO) who will be responsible to monitor compliance to the COEMPr. • Inform the department of the appointment of the ECO and provide the candidate's contact details.	• Signed Declaration by contractor. • Appointment Letter • Proof of submission to DEA.	• Eskom • Contractor	Prior commencement of construction activities

10 CONSTRUCTION MANAGEMENT PROGRAMME

10.1 SITE ESTABLISHMENT

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
To ensure minimal disturbance of the environment during the site establishment.	Construction camps on the site must be established on least sensitive locations preferably within already disturbed areas. After completion of the contract, these areas have to be rehabilitated. **10.1.1 Site Plan:** Documentation for the proposed camp site must be prepared by the Contractor prior to the commencement of construction activities, and must be submitted to Eskom for approval. This documentation must include, but not limited to the following: • Site access (including entry and exit points). • All material and equipment storage areas including storage areas for hazardous substances. • Construction offices and other structures. • Security requirements including temporary and permanent fencing, and lighting. • Solid waste management facilities. • Storm water control measures. • Provision of potable water and mobile chemical ablution facilities. Throughout the period of construction, the Contractor shall restrict all activities to within the designated areas as per the construction layout plan. Any relaxation or modification of the construction layout plan is to be approved by the ECO.	• Observation • Site Plan • Landowner agreements	• ECO • Contractor • CEO	Prior to site establishment

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
	10.1.2 Site Camps: The following restrictions shall be placed on the site camp for the construction staff in general: • The use of water courses for washing of clothes. • The use of welding equipment, oxy-acetylene torches and other bare flames where veld fires can be a hazard. • Collection of firewood. • Poaching of any form. • Use of surrounding veld as toilets. **10.1.3 Vegetation clearing:** • The natural vegetation encountered on site is to be conserved and left intact as much as possible. • Only flora within the construction footprint must be cleared. Clearance must be as per the approved Method statement in line with Eskom policies. • Search and rescue should be done by a Specialist in consultation with the ECO. **10.1.4 Water for human consumption:** Water for human consumption must be available at all times. **10.1.5 Sewage Treatment:** • Given the remoteness of the site, chemical toilets must be supplied (1 per 15 persons) and must be regularly cleaned and maintained by the Contractor. • The Contractor must arrange for regular emptying of toilets and will be entirely responsible for			

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
	enforcing their use and for maintenance. • The ablution facilities must be at least 100m distance from the watercourses and associated buffers. • All ablution facilities must be anchored to prevent them from being toppled by the wind.			

10.2 SENSITIVE ECOLOGY

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• To ensure that the sensitive area is not disturbed. • To ensure minimal or if all possible no disturbance to the vegetation on and around the site.	The proposed power line will encroach on various listed species including; *Leucospermum praemorsum; Lachenalia arenicola*, *Agathosma elata Lachenalia arenicola*, *rubella*, *Leucospermum rodolentum, Muraltia Babiana obovate*, *Diplosoma luckhofii, Aspalathus obtusata, Otholobium venustum*, *Aspalathus obtusata*, *Vanzijlia annulata*, and *Osteospermum nordenstami.* • It is recommended that search and rescue be done on the affected towers and permit applications made to DAFF for removal and relocation. • Construction in high sensitive areas must take place during the dry season (November to May) to minimise impacts on bulbs and annuals. • No laydown areas may be located within identified areas of high ecological sensitivity. • Creation of new access tracks should be minimised in all areas of natural vegetation. • Fitting of bird diverters is strongly recommended in most parts of this route due to the known regular presence of at	• Observation • ECO to monitor • Site plan	Eskom Contractor	Prior to construction

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
	least five threatened bird species. • Point out and/or demarcate all ecologically "sensitive" areas to the contractors (e.g. red data habitats & species, water courses, sensitive soils, sand dunes, steep slopes and areas susceptible to erosion). • Demarcate and create a DWS approved buffer for the area near the wetlands and consider it a no-go area. • Ensure that 'No-Go' areas are clearly demarcated and/or fenced before construction starts. Barriers are to be maintained in good order throughout the course of the construction.			

10.3 MATERIALS HANDLING, USE AND STORAGE

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• To ensure safe handling, storage use and disposal of hazardous substances. • To ensure full compliance with the requirements of the applicable legislation.	The Contractor's management and maintenance of plant and machinery will be strictly monitored according to the criteria given below: **10.3.1 Safety:** • All the necessary handling and safety equipment required for the safe use of hydrocarbons shall be provided by the Contractor to be used and/or worn by the staff. • The Contractor must comply with the Occupational Health and Safety Act (Act 85 of 1993) and Construction Regulations, 2003 as this governs what the Contractor must do and provide for his staff. **10.3.2 Hazardous Material Storage:**	• Observation • Incident Report	ECO & Contractor CEO	Continuous throughout the construction phase

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
	• Hydrocarbons and hazardous substances will only be stored under controlled conditions. • All hazardous materials will be stored in a secured, designated area with restricted entry. • Storage of hazardous products will only be in suitable containers. The containers must indicate the nature of the stored materials and Material Safety Data Sheets (MSDS). **10.3.3 Fuels and Gas Storage:** • Fuel must be stored in a steel tank supplied and maintained by the Contractor according to safety procedures. • The tanks/ bowsers shall be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining shall extend to the crest of the bund and the volume inside the bund shall be 110% of the total capacity of all the storage tanks/ bowsers. • Gas welding cylinders and LPG cylinders must be stored in a secure, well-ventilated area. The Contractor must supply sufficient fire fighting equipment in the event of an accident and strictly no smoking will be allowed where fuel is stored and used.			

10.4 CONSTRUCTION AND OPERATION EMPR TRAINING

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
To ensure that all site personnel have basic level of environmental awareness training.	• The CEO shall arrange for Environmental Awareness Training programs for all personnel on site. • The training must include the content of the COEMPr and the CEO must sensitise the team on the importance of compliance. • Weekly toolbox talks must be undertaken by the CEO.	• Signed training attendance Register • Declaration of good conduct signed by all site personnel	• CEO	Prior construction and to continue throughout construction through toolbox talks.

10.5 WATER SUPPLY

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• To ensure availability of water for various uses as and when required. • To ensure that water usage is minimised. • To conserve water resources at all times. • To encourage a 3R (Reduce, Reuse, Recycle)	• The Contractor must ensure that all water sources are authorised and proof of such must be presented to the ECO. • Contractor must ensure absolute conservation of water throughout construction. • If possible grey water must be used for dust suppression. • Contractor must supply portable water for human consumption at all times.	Water consumption record	ECO Contractor	Ongoing during the construction phase

10.6 VEHICULAR ACCESS AND MOVEMENT OF CONSTRUCTION VEHICLES

Possible Impact	Objective	Applicable Legislation /Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Damage to protected /endangered vegetation. • Damage to sensitive areas. • Erosion and loss of topsoil.	• To prevent ecological damage. • Minimise damage to the identified watercourses. • Minimise erosion of embankments and subsequent siltation of watercourses.	• CARA • NEMBA • NWA	• A physical access Method Statement along the servitude shall be compiled by the Contractor and approved by the ECO. • Access roads will be maintained by the Contractor. The Contractor will erect and maintain marker pegs along the boundaries of the working areas, access roads, haul roads or paths before commencing any other work. If proved insufficient for control, these will be replaced. Ensure that access roads to the site are of a suitable quality to eliminate soil erosion and channel storm water. • No illegal use of private roads during construction. • The Contractor shall sign post the access roads to the tower positions, immediately after the access has been negotiated. • No roads shall cut through water courses as this may lead to erosion	• Access plan approved by the ECO • No complaints from landowners. • No access roads through wetlands • No visible erosion scars once construction is completed • Erosion is not evident on slopes. • Use of designated access roads • No complaints from the	• Photographic record of private roads prior to the Contractor using the roads. Site plan • Regular monitoring of access roads conditions • Monitoring of impacts into the surrounding areas	ECO & Contractor CEO	Continuous during the construction phase

			causing siltation of streams. • All negotiated existing private access roads used for construction purposes shall be maintained at all times to ensure that the land owners have free and easy access to and from their properties. • Where new roads are required, the disturbance area should be kept minimal (A two track dirt road will be the most preferred option). • The Contractor must not construct a road with a reserve wider than 13, 5 metres, or where no reserve exists where the road is wider than 8 metres as this triggers a listed activity as per 2014 EIA Regulation. • Upon completion of the project all roads shall be repaired to their original state. • All existing farm roads (private roads) damaged during the construction phase, should at the end of construction be repaired to the satisfaction of the landowner, as per the conditions of the written contractual agreement between the landowner and the Contractor.	landowners • No destruction of or • damage to known • archaeological sites			

10.7 MOVEMENT OF CONSTRUCTION PERSONNEL AND EQUIPMENT

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Impact on sensitive environs. • Trespassing • Safety and security.	• To ensure controlled and manageable movement of personnel and equipmen.	• TRMPV ACV2 REV1	• The Contractor must ensure that all construction personnel, labourers and equipment remain within the demarcated construction sites at all times. • Where construction personnel move outside the boundaries of the site, the Contractor/ labourers must obtain permission from the CEO. • All equipment moved onto site or off site is subject to the legal requirements as well as Eskom specifications for the transport of such equipment. The Contractor shall meet these safety requirements under all circumstances. • All equipment transported shall be clearly labelled as to their potential hazards according to specifications. • All the required safety labelling on the containers and trucks used shall be in place. • The Contractor shall ensure that all the	• No trespassing of contractor's workforce. • No complaints from landowners	• Observation • Security registers. • Complaints register	ECO & Contractor	Continuous throughout the construction phase.

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			necessary precautions against damage to the environment and injury to persons are taken in the event of an accident and shall provide a Method statement to that effect. • The Contractor is to ensure that no machinery, personnel, material, or equipment enters 'No-Go' areas during the course of the project.				

10.8 VEGETATION

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Damage to protected/endangered vegetation • Damage to topsoil	• To conserve flora. • To ensure the control of alien invasive species and to ensure that rehabilitation is as close as possible to	• NEMBA • CARA	• Some of the towers will be in proximity to sensitive environs. A number of protected species are present at the site, including *Leucospermum praemorsum; Lachenalia arenicola, Agathosma elata Lachenalia arenicola, rubella, Leucospermum rodolentum, Muraltia Babiana obovate, Diplosoma luckhofii, Aspalathus obtusata, Otholobium venustum,*	• No alien species • No disturbance of protected flora • Minimal disturbance of vegetation including crops	• Observation • Complaints register	• ECO & • Contractor • CEO	On-going during the construction phase.

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
	the original state		*Aspalathus obtusata, Vanzijlia annulata*, and *Osteospermum nordenstami.* • Demarcate the construction footprint. • The natural vegetation encountered on the site is to be conserved and left intact as much as possible. • Only vegetation directly affected by the works may be felled or cleared. • No open fires are permitted within naturally vegetated areas. • Formalise access roads and make use of existing roads and tracks where feasible, rather than creating new routes through naturally vegetated areas. • Retain vegetation and soil in position for as long as possible in that area (DWAF, 2005). • Bush clearing in the servitude or around the transmission power line must be in accordance to Eskom Vegetation Management Guideline (Reference – TGL41-334); and				

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			• No bush clearing is to be undertaken without the knowledge of the property owner. It is recommended that the owner is informed of the basic construction process during initial interaction so that they are aware of the vegetation clearing that will occur. • Only manual removal of weed will be permitted on site. Chemical and mechanical (TLB, bulldozer) control is not allowed on site. • Implement an alien invasive plant monitoring and management plan whereby the spread of alien and invasive plant species into the areas disturbed by the construction of the power line are regularly removed and re-infestation monitored.				

10.9 PROTECTION OF FAUNA AND AVIFAUNA

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Damage to habitat • Negative impact on bird due to electrocution and faulting • Negative impact on animal life.	• To conserve animal life. • To ensure that impact on natural vegetation is kept to the minimum in order to conserve suitable habitats as much as possible. • To prevent degradation of suitable sensitive fauna habitats. • To prevent contamination	• NEMBA	Considering the loss of natural habitat in the area and the fragmentation of the remaining areas the following measures must be implemented: • Avoid unnecessary disturbance of faunal habitats. • Any bird nests that are found must be left intact/undisturbed. • The movement of vehicles and heavy machinery around sensitive fauna habitats (river crossings, pan systems and thickets) must be limited. • During construction, if any of the Red Data species as indicated in the Avifauna report (Appendix D2) are noted to be roosting and/or breeding in the vicinity, the ECO must be notified. • An Eskom approved bird friendly pole design must be used. • Anti-collision devices must be	• No reported faunal injuries • No complaints from landowners	• Observation • Complaints register that records complaints from landowners • Daily inspection	• ECO • CEO	On-going during the construction phase.

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
	of water within the nearby watercourse thereby preserving several amphibian species. • To ensure that impact on sensitive fauna species is kept to a minimum • To ensure that ecological linkages are maintained along the power line route. • To prevent		installed as soon as the wires are strung. • Under no circumstances shall any animals (livestock or game) be hunted, handled, killed or be interfered with by the construction team. • Domesticated animals are not allowed on site. • The Contractor shall keep the site clean and tidy from waste material that can attract animals. • Fauna rescue and relocation programme must be implemented. • Any open excavations must be regularly inspected to rescue any fauna that may have fallen in. • Records of any injured or deaths of fauna within the construction servitude must be kept by the CEO and ECO. • Construction must be restricted to daylight hours to prevent any disturbance such as floodlights.				

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
	injury or death of fauna species as a result of falling into open excavations • To prevent collision of birds with power lines • To prevent electrical faulting		• To mitigate for collision, it is recommended that the earth wires be fitted with Eskom approved anti bird collision line marking device. • All towers close to water must be fitted with the standard Eskom Bird Guards as per Eskom Transmission guidelines.				

10.10 HERITAGE AND/OR ARCHAEOLOGICAL SITES

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Destruction of sites of archaeologic al and heritage	• To preserve any heritage, cultural or archaeologic al sites that	• NHRA	Isolated stone tools, informal graves and historical structures have been identified along the route. These were noted in Tower 540, 541, 51, 52, 203,	• Detailed record of chance finds. • No destruction of or damage	• Intermittent observation.	• ECO & • Contractor • CEO • Archaeologist	On-going during all excavations

significance. • Loss of historic cultural landscape. • Loss of intangible heritage value due to change in land use.	might be encountered during the construction phase. • Protection of known sites against destruction, vandalism and theft. • Preservation and appropriate management of any new archaeological sites should this be discovered during construction.		279 and 292 respectively. The following mitigations must be implemented: • To protect the graves, an educational programme to construction workers is essential to avoid accidental damage. Isolated stone tools were observed on site therefore, no stone robbing or removal of any material is allowed. • All identified archaeological material including graves shall be barricaded and marked as no go for the duration of the construction phase. • Where burial sites are accidentally disturbed during construction, the affected area should be demarcated as no go areas. • If any archaeological material (e.g. fossils, bones, artefacts etc.) is found during excavation, the contractor shall stop work immediately and inform the Construction Manager. The Contractor shall not recommence working in that area until written permission has been received from	to known archaeological sites • Management of existing sites and new discoveries in accordance with the recommendations of the Archaeologist. • No litigation due to destruction of sites.			

			the SAHRA. f any archaeological material (e.g. fossils, bones, artefacts etc.) is found during excavation, the contractor shall stop work immediately and inform the Construction Manager.				

10.11 SERVICING AND RE-FUELLING OF CONSTRUCTION EQUIPMENT

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Impact on soil and water resources due to accidental spillages.	• To conserve soils, surface and ground water. • To prevent spillages of hazardous substances	• NEMWA • NWA • OHSA	• All maintenance and repair work will be carried out within an area designated for this purpose, equipped with necessary pollution containment measures. • Refuelling, greasing or oiling of vehicle and construction machinery must be done on a drip tray or bunded surface. • Drip trays must be placed under stationary vehicles and machinery at all times. • Construction vehicles are to be maintained in an acceptable state of repair. No vehicles or equipment with leaks or causing spills will be	• No evidence of hazardous substances polluting the site.	• On-going monitoring with regular inspections; and • Service Records.	• ECO & • Contractor • CEO	On-going during the construction phase

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			permitted on site. • Fuels required during construction must be stored at a central depot that must be located on a slab and be contained within a bund capable of containing at least 110% of the total volume in the containers. • Temporary fuel storage tanks and transfer areas also need to be located on an adequately bunded surface to contain accidental spillages.				

10.12 WASTE MANAGEMENT

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Visual Impact • Water resources • Land pollution	• To ensure the efficient management of waste on site • To ensure minimal impact on the surrounding environment • Minimise waste material being strewn in the environment	• NEMWA	**10.12.1 SOLID WASTE MANAGEMENT** • Waste must be separated at source (e.g. containers for glass, paper, metals, plastic, organic waste and hazardous waste). • An adequate number of scavenger proof refuse bins must be provided at the construction site and must be clearly labelled (general or hazardous) according to waste streams. • All waste must be transported in an appropriate manner (e.g. plastic rubbish bags) and disposed of at a licensed waste disposal facility. Proof of safe disposal must be kept on site. • The Contactor may not dispose of any waste and / or construction debris by burning, or burying. • Waste bins must be emptied regularly (minimum weekly) such that they do not overfill. • The Contractor shall maintain 'good housekeeping' practices and ensure that all work sites and the construction camp is kept tidy and litter free.	• Presence of proper storage facilities that are properly labelled. • Post-construction work areas are clear of all waste materials.	• Intermittent Observation • Waste Disposal Records	• ECO & • Contractor • CEO	Daily

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			10.12.2 LIQUID WASTE MANAGEMENT • An adequate number of suitable containers with lids must be provided at the construction site. • The Contractor will ensure that waste water is discharged in the drums provided. • All waste must be transported in an appropriate manner and disposed of at a licensed waste disposal site.				

10.13 SURFACE AND GROUND WATER MANAGEMENT

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Possible contamination of water resources.	• To conserve all natural water resources • To avoid illegal diversion and	NWA	• The Contractor must take reasonable precautions to prevent the pollution of ground and surface water resources as a result of	• Unpolluted waterc ourses •	• Observation • Design Plans	• Contractor • ECO • CEO	Continuous through the construction phase.

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
	destruction of water resources. • To ensure proper management of storm water run-off that causes erosio and .siltation/sedimentation • To ensure that the rivers and streams are protected and incur minimal negative impact from the development. • To ensure compliance with the reqirements of the Act.		construction activities. • No natural watercourse is to be used for the cleaning of tools. This includes for purposes of bathing, or washing of clothes etc. • No spills may be hosed into the surrounding natural environment. • All soil contaminated must be excavated to the depth of contaminant penetration, placed in suitable drums/containers and removed to a hazardous waste facility. • No extraction of water from any natural resources without the relevant authorisation. • Erosion control measure must be put in place to control storm water runoff. • Storm water management measures must be as per the Method Statement prepared				

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			by the Contractor for ECO approval. • Erosion control on all access roads must be undertaken. • Any physical damage to any aspect of a watercourse must be prohibited. • Minimise the extent of damage to flood plains that is necessary to complete the works, and will not pollute any water course as a result of construction.				

10.14 SENSITIVE AREAS (WATER COURSES AND BUFFERS)

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Changing the quantity and fluctuation properties of the watercourse.	• To preserve and conserve the sensitive environmen.	NWA	Five wetlands, numerous channels and non-perennial rivers were identified. These water courses are affected by the following Towers: 585, 579, 573, 572, 571, 570, 569, 568, 566, 565, 564, 563, 543, 542, 541, 540, 539, 531, 530, 529, 528, 525, 524,	• Undisturbed sensitive environments and/or properly	• Observation • WUL	• CEO • ECO • Contractor	Throughout the construction and post construction to ensure proper rehabilitation.

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Changing the amount of sediment entering water resource and associated change in turbidity (increasing or decreasing the amount) • Alteration of water quality toxic contaminants (including toxic metal ions (e.g. copper, lead, zinc) and hydrocarbons. • Changing the physical structure within a water resource.			523, 522, 521, 520, 519, 518,517, 509, 508, 472, 471,470, 469,468, 466, 464, 463, 462A, 462, 461, 460, 459, 458, 457, 456, 450, 449, 438, 437, 426, 425, 424, 423, 381, 380, 373, 372, 371, 370, 369, 368, 366, 365, 364, 319, 318, 317, 316, 264, 263, 262, 261, 227, 226, 225, 224, 223, 222, 221, 220, 219, 218, 217, 216, 215, 214, 213, 204, 203, 212, 211, 210, 209, 144, 143, 142, 6, 5, 4 and 3. • Construction in and around watercourses must be restricted to the dryer months (November to February) in the West Coast of South Africa. • Vehicular access through watercourses must be prohibited (unless a GA/WUL is in place). If inevitable access must be managed and limited to only one access. • Cordon-off areas that are under rehabilitation as no-go areas. If necessary, these areas should be cordoned off to prevent vehicular, pedestrian and livestock access.	rehabilitated. • Compliance with the WUL conditions			

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			• Runoff from roads must be managed to avoid erosion and pollution problems. • Demarcate the watercourses and buffer zones to limit disturbance and clearly mark these areas as no-go areas. • No stockpiling of any materials may take place within a 100m to any of the wetlands or drainage channels. • Erosion control measures must be implemented in areas sensitive to erosion, particularly in areas prone to wind erosion and where erosion has already occurred such as edges of slopes, exposed soil etc. • Recommendation from Department of Water and Sanitation as part of the licencing process must be taken into consideration throughout the construction phase.				

10.15 HAZARDOUS MATERIALS

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Impact on soils and water resources	• To ensure safe and proper handling of hazardous material	• HSA	• The Contractor must comply with all National, Regional and Local legislation with regard to the storage, transport, use and disposal of petroleum, chemical, harmful and hazardous substances and materials. • Spill kits must be made available on site at all times. • The CEO will furthermore be responsible for the training and education of all personnel on site who will be handling the material about its proper use, handling and disposal. • Storage of all hazardous material is to be safe, tamper proof and under strict control. • Exercise extreme care with the handling of diesel and other toxic solvents to ensure that spillage is avoided. • Any accidental chemical / fuel spills must be remediated immediately.	• No incidents reported	• Hazardous material data sheet • Incident reports • Observation of spillages and leakages	• ECO & • Contractor • CEO	Continuous throughout the construction phase

10.16 OIL SPILL MANAGEMENT

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Impact on soils and water resources	• To avoid ground and surface water contamination • To ensure proper and safe handling of oil spillages.	• HSA	• The Contractor must prevent potential hydrocarbon spills during construction. • Hydrocarbon must be stored in properly contained areas so as to minimise accidental spillage. • Use of drip trays under stationary vehicles. All spills must be reported to the ECO within 24 hours of the spill via a flash report. • The Contractor must be in possession of a mobile oil spill kit at all times. • The oil spill clean-up and rehabilitation standards need to be implemented.	• No incident reported • Proper use of drip trays • Presence of oil spill kit	• Observation • Incident report	• ECO • Contractor • CEO	On-going during the construction phase.

10.17 STORM WATER MANAGEMENT

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Possible negative impact on	• To reduce the potential impact from runoff on sensitive	• NWA	• The Contractor must ensure that rainwater pollutants from construction activities does not run-off into natural areas and thus result in a pollution threat. • Storm water shall be diverted from the	• No evidence of erosion • No evidence of increased siltation • No evidents	• Site Plan • Observation	• ECO • Contractor • CEO	Continuous during the construction

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
water resources	areas.		construction works. • Storm water management measures must be as per the Storm water Management Method Statement prepared by the Contractor for ECO approval. • Increased runoff due to vegetation clearance and/or soil compaction must be managed and steps must be taken to ensure that storm water does not lead to excessive levels of silt entering the watercourses. • Necessary storm water control mechanisms shall be employed to ensure the sustainability of all the structures. • Effort shall be made to ensure that storm water leaving the construction site is not contaminated by any substance, whether solid, liquid or gas.	of contaminated water courses.			

10.18 FIRE

Possible Impact	Objective	Applicable Legislation /Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Destruction of property • Loss of life • Destruction of crops and livestock	• To prevent open fires. • To ensure that the workforce is aware of emergency procedures should an incident occur	• NEMA •	• A fire Management Method Statement must be put in place by the Contractor Landowners must be consulted in order to incorporate their specific fire fighting measures. The Method Statement must be approved by the ECO. • All the necessary precautions to ensure that fires are not started as a result of activities on site must be implemented. • Fuels or chemicals must be stored at the designated storage area. • Gas and liquid fuels must not be stored in the same storage area. • All fire control mechanisms (fire fighting equipment) will be made available and accessible at all times and routinely inspected. • No open fires for heating or cooking will be permitted on site, unless agreed and then only on designated areas. • Designated smoking areas must be provided, with special bins for discarding of cigarette stump. • Fire must be reported immediately.	• No reported fire incidents • No loss of life • No traces of cigarettes buts outside the designated smoking area.	• Fire Management Plan • Daily checks	• ECO • Contractor • CEO	On-going during the construction phase

10.19 AIR POLLUTION

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Dust nuisance from excavations, vegetation clearing and dirt roads. • Exhaust fumes from constructio vehicles.	• To ensure proper mitigation of air pollution • To avoid dust nuisance from excavation activities and vehicles on dirt roads	• NEMAQA	The potential air pollutants would be dust emanating from excavation activities and access roads; emissions or exhaust fumes from faulty plant or equipment. The following measures must be put in place: • Appropriate dust suppression measures or temporary stabilising mechanisms (e.g. adherence to speed limit, chemical soil binders, straw, brush packs chipping) must be put in place throughout construction, particularly during prolonged periods of dry weather. • Removal of vegetation must be avoided until such time as soil stripping is required. • No burning of waste material is allowed; • A maximum speed of 40km/hr. on the access road must be adhered to in order to minimise or avoid dust pollution. • Construction vehicles and equipment must be in good working order and serviced regularly.	• No complaints from surrounding land owners recorded. • No evidence of dust pollution plumes on site. •	• Observation • Complaints register	• ECO • Contractor • CEO	On-going throughout the construction phase

10.20 NOISE

Possible Impact	Objective	Applicable Legislation/ Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Noise during excavation/ drilling of foundations and associated activities	• To ensure minimal noise disturbance • To ensure proper mitigation of noise. • To avoid noise nuisance from operating construction equipment.	• ECA	• Machinery and vehicles are to be maintained in good working order. • Offending machinery and vehicles will be banned from use on site until they have been repaired. • The project team must endeavour to keep noise generating activities associated with construction to a minimum and within working hours. • Any complaints pertaining to noise must be recorded and reported to the ECO and addressed accordingly. • Labourers to be provided with hearing protection as and when required.	• No complaints from surrounding land owners recorded.	• Noise monitoring • A register of complaints to be kept on site at all times and kept up to date.	• Contractor • ECO • CEO	On-going during the construction phase

10.21 VISUAL

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Loss of sense of place.	• To ensure proper mitigation of potential	• NEMA	• Demarcate sensitive areas and no-go areas with danger tape to prevent disturbance during construction.	• Clean and tidy site. • No	• Observation • Complaints register	ECO & Contractor CEO	On-going during the construction phase.

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
	visual impacts. • To maintain the site's aesthetics.		• Plan construction times in such a manner to have the least impact on surrounding properties. • Keep disturbed areas to a minimum. • No clearing of land to take place outside the demarcated footprints. • The steel components should not be painted but be galvanised and allowed to oxidise naturally over time. The grey colour produced in this process will help to reduce the visual impact. • New road construction must be kept to a minimum. Utilise existing roads and tracks to the extent possible. • Create stormwater channels alongside access roads and divert stormwater in the natural veld at regular intervals along the road. • Institute a solid waste management programme to minimise waste generation on the construction site and recycle waste where possible.Identify suitable areas within the construction camp for fuel storage, temporary	complaints from the landowners and affected parties.			

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			workshops, eating areas, and ablution facilities. • Reduce and control dust through the use of approved dust suspension techniques as and when required. • Construction to occur only during daytime. Should the ECO authorize night work, low flux and frequency lighting shall be used. • Rehabilitate all disturbed areas in accordance with the Method Statement. • Maintain access roads to prevent scouring and erosion, especially after rains. • Storage facilities and other temporary structures on site must be located such that they have as little visual impact on local residents as possible. • Soil excavated (if any) must not be stockpiled above 2m. • All temporary structures erected on site for the purposes of the project's construction phase will be removed from site upon completion of the project.				

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			• Lighting will be sufficient to ensure security but will not constitute 'light pollution' to the surrounding areas. • The site must be clean and tidy at all times.				

10.22 EXCAVATION, BACKFILLING AND TRENCHING

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Possible erosion • Injury of animal life	• To prevent erosion. • To ensure safety for both human and animals.	• OHSA	While working at areas prone to erosion the following must be adhered to: • Excavations must not be left open for longer than 7 days. • Excavations must be barricaded/ fenced off at all times.	• No incidence of animals trapped in trenches reported	• Observation • Incident report	• Contractor / • ECO • CEO	On-going excavations

10.23 AGRICULTURAL ACTIVITIES

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Negative impacts on agricultural	• To limit the impact	CARA	• Maintain good relations with landowners. • Consult farmers prior to any clearing	• No encroachment into agricultural	• Observation • Complaints register	• ECO • CEO • Contractor	During and after maintenance

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
activities.	on agricultural activities. • To avoid undue loss of livestock and crops.		activities. • Avoid unnecessary destruction of crops by remaining within the servitude at all times. • No form of disturbance of agricultural stock will be permitted for whatever reason.	crops • No negative feedback from landowners			procedures

10.24 EROSION AND CONTROL

Possible Impact	Objective	Applicable Legislation /Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Impact on soils and habitats and sensitive environs.	• To prevent erosion and sedimentation.	• NWA	To prevent any form of erosion the following must be adhered to: • During construction, the Contractor will protect areas susceptible to erosion by installing necessary temporary and / or permanent drainage and by taking suitable measures to prevent surface water concentration into nearby roadways.	• No visible signs of erosion.	• Observation • Complaints register	• Contractor • ECO • CEO	On-going particularly during excavations

Possible Impact	Objective	Applicable Legislation /Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			• Prior to construction, all topsoil must be stripped and stockpiled separately from subsoil and rocky material. Soil must be stripped in a phased manner so as to retain vegetation cover for as long as possible. • Stockpiled topsoil must not be compacted and must be replaced as the final soil layer. • Stockpiled soil must be protected by erosion-control berms if exposed for a period of greater than 14 days during the wet/windy season. • Topsoil stockpiles must not be contaminated with oil, diesel, petrol, waste or any other foreign matter, which may inhibit the later growth of vegetation and micro-organisms in the soil. • Soil must not be stockpiled on drainage lines or near watercourses • The timing of clearing and grubbing must be co-ordinated as much as possible to avoid prolonged exposure of soils to wind and water erosion.				

Possible Impact	Objective	Applicable Legislation /Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
			• If topsoil will be stockpiled for a longer period, it must be either vegetated with indigenous grasses or covered with a suitable material to prevent erosion and invasion by weeds. • To limit the introduction of alien species into the area, no soil may be imported onto site. • Where required, cut-off trenches can be installed to divert substantial run-off and prevent erosion as and when necessary. • Where new roads are constructed, water diversion berms should be constructed to prevent erosion. • Sensitive areas such as watercourses (wetlands, pans, and riparian areas) must be cordoned off to control vehicles and construction personnel access.				

10.25 USE OF CEMENT AND CONCRETE

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Soil, surface and groud water pollution.	• To conserve soils, surface and groundwater. • To minimise waste concrete from polluting the environment	• NEMA • NEMWA • HSA	Cement and concrete are regarded as highly hazardous to the natural environment due to their high pH and the chemicals contained therein. To avoid ground pollution the following must be implemented: • Pre-mix concrete shall be the preferred option where possible. If concrete mixing is undertaken on site, the following measures must be put in place: • The batching / mixing area must be properly designated, indicated on the site plan and kept neat and tidy at all times. • No batching / mixing activities will occur on a permeable surface. • Unused cement bags will be stored and disposed off appropriately. • The visible remains of the batch plant and concrete, either solid, or from washings shall be physically removed and disposed of appropriately at a licensed landfill site if not reused.	• Areas of construction are clear of all concrete residue/waste following construction.	• Observation • Site Plan	• Contractor • ECO • CEO	Throughout the construction phase

10.26 SITE CLEAN-UP AND REHABILITATION

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Erosion • Spread of alien invasive plant species	• Minimise damage to topsoil and environment at tower positions • Successful rehabilitation of all damaged areas • Prevention of erosion. • To ensure that the site is fully rehabilitated to its original state. • To ensure that the site is clean and neat. • Minimize claims and litigation from landowners	• NEMBA • NEMA	• The Contractor must ensure that all temporary structures, materials, waste and facilities used for construction activities are removed upon completion of the project. • Fully rehabilitate (e.g. clear and clean area, rake, pack branches etc.) all disturbed areas and protect them from erosion. • All replaced equipment and excess gravel, stone, concrete, bricks, temporary fencing and the like shall be removed from the site upon completion of the work. • No discarded materials of any nature shall be buried on the site or on any other land within the site. • Re-seeding shall be done on disturbed areas as per the rehabilitation Method Statement and as directed by the CEO and ECO. • Slopes in excess of 2% must be contoured and slopes in excess of 12% must be terraced. • The Contractor shall dispose of all excess material from site at a registered disposal facility. • Reusable material will be taken off site and reused elsewhere.	• No loss of topsoil due to construction activities • No loss of topsoil due to construction activities • All disturbed areas successfully rehabilitated within three months of completion of the contract • No visible erosion scars three months after completion of the contract • No open fires shall be	• Rehabilitation Plan • Observation	ECO CEO Contractor	On completion of construction Random surveys by landowner

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
				allowed on site under any circumstance • No evidence of rubble or litter left on site. • Successful completion of the contract with all landowners signing the release form six months after completion of the project.			

10.27 GEOLOGY

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Loss of aesthetic value • Habitat destruction • Geological fragmentation • Loss of livestock	• To conserve the natural geology on site. • To ensure the structural integrity of pylons. • To limit undue disturbance on the sand dunes.	NEMA	The geology of the area varies from highly rock to extremely sandy. In some areas Aeolian material overly Tertiary and Quaternary marine sediments therefore: • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density may be essential. • Piled foundations must be established. Where blasting is required the following must be implemented: • Blasting Method Statement must be prepared, signed by the engineer and approved by the ECO. • Land owners must be notified prior to blastings. • Construction team must be made aware of the planned blasting activities. • Proper PPE must be worn at all times. • Blasting activities must be supervised by qualified personnel.	• No loss of life due to balstiing activities. • Stable pylons • Intact geological structure	• Signed off foundations by engineers. • Blasting Certificate	• Engineers • ECO • CEO	Throughout construction.

10.28 INFRASTRUCTURE

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• Damage to fence, gates and telephone lines • Loss of livestock	• Minimise damage to infrastructure such as fence, gates and telephone lines. • Prevent loss of livestock • Minimize claims and litigation from landowners	Fencing Act (Act 31 of 1963)	• The Contractor must ensure that all gates are left in the state the landowner intended. • The Contractor must not interfere with landowner's locks. • No gates must be left open as this can lead to livestock loss. • The climbing/crawling over/through fences without the permission of the landowner must be prohibited. • Damage to fences during stringing must be avoided. • No infrastructure along the authorised route must be tampered with e.g. telephone lines.	• No complaints from the landowners with regards to broken fences and gates. • All gates closed during the construction phase. • No damage to the existing telephone lines along the proposed route.	• Complaints register • Observation	• ECO • CEO • Contractor	• During construction and completion of construction • Random surveys landowner

10.29 OPERATION PHASE

Possible Impact	Objective	Applicable Legislation/Policy	Mitigation / Management Action	Performance Indicator	Monitoring Criteria	Responsible Agent	Monitoring Frequency
Access roads Access roads used for maintenance purposes might impact on vegetation and water courses.	• To prevent ecological damage • Minimize damage to the identified water courses.	NEMA NWA NEMBA	• Access roads are to be maintained in an acceptable manner. • No vehicles should be allowed to cross rivers or streams in any area other than an approved crossing. • Appropriate erosion measures must be in place to prevent any impact in surrounding habitat.	No complaints from the land owners.	• Complaints register. • Observation	• Project Manager	Yearly
Avifauna	Reduce the deaths	NEMBA	The transmission	No death of birds	Observation	Project Manager	Yearly

Bird collisions with power lines and possible bird electrocutions.	of birds caused by collision and electrocution.		line must be fitted with bird deflectors to avoid collisions.	caused by collision and electrocution.			
Waste generation and disposal Waste generation during the operational phase will have a negative impact on the environment if not controlled adequately.	To prevent littering on site by storing and disposing of waste appropriately.	NEMWA	• Solid waste generated during operation phase must be removed in a continuous and efficient manner. • A waste management plan must be developed and maintained. • No solid waste should be dumped on the site. • All domestic waste generated on the site should be disposed of	No complaints from the landowners.	• Complaints register. • Observation	• Project Manager	Yearly

			in a proper manner off site i.e. no burial on site. • Burning of waste will not be permitted.				
Storm water Management Soil erosion on site may occur if storm water is not managed properly.	To prevent soil erosion and water logging on site.	NEMA NWA	It is recommended that proper storm water drainage system be ensured during operation phase.	Erosion scars	Observation	Project Manager	Yearly
Clean up action Leakage of hazardous waste can cause soil contamination.	To prevent contamination of soil.	NEMWA NEMA	• In the event of incident or leakage of hazardous waste from storage site, a professional company must be appointed to remove and clean up the waste as soon as possible. • ECO must	No evidence of spillages.	Observation	Project Manager	Yearly

			carry out monthly inspections for the waste temporally stored on site.				
Safety There is the potential risk of electrocution (people and livestock) if access to the site is not controlled.	Prevent loss of life of people and livestock due to electrocution	NEMA	• Safety and security issues should be addressed as a priority. It is recommended that the landowners and affected community members are contacted in advance to ensure that they are forewarned of the construction and maintenance activities				

			planned in the area. • The local community must be educated about the dangers of high voltage electricity.				
Environmental complaint register Complaints from the affected parties not addressed.	To ensure that all complaints raised are recorded and addressed.		The environmental complaint register must be maintained during the operation phase.	Availability of complaint a register on site.	Complaint register	• Operator • ECO	Until decommissioning phase

10.30 MONITORING OF CONSTRUCTION AND OPERATION EMPR COMPLIANCE

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
To implement an on-going monitoring and performance audit programme.	• The correct and successful implementation of impact mitigation measures in order to reduce adverse impacts on environmental aspects needs to be ensured by a proper monitoring program. • Monitoring of the general implementation of/adherence to the COEMPr shall be the responsibility of the ECO. • Reporting on adherence/compliance to stipulations as communicated to Contractors, shall take place during scheduled site meetings. • Regular site Meetings by the project team. • Continuous induction of staff and visitors on the COEMPr conditions and requirements. • Put in place non conformance, prevention and corrective procedures.	• Observation • Checklist • Daily Register • Attendance Registers • Photographic evidence	• ECO & • Contractor • CEO	On-going post rehabilitation.

10.31 DOCUMENT CONTROL

Objective	Mitigation / Management Action	Monitoring Criteria	Responsible Agent	Monitoring Frequency
• To ensure compliance with the requirements of the regulatory authority • To assign roles and responsibilities to ensure compliance • To implement and comply with the requirements of the COEMPr.	• A copy of the COEMPr and the EA will be made available on site at all times. • The COEMPr as well as the EA will be used for referral as the project progresses. The EA will also be presented on request to I&APs and stakeholders who may visit the site. • Monitoring and Audit Reports must be submitted to DEA and copies filed.	• Availability of an Construction and Operation EMPr copy on site • Report submission Transmittal	• ECO & • Contractor • CEO	On-going during the construction phase.

11 SUMMARY OF LAND OWNER DETAILS AND CONDITIONS

All contact with the Landowners shall be courteous at all times. The rights of the Landowners shall be respected at all times and all staff shall be sensitised to the effect on the works undertaken on private property. Eskom shall ensure that all agreements reached with the Landowner are fulfilled, and that such areas be rehabilitated once construction is completed.

Land owner special conditions are attached as Appendix F.

12 SITE DOCUMENTATION/MONITORING

The standard Eskom site documentation shall be used to keep records on site. All documents shall be kept on site and be available for monitoring and auditing purposes. Site inspections by an Environmental Audit Team may require access to this documentation for auditing purposes. The documentation shall be signed by all parties to ensure that such documents are legitimate. Regular monitoring of all site works by the Environmental Control Officer is imperative to ensure that all problems encountered are solved punctually and amicably. When the Environmental Control Officer is not available, the Contract Manager/Site Supervisor shall keep abreast of all works to ensure no problems arise.

Monthly reports shall be forwarded to the appointed Land Development Environmental Advisor with all information relating to environmental matters. The following Key Performance Indicators must be reported on a two-weekly basis:

- Complaints received from Landowners and actions taken.
- Environmental incidents, such as oil spills, concrete spills, etc. and actions taken (litigation excluded).
- Incidents possibly leading to litigation and legal contraventions.
- Environmental damage that needs rehabilitation measures to be taken.

The following documentation shall be kept on site:

- Access negotiations and physical access plan.
- Complaints register.
- Site daily dairy.
- Records of all remediation / rehabilitation activities.
- Copies of monthly reports to the Tx Environmental Advisor.
- Copy of the COEMPr.

12.1 AUDITS

During the construction period at least monthly Environmental Audits shall be conducted by the ECO to determine compliance with the recommendations of the COEMPr and conditions of the EA.

The appointed ECO, as well as the contractors on site, are responsible for ensuring compliance with the COEMPr. It is recommended that periodic COEMPr compliance reports (audits) are compiled by the ECO and submitted to CEO for correction of non-compliance issues. It is the responsibility of the ECO to report any non-compliance, which is not correctly rectified to the DEA.

12.2 ACCESS TO DOCUMENTS

Interested and Affected Parties (Landowners) must be allowed access to the COEMPr document should they so wish. They have the right to monitor specific aspects of the COEMPr in conjunction with the ECO and Contractor in a reasonable and informal manner, without unreasonably disrupting construction activities.

12.3 SOCIO-CULTURAL ISSUES

- A plan of action must be drawn up in the case of an emergency (veld fire, damaged power line, vegetation problems etc.)
- Property owners or occupiers must be treated with respect and courtesy at all times;
- The culture and lifestyles of the communities living in close proximity to the substation must be respected;
- Removal of agricultural products is prohibited. Receipts must be obtained for any merchandise purchased or received from landowners;
- Vehicles must be driven carefully in hazardous road conditions (sharp bends, narrow roads, bad weather, children playing on or near the road, domestic animals on or near the road etc.). Vehicle movement must be kept to a minimum during rain to avoid damage to the access road;
- Environmental clauses (as referred to in this COEMPr) must be included into contract documents for all contractors;
- Tribal graves, archaeological sites and sites of historical interest are to be treated with respect and protected.
- No firewood is to be collected except with the written consent of the landowner; and
- A register must be maintained of all complaints or queries received as well as action taken.

13 FAILURE TO COMPLY WITH THE ENVIRONMENTAL CONSIDERATIONS

The ECO will, acting reasonably, have the authority to order the Contractor to suspend part or all of the works if the he causes unacceptable damage to the environment by not adhering to the specifications set out below. The suspension will be enforced

until such time as the offending parties' actions, procedures and/or equipment are corrected and adequate mitigation measures implemented.

14 AMENDMENT OF CONSTRUCTION AND OPERATION EMPR

Any issue that may arise during the construction or operational phase of the development and that is not provided for in this COEMPr may be addressed as an addendum to this COEMPr. An addendum will be submitted to the client for approval prior to the implementation of the provisions contained and communicated to the Authorities.

15 TOWER SPECIFIC MANAGEMENT MEASURES

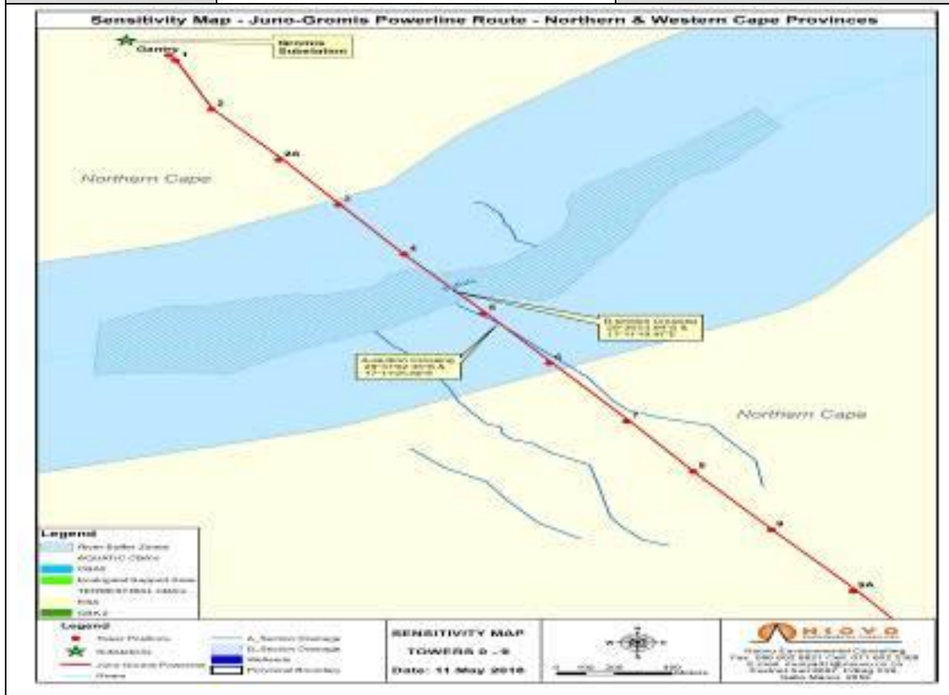
This section outlines tower specific management measures that need to be taken into consideration. This has been compiled with input from specialist who walked the site to identify sensitivities. The details of the specialists are as follows:

Table 3: Specialist contact details

Specialist study	Company	Contact person	Contact details
Heritage Specialist	Vhubvo-Archaeo-Heritage Consultants	Munyadziwa Magoma	Cell: 082 535 6855 E-mail: munyadziwa@vhubvo.co.za
Ecological specialist	Simon Todd Consulting	Simon Todd	Cell: 0823326502 Email: simon.todd@3foxes.co.za
Wetland Delineation	Afzelia Environmental Consulting	Rowena Harrison	Cell: 078 023 0532 Tel: 031 303 2835 Email: rowena@afzelia.co.za
Avifauna Specialist	Afzelia Environmental Consulting	Craig Widdows	Cell: 083 781 8725 Tel: 031 303 2835 Email: craig@afzelia.co.za
Visual Impact Assessment	Zone land	Johan Claassen	Cell: 0832996650 E-mail: johan@zonesolutions.co.za
Geotechnical Review	North arrow Consulting and Advisory	Clement Rikhotso	Cell: 0833068328 E-mail: clement.rikhotso@northarrowholdings.co.za

Tower Specific Management Plan for Towers 001-009

Tower Number	001	**Coordinates**	29°36'3.98"	17°10'48.26"
	002		29°36'14.55"	17°10'52.29"
	002A		29°36'25.45"	17°10'59.80"
	003		29°36'35.17"	17°11'6.49"
	004		29°36'45.86"	17°11'13.86"
	005		29°36'58.71"	17°11'22.71"
	006		29°37'9.42"	17°11'30.08"
	007		29°37'21.99"	17°11'38.74"
	008		29°37'32.83"	17°11'46.20"
	009		29°37'45.48"	17°11'54.92"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 001 to 009.Generic Conditions apply.
Wetland	• A B-section channel (Buffels River) was identified 483m to Tower 003, 125m to Tower 004, 104m to Tower 005 and 485m to Tower 006. • An A- section channel was identified 60m to Tower 007, 199m to Tower 008 and 302m to Tower 009. WUL is required.
Avifauna	• An avian flight path and a collision prone area were identified at Tower 004 to 009. • Anti-collision devices must be installed as during stringing.
Geology	Aeolian material overlying Tertiary and Quatrenary marine sediments: • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. • Piled foundations where necessary.
Ecology	No protected or listed species were noted from Tower 001 to Tower 009. Generic conditions apply.

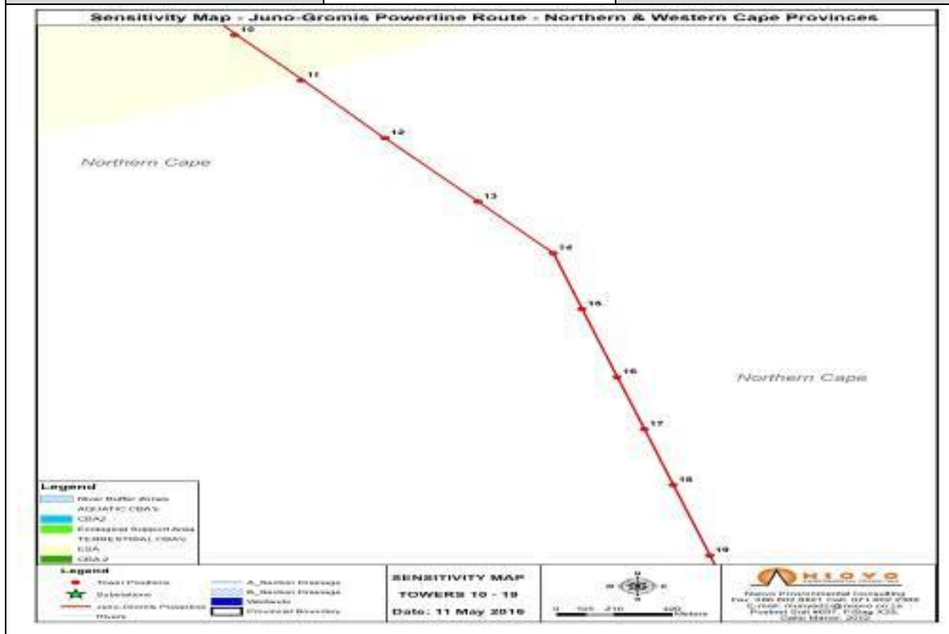
Tower 001

Tower 004

Tower 005

Tower 007

Tower Specific Management Measure for Towers 009A to 018				
Tower Number	009A	**Coordinates**	29°37'58.72"	17°12'4.04"
	010		29°38'6.99"	17°12'9.74"
	011		29°38'18.31"	17°12'17.54"
	012		29°38'32.66"	17°12'27.43"
	013		29°38'48.56"	17°12'38.39"
	014		29°39'1.39"	17°12'47.23"
	015		29°39'15.35"	17°12'50.65"
	016		29°39'32.28"	17°12'54.80"
	017		29°39'45.29"	17°12'57.99"
	018		29°39'59.20"	17°13'1.39"



Tower Specific Management Measure

Specialist	Recommendations
Heritage	No Heritage sites were identified. Generic Conditions apply.
Wetland	No watercourses were identified. Generic Conditions apply.
Avifauna	• An avian flight path and a collision prone area were identified at Tower 009A. • Anti-collision devices must be installed as soon as the wires are strung.
Geology	• Aeolian material overlying Tertiary and Quatrenary marine sediments. • Tower 11 is located on very fine reddish to brownish sand dune and Tower 009A is located on Quartzite rock. • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary.
Ecology	• An unknown species was identified at Tower 009A. • Tower must be moved about 110m to S or 130m to N.

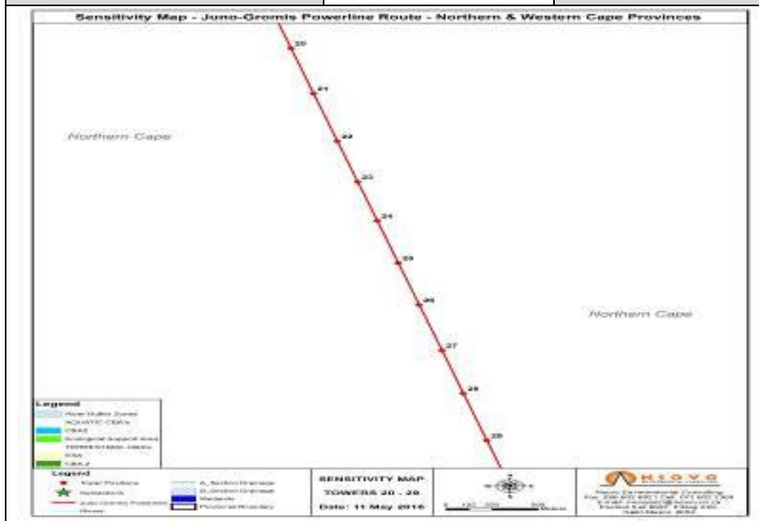

Tower 009A


Tower 011


Tower 14


Tower 017

Tower Specific Management Measure for Towers 019 to 029				
Tower Number	019	**Coordinates**	29°40'16.78"	17°13'5.70"
	020		29°40'33.56"	17°13'9.81"
	021		29°40'49.66"	17°13'13.76"
	022		29°41'6.68"	17°13'17.93"
	023		29°41'21.20"	17°13'21.49"
	024		29°41'35.05"	17°13'24.88"
	025		29°41'50.09"	17°13'28.57"
	026		29°42'5.04"	17°13'32.24"
	027		29°42'21.29"	17°13'36.22"
	028		29°42'36.60"	17°13'39.98"
	029		29°42'53.35"	17°13'44.08"



Tower Specific Management Measure	
Specialist	**Recommendations**
Heritage	No Heritage sites were identified from Towers 020 to 029.Generic Conditions apply
Wetland	No watercourses were identified from Towers 020 to 029. Generic conditions apply.
Avifauna	No areas were identified for marking from Towers 020 to 029. Generic conditions apply.
Geology	• Aeolian material overlying Tertiary and Quatrenary marine sediments. • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary
Ecology	No protected or listed species were identified. Generic conditions apply.

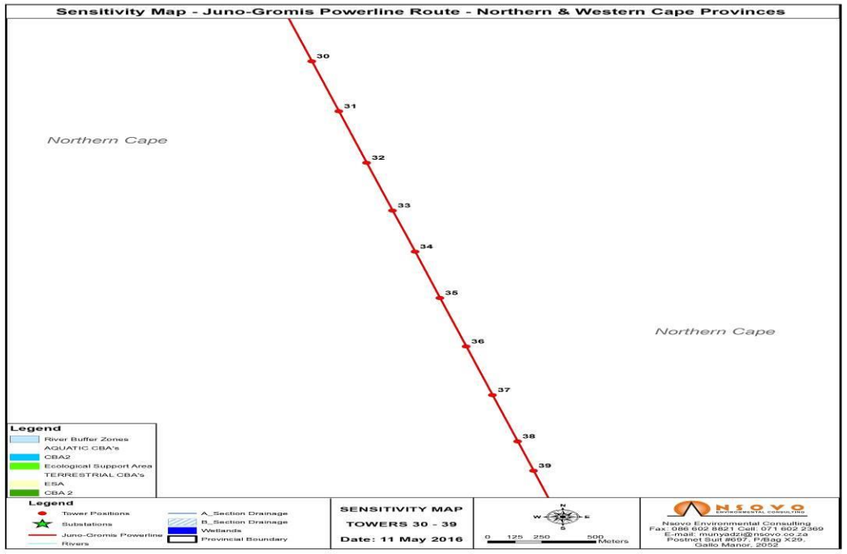
Tower 20

Tower 026

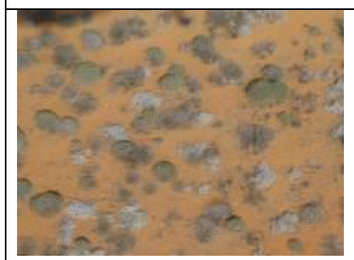
Tower 028

Tower 029

Tower Specific Management Measure for Tower 030 to 039				
Tower Number	030	**Coordinates**	29°43'11.17"	17°13'48.45"
	031		29°43'27.70"	17°13'52.51"
	032		29°43'44.74"	17°13'56.69"
	033		29°44'0.53"	17°14'0.56"
	034		29°44'14.17"	17°14'3.91"
	035		29°44'29.46"	17°14'7.66"
	036		29°44'45.52"	17°14'11.60"
	037		29°45'1.59"	17°14'15.55"
	038		29°45'16.89"	17°14'19.30"
	039		29°45'26.61"	17°14'21.69"



Tower Specific Management Measure	
Specialist	**Recommendations**
Heritage	No Heritage sites were identified. Generic Conditions apply
Wetland	No watercourses were identified. Generic conditions apply.
Avifauna	No areas were identified for marking from Towers 030 to 039. Generic conditions apply.
Geology	• Tower 039 is proposed on a very fine whitish sand dune. • Aeolian material overlying Tertiary and Quatrenary marine sediments. • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary.
Ecology	No protected or listed species were identified.Generic conditions apply.

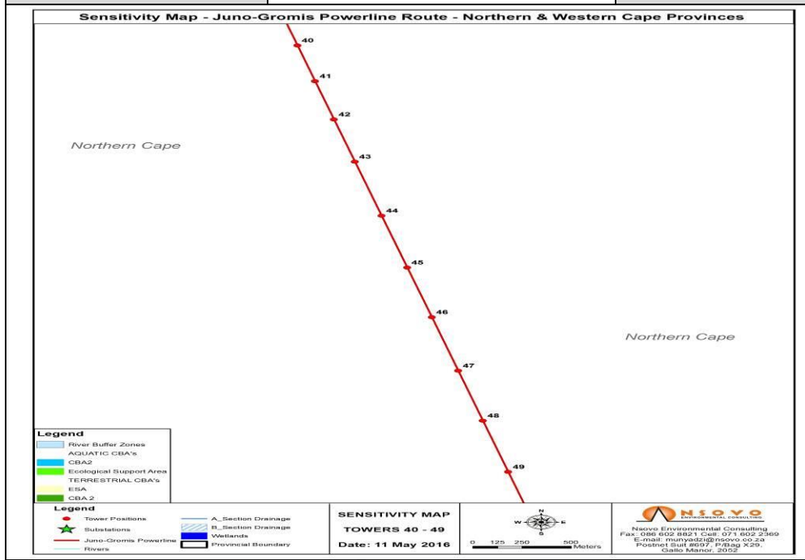

Tower 030


Tower 033


Tower 035


Tower 039

Tower Specific Management Measure for Towers 040 to 049				
Tower Number	040	**Coordinates**	29°45'41.42"	17°14'25.32"
	041		29°45'53.25"	17°14'28.23"
	042		29°46'5.89"	17°14'31.33"
	043		29°46'19.86"	17°14'34.76"
	044		29°46'37.74"	17°14'39.15"
	045		29°46'54.88"	17°14'43.36"
	046		29°47'11.33"	17°14'47.40"
	047		29°47'29.02"	17°14'51.75"
	048		29°47'45.60"	17°14'55.82"
	049		29°48'2.51"	17°14'59.97"



Tower Specific Management Measure

Specialist	Recommendations
Heritage	No Heritage sites were identified from Tower 040 to 049. Generic conditions apply.
Wetland	No watercourses were identified from Tower 040 to Tower 049. Generic conditions apply.
Geology	• Aeolian material overlying Tertiary and Quatrenary marine sediments. • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary.
Ecology	Tower 047 located in seasonal salt pans that support vegetation and high numbers of *Cheiridopsis deniticulata*. Move to less sensitive area at waypoint 008 (29°47'35.31"S; 17°14'54.77"E).

Tower 040

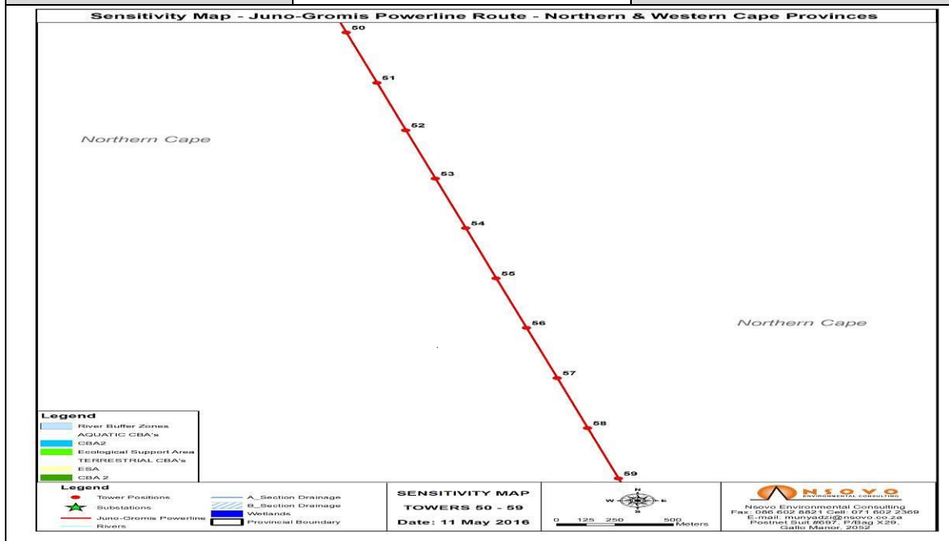
Tower 042

Tower 048

Tower 049

Tower Specific Management Measure for Tower 050 to 059

Tower Number		Coordinates		
	050		29°48'19.89"	17°15'4.24"
	051		29°48'37.22"	17°15'8.50"
	052		29°48'53.58"	17°15'12.52"
	053		29°49'10.27"	17°15'16.62"
	054		29°49'27.38"	17°15'20.83"
	055		29°49'44.68"	17°15'25.08"
	056		29°50'1.77"	17°15'29.28"
	057		29°50'19.05"	17°15'33.53"
	058		29°50'36.36"	17°15'37.79"
	059		29°50'53.72"	17°15'42.06"



Tower Specific Management Measure

Specialist	Recommendations
Heritage	• An informal family grave site was noted south-west and 300m of Tower No.051. • An educational programme to construction workers is essential to avoid accidental damage. The grave position must be marked and no negative impacts take place during construction. • A danger tape around the grave is recommended during activities on Tower No. 051 and 052.
Wetland	No watercourses were identified from Towers 050 to 059. Generic conditions apply.
Avifauna	No areas for marking were identified from Tower 050 to 059. Generic conditions apply.
Geology	• Aeolian material overlying Tertiary and Quatrenary marine sediments. • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary.
Ecology	No protected or listed species were identified.Generic conditions apply

Tower 052

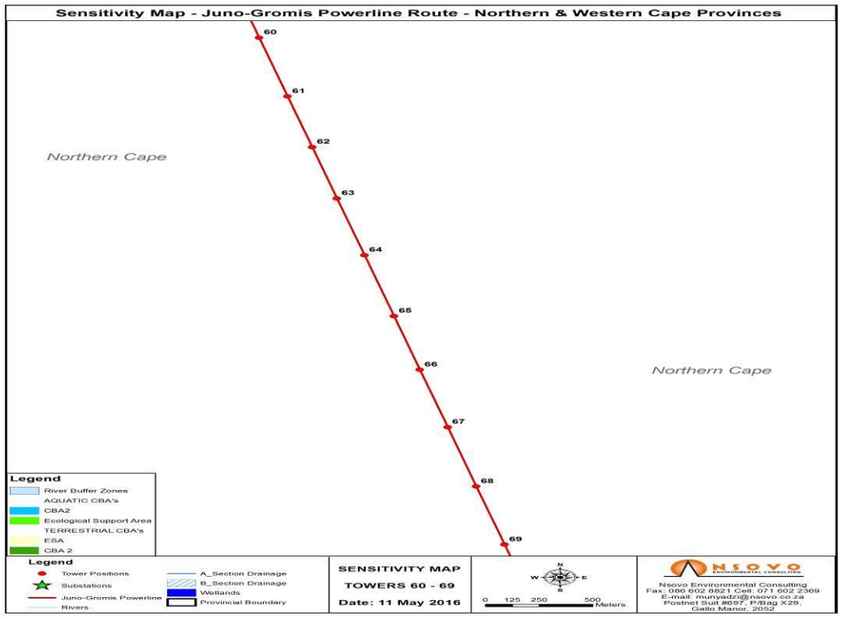
Tower 055

Tower 058

Tower 059

Tower Specific Management Measure for Towers 060 to 069

Tower Number		Coordinates		
	060		29°51'11.08"	17°15'46.33"
	061		29°51'28.47"	17°15'50.61"
	062		29°51'43.51"	17°15'54.30"
	063		29°51'58.70"	17°15'58.04"
	064		29°52'15.52"	17°16'2.18"
	065		29°52'33.55"	17°16'6.62"
	066		29°52'49.44"	17°16'10.53"
	067		29°53'6.46"	17°16'14.71"
	068		29°53'24.02"	17°16'19.04"
	069		29°53'41.23"	17°16'23.27"



Tower Specific Management Measures

Specialist	Recommendations
Heritage	No heritage sites were identified from Towers 060 to 069. Generic Conditions apply.
Wetland	No watercourses were identified from Tower 060 to 069. Generic conditions apply.
Avifauna	No areas for marking were identified from theses Towers. Generic conditions apply.
Geology	• Aeolian material overlying Tertiary and Quatrenary marine sediments. • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary.
Ecology	No protected or listed species were identified. Generic conditions apply

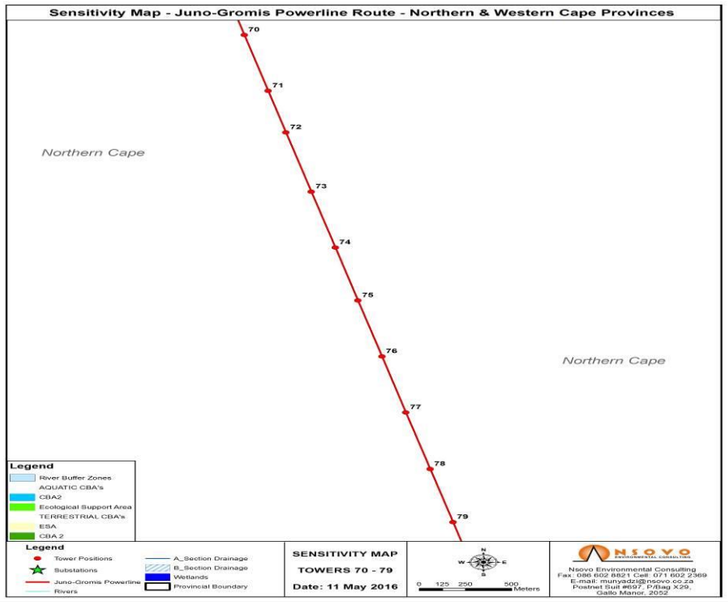
Tower 061

Tower 063

Tower 065

Tower 069

Tower Specific Management Measure Plan for Towers 070 to 079				
Tower Number	070	**Coordinates**	29°53'59.55"	17°16'27.78"
	071		29°54'16.51"	17°16'31.96"
	072		29°54'29.17"	17°16'35.08"
	073		29°54'47.22"	17°16'39.52"
	074		29°55'4.18"	17°16'43.70"
	075		29°55'20.28"	17°16'47.66"
	076		29°55'37.35"	17°16'51.87"
	077		29°55'54.36"	17°16'56.06"
	078		29°56'11.60"	17°17'0.31"
	079		29°56'27.72"	17°17'4.28"



Tower Specific Management Measure

Specialist	**Recommendations**
Heritage	No Heritage sites were identified from Tower 070 to 079. General conditions apply.
Wetland	No watercourses were identified from Tower 070 to 079. Generic conditions apply.
Avifauna	No areas were identified for marking from these Towers. Generic conditions apply.
Geology	• Aeolian material overlying Tertiary and Quatrenary marine sediments. • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary.
Ecology	No protected or listed species were identified. Generic conditions apply.

Tower 070

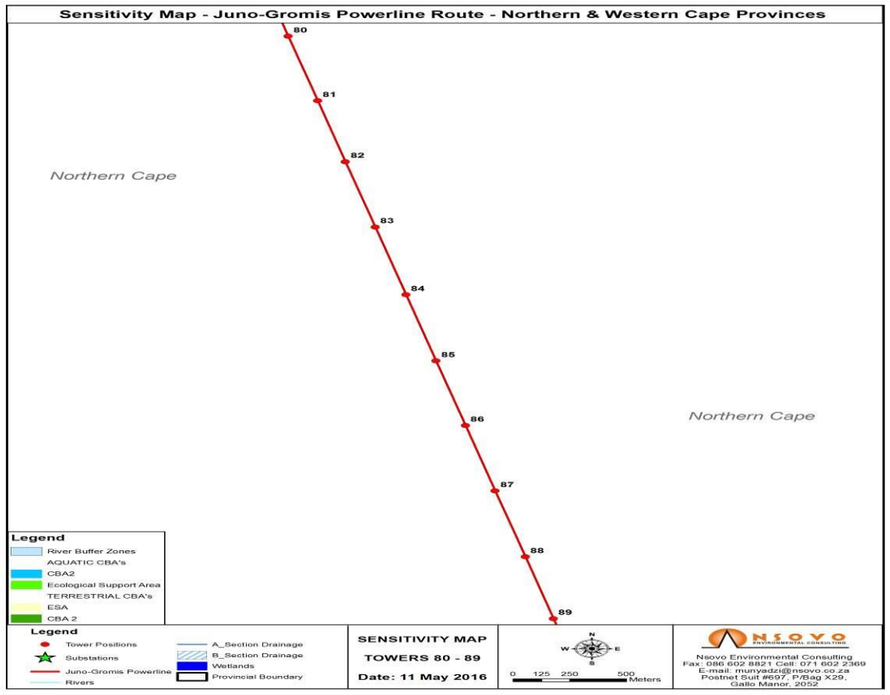
Tower 072

Tower 075

Tower 079

Tower Specific Management Measures for Towers 080 to 089

Tower Number	080	**Coordinates**	29°56'44.13"	17°17'8.32"
	081		29°57'1.12"	17°17'12.51"
	082		29°57'17.18"	17°17'16.47"
	083		29°57'34.38"	17°17'20.71"
	084		29°57'52.25"	17°17'25.11"
	085		29°58'9.66"	17°17'29.41"
	086		29°58'26.67"	17°17'33.60"
	087		29°58'43.89"	17°17'37.85"
	088		29°59'1.28"	17°17'42.14"
	089		29°59'17.57"	17°17'46.15"



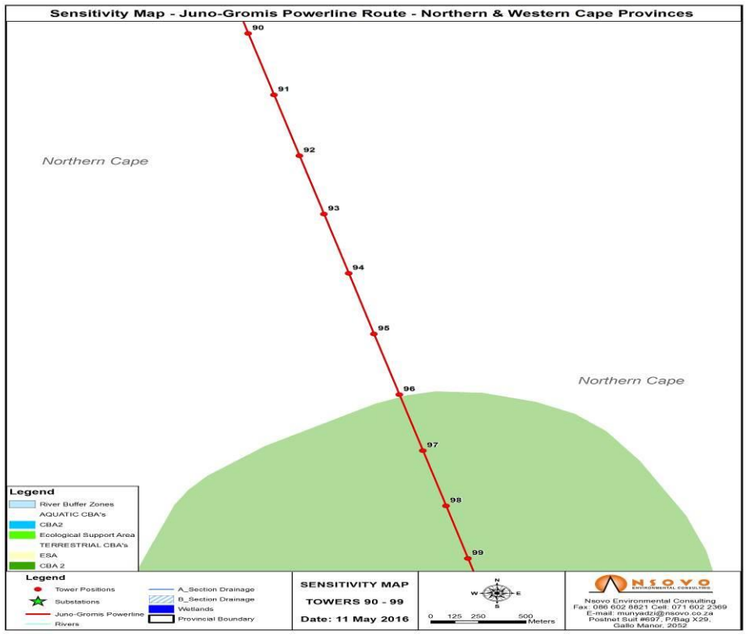
Tower Specific Management Measure

Specialist	Recommendations
Heritage	No Heritage sites were identified from Tower 080 to 089. General conditions apply.
Wetland	No watercourses were identified from Tower 080 to 089. Generic conditions apply.
Avifauna	No areas were identified for marking from theses Towers. Generic conditions apply.
Geology	• Aeolian material overlying Tertiary and Quatrenary marine sediments. • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary.
Ecology	No protected or listed species were identified. Generic conditions apply.

Tower 080

Tower 083

Tower Specific Management Plan for Towers 090 to 099				
Tower Number	090	**Coordinates**	29°59'34.22"	17°17'50.26"
	091		29°59'51.92"	17°17'54.63"
	092		30° 0'9.47"	17°17'58.96"
	093		30° 0'26.26"	17°18'3.10"
	094		30° 0'43.34"	17°18'7.31"
	095		30° 1'0.81"	17°18'11.63"
	096		30° 1'18.30"	17°18'15.94"
	097		30° 1'34.47"	17°18'19.93"
	098		30° 1'50.39"	17°18'23.86"
	099		30° 2'5.54"	17°18'27.60"



Tower Specific Management Plan

Specialist	Recommendations	
Heritage	No Heritage sites were identified. General conditions apply.	
Wetland	No watercourses were identified. Generic conditions apply.	
Avifauna	No sensitive areas were identified from these Towers. Generic conditions apply.	
Geology	• Aeolian material overlying Tertiary and Quatrenary marine sediments. • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary.	
Ecology	Tower 098 located on top of a dune. Move tower 50m north or 50m south to avoid dune.	Move tower 50m south to avoid


Tower 090

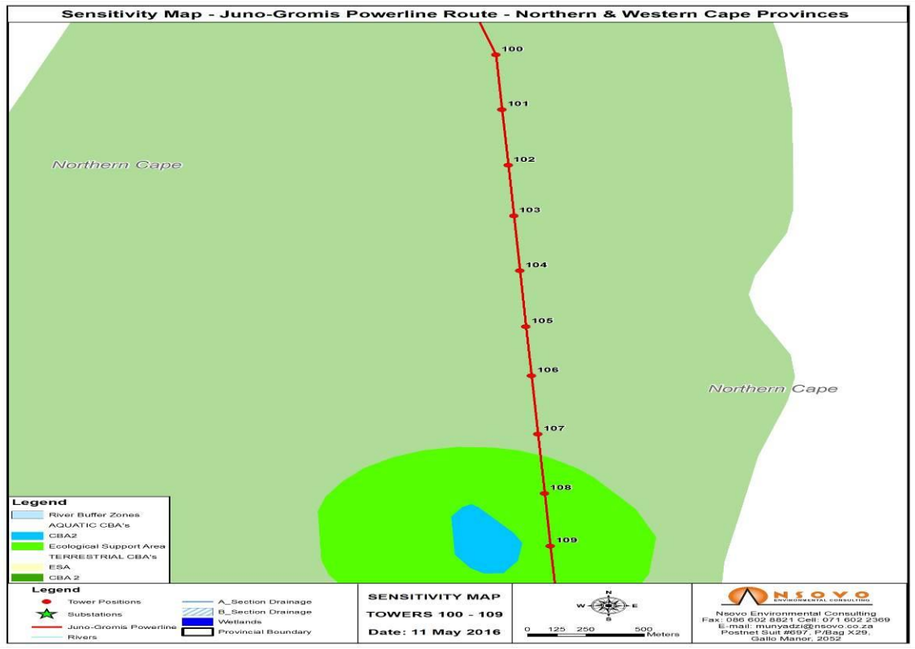

Tower 093


Tower 9[illegible] 096


Tower 099

Tower Specific Management Plan for Towers 100 to 109				
Tower Number	100	**Coordinates**	30° 2'17.66"	17°18'30.60"

	101		30° 2'33.11"	17°18'31.44"
	102		30° 2'48.82"	17°18'32.29"
	103		30° 3'3.12"	17°18'33.07"
	104		30° 3'18.64"	17°18'33.92"
	105		30° 3'34.43"	17°18'34.78"
	106		30° 3'48.29"	17°18'35.54"
	107		30° 4'4.82"	17°18'36.44"
	108		30° 4'21.54"	17°18'37.35"
	109		30° 4'36.41"	17°18'38.16"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Tower 100 to 109. General conditions apply.
Wetland	No watercourses were identified from Tower 100 to 109. Generic conditions apply.
Avifauna	Generic conditions apply.
Geology	• Aeolian material overlying marine sediments. • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary.
Ecology	No protected or listed species were identified. Generic conditions apply.

Tower 100

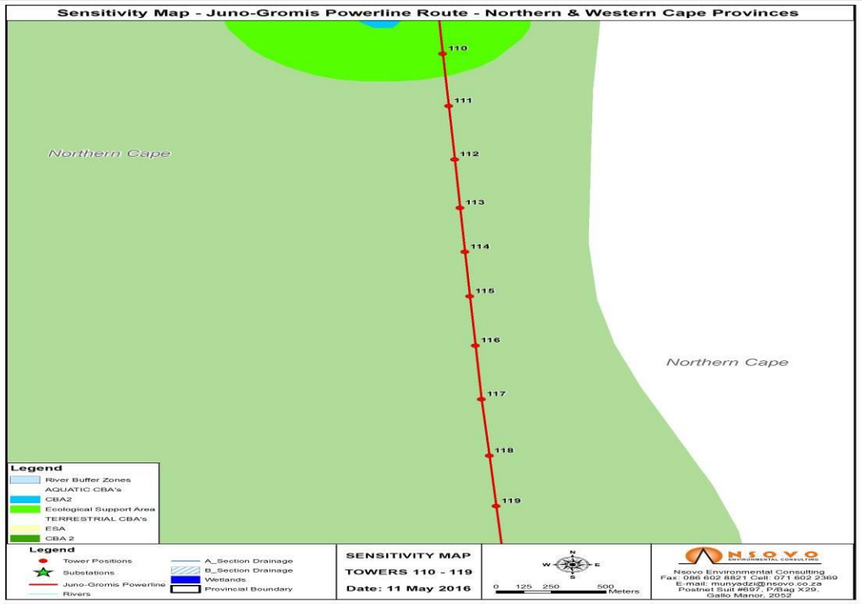
Tower 102

Tower 106

Tower 108

Tower Specific Management Plan for Towers 110 to 119				
Tower Number	110	**Coordinates**	30° 4'51.95"	30° 4'51.95"
	111		30° 5'7.78"	30° 5'7.78"

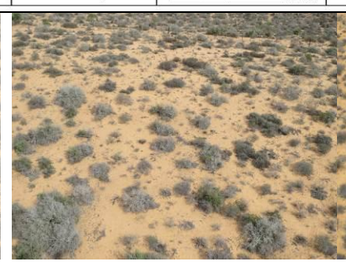
	112		30° 5'23.98"	30° 5'23.98"
	113		30° 5'38.62"	30° 5'38.62"
	114		30° 5'51.98"	30° 5'51.98"
	115		30° 6'5.44"	30° 6'5.44"
	116		30° 6'20.35"	30° 6'20.35"
	117		30° 6'36.62"	30° 6'36.62"
	118		30° 6'53.75"	30° 6'53.75"
	119		30° 7'9.00"	30° 7'9.00"



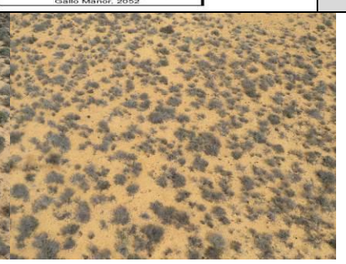
Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Tower 110 to 119. General conditions apply.
Wetland	No watercourses were identified from Tower 110 to 119. Generic conditions apply.
Avifauna	Generic conditions apply.
Geology	• Aeolian material overlying Tertiary and Quatrenary marine sediments. • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary.
Ecology	Tower 117would impact a distinctive population of Searsia laevigata that is a locally very rare feature. Move tower 30m south.

Tower 100



Tower 113

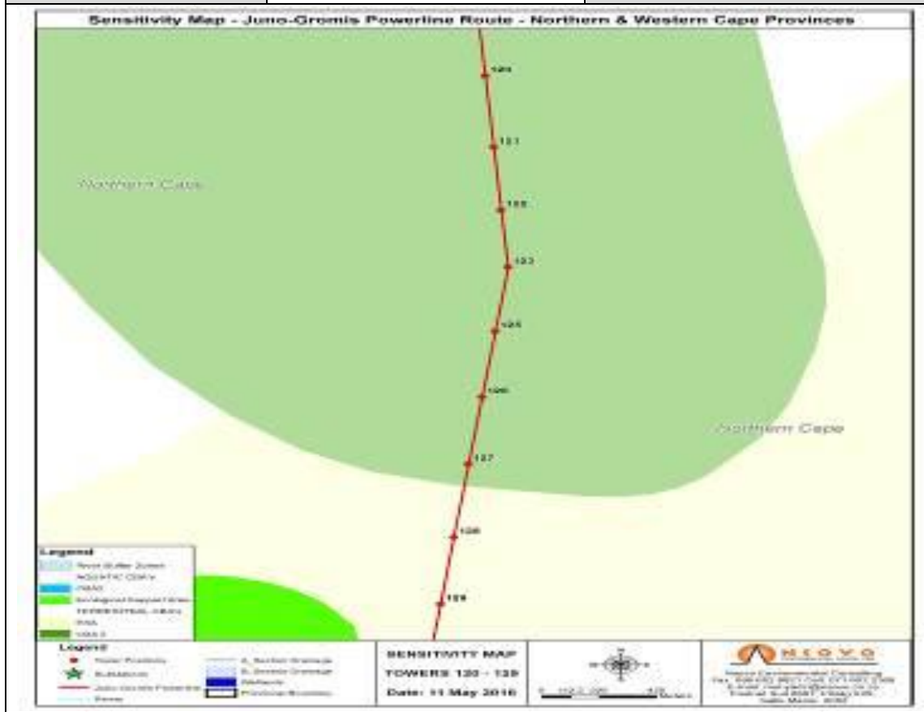


Tower 115

Tower 119

Tower Specific Management Plan for Towers 120 to 129

Tower Number	120	**Coordinates**	30° 7'26.51"	17°18'48.05"
	121		30° 7'42.98"	17°18'49.14"
	122		30° 7'57.48"	17°18'50.11"
	123		30° 8'10.61"	17°18'50.98"
	125		30° 8'25.35"	17°18'49.35"
	126		30° 8'40.50"	17°18'47.67"
	127		30° 8'56.00"	17°18'45.96"
	128		30° 9'12.84"	17°18'44.09"
	129		30° 9'28.25"	17°18'42.38"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Tower 120 to 129. Generic conditions apply.
Wetland	No watercourses were identified from Tower 120 to 129. Generic conditions apply.
Avifauna	No areas were identified for marking from Tower 120 to 129. Generic conditions apply.
Geology	• Towers 120 to 123 on aeolian material overlying marine sediments • Towers 125 to 129 on aeolian material overlying Tertiary and Quatrenary marine sediments. Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary.
Ecology	Tower 120 located on a dune. Avoid dune at waypoint 017 (30° 7'29.39"S; 17°18'47.27"E)

Tower 120

Tower 122

Tower 124

Tower 127

Tower Specific Management Plan for Towers 130 to 139

Tower Number	130	**Coordinates**	30° 9'43.87"	17°18'40.65"
	131		30° 9'58.48"	17°18'39.03"
	132		30°10'13.08"	17°18'37.51"
	133		30°10'29.76"	17°18'35.76"
	134		30°10'47.32"	17°18'33.93"
	135		30°11'4.30"	17°18'32.15"
	136		30°11'22.01"	17°18'30.30"
	137		30°11'39.76"	17°18'28.45"
	138		30°11'57.66"	17°18'26.57"
	139		30°12'14.27"	17°18'24.84"

Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 130 to 139. Generic conditions apply.
Wetland	No watercourses were identified from Tower 130 to 139. Generic conditions apply.
Avifauna	No areas were identified for marking from these Towers. Generic conditions apply.
Geology	• Aeolian material overlying Tertiary and Quatrenary marine sediments. Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary.
Ecology	No protected or listed species were identified. Generic conditions apply.

Tower 131

Tower 133

Tower 136

Tower 139

Tower Specific Management Plan for Towers 140 to 149

Tower Number	140	**Coordinates**	30°12'22.00"	17°18'24.03"
	141		30°12'29.45"	17°18'30.73"
	142		30°12'40.66"	17°18'40.81"
	143		30°12'56.79"	17°18'55.32"
	144		30°13'8.54"	17°19'5.89"
	145		30°13'19.23"	17°19'15.50"
	146		30°13'35.10"	17°19'14.14"
	147		30°13'53.58"	17°19'12.56"
	148		30°14'10.94"	17°19'11.06"
	149		30°14'27.38"	17°19'9.65"

Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 140 to 149. Generic conditions apply.
Wetland	• A B-section Channel (Swartlintjies River) was identified 254m to Tower 142, 50m to Tower 143 and 410m to Tower 144. • WUL is required.
Avifauna	• An avian flight path and a collision prone area were identified at Tower 142 and 143. • Anti-collision devices must be installed as soon as the wires are strung.
Geology	• Tower 148 is proposed on a sand dune. • Aeolian material overlying marine sediments. Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary.
Ecology	No protected or listed species were identified. Generic conditions apply.


Tower 141

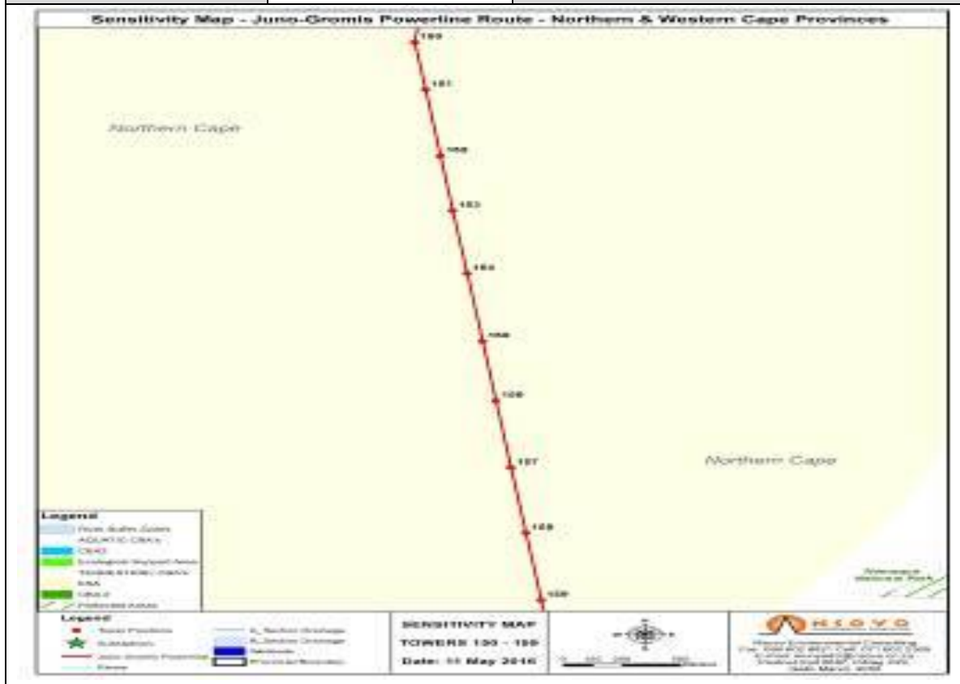

Tower 143


Tower 148


Tower 149

Tower Specific Management Plan for Towers 150 to 159

Tower Number		Coordinates		
	150		30°14'40.59"	17°19'8.52"
	151		30°14'53.44"	17°19'9.99"
	152		30°15'11.47"	17°19'12.05"
	153		30°15'26.34"	17°19'13.75"
	154		30°15'43.41"	17°19'15.70"
	155		30°16'1.83"	17°19'17.81"
	156		30°16'18.01"	17°19'19.66"
	157		30°16'36.17"	17°19'21.74"
	158		30°16'53.88"	17°19'23.77"
	159		30°17'12.16"	17°19'25.86"

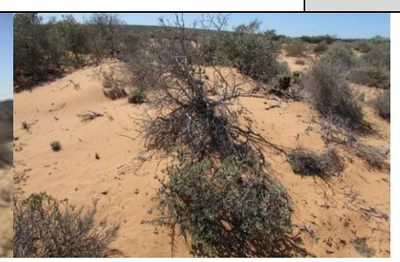


Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Tower 150 to 159. Generic conditions apply.
Wetland	No watercourses were identified from Tower 150 to 159. Generic conditions apply.
Avifauna	No areas were identified for marking from Tower 150 to 159. Generic conditions apply.
Geology	• Tower 153 is proposed on a sand dune. • Aeolian material overlying marine sediments. • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary.
Ecology	• Tower 150 located on a dune. The Near Threatened Helichrysum tricostatum occurs at this point. Place tower next to fence 40-50m west along road to avoid dune. • Tower 151 located on a dune. Can only be avoided if the tower is moved to the fence 90m to the west. • Tower 158 located on a sensitive intact duneveld. A more environmentally acceptable tower position would be at waypoint 019 30°16'53.41"S; 17°19'23.93"E) in the disturbed area.


.Tower 150

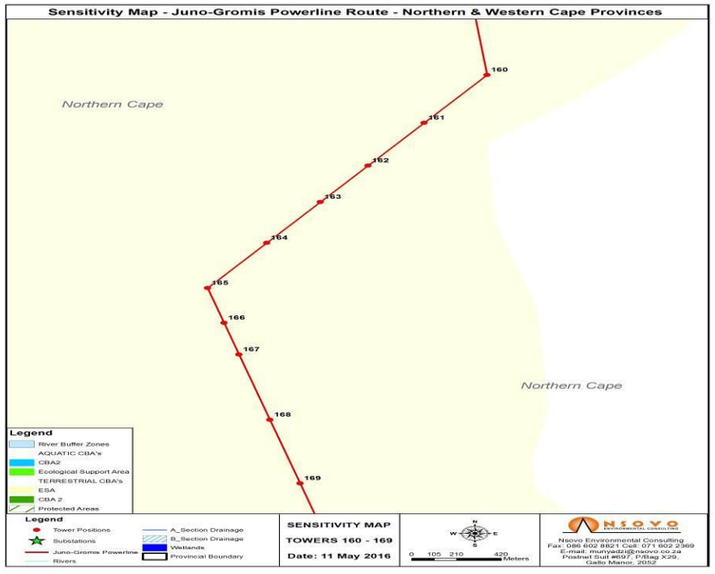

Tower 151


Tower 153


Tower 159

Tower Specific Management Plan for Towers 160 to 169

Tower Number	160	**Coordinates**	30°17'28.30"	17°19'27.71"
	161		30°17'41.40"	17°19'18.15"
	162		30°17'53.04"	17°19'9.66"
	163		30°18'3.00"	17°19'2.40"
	164		30°18'14.13"	17°18'54.28"
	165		30°18'26.45"	17°18'45.29"
	166		30°18'35.99"	17°18'47.80"
	167		30°18'44.62"	17°18'50.07"
	168		30°19'2.46"	17°18'54.77"
	169		30°19'19.82"	17°18'59.35"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified on site from Tower 160 to 169. Generic conditions apply.
Wetland	No watercourses were identified from Tower 160 to 169. Generic conditions apply.
Avifauna	No areas were identified fir marking from Tower 160 to 169. Generic conditions apply.
Geology	• Tower 168 is proposed on an area which is disturbed indefinitely. As a consequence, the sand in the proposed area is a result of mine dumps. • The tower must be moved to ensure the stability of the Pylon. • Alternatively, removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary.
Ecology	• Tower 167 on a sensitive intact duneveld. Move tower to disturbed area at waypoint 021 (30°18'44.85"S; 30°18'44.85"S) • Tower 169 on a rehabilitated mining area. Move tower off re-created dune to waypoint 022 30°19'21.53"S; 17°18'59.46"E).

Tower 162

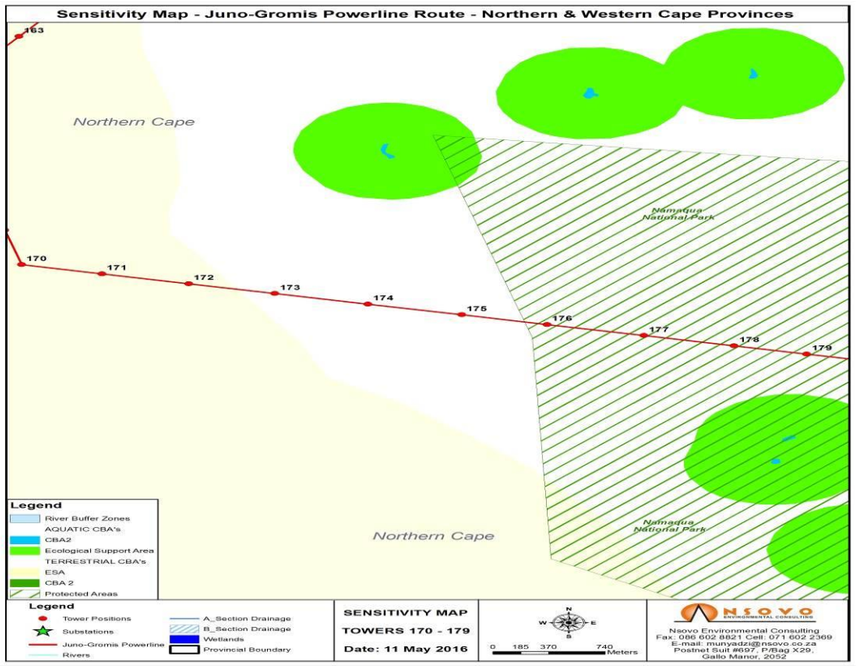
Tower 163

Tower 164

Tower 168

Tower Specific Management Plan for Towers 170 to 179

Tower Number	170	**Coordinates**	30°19'33.50"	17°19'2.95"
	171		30°19'37.13"	17°19'20.19"
	172		30°19'41.06"	17°19'38.79"
	173		30°19'44.95"	17°19'57.25"
	174		30°19'49.15"	17°20'17.21"
	175		30°19'53.39"	17°20'37.31"
	176		30°19'57.24"	17°20'55.59"
	177		30°20'1.62"	17°21'16.36"
	178		30°20'5.70"	17°21'35.72"
	179		30°20'8.97"	17°21'51.26"

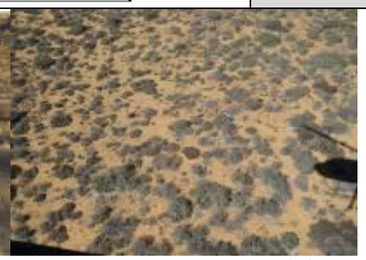


Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Tower 170 to 175. Generic conditions apply.
Wetland	No watercourses were identified from Tower 170 to 179. Generic conditions apply.
Avifauna	• Tower 175 to 179 falls within a National Park and a potential collision risk. • Anti-collision devices must be installed as soon as the wires are strung.
Geology	• Towers 170 to 176 are on Aeolian material overlying marine sediments • Towers 177 to 179 are on Aeolian material overlying marine sediments as well as undifferentiated granites and gneiss of the Namaqualand metamorphic complex • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary.
Ecology	Tower 171 situated on a small rehabilitated dune. Move off rehabilitated dune to waypoint 024 (30°19'36.91"S; 17°19'19.59"E).

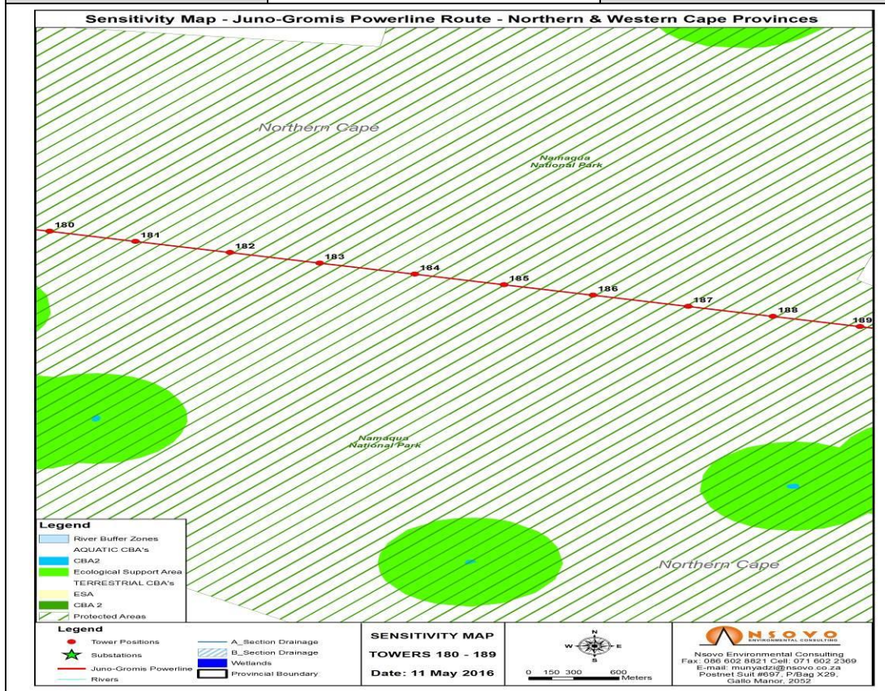

Tower 170


Tower 171


Tower 175


Tower 179

Tower Specific Management Plan for Towers 180 to 189				
Tower Number	180	**Coordinates**	30°20'12.35"	17°22'7.35"
	181		30°20'16.26"	17°22'25.88"
	182		30°20'20.54"	17°22'46.22"
	183		30°20'24.59"	17°23'5.50"
	184		30°20'28.91"	17°23'26.02"
	185		30°20'32.96"	17°23'45.27"
	186		30°20'37.00"	17°24'4.48"
	187		30°20'41.31"	17°24'25.00"
	188		30°20'45.14"	17°24'43.23"
	189		30°20'49.09"	17°25'2.01"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	• From Towers 176 to 191 are located within Namaqua reserves. The findings of these towers were exclusively extrapolated from aerial observations. Prior experience has taught us that archaeological sites tend to remain stable in reserves since there are few disturbances in these areas. • Archaeological monitoring must be undertaken by an archaeologist during construction of these towers. Especially on precipitous areas.
Wetland	No watercourses were identified from Tower 180 to 189. Generic conditions apply.
Avifauna	• Tower 180 to 189 falls within a National Park and a potential collision risk. • Anti-collision devices must be installed as soon as the wires are strung.
Geology	• Aeolian material overlying marine sediments as well as undifferentiated granites and gneiss of the Namaqualand metamorphic complex • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary.
Ecology	• Sensitive habitat between JUNO180 and JUN181Avoid dune with high numbers of Aloe perfoliata at waypoint 027.Avoid area at waypoint 027 (30°20'15.86"S; 17°22'19.96"E). • Tower 180 located on the edge of a dune. Move tower to waypoint 028 (30°20'16.21"S; 17°22'26.86"E) to avoid damage to the dune. • Tower 188 located on sensitive intact fynbos. Move tower to disturbed area at waypoint 030 (30°20'45.54"S; 17°24'43.17"E).

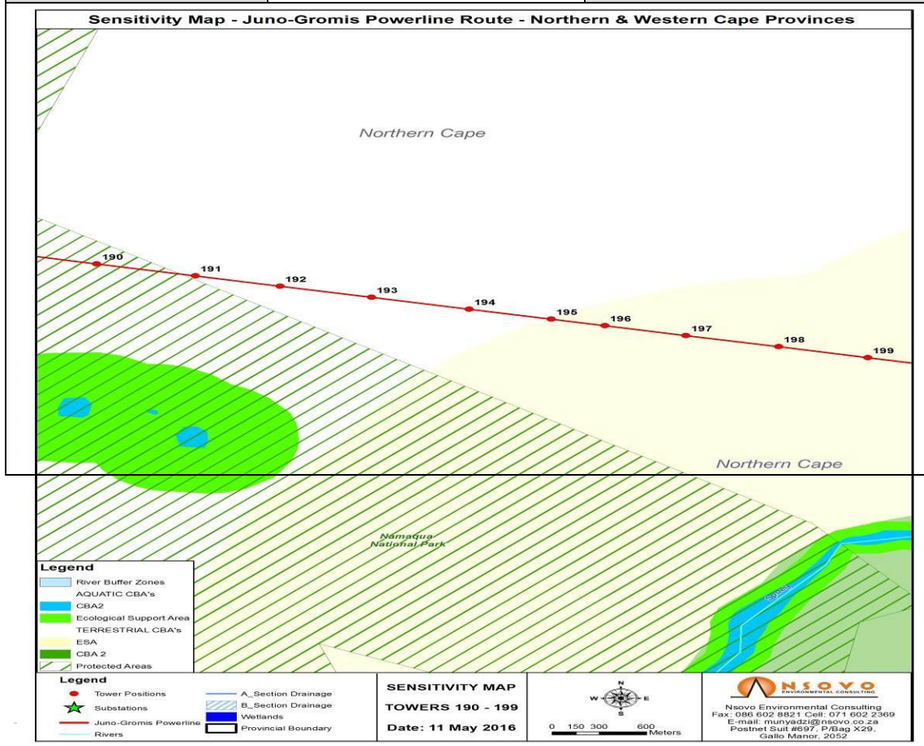

Tower 181


Tower 184


Tower 186


Tower 189

Tower Specific Management Plan for Towers 190 to 199				
Tower Number	190	**Coordinates**	30°20'53.28"	17°25'21.96"
	191		30°20'57.55"	17°25'42.29"
	192		30°21'1.22"	17°25'59.76"
	193		30°21'5.17"	17°26'18.61"
	194		30°21'9.39"	17°26'38.70"
	195		30°21'12.95"	17°26'55.66"
	196		30°21'15.27"	17°27'6.70"
	197		30°21'18.77"	17°27'23.41"
	198		30°21'22.77"	17°27'42.49"
	199		30°21'26.63"	17°28'0.90"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified From Towers 192 to 199. Generic conditions must apply.
Wetland	No watercourses were identified from Towers 190 to 199. Generic conditions apply.
Avifauna	• Tower 190 to 192 falls within a National Park and a potential collision risk. • Anti-collision devices must be installed as soon as the wires are strung.
Geology	• Tower 198 is proposed on a very fine sand dune. • Aeolian material overlying marine sediments • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary

	Ecology	• Tower 192 Sensitive intact duneveld. Move tower off the dune to waypoint 039 (30°20'58.63"S; 17°25'58.59"E). • Tower 193 Located on a dune. Move tower off dune to waypoint 040 (30°21'6.56"S; 17°26'21.80"E). • Tower 194 Located on a dune. Move tower off dune to waypoint 042 (30°21'10.61"S; 17°26'40.56"E). • Tower 195 Located on a dune. Move tower off dune to waypoint 043 (30°21'13.55"S; 17°26'57.05"E). • Tower 196 Located on a dune. Move tower off dune to waypoint 044 (30°21'13.34"S; 17°27'4.11"E). • Tower 197 Located on a dune. Move tower off dune to waypoint 045 (30°21'18.67"S; 17°27'25.19"E). • Tower 198 Located on a dune. Move tower off dune either to waypoint 046 (30°21'23.25"S; 17°27'41.97"E) or 140m East. • Tower 199 Located on a dune. Located on top of a dune. Move tower off dune either 80m east or 80m west


Tower 190


Tower 192


Tower 196


Tower 198

Tower Specific Management Plan for Towers 200 to 209

Tower Number	200	**Coordinates**	30°21'30.75"	17°28'20.53"
	201		30°21'34.83"	17°28'39.99"
	202		30°21'39.15"	17°29'0.61"
	203		30°21'43.26"	17°29'20.22"
	204		30°21'47.65"	17°29'41.21"
	205		30°21'51.10"	17°29'57.67"
	206		30°22'0.37"	17°30'7.06"
	207		30°22'11.64"	17°30'18.46"
	208		30°22'21.41"	17°30'28.35"
	208A		30°22'30.46"	17°30'37.52"
	209		30°22'40.67"	17°30'47.85"

Tower Specific Management Plan

Specialist	Recommendations
Heritage	• An informal family graveyard was noted 300m of Tower No. 203, next to the access road. • Several oval stone assemblages which might possibly be an indication of a grave site were documented 80m south east of Tower 204. The Farm owner must be consulted with regarding the possibility of this being a grave. • The grave site must be marked and barricaded throughout the construction phase.
Wetland	• Watercourses were identified 350m to Tower 203, 490m from Tower 204. • A B-section Channel (Horees River) was identified 265m from Tower 209. • WUL is required.
Avifauna	• An avian flight path and a collision prone area were identified from Tower 203 to Tower 205. • Anti-collision devices must be installed as soon as the wires are strung.
Geology	• Towers 200 to 206 are on Aeolian material overlying marine sediments as well as undifferentiated granites and gneiss of the Namaqualand metamorphic complex • Tower 207 and 209 are on Undifferentiated granites and gneiss of the Namaqualand metamorphic complex • Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading
Ecology	No Species were identified in theses Towers. Generic conditions apply.

Tower 203

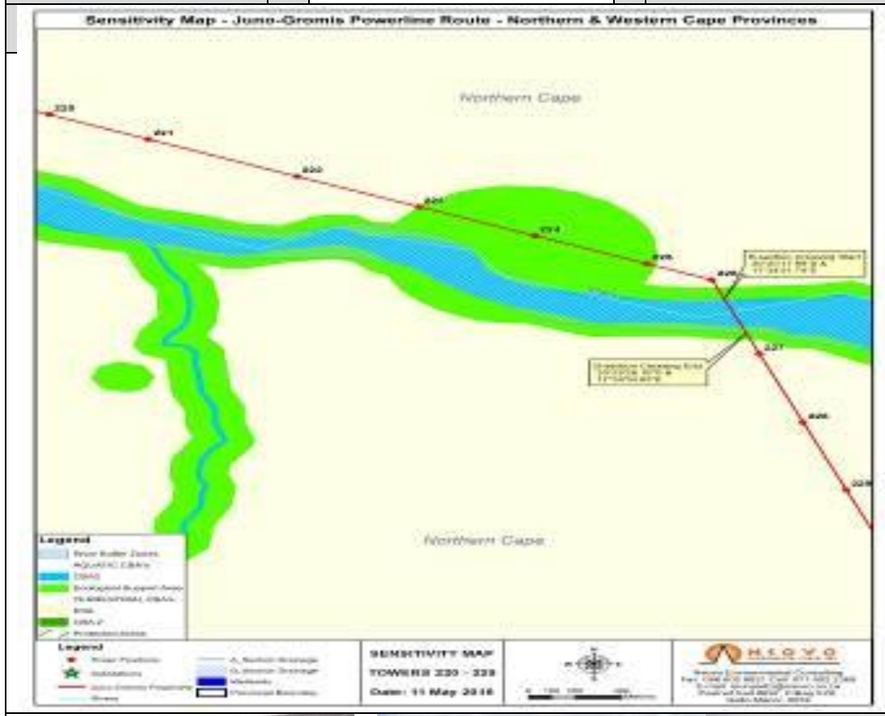
Tower 204

Tower 207

Tower 208

Tower Specific Management Plan for Towers 220 to 229

Tower Number	Plan for Towers 210 to 219	Coordinates		
220		30°24'33.73"	17°32'58.47"	
221	210	30°24'39.66"	30°22'47.92"	17°33'12.14"	17°30'55.19"
222	211	30°24'48.58"	30°22'58.42"	17°33'32.71"	17°31'5.83"
223	212	30°25'5.89"	30°23'8.52"	17°33'49.59"	17°31'16.06"
224	213	30°25'2.84"	30°23'21.07"	17°34'5.62"	17°31'28.76"
225	214	30°25'9.56"	30°23'34.66"	17°34'21.12"	17°31'42.53"
226	215	30°25'13.45"	30°23'44.46"	17°34'30.10"	17°31'52.46"
227	216	30°25'31.26"	30°23'57.56"	17°34'36.64"	17°32'5.73"
228	217	30°25'42.74"	30°24'8.37"	17°34'42.70"	17°32'16.69"
229	218	30°26'3.96"	30°24'21.29"	17°34'48.66"	17°32'29.77"
			30°24'21.98"		17°32'38.30"



Tower Specific Management Plan

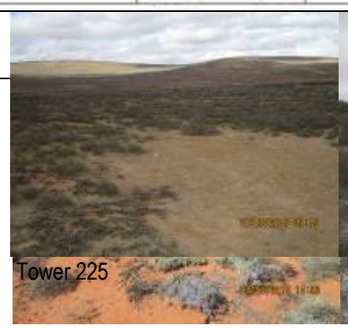
Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 220 to 229. Generic conditions must apply
Wetland	• A watercourse was identified 342m from Tower 220 and 465m from Tower 221. • A B-section channel (Spoeg River) was identified 427m from Tower 222, 165m from Tower 223, 250m from Tower 224, 242m from Tower 225, 110m from Tower 226 and 200m from Tower 227. • WUL is required.
Avifauna	• An avian flight path and a collision prone area were identified from Tower 225 to Tower 227. • Anti-collision devices must be installed as soon as the wires are strung.
Geology	• Undifferentiated granites and gneiss of the Namaqualand metamorphic complexHard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading • Towers 227 to 229 are on Aeolian material overlying marine sediments as well as undifferentiated granites and gneiss of the Namaqualand metamorphic complex
Ecology	Tower 227 Population of rare red form of Dorotheanthus rourkei at waypoint 049 (30°23'14.66"S; 17°31'21.85"E) should be avoided. Located on top of a dune. Move tower to waypoint 052 (30°25'34.72"S; 17°34'37.52"E).

~~Recommendations~~

~~No Heritage sites were identified from Towers 210 to 219. Generic conditions must apply~~

- A B-section Channel (Horees River) was identified 98m from Tower 210, 118m from Tower 211 and 98m from Tower 210.
- A watercourse was identified at 273m from Tower 213, 260m from Tower 214, 258m from Tower 215, 291m from Tower 216, 348m from Tower 217, 186m from Tower 218 and 194m from Tower 219. WUL is required.
- An Avian flight path and a collision prone area were identified at Tower 210 and 211.
- Anti-collision devices must be installed as soon as the wires are strung.
- Undifferentiated granites and gneiss of the Namaqualand metamorphic complexHard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading
- ~~Sensitive habitat between Tower 212 and 213. Rare form of Dorotheanthus rourkei may be impacted.~~ Located on top of a dune. Move tower to waypoint 052 (30°25'34.72"S; 17°34'37.52"E).
- ~~Tower 213 Population of rare red form of Dorotheanthus rourkei at waypoint. High numbers so impacts~~ ~~bably very low (i.e. 'acceptable' loss).~~


Tower 222


Tower 225

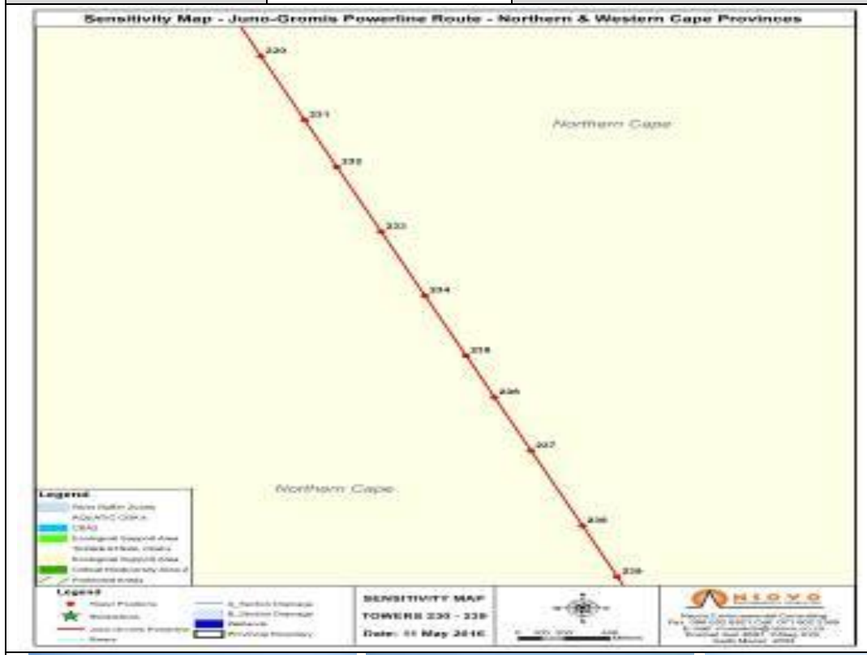

Tower 226


Tower 227

~~Tower 212~~ ~~Tower 216~~ ~~Tower 217~~ ~~Tower 219~~

Tower Specific Management Plan for Towers 230 to 239

Tower Number		Coordinates		
	230		30°26'21.26"	17°34'55.02"
	231		30°26'38.03"	17°35'1.18"
	232		30°26'50.36"	17°35'5.72"
	233		30°27'7.36"	17°35'11.97"
	234		30°27'24.14"	17°35'18.14"
	235		30°27'39.88"	17°35'23.93"
	236		30°27'50.83"	17°35'27.95"
	237		30°28'4.85"	17°35'33.11"
	238		30°28'24.58"	17°35'40.37"
	239		30°28'37.95"	17°35'45.28"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 230 to 239. Generic conditions must apply
Wetland	No watercourses were identified from Towers 230 to 239. Generic conditions apply.
Avifauna	No areas for marking were identified from Tower 230 to 239. Generic conditions apply
Geology	• Tower 230 and 233 is proposed on a sand dune. • Aeolian material overlying marine sediments as well as undifferentiated granites and gneiss of the Namaqualand metamorphic complex • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary
Ecology	Sensitive habitat between JUNO230 and JUN231 A 'meerkat heuweltjie' occurs at waypoint 056 (30°26'31.15"S; 17°35'0.87"E). Avoid important ecological feature at waypoint 056.

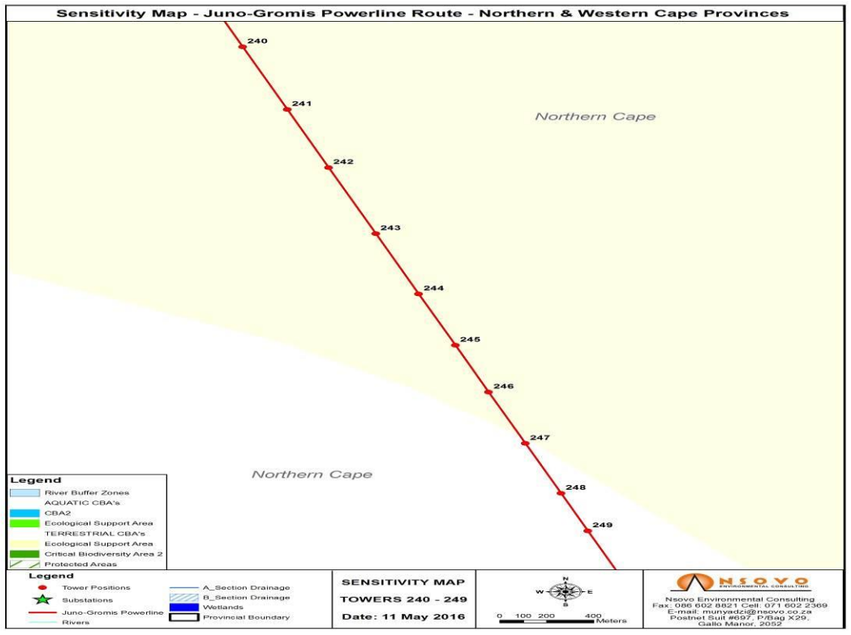
Tower 230

Tower 233

Tower 234

Tower Specific Management Plan for Towers 240 to 249

Tower Number		Coordinates		
	240		30°28'49.41"	17°35'49.50"
	241		30°29'6.17"	17°35'55.66"
	242		30°29'21.72"	17°36'1.39"
	243		30°29'39.41"	17°36'7.90"
	244		30°29'55.54"	17°36'13.83"
	245		30°30'9.25"	17°36'18.88"
	246		30°30'21.79"	17°36'23.50"
	247		30°30'35.54"	17°36'28.56"
	248		30°30'48.89"	17°36'33.47"
	249		30°30'58.94"	17°36'37.17"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 240 to 249. Generic conditions must apply
Wetland	No watercourses were identified from Towers 240 to 249. Generic conditions apply.
Avifauna	No areas for marking were identified from Tower 240 to 249. Generic conditions apply
Geology	• *Aeolian material overlying undifferentiated granites and gneiss of the Namaqualand metamorphic complex as well as marine sediments* • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary.
Ecology	• Tower 243 Located on a dune. Agathosma elata not found at this point but does occur in the area. Move tower off dune to side of dune at waypoint 062 (30°29'39.50"S; 17°36'7.97"E). • Tower 248 Located on top of dune. Move tower further south to waypoint 063 (30°30'53.40"S; 17°36'34.93"E).


Tower 240

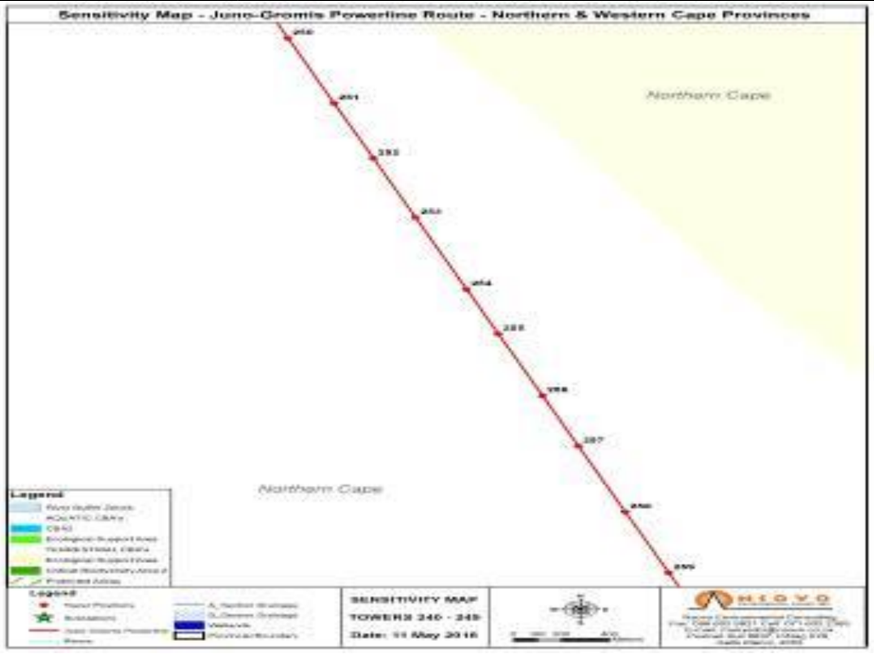

Tower 243


Tower 245


Tower 249

Tower Specific Management Plan for Towers 250 to 259

Tower Number		Coordinates		
	250		30°31'12.50"	17°36'42.16"
	251		30°31'29.44"	17°36'48.40"
	252		30°31'43.78"	17°36'53.68"
	253		30°31'59.17"	17°36'59.35"
	254		30°32'17.86"	17°37'6.24"
	255		30°32'29.46"	17°37'10.51"
	256		30°32'45.55"	17°37'16.44"
	257		30°32'58.71"	17°37'21.29"
	258		30°33'15.85"	17°37'27.60"
	259		30°33'31.69"	17°37'33.44"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	• A historical structure was noted 100m south west of Tower 251. • The position of this structure must be marked and ensure that no negative impact take place during construction. • The site must be barricaded.
Wetland	No watercourses were identified from Towers 250 to 259. Generic conditions apply.
Avifauna	No areas were identified from Tower 250 to Tower 259. Generic conditions apply.
Geology	• Aeolian material overlying undifferentiated granites and gneiss of the Namaqualand metamorphic complex as well as marine sediments • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary
Ecology	• Tower 250 Located on dune top. Move tower 50 m north to avoid dune. • Tower 252 Located on a dune top depression (blowout). Not a suitable location. Move tower to waypoint 065 (30°31'44.41"S; 17°36'54.49"E). • Sensitive habitat between JUNO259 and JUN261General area is sensitive due to the locality of Hermannia sp. nov. Avoid the species at waypoint 070 (30°33'31.87"S; 17°37'33.69"E).

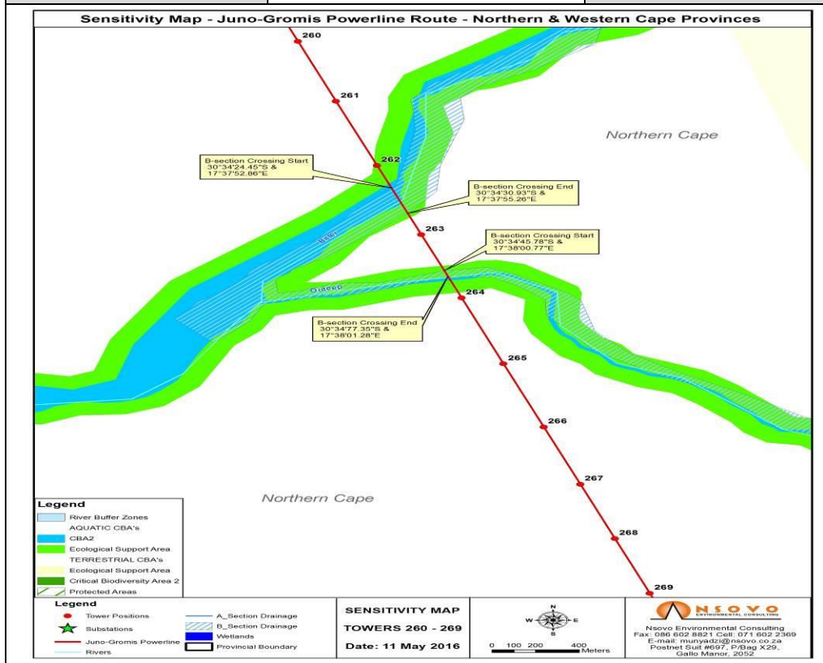

Tower 251


Tower 253


Tower 257

Tower Specific Management Plan for Towers 260 to 269

Tower Number	260	**Coordinates**	30°33'46.73"	17°37'38.98"
	261		30°34'2.18"	17°37'44.67"
	262		30°34'18.69"	17°37'50.76"
	263		30°34'36.51"	17°37'57.33"
	264		30°34'52.81"	17°38'3.34"
	265		30°35'9.77"	17°38'9.59"
	266		30°35'26.01"	17°38'15.58"
	267		30°35'40.77"	17°38'21.03"
	268		30°35'54.75"	17°38'26.18"
	269		30°36'8.84"	17°38'31.38"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 260 to 269. Generic conditions must apply
Wetland	• A B- section Channel (Bitter River and Outeep River) - towers positioned at the confluence of the 2 rivers were identified 472m from Bitter to Tower 261, 206m from Bitter to Tower 262, 279m from Outeep to Tower 263,158m from Bitter to Tower 264, 189 from Outeep to Tower 265. • WUL is required.
Avifauna	• An Avian flight path and a collision prone area were identified from Tower 261 to 264. • Anti-collision devices must be installed as soon as the wires are strung.
Geology	• Aeolian material overlying undifferentiated granites and gneiss of the Namaqualand metamorphic complex as well as marine sediments • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary. • Towers 267 to 269 are on undifferentiated granites and gneiss of the Namaqualand metamorphic complex. Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading
Ecology	Tower 261 Sensitive habitat, and locality of Hermannia sp. nov. population. The tower should be moved to the less sensitive area at waypoint 071 (30°33'48.86"S; 17°37'38.66"E).

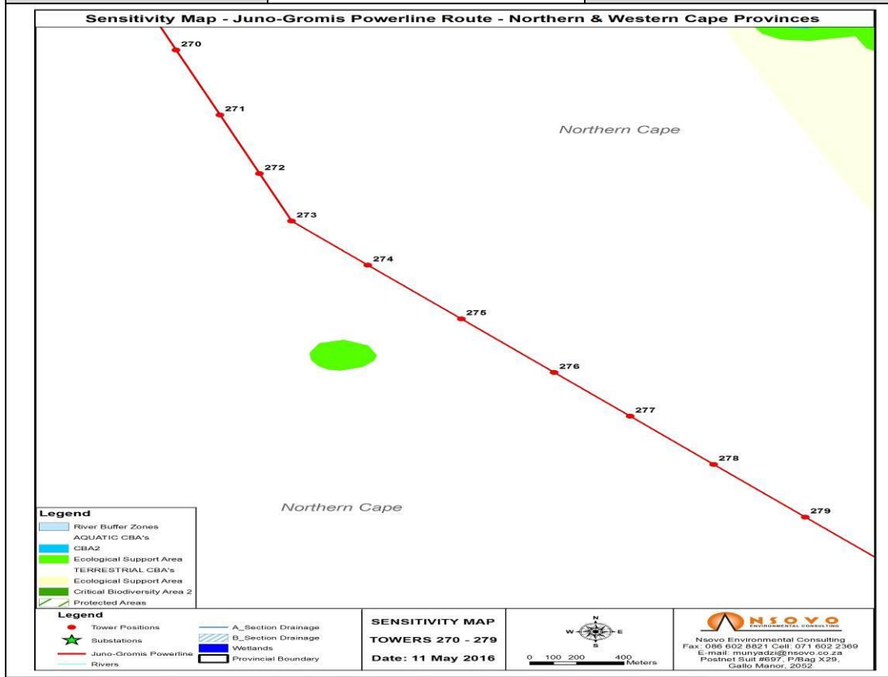

Tower 260


Tower 262


Tower 263


Tower 264

Tower Specific Management Plan for Towers 270 to 279				
Tower Number	270	**Coordinates**	30°36'22.40"	17°38'36.38"
	271		30°36'38.77"	17°38'42.42"
	272		30°36'53.59"	17°38'47.89"
	273		30°37'5.56"	17°38'52.31"
	274		30°37'16.67"	17°39'2.84"
	275		30°37'30.25"	17°39'15.71"
	276		30°37'43.78"	17°39'28.53"
	277		30°37'54.83"	17°39'39.01"
	278		30°38'6.98"	17°39'50.52"
	279		30°38'20.31"	17°40'3.16"



Tower Specific Management Plan	
Specialist	**Recommendations**
Heritage	• A historical structure was noted 110m of Tower 279. • The position of this structure must be marked and ensure that no negative impact take place during construction. • The site must be barricaded.
Wetland	No watercourses were identified from Towers 270 to 279. Generic conditions apply.
Avifauna	No areas were identified for marking from Tower 270 to Tower 279. Generic conditions apply.
Geology	• Aeolian material overlying undifferentiated granites and gneiss of the Namaqualand metamorphic complex as well as marine sediments • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary.
Ecology	An unknown Species were identified at Tower 279.


Tower 270

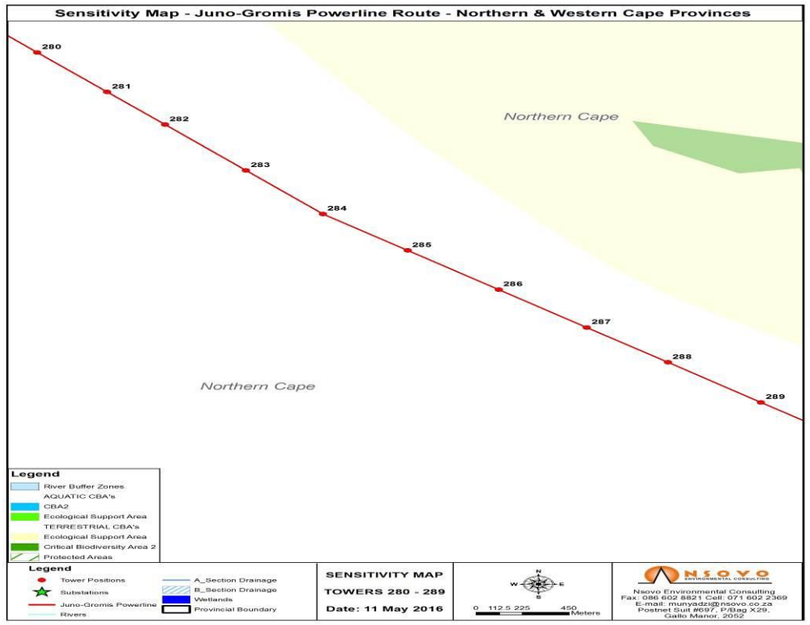

Tower 274


Tower 278


Tower 279

Tower Specific Management Plan for Towers 280 to 289

Tower Number	280	**Coordinates**	30°38'32.65"	17°40'14.86"
	281		30°38'44.24"	17°40'25.85"
	282		30°38'53.78"	17°40'34.90"
	283		30°39'7.21"	17°40'47.64"
	284		30°39'19.95"	17°40'59.72"
	285		30°39'30.62"	17°41'13.04"
	286		30°39'42.09"	17°41'27.36"
	287		30°39'53.17"	17°41'41.20"
	288		30°40'3.37"	17°41'53.94"
	289		30°40'15.09"	17°42'8.57"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 280 to 289. Generic conditions must apply
Wetland	No watercourses were identified from Towers 280 to 289. Generic conditions apply.
Avifauna	No areas were identified from Tower 280 to 289. Generic conditions apply.
Geology	• Aeolian material overlying undifferentiated granites and gneiss of the Namaqualand metamorphic complex as well as marine sediments. • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary.
Ecology	Tower 282 Located on a heuweltjie. Move tower to waypoint 073 (30°38'54.75"S; 17°40'34.44"E) or any direction 50 m away from JUN282 to avoid heuweltjie.


Tower 280

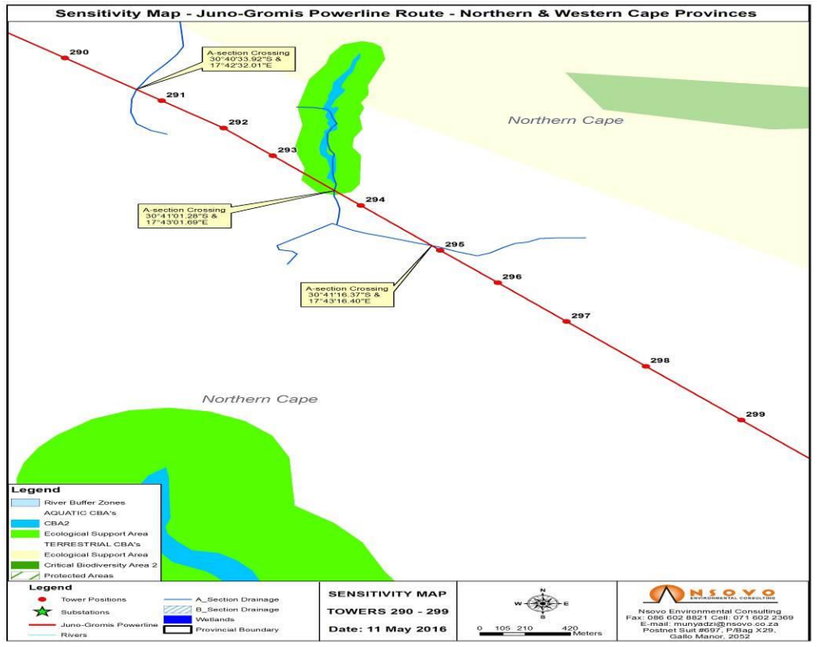

Tower 283


Tower 286


Tower 288

Tower Specific Management Plan for Towers 290 to 299

Tower Number		Coordinates		
	290		30°40'25.30"	17°42'21.32"
	291		30°40'36.94"	17°42'35.86"
	292		30°40'44.42"	17°42'45.20"
	293		30°40'51.98"	17°42'52.56"
	294		30°41'5.52"	17°43'5.77"
	295		30°41'17.75"	17°43'17.69"
	296		30°41'26.58"	17°43'26.30"
	297		30°41'37.19"	17°43'36.65"
	298		30°41'49.38"	17°43'48.55"
	299		30°42'4.07"	17°44'2.87"

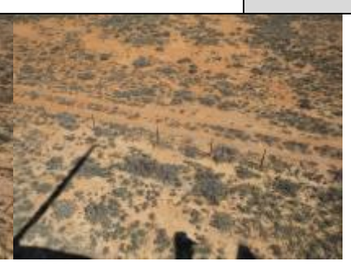


Tower Specific Management Plan

Specialist	Recommendations
Heritage	• A house which might be over 60 years of age was noted about 100m of Tower 292. • The position of this structure must be marked and ensure that no negative impact take place during construction. • The site must be barricaded.
Wetland	• An A-section channel was identified 379m from Tower 290, 119m from Tower 291, 246m from Tower 292, 232m from Tower 293, 91m from Tower 294, 26m from Tower 295. • WUL is required.
Avifauna	• Higher collision risk associated with the presence of water was identified from Tower 293 to Tower 295. • Anti-collision devices must be installed as soon as the wires are strung.
Geology	• Aeolian material overlying undifferentiated granites and gneiss of the Namaqualand metamorphic complex as well as marine sediments • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary • Towers 297 to 300 are on undifferentiated granites and gneiss of the Namaqualand metamorphic complex. Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading.
Ecology	Tower 294 Located on a heuweltjie. Move tower off heuweltjie 20m to the west.


Tower 292

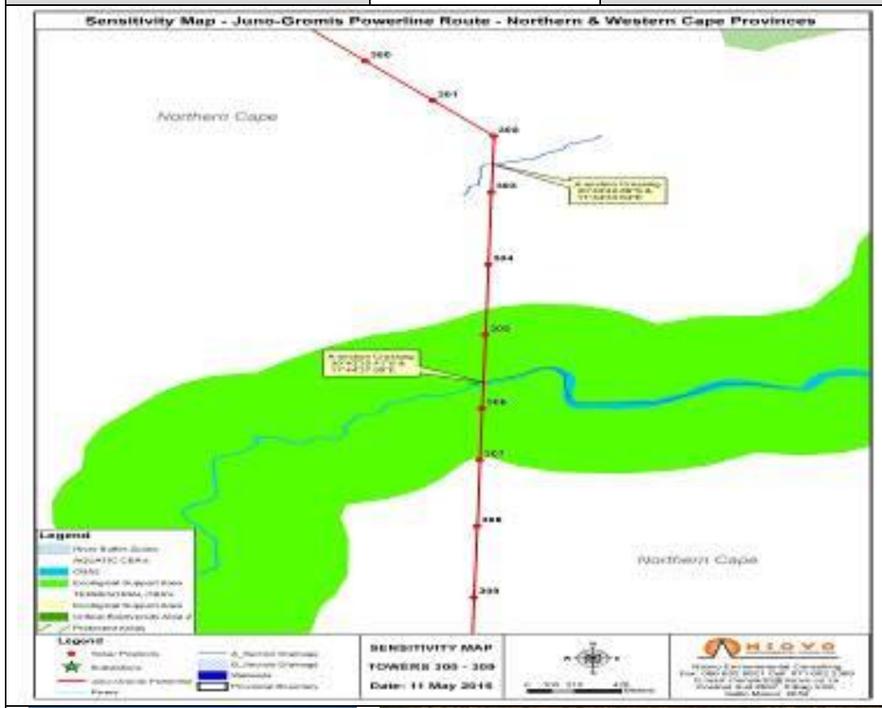

Tower 295


Tower 296


Tower 298

Tower Specific Management Plan for Towers 300 to 309

Tower Number	300	**Coordinates**	30°42'16.89"	17°44'15.38"
	301		30°42'26.85"	17°44'25.09"
	302		30°42'35.82"	17°44'33.84"
	303		30°42'49.96"	17°44'33.49"
	304		30°43'8.26"	17°44'33.05"
	305		30°43'26.04"	17°44'32.61"
	306		30°43'44.57"	17°44'32.16"
	307		30°43'57.62"	17°44'31.84"
	308		30°44'14.33"	17°44'31.43"
	309		30°44'32.30"	17°44'30.99"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 300 to 309. Generic conditions must apply
Wetland	• An A-section Channel was identified 213m from Tower 302, 78m from Tower 303, 388m from Tower 305, 191m from Tower 306. • WUL is required.
Avifauna	• Higher collision risk associated with the presence of water was identified at Tower 305 and Tower 306. • Anti-collision devices must be installed as soon as the wires are strung.
Geology	• Undifferentiated granites and gneiss of the Namaqualand metamorphic complex • Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading
Ecology	Tower 303 Located on a heuweltjie. Move tower off heuweltjie to waypoint 076 (30°42'50.48"S; 17°44'33.22"E).


Tower 300


Tower 301


Tower 302


Tower 307

Tower Specific Management Plan for Towers 310 to 319

Tower Number	310	**Coordinates**	30°44'50.10"	17°44'30.56"
	311		30°45'7.64"	17°44'30.13"
	312		30°45'26.45"	17°44'29.67"
	313		30°45'42.73"	17°44'29.27"
	314		30°45'56.81"	17°44'28.93"
	315		30°46'13.47"	17°44'28.52"
	316		30°46'28.34"	17°44'28.16"
	317		30°46'38.70"	17°44'35.25"
	318		30°46'54.78"	17°44'46.26"
	319		30°47'8.69"	17°44'55.78"

Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 310 to 319. Generic conditions must apply
Wetland	• A B-section channel (Groen River) was identified 237m from Tower 316, 68m from Tower 317, 151m from Tower 318 and 406m from Tower 319. • WUL is required.
Avifauna	• An Avian flight path and a collision prone area were identified from Tower 316 to Tower 319. • Anti-collision devices must be installed as soon as the wires are strung.
Geology	• Undifferentiated granites and gneiss of the Namaqualand metamorphic complex • Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading
Ecology	No Protected or listed Species were identified from Tower 310 to 316.Generic conditions apply.


Tower 313

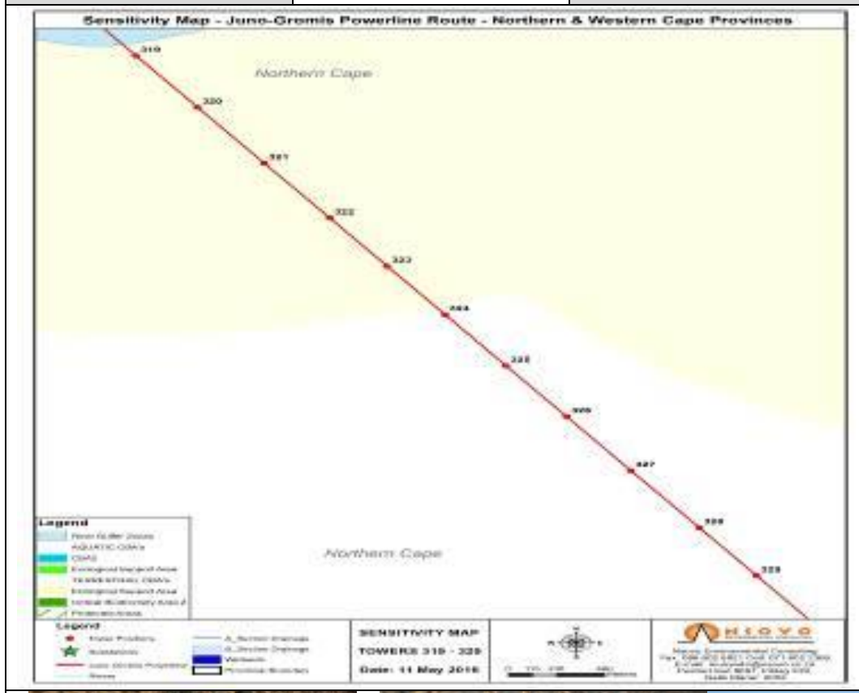

Tower 316


Tower 317


Tower 318

Tower Specific Management Plan for Towers 320 to 329

Tower Number		Coordinates		
	320		30°47'22.59"	17°45'5.30"
	321		30°47'37.57"	17°45'15.56"
	322		30°47'52.28"	17°45'25.63"
	323		30°48'5.19"	17°45'34.47"
	324		30°48'18.21"	17°45'43.39"
	325		30°48'31.94"	17°45'52.80"
	326		30°48'45.58"	17°46'2.14"
	327		30°49'0.07"	17°46'12.07"
	328		30°49'15.44"	17°46'22.60"
	329		30°49'28.29"	17°46'31.41"

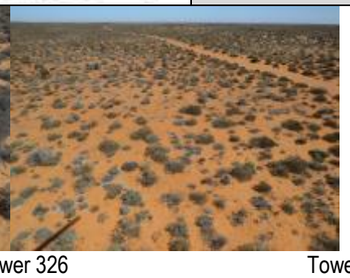


Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 320 to 329. Generic conditions must apply
Wetland	No watercourses were identified from Towers 320 to 329. Generic conditions apply.
Avifauna	No areas were identified for marking from Tower 320 to Tower 329. Generic conditions apply.
Geology	• Aeolian material overlying marine sediments as well as granites and gneiss of the Namaqualand metamorphic complex • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary
Ecology	• Tower 322 Located on a dune. Move tower 60 m north to avoid dune. • Tower 323 Meerkat heuweltjie. Move tower 20m south to avoid sensitive ecological feature.


Tower 320

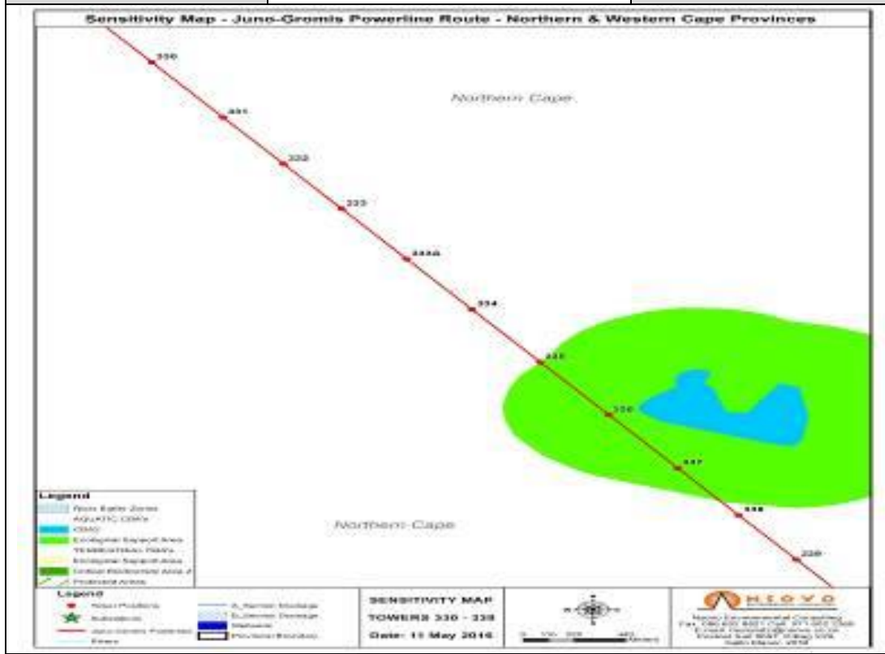

Tower 324


Tower 326


Tower 327

Tower Specific Management Plan for Towers 330 to 339

Tower Number	330	**Coordinates**	30°49'42.31"	17°46'41.02"
	331		30°49'56.71"	17°46'50.89"
	332		30°50'8.91"	17°46'59.25"
	333		30°50'20.70"	17°47'7.34"
	333A		30°50'33.85"	17°47'16.36"
	334		30°50'47.02"	17°47'25.39"
	335		30°51'0.82"	17°47'34.85"
	336		30°51'14.65"	17°47'44.33"
	337		30°51'28.60"	17°47'53.90"
	338		30°51'40.93"	17°48'2.36"
	339		30°51'52.55"	17°48'10.33"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 330 to 339. Generic conditions must apply
Wetland	No watercourses were identified from Towers 330 to 339. Generic conditions apply.
Avifauna	No areas were identified for marking from Tower 330 to Tower 339. Generic conditions apply.
Geology	• Aeolian material overlying marine sediments as well as undifferentiated granites and gneiss of the Namaqualand metamorphic complex • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary
Ecology	• Tower 333 Located on a heuweltjie. Move tower 40m north. • Tower 333A Located very close to a heuweltjie. Move tower 30m south to waypoint 079 (30°50'34.50"S; 17°47'16.81"E).


Tower 330

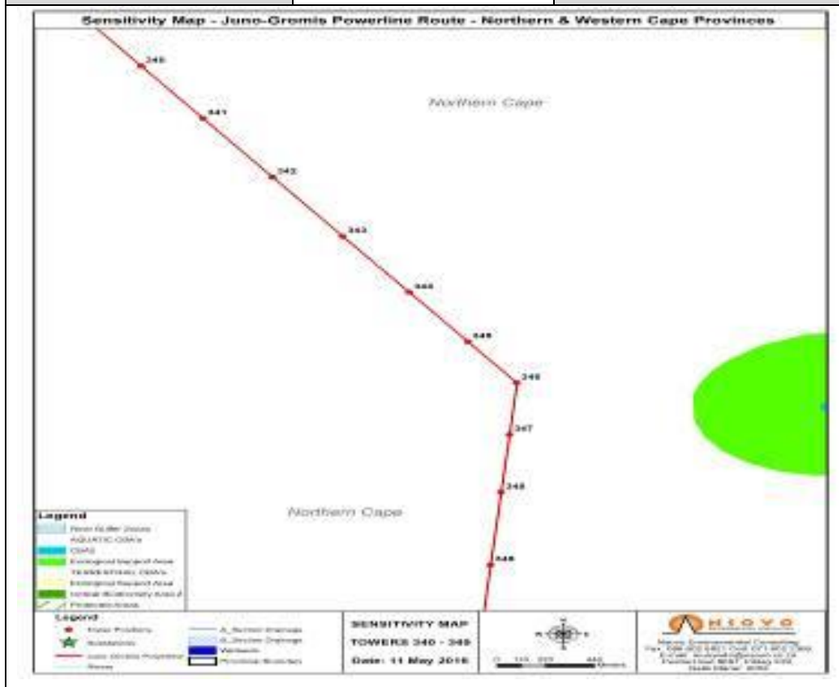

Tower 333


Tower 334


Tower 337

Tower Specific Management Plan for Towers 340 to 349

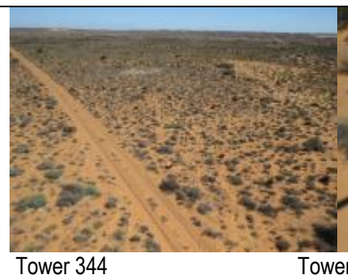
Tower Number	340	**Coordinates**	30°52'3.67"	17°48'17.96"
	341		30°52'16.83"	17°48'26.99"
	342		30°52'31.65"	17°48'37.16"
	343		30°52'46.56"	17°48'47.39"
	344		30°53'0.67"	17°48'57.08"
	345		30°53'13.17"	17°49'5.65"
	346		30°53'23.55"	17°49'12.78"
	347		30°53'36.56"	17°49'11.70"
	348		30°53'51.14"	17°49'10.49"
	349		30°54'9.42"	17°49'8.97"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Tower 340 to 349. Generic conditions must apply
Wetland	No watercourses were identified from Tower 340 to 349. Generic conditions apply.
Avifauna	No areas were identified for marking from Tower 340 to Tower 349. Generic conditions apply.
Geology	• Tower 345 and Tower 348 are located on a sand dune. • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary
Ecology	• Tower 343 Located on a dune ridge. Move tower off the ridge, to either waypoint 080 (30°52'44.54"S; 17°48'46.94"E) or 081 (30°52'47.02"S; 17°48'48.72"E). • Tower 347 Located on a dune ridge. Move tower off ridge to waypoint 085 (30°53'37.06"S; 17°49'12.59"E). • Tower 348 Dune 'blowout'. Not ideal to place a tower here since this is may be an ancient and important ecological feature. Move tower 60m south

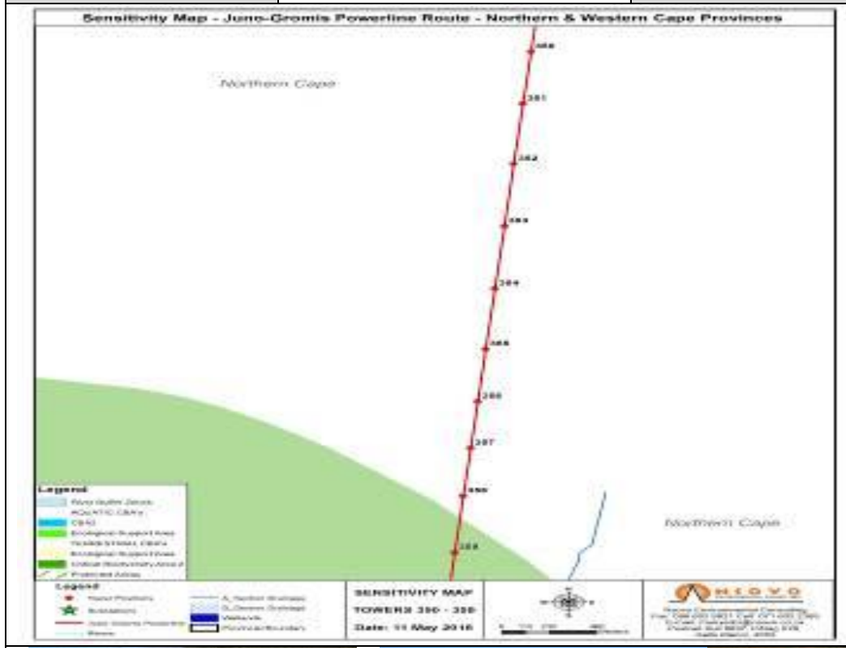

Tower 342


Tower 344


Tower 345


Tower 348

Tower Specific Management Plan for Towers 350 to 359				
Tower Number	350	**Coordinates**	30°54'25.72"	17°49'7.61"
	351		30°54'40.66"	17°49'6.37"
	352		30°54'57.87"	17°49'4.93"
	353		30°55'15.68"	17°49'3.45"
	354		30°55'33.56"	17°49'1.96"
	355		30°55'50.85"	17°49'0.52"
	356		30°56'5.84"	17°48'59.28"
	357		30°56'19.15"	17°48'58.17"
	358		30°56'32.86"	17°48'57.03"
	359		30°56'49.05"	17°48'55.68"



Tower Specific Management Plan	
Specialist	**Recommendations**
Heritage	No Heritage sites were identified from Towers 350 to 359. Generic conditions must apply
Wetland	No watercourses were identified from Towers 350 to 359. Generic conditions apply.
Avifauna	No areas were identified for marking from Tower 350 to Tower 359. Generic conditions apply.
Geology	• Tower 359 is located on a sand dune. • Aeolian material overlying marine sediments as well as undifferentiated granites and gneiss of the Namaqualand metamorphic complex • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary
Ecology	• *Babiana rubella* was identified from Tower 350 to Tower 357. • Search and rescue must be undertaken and necessary permits applied for.


Tower 350

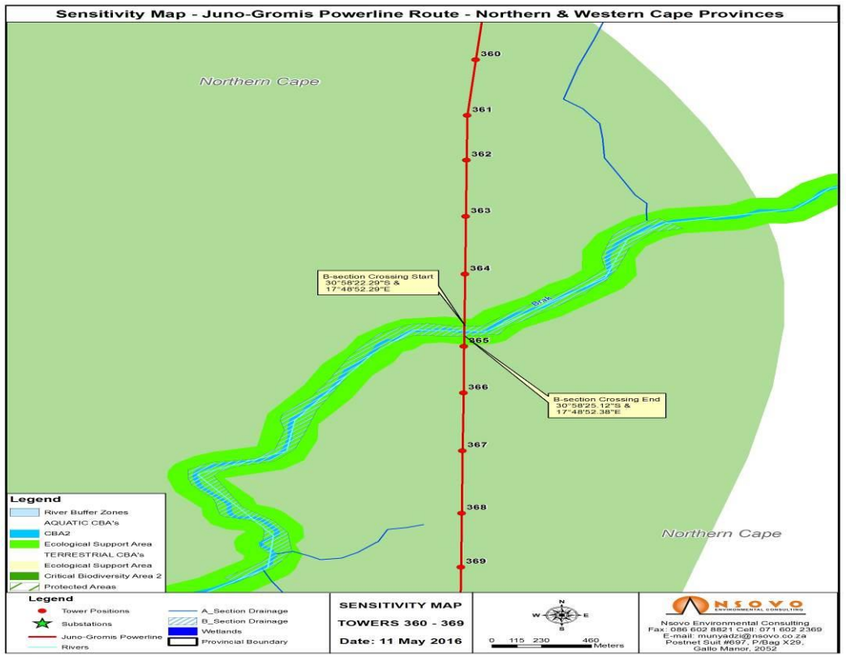

Tower 351


Tower 354


Tower 359

Tower Specific Management Plan for Towers 360 to 369

Tower Number		Coordinates		
	360		30°57'8.28"	17°48'54.08"
	361		30°57'23.76"	17°48'52.79"
	362		30°57'36.17"	17°48'52.69"
	363		30°57'51.85"	17°48'52.57"
	364		30°58'7.89"	17°48'52.45"
	365		30°58'27.95"	17°48'52.30"
	366		30°58'40.91"	17°48'52.20"
	367		30°58'56.97"	17°48'52.08"
	368		30°59'14.34"	17°48'51.95"
	369		30°59'29.32"	17°48'51.83"

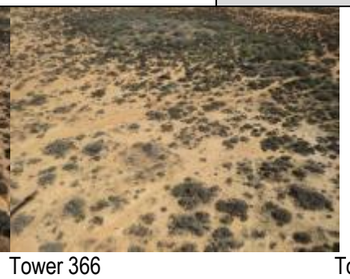


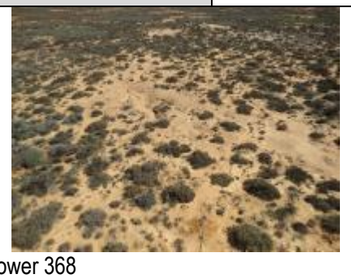
Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 360 to 369. Generic conditions must apply
Wetland	• An A-section Channel was identified 411m from Tower 361, 166m from Tower 368 and 405m from Tower 369. • A B-Section channel (Brak River) was identified 425m from Tower 364, 146m from Tower 365 and 475m from Tower 366. • WUL is required.
Avifauna	• Higher collision risk associated with the presence of water was identified from Tower 364, 365, 367 and Tower 368. • Anti-collision devices must be installed as soon as the wires are strung.
Geology	• Towers 360 to 365 are on Aeolian material overlying marine sediments as well as undifferentiated granites and gneiss of the Namaqualand metamorphic complex. Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary • Towers 366 to 360 are on undifferentiated granites and gneiss of the Namaqualand metamorphic complex. Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading
Ecology	No Protected Species were identified from Tower 360 to Tower 369.

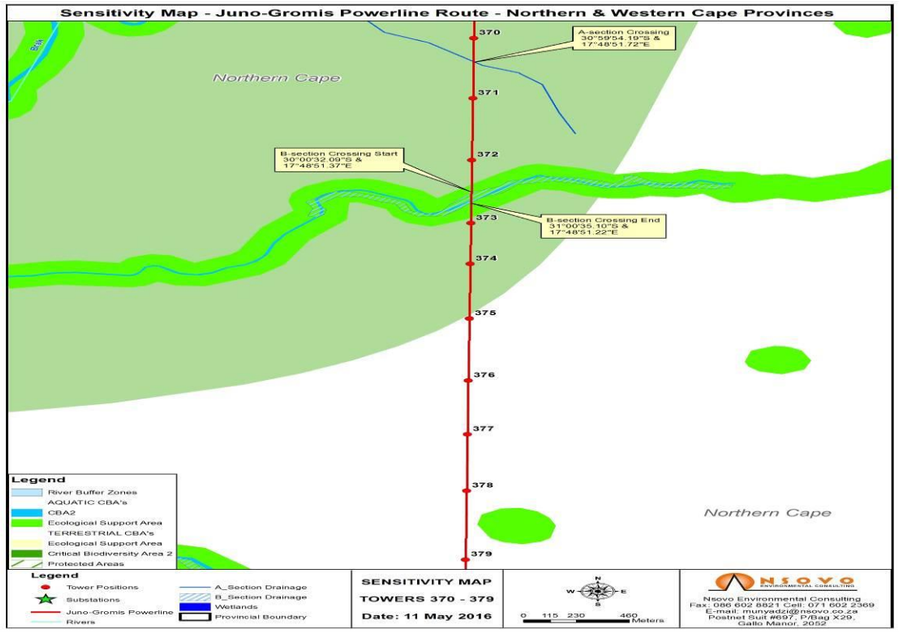

Tower 364


Tower 365


Tower 366


Tower 368

Tower Number		Coordinates		
	370		30°59'47.50"	17°48'51.69"
	371		31° 0'4.87"	17°48'51.56"
	372		31° 0'22.72"	17°48'51.43"
	373		31° 0'40.96"	17°48'51.29"
	374		31° 0'52.71"	17°48'51.20"
	375		31° 1'8.53"	17°48'51.08"
	376		31° 1'26.46"	17°48'50.94"
	377		31° 1'42.00"	17°48'50.82"
	378		31° 1'58.33"	17°48'50.70"
	379		31° 2'18.23"	17°48'50.55"



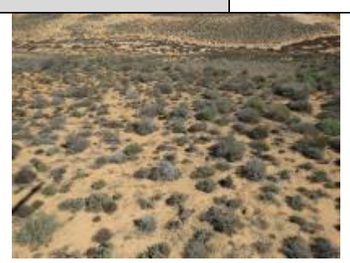
Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 370 to 379. Generic conditions must apply
Wetland	• An A -section Channel was identified 176m to Tower 370, 303m to Tower 371 and 430m to Tower 372. • A B-section Channel was identified 430m to Tower 372 and 158m from Tower 373. • WUL is required.
Avifauna	• Higher collision risk associated with the presence of water was identified at Tower 372. • Anti-collision devices must be installed as soon as the wires are strung.
Geology	• Undifferentiated granites and gneiss of the Namaqualand metamorphic complex • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary
Ecology	No Protected Species were identified from Tower 370 to Tower 379.Generic conditions apply.


Tower 370

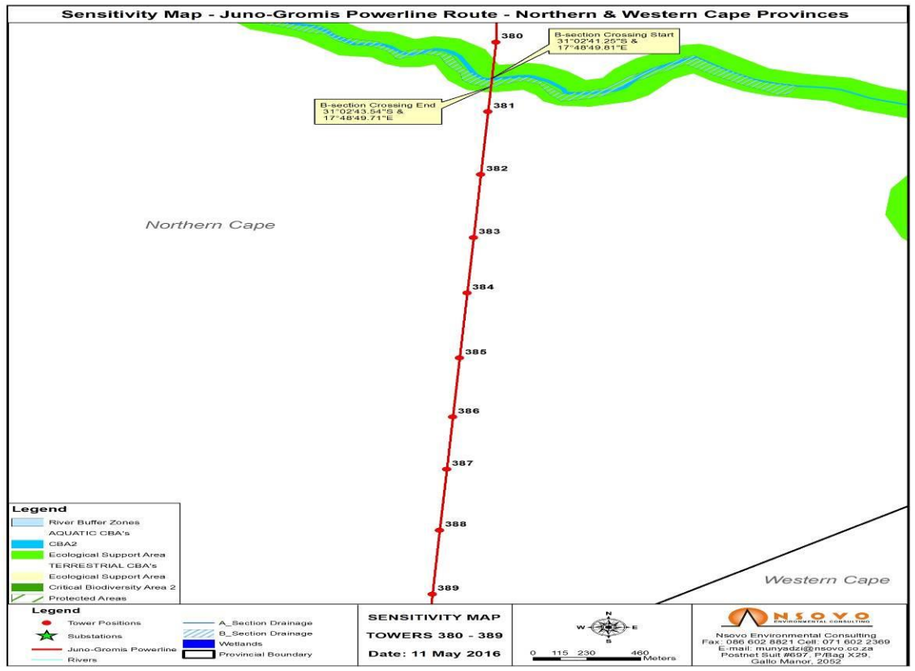

Tower 373


Tower 375


Tower 379

Tower Specific Management Plan for Towers 380 to 389

Tower Number	380	**Coordinates**	31° 2'31.30"	17°48'50.45"
	381		31° 2'50.26"	17°48'49.33"
	382		31° 3'7.41"	17°48'48.32"
	383		31° 3'24.58"	17°48'47.31"
	384		31° 3'39.71"	17°48'46.42"
	385		31° 3'57.43"	17°48'45.38"
	386		31° 4'13.52"	17°48'44.43"
	387		31° 4'27.77"	17°48'43.59"
	388		31° 4'44.39"	17°48'42.61"
	389		31° 5'1.83"	17°48'41.59"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 380 to 389. Generic conditions must apply
Wetland	• A B-section Channel was identified 232m from Tower 381 and 322m from Tower 380. • WUL is required.
Avifauna	• Higher collision risk associated with the presence of water was identified at Tower 380 and Tower 381. • Anti-collision devices must be installed as soon as the wires are strung.
Geology	• Aeolian material overlying undifferentiated granites and gneiss of the Namaqualand metamorphic complex as well as marine sediments • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary
Ecology	• Sensitive habitat south of Tower 383 Lampranthus procumbens found at waypoint 097. Avoid any impacts at waypoint 097 (31° 3'26.95"S; 17°48'46.66"E). • Tower 384 Endangered species Agathosma elata population. Move tower to waypoint 098 to avoid Agathosma elata. Tower 387 Located on the side of a dune. *Boophone haemanthoides* present. Move tower off the dune edge to waypoint 099 (31° 4'27.87"S; 17°48'43.26"E).


Tower 380

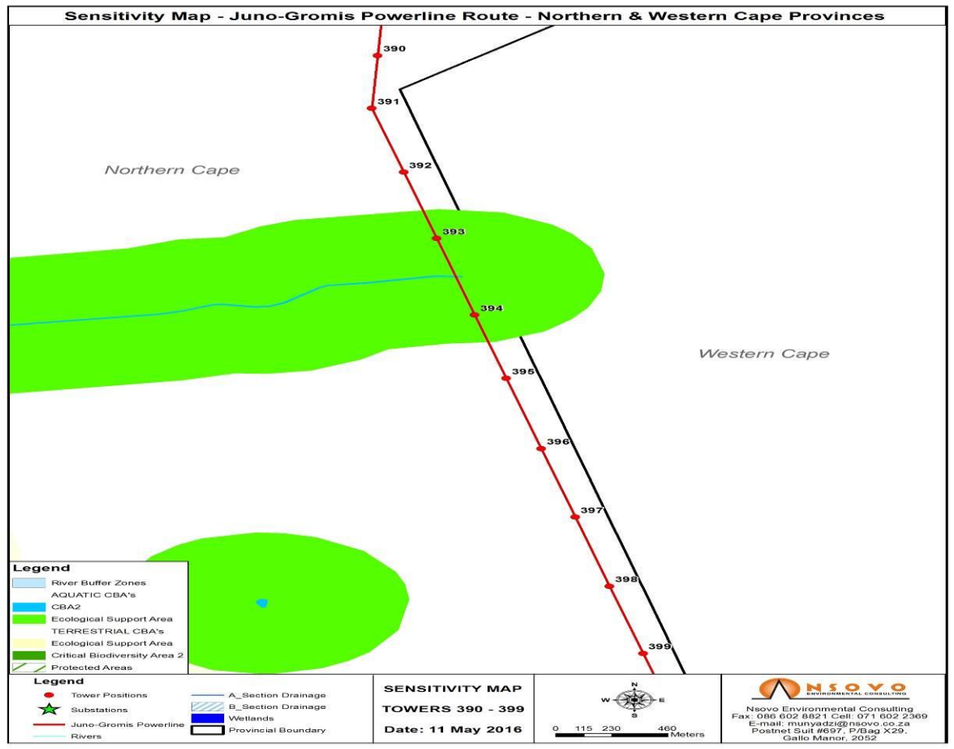

Tower 381


Tower 383


Tower 388

Tower Specific Management Plan for Towers 390 to 399

Tower Number		Coordinates		
	390		31° 5'18.48"	17°48'40.60"
	391		31° 5'31.38"	17°48'39.85"
	392		31° 5'46.97"	17°48'44.07"
	393		31° 6'3.19"	17°48'48.47"
	394		31° 6'21.89"	17°48'53.54"
	395		31° 6'37.36"	17°48'57.74"
	396		31° 6'54.55"	17°49'2.40"
	397		31° 7'11.29"	17°49'6.94"
	398		31° 7'28.17"	17°49'11.52"
	399		31° 7'44.61"	17°49'15.98"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Tower 390 to 399. Generic conditions must apply
Wetland	No watercourses were identified from Tower 390to 399. Generic conditions apply.
Avifauna	No areas were identified for marking. Generic conditions apply.
Geology	• Aeolian material overlying undifferentiated granites and gneiss of the Namaqualand metamorphic complex as well as marine sediments • Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary.
Ecology	• Tower 392 Dunes occur in all directions. No leeway to mitigate impacts by moving tower. • Tower 393 Located on the side of a heuweltjie. Move tower off heuweltjie to waypoint 101 (31° 6'3.51"S; 17°48'48.33"E). • Tower 394 Agathosma elata is common at this point so ecological benefit in moving the tower. Twenty plants of Leucospermum rodolentum occur at waypoint 102. Avoid impacts to Leucospermum rodolentum which occur at waypoint 102 (31° 6'32.62"S; 17°48'57.32"E). • Tower 396 Dune systems in all directions. The Near Threatened Metalasia adunca occurs at this point. No leeway to reposition tower. • Tower 397 Located on top of a large rounded dune-like hilltop. Move tower off the dune to waypoint 105 (31° 7'11.54"S; 17°49'7.68"E) to avoid dune. • Tower 398 Located on a dune. Move tower to waypoint 107 (31° 7'28.23"S; 17°49'12.43"E) to avoid dune. • Tower 399 Located between dune, which is not a suitable position. Moving the tower would impact the surrounding dunes, which would have no ecological benefit.


Tower 390

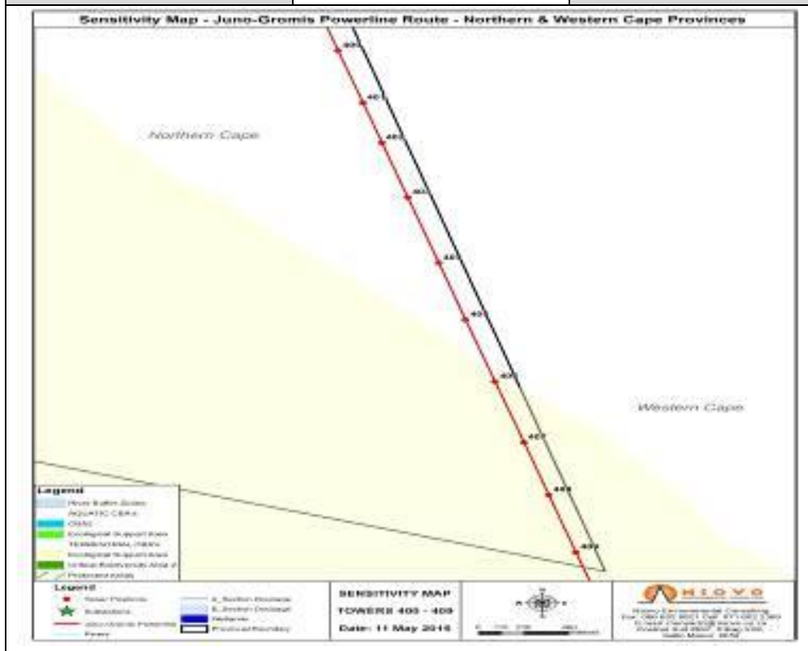

Tower 394


Tower 397


Tower 398

Tower Specific Management Plan for Towers 400 to 499

Tower Number	400	**Coordinates**	31° 8'0.15"	17°49'20.20"
	401		31° 8'15.16"	17°49'24.27"
	402		31° 8'26.57"	17°49'27.37"
	403		31° 8'42.21"	17°49'31.62"
	404		31° 9'1.00"	17°49'36.72"
	405		31° 9'17.27"	17°49'41.14"
	406		31° 9'35.00"	17°49'45.95"
	407		31° 9'52.44"	17°49'50.69"
	408		31°10'7.49"	17°49'54.77"
	409		31°10'23.89"	17°49'59.23"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	A wind mill was noted 50m of Tower 400. Eskom must take note of the site and its position and ensure that no negative impact take place during construction.
Wetland	No watercourses were identified from Tower 400 to 409. Generic conditions apply.
Avifauna	No areas were identified for marking from Tower 400 to Tower 409. Generic conditions apply.
Geology	• Towers 401 to 406 are on Aeolian material overlying undifferentiated granites and gneiss of the Namaqualand metamorphic complex as well as marine sediments. Removal of collapsible soil by excavation to a specified depth for foundation loading, backfilling in thin layers and compaction to specified density. Piled foundations where necessary. • Towers 407 to 409 are on undifferentiated granites and gneiss of the Namaqualand metamorphic complex with marine sediments on the lower footslopes. Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading
Ecology	• *Tower 405 Located on a dune saddle-like feature i.e. not a dune slack. Avoid this position by moving the tower to waypoint 112 (31° 9'15.48"S; 17°49'40.77"E).* • *Tower 406 Located on edge of small dunes. Move tower to waypoint 115 (31° 9'34.29"S; 17°49'45.93"E) to avoid dunes.*


Tower 401

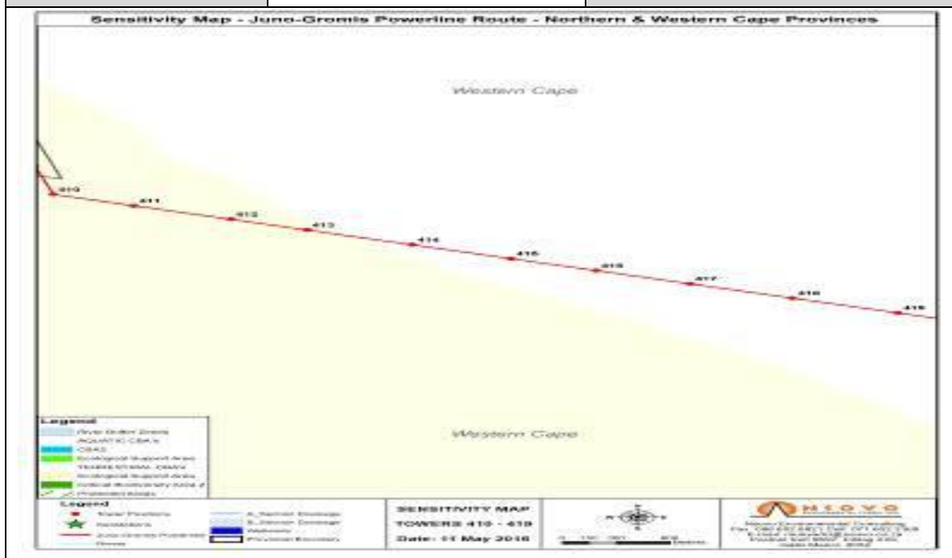

Tower 403


Tower 406


Tower 408

Tower Specific Management Plan for Towers 410 to 419

Tower Number	410	**Coordinates**	31°10'36.04"	17°50'2.53"
	411		31°10'40.99"	17°50'17.11"
	412		31°10'46.91"	17°50'34.55"
	413		31°10'51.58"	17°50'48.32"
	414		31°10'57.97"	17°51'7.18"
	415		31°11'4.00"	17°51'24.96"
	416		31°11'9.21"	17°51'40.33"
	417		31°11'14.93"	17°51'57.21"
	418		31°11'21.19"	17°52'15.68"
	419		31°11'27.60"	17°52'34.60"



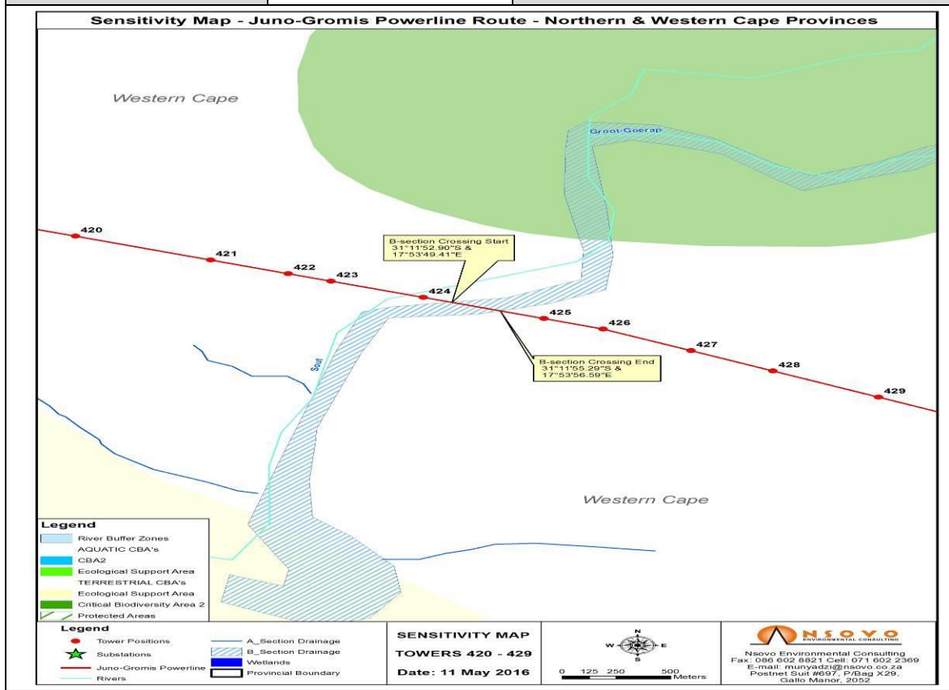
Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 410 to 419. Generic conditions must apply
Wetland	No watercourses were identified from Tower 410 to 419. Generic conditions apply.
Avifauna	No areas were identified for marking from Tower 410 To Tower 419. Generic conditions apply.
Geology	• Undifferentiated granites and gneiss of the Namaqualand metamorphic complex with marine sediments on the lower footslopes. • Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading
Ecology	• Tower 411 Located on a heuweltjie. Move tower off heuweltjie to waypoint 118 (31°10'40.37"S; 17°50'18.00"E). • Tower 416 Located on a heuweltjie. Move tower to waypoint 120 (31°11'9.01"S; 17°51'40.81"E) to avoid heuweltjie. Tower 417 Located on the edge of a heuweltjie. Move tower to waypoint 121 (31°11'15.22"S; 17°51'57.48"E) to avoid heuweltjie.

Tower 410

Tower 414

Tower Specific Management Plan for Towers 420 to 429				
Tower Number	420	**Coordinates**	31°11'33.90"	17°52'53.21"
	421		31°11'40.73"	17°53'13.36"
	422		31°11'44.66"	17°53'24.97"
	423		31°11'46.81"	17°53'31.31"
	424		31°11'51.47"	17°53'45.10"
	425		31°11'57.57"	17°54'3.10"
	426		31°12'0.56"	17°54'11.94"
	427		31°12'6.81"	17°54'25.01"
	428		31°12'12.64"	17°54'37.24"
	429		31°12'20.16"	17°54'52.99"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 420 to 429. Generic conditions must apply
Wetland	• A B-section Channel (Sout River) was identified 364m from Tower 423, 106m from Tower 424, 80m from Tower 425 and 290m from Tower 426. • WUL is required.
Avifauna	• Avian flight path and a collision prone area were identified at Tower 424 and Tower 425. • Anti-collision devices must be installed as soon as the wires are strung.
Geology	• Undifferentiated granites and gneiss of the Namaqualand metamorphic complex with marine sediments on the lower footslopes. • Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading
Ecology	No Species were identified from Tower 420 to Tower 429. Generic conditions apply.


Tower 425

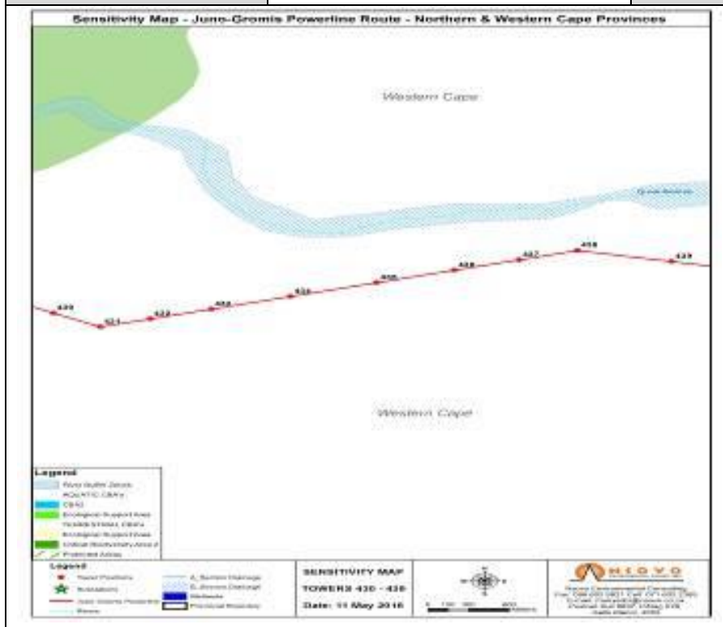

Tower 426


Tower 428


Tower 429

Tower Specific Management Plan for Towers 430 to 439

Tower Number	430	**Coordinates**	31°12'26.77"	17°55'6.82"
	431		31°12'32.12"	17°55'18.03"
	432		31°12'29.02"	17°55'30.02"
	433		31°12'25.27"	17°55'44.53"
	434		31°12'20.38"	17°56'3.44"
	435		31°12'15.06"	17°56'24.03"
	436		31°12'10.25"	17°56'42.63"
	437		31°12'6.26"	17°56'58.06"
	438		31°12'2.66"	17°57'12.00"
	439		31°12'6.93"	17°57'34.56"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 430 to 439. Generic conditions must apply
Wetland	B Section Channel (Groot-Goerap River) was identified 438m from Tower 437 and 400m from Tower 438. WUL is required.
Avifauna	No areas were identified for marking from Tower 430 to Tower 439. Generic conditions apply.
Geology	• Undifferentiated granites and gneiss of the Namaqualand metamorphic complex with marine sediments on the lower footslopes. • Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading
Ecology	• Sensitive quartz patches between Tower 436 and Tower 438 Sensitive endemic succulents on quartz patches. Avoid quartz patches at and surrounding waypoint 128 (31°12'7.44"S; 17°56'50.51"E). • Tower 437 Sensitive quartz patch. Move tower to waypoint 129 (31°12'6.04"S; 17°56'58.65"E). • Tower 439 Located on a dune. Move tower to more stable part of dune at waypoint 131 (31°12'6.80"S; 17°57'36.02"E).

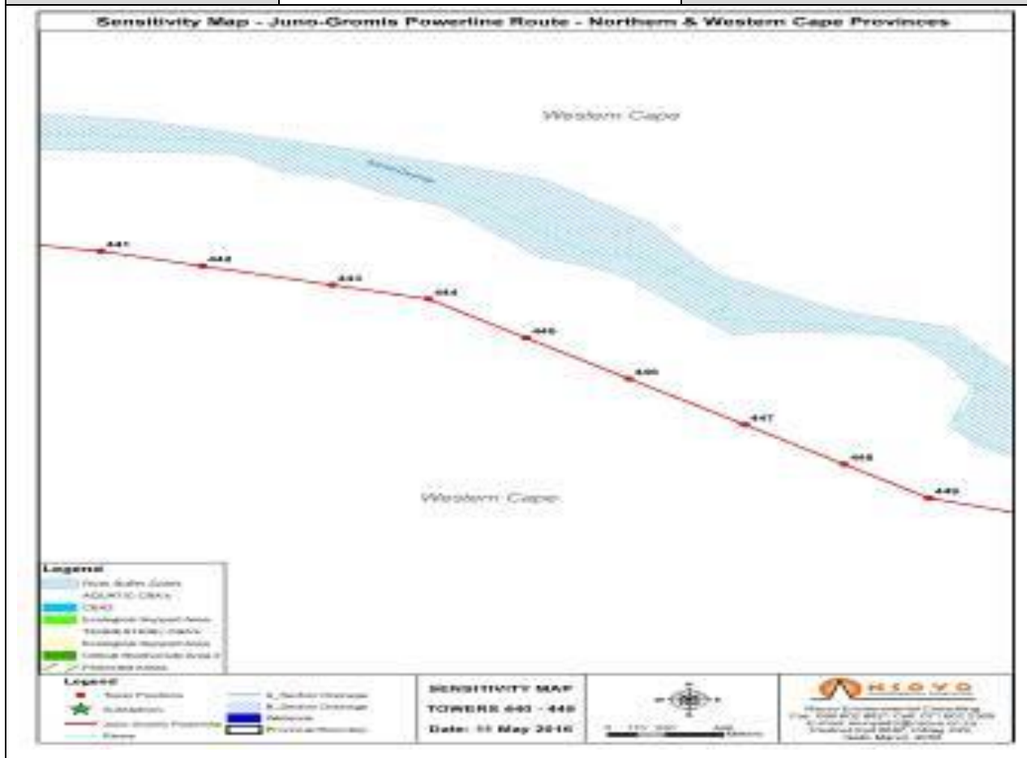

Tower 430


Tower 438


Tower 439

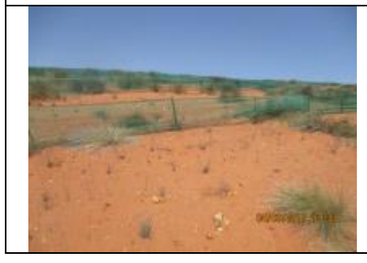
Tower Specific Management Plan for Towers 440 to 449

	441		31°12'10.05"	17°57'51.01"
	442		31°12'13.73"	17°58'4.06"
	443		31°12'18.42"	17°58'20.70"
	444		31°12'21.89"	17°58'33.03"
	445		31°12'31.48"	17°58'45.58"
	446		31°12'41.52"	17°58'58.71"
	447		31°12'52.88"	17°59'13.58"
	448		31°13'2.62"	17°59'26.32"
	449		31°13'10.93"	17°59'37.19"



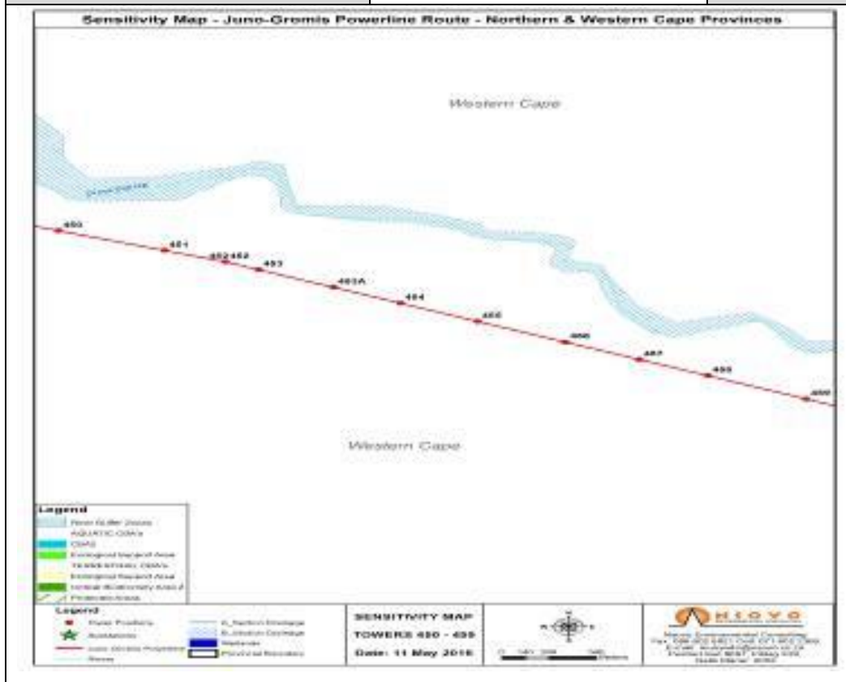
Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 441 to 449. Generic conditions must apply.
Wetland	• A B-section Channel (Groot-Goerap River) was identified 463m from Tower 448 and 400m from Tower 449. • WUL is required.
Avifauna	No areas were identified for marking from Tower 440 to Tower 449. Generic conditions apply.
Geology	Towers 441 to 449 are proposed on a rehabilitated area. • Undifferentiated granites and gneiss of the Namaqualand metamorphic complex with marine sediments on the lower footslopes. • Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading
Ecology	• Tower 453 Granite rocky habitat. Avoid area and place tower at waypoint 132 (31°13'27.63"S; 18° 0'28.06"E). • Tower 453A Located very close to a minor drainage line. Erosion-prone area. Move tower to waypoint 133 (31°13'33.80"S; 18° 0'42.68"E). • Tower 456 Slight erosion exists. Ensure erosion control or move tower to waypoint 134 (31°13'52.65"S; 18° 1'27.41"E) to circumvent this • Tower 459 Erosion prone area next to drainage line. Move away from drainage line to waypoint 136 (31°14'17.03"S; 18° 2'25.11"E).



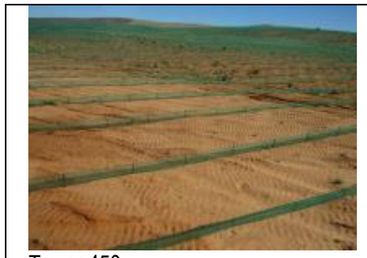

Tower 441	Tower 445	Tower 448	Tower 449

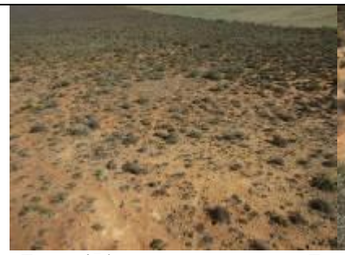
Tower Specific Management Plan for Towers 450 to 459				
Tower Number	450	**Coordinates**	31°13'15.00"	17°59'49.62"
	451		31°13'21.65"	18° 0'9.92"
	452		31°13'25.44"	18° 0'21.50"
	453		31°13'28.11"	18° 0'27.91"
	453A		31°13'34.06"	18° 0'42.21"
	454		31°13'39.37"	18° 0'54.97"
	455		31°13'45.49"	18° 1'9.68"
	456		31°13'52.47"	18° 1'26.47"
	457		31°13'58.33"	18° 1'40.56"
	458		31°14'3.76"	18° 1'53.62"
	459		31°14'11.58"	18° 2'12.42"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 450 to 459. Generic conditions must apply
Wetland	• A B-section Channel (Groot-Goerap River) was identified 313m from Tower 450, 406m from Tower 456, 305m from Tower 457, 440m from Tower 458 and 445 from Tower 459. • WUL is required.
Avifauna	No areas were identified for marking from Tower 450 to Tower 459. Generic conditions apply.
Geology	Tower 450 and 451 are proposed on a rehabilitated area. • Undifferentiated granites and gneiss of the Namaqualand metamorphic complex with marine sediments on the lower footslopes. Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading
Ecology	• Tower 462 Rocky granite habitat. Move off rocky area to waypoint 138 (31°14'37.52"S; 18° 3'12.92"E). • Tower 466 Quartz patch with Argyroderma sp. population. Move tower to either waypoint 139 (31°14'57.25"S; 18° 4'12.57"E) or 141 (31°14'58.64"S; 18° 4'15.25"E) or 142 (31°15'17.25"S; 18° 4'49.17"E) to avoid quartz patch.


Tower 450

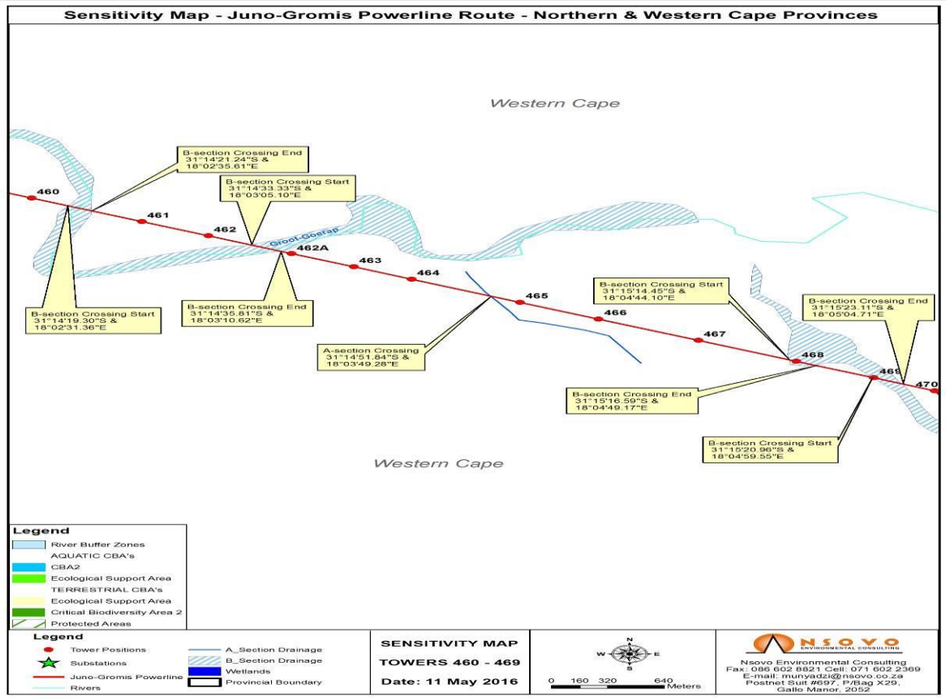

Tower 451


Tower 458


Tower 459

Tower Specific Management Plan for Towers 460 to 469

Tower Number		Coordinates		
	460		31°14'16.68"	18° 2'24.68"
	461		31°14'25.12"	18° 2'44.99"
	462		31°14'30.23"	18° 2'57.27"
	462A		31°14'36.56"	18° 3'12.51"
	463		31°14'41.34"	18° 3'24.00"
	464		31°14'45.77"	18° 3'34.66"
	465		31°14'54.06"	18° 3'54.63"
	466		31°15'0.06"	18° 4'9.08"
	467		31°15'7.69"	18° 4'27.45"
	468		31°15'15.20"	18° 4'45.50"
	469		31°15'21.11"	18° 4'59.74"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	• Historical Farm dwellings were noted approximately 150m from Tower 464. • The identified dwelling must be marked as no go area and barricaded.
Wetland	• An A-section Channel (Groot-Goerap River) was identified 197m from Tower 460, 261m from Tower 461, 190m from Tower 462, 40m from Tower 462A, 356m from Tower 463 and 262m from Tower 464. • A B-section Channel was identified 95m from Tower 465, 465m from Tower 466, 484m from Tower 467, 270m from Tower 468 and 10m from Tower 469. • WUL is required.
Avifauna	• Avian flight path and a collision prone area were identified from Tower 460 to Tower 464. • Higher collision risk associated with the presence of water was identified at Tower 468 and Tower 469. • Anti-collision devices must be installed as soon as the wires are strung.
Geology	• Undifferentiated granites and gneiss of the Namaqualand metamorphic complex with marine sediments on the lower footslopes. • Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading
Ecology	• *Vanzijlia annulata was identified at Tower 462 and Tower 462A. Aspalathus obtusata was identified at Tower 466.* • Move Tower 462 20m NW to avoid rocky outcrop. Move Tower 462A 30m SE to avoid rocky outcrop.

Tower 460

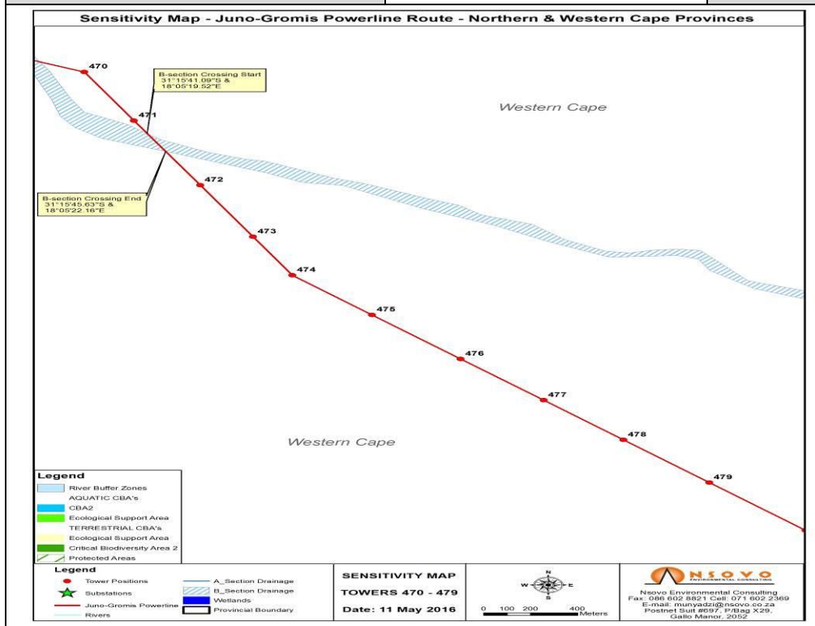
Tower461

Tower 463

Tower 469

Tower Specific Management Plan for Towers 470 to 479

Tower Number	470	**Coordinates**	31°15'25.76"	18° 5'10.94"
	471		31°15'37.98"	18° 5'17.82"
	472		31°15'54.21"	18° 5'26.94"
	473		31°16'7.19"	18° 5'34.24"
	474		31°16'16.86"	18° 5'39.68"
	475		31°16'26.83"	18° 5'50.71"
	476		31°16'37.92"	18° 6'2.96"
	477		31°16'48.27"	18° 6'14.41"
	478		31°16'58.23"	18° 6'25.43"
	479		31°17'8.96"	18° 6'37.30"



Tower Specific Management Plan

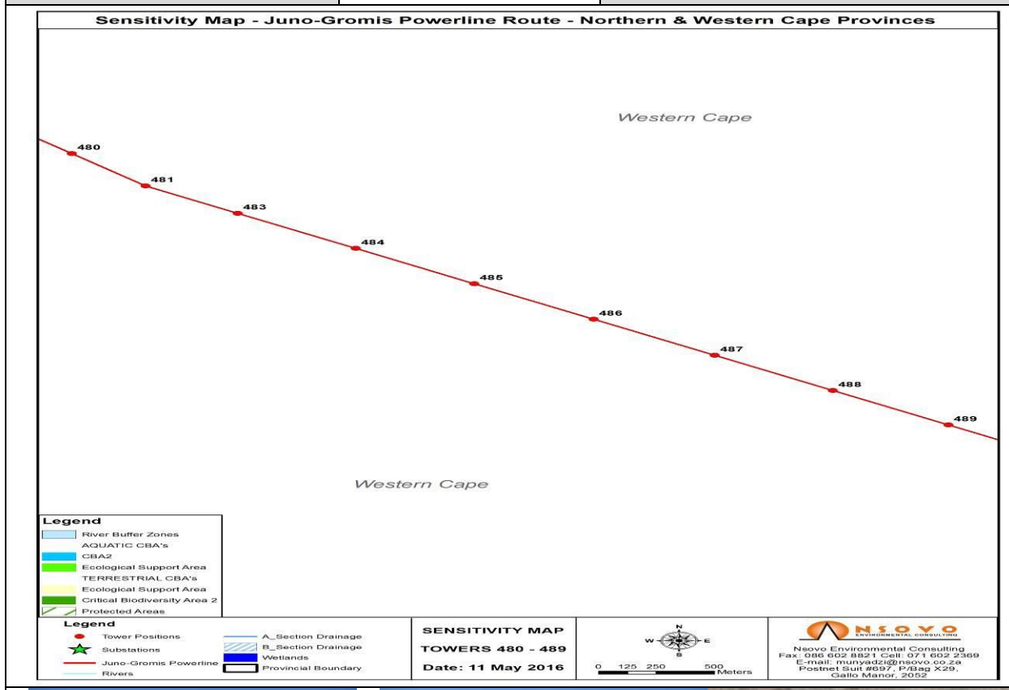
Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 470 to 479. Generic conditions must apply
Wetland	• A B-section Channel was identified 110m from Tower 470, 25m from Tower 471, 212m from Tower 472 and 486m from Tower 473. • WUL is required.
Avifauna	• Higher collision risk associated with the presence of water was identified at Tower 470 and Tower 471. • Collision risk for large avian species associated with the agricultural landscape was identified from Tower 477 to Tower 479. • Anti-collision devices must be installed as soon as the wires are strung.
Geology	• Undifferentiated granites and gneiss of the Namaqualand metamorphic complex with marine sediments on the lower footslopes. • Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading
Ecology	No Plant Species were identified from Tower 470 to Tower 479.Generic conditions apply.



Tower 472	Tower 474	Tower 475

Tower Specific Management Plan for Towers 480 to 489

Tower Number		Coordinates		
	480		31°17'20.97"	18° 6'50.58"
	481		31°17'30.31"	18° 7'0.91"
	483		31°17'38.24"	18° 7'13.78"
	484		31°17'48.42"	18° 7'30.28"
	485		31°17'58.64"	18° 7'46.86"
	486		31°18'8.91"	18° 8'3.53"
	487		31°18'19.35"	18° 8'20.46"
	488		31°18'29.53"	18° 8'36.99"
	489		31°18'39.49"	18° 8'53.15"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 480 to 489. Generic conditions must apply
Wetland	No watercourses were identified from these Towers. Generic conditions apply.
Avifauna	• Collision risk for large avian species associated with the agricultural landscape was identified at Tower 480 to Tower 489. • Anti-collision devices must be installed as soon as the wires are strung
Geology	• Undifferentiated granites and gneiss of the Namaqualand metamorphic complex with marine sediments on the lower footslopes. • Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading
Ecology	No Species were identified from Tower 480 To Tower 489. Generic conditions apply.


Tower 484

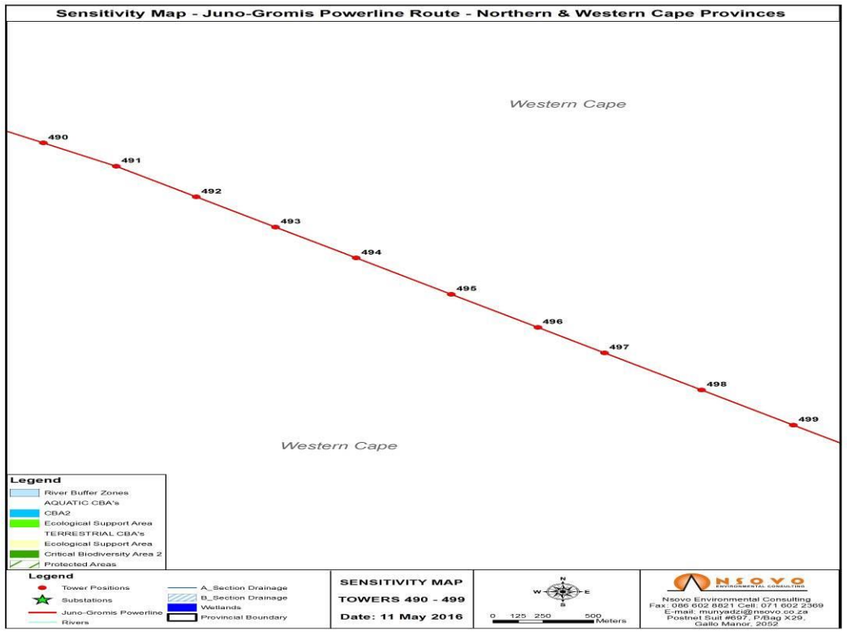

Tower 485


Tower 487


Tower 489

Tower Specific Management Plan for Towers 490 to 499

Tower Number	490	**Coordinates**	31°18'48.82"	18° 9'8.29"
	491		31°18'56.08"	18° 9'20.08"
	492		31°19'5.58"	18° 9'32.95"
	493		31°19'14.97"	18° 9'45.69"
	494		31°19'24.55"	18° 9'58.69"
	495		31°19'35.83"	18°10'14.00"
	496		31°19'46.10"	18°10'27.93"
	497		31°19'54.00"	18°10'38.66"
	498		31°20'5.53"	18°10'54.31"
	499		31°20'16.44"	18°11'9.10"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 490 to 499. Generic conditions must apply
Wetland	No watercourses were identified from theses Towers. Generic conditions apply.
Avifauna	• Collision risk for large avian species associated with the agricultural landscape was identified at Tower 490 to Tower 499. • Anti-collision devices must be installed as soon as the wires are strung
Geology	• Undifferentiated granites and gneiss of the Namaqualand metamorphic complex with marine sediments on the lower footslopes. • Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading
Ecology	Tower 495 Located on a heuweltjie. Move tower to waypoint 143 (31°19'36.21"S; 18°10'15.01"E) to avoid heuweltjie.


Tower 490

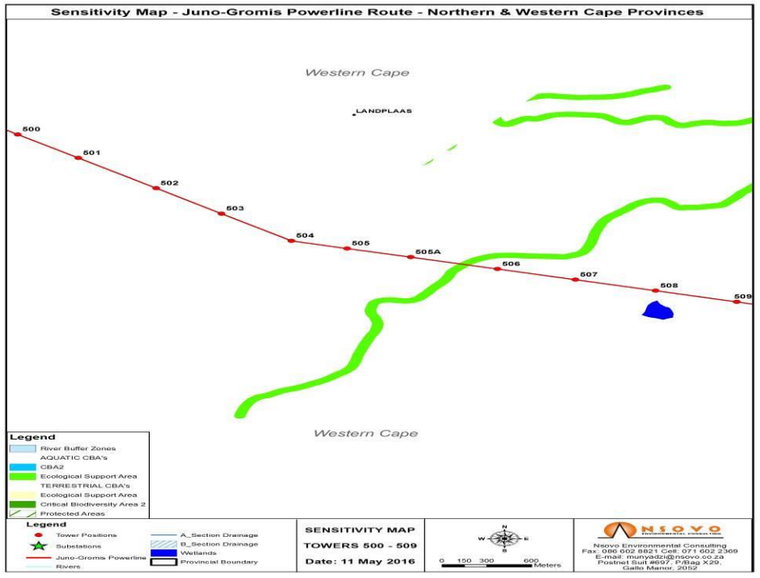

Tower 493


Tower 495


Tower 498

Tower Specific Management Plan for Towers 500 to 509

Tower Number		Coordinates		
	500		31°20'26.57"	18°11'22.85"
	501		31°20'36.26"	18°11'36.01"
	502		31°20'48.69"	18°11'52.89"
	503		31°20'59.16"	18°12'7.10"
	504		31°21'10.32"	18°12'22.25"
	505		31°21'13.47"	18°12'34.37"
	505A		31°21'17.05"	18°12'48.18"
	506		31°21'21.94"	18°13'7.01"
	507		31°21'26.34"	18°13'23.91"
	508		31°21'30.87"	18°13'41.36"
	509		31°21'35.43"	18°13'58.93"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 500 to 509. Generic conditions must apply
Wetland	• Depression/Pan was identified 131m from Tower 508 and 382m from Tower 509. • Two seasonal pans between Tower 501 and Tower 502. • WUL is required.
Avifauna	• Collision risk for a large avian species associated with the agricultural landscape was identified from Tower 500 to Tower 509. • Anti-collision devices must be installed as soon as the wires are strung
Geology	• Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading. • Use of pneumatic tools to provide a level founding surface in hard calcrete and excavation and compaction in deep silty sands to specified density
Ecology	• Sensitive habitat south of Tower 501 Numerous heuweltjies and quartz patch Tower should be moved to waypoint 144 (31°20'37.46"S; 18°11'36.97"E) to avoid numerous heuweltjies. Avoid impacts to quartz patch at waypoint 145 (31°20'38.81"S; 18°11'37.62"E). • Tower 504 Agricultural land with numerous heuweltjies. Move tower to waypoint 147 (31°21'11.15"S; 18°12'24.12"E). • Tower 509 Located on a heuweltjie. Move tower off heuweltjie to waypoint 148 (31°21'35.79"S; 18°13'59.34"E).


Tower 500

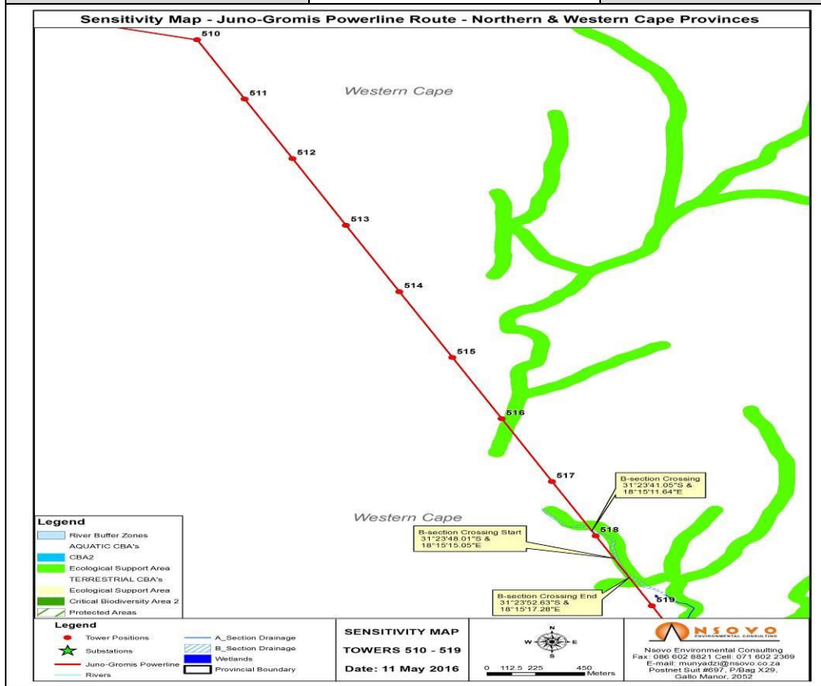

Tower 505A


Tower 508


Tower 509

Tower Specific Management Plan for Towers 510 to 519

Tower Number	510	**Coordinates**	31°21'39.03"	18°14'12.81"
	511		31°21'53.77"	18°14'19.91"
	512		31°22'8.56"	18°14'27.04"
	513		31°22'25.13"	18°14'35.03"
	514		31°22'41.65"	18°14'42.99"
	515		31°22'58.00"	18°14'50.88
	516		31°23'13.21"	18°14'58.21"
	517		31°23'28.84"	18°15'5.75"
	518		31°23'42.33"	18°15'12.25"
	519		31°23'59.71"	18°15'20.64"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 510 to 519. Generic conditions must apply
Wetland	• A B-section channel was identified 220m from Tower 517, 25m from Tower 518 and 100m from Tower 519. • A Depression/Pan was identified 70m from Tower 519. WUL is required.
Avifauna	No areas were identified for marking. Generic conditions apply.
Geology	• Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading. • Use of pneumatic tools to provide a level founding surface in hard calcrete and excavation and compaction in deep silty sands to specified density
Ecology	Tower 515 Located on a heuweltjie. Move tower to waypoint 151 (31°22'58.28"S; 18°14'50.68"E).

		Tower 519	Located on a heuweltjie. Move tower to waypoint 153 (31°24'0.67"S; 18°15'21.08"E).


Tower 515

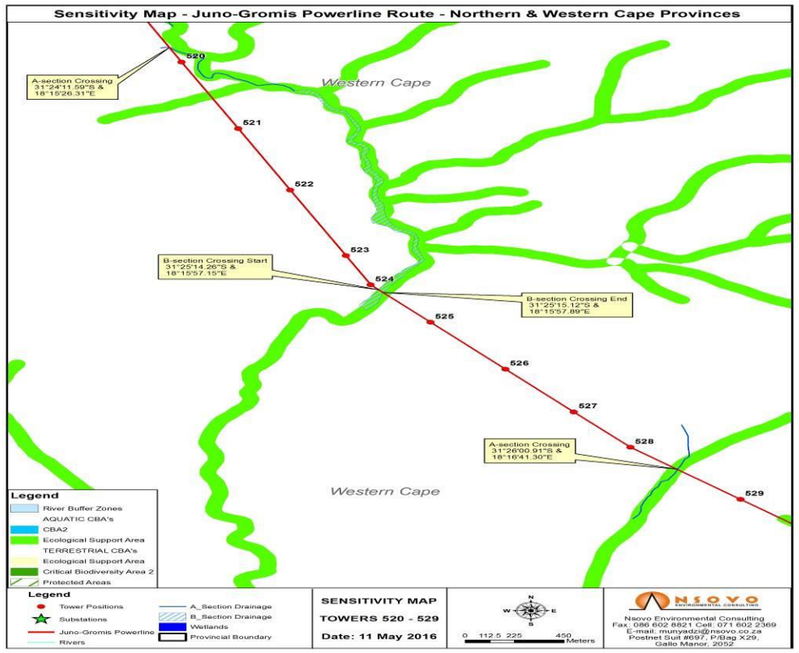

Tower 516


Tower 518


Tower 519

Tower Specific Management Plan for Towers 520 to 529

Tower Number		Coordinates		
	520		31°24'15.32"	18°15'28.17"
	521		31°24'32.58"	18°15'36.49"
	522		31°24'48.51"	18°15'44.18"
	523		31°25'5.56"	18°15'52.41"
	524		31°25'13.11"	18°15'56.05"
	525		31°25'22.82"	18°16'4.88"
	526		31°25'34.98"	18°16'15.94"
	527		31°25'46.07"	18°16'26.03"
	528		31°25'55.25"	18°16'34.38"
	529		31°26'8.72"	18°16'50.59"



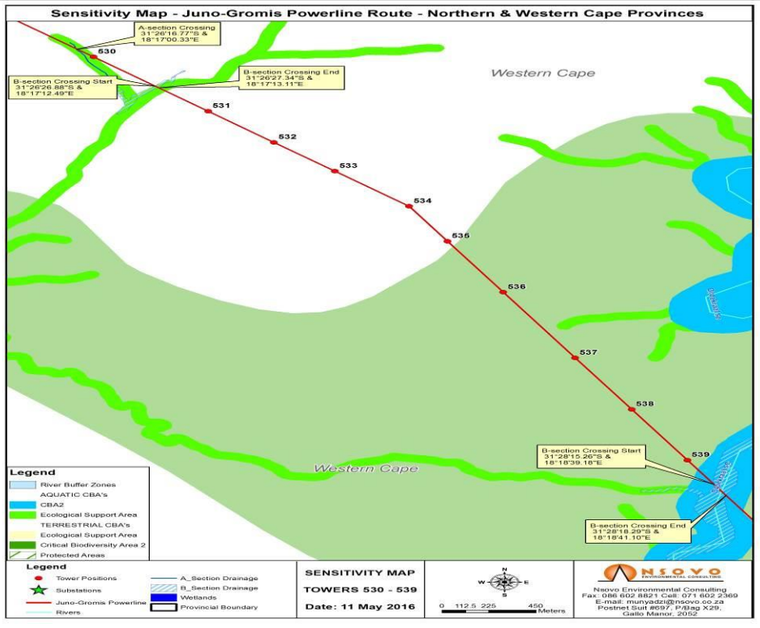
Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 520 to 529. Generic conditions must apply
Wetland	• An A-section channel was identified 72m from Tower 520, 254m from Tower 528 and 365m from Tower 529. • A B-Section Channel was identified 454m from Tower 521, 329m from Tower 522, 277m from Tower 523, 62m from Tower 524 and 302m from Tower 525. • WUL is required.
Avifauna	• An Avian flight path and a collision prone area were identified at Tower 524 and Tower 525. • Anti-collision devices must be installed as soon as the wires are strung
Geology	• Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading. Use of pneumatic tools to provide a level founding surface in hard calcrete and excavation and compaction in deep silty sands to specified density
Ecology	• Tower 520 Located on a heuweltjie. Move tower to waypoint 154 (31°24'16.32"S; 18°15'28.11"E). • Sensitive area northeast of JUN525 Area would potentially be impacted during construction Avoid heuweltjie at waypoint 156 (31°25'22.43"S; 18°16'5.10"E). Move tower to waypoint 157 (31°25'23.30"S; 18°16'5.16"E).




Tower 521	Tower 523	Tower 524	Tower 529

Tower Specific Management Plan for Towers 530 to 539				
Tower Number	530	**Coordinates**	31°26'19.03"	18°17'3.00"
	531		31°26'33.80"	18°17'20.78"
	532		31°26'42.27"	18°17'30.98"
	533		31°26'50.11"	18°17'40.42"
	534		31°26'59.67"	18°17'51.94"
	535		31°27'9.19"	18°17'57.88"
	536		31°27'23.05"	18°18'6.54"
	537		31°27'40.94"	18°18'17.71"
	538		31°27'54.93"	18°18'26.45"
	539		31°28'8.76"	18°18'35.09"



Tower Specific Management Plan

Specialist	**Recommendations**
Heritage	No Heritage sites were identified from Towers 530 to 539. Generic conditions must apply
Wetland	• An A-section Channel was identified 37m from Tower 530.B Section Channel was identified 277m from Tower 531. • A B-section Channel (Droekraal Se River) was identified 200m from Tower 539. • WUL is required.
Avifauna	• Higher collision risk associated with the presence of water was identified at Tower 539. • Anti-collision devices must be installed as soon as the wires are strung.
Geology	• Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading. Use of pneumatic tools to provide a level founding surface in hard calcrete and excavation and compaction in deep silty sands to specified density
Ecology	• Tower 538 Sensitive quartz patch and SCC. Quartz patches support endemic species that are highly sensitive and confined in terms of geographical surface area. The Rare Othonna lepidocaulis occurs on the koppie at waypoint 070. Avoid area and move tower off quartz to waypoint 167 (31°27'55.22"S; 18°18'27.14"). Highly sensitive quartz koppie at waypoints 168 (31°28'6.23"S; 18°18'35.31"E), 169 (31°28'5.60"S; 18°18'36.31"E) and 170 (31°28'7.37"S; 18°18'36.81"E) must not be impacted.


Tower 530

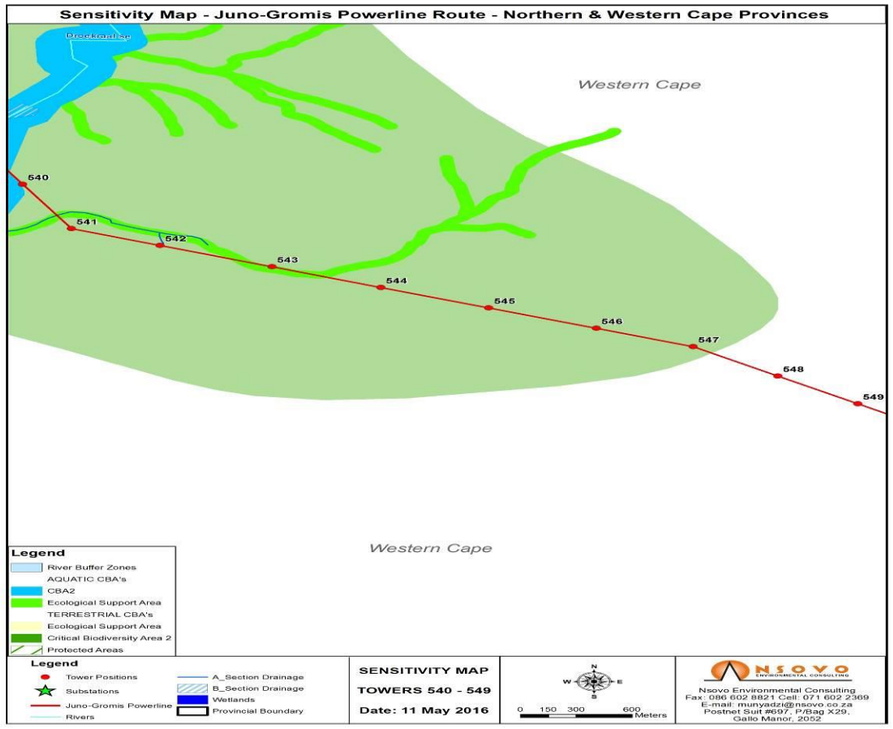

Tower 531


Tower 537


Tower 539

Tower Specific Management Plan for Towers 540 to 549

Tower Number	540	**Coordinates**	31°28'26.33"	18°18'46.07"
	541		31°28'39.90"	18°18'54.55"
	542		31°28'45.05"	18°19'9.92"
	543		31°28'51.56"	18°19'29.41"
	544		31°28'57.89"	18°19'48.32"
	545		31°29'4.16"	18°20'7.08"
	546		31°29'10.40"	18°20'25.76"
	547		31°29'16.03"	18°20'42.59"
	548		31°29'25.03"	18°20'57.32"
	549		31°29'33.51"	18°21'11.20"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	• Isolated tools found in low density (0-1) were documented between Tower numbers 540 to 541, mostly on the line corridor. These tools were found in secondary positions. • Surface collection of these tools is recommended. In addition. • Monitoring is required during construction to assess the level of density of these tools.
Wetland	• A B-section channel (Droekraal Se River) was identified 200m from Tower 539, 112m from Tower 540. • An A-section Channel was identified 137m from Tower 541, 126m from Tower 542 and 344m from Tower 543. • WUL is required.
Avifauna	• Higher collision risk associated with the presence of water was identified from Tower 540 to 542. • Anti-collision devices must be installed as soon as the wires are strung
Geology	• From Tower 541 to Tower 544 the area is dominated by Calcrete. • Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading. • Use of pneumatic tools to provide a level founding surface in hard calcrete and excavation and compaction in deep silty sands to specified density
Ecology	Tower 544 Located on a heuweltjie. Move tower to waypoint 176 to avoid heuweltjie. Located on a heuweltjie. Move tower to waypoint 176 to avoid heuweltjie.


Tower 541

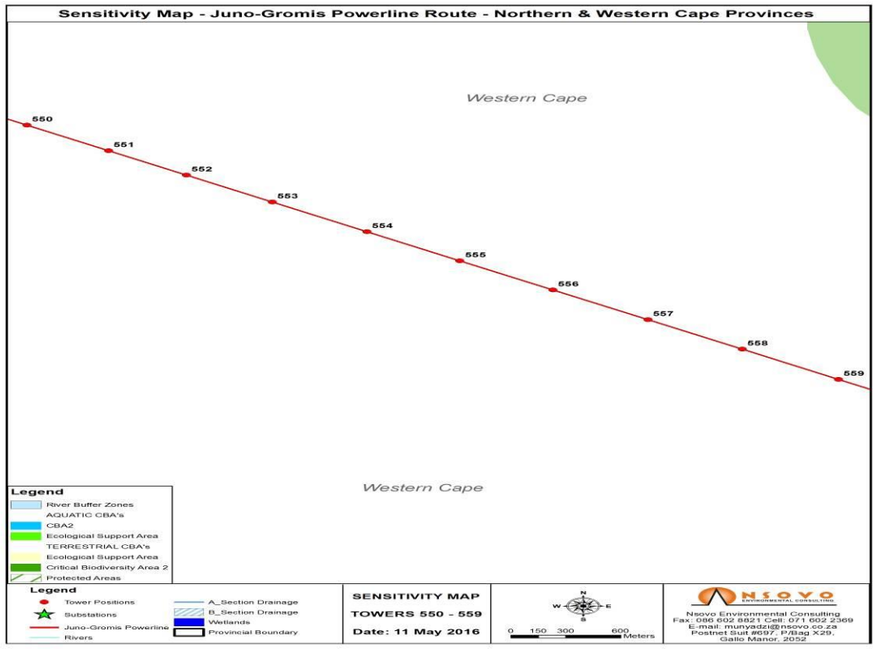

Tower 542


Tower 543


Tower 544

Tower Specific Management Plan for Towers 550 to 559

Tower Number	550	**Coordinates**	31°29'41.16"	18°21'23.73"
	551		31°29'49.98"	18°21'38.16"
	552		31°29'58.41"	18°21'51.96"
	553		31°30'7.68"	18°22'7.14"
	554		31°30'17.90"	18°22'23.87"
	555		31°30'27.95"	18°22'40.34"
	556		31°30'38.00"	18°22'56.79"
	557		31°30'48.27"	18°23'13.61"
	558		31°30'58.44"	18°23'30.28"
	559		31°31'8.84"	18°23'47.32"



Tower Specific Management Plan

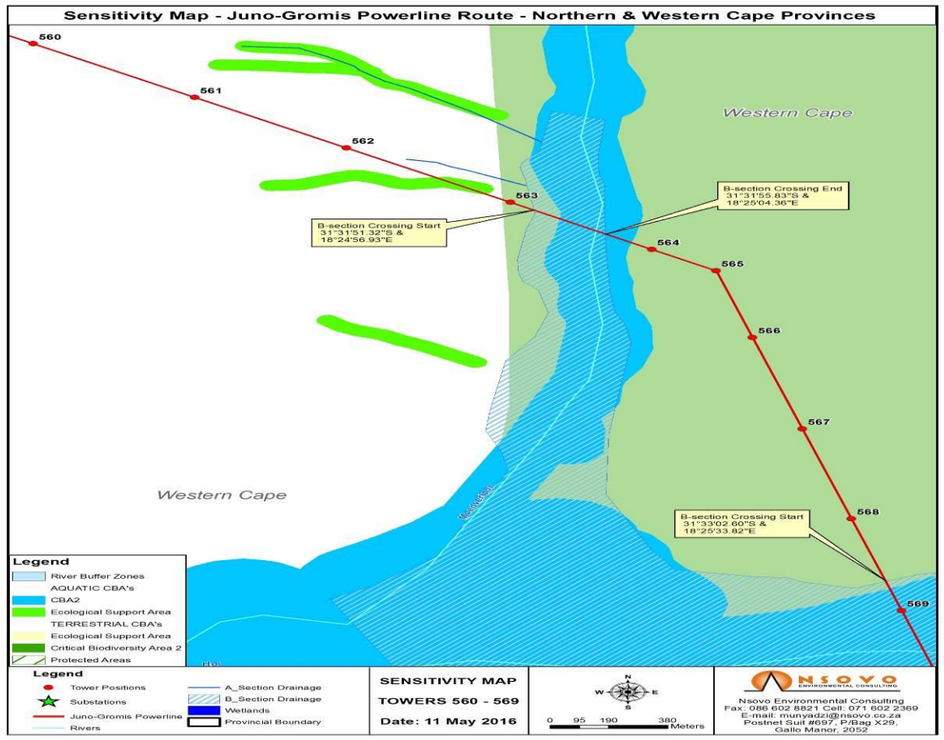
Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 550 to 559. Generic conditions must apply
Wetland	No watercourses were identified from Towers 550 to 559. WUL is required.
Avifauna	No areas were identified for marking from Tower 550 to Tower 559.Generic conditions apply.
Geology	• Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading. Use of pneumatic tools to provide a level founding surface in hard calcrete and excavation and compaction in deep silty sands to specified density
Ecology	• Sensitive habitat between Tower 456 and 457. Quartz patch located at waypoint 179 (31°29'13.59"S; 18°20'34.20"E) supports Argyroderma sp. Area must be avoided. • Tower 554 Located on top of a dune. Move tower off the dune to waypoint 180 (31°30'18.63"S; 18°22'25.18"E). • Tower 558 Area supports high numbers of heuweltjie in all direction in very close proximity. No leeway to move tower position. • Tower 559 Located on a heuweltjie. Move tower off heuweltjie to waypoint 181 (31°31'8.53"S; 18°23'47.03"E).




Tower 550	Tower 551	Tower 553	Tower 559

Tower Specific Management Plan for Towers 560 to 569

Tower Number	560	**Coordinates**	31°31'19.33"	18°24'4.51"
	561		31°31'29.65"	18°24'21.42"
	562		31°31'39.33"	18°24'37.30"
	563		31°31'49.81"	18°24'54.48"
	564		31°31'58.84"	18°25'9.29"
	565		31°32'2.96"	18°25'16.03"
	566		31°32'15.78"	18°25'19.84"
	567		31°32'33.34"	18°25'25.06"
	568		31°32'50.61"	18°25'30.20"
	569		31°33'8.26"	18°25'35.45"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from Towers 560 to 569. Generic conditions must apply.
Wetland	• A B-section Channel (Moedverloor River) was identified 326m from Tower 561, 185m from Tower 562, 76m to Tower 563, 120m to Tower 564, 285m to Tower 565, 336m to Tower 566 and 393 to Tower 568. • A B-section Channel (Hol River) was identified 23m from channel edge however the tower is situated in the alluvial floodplain to Tower 569. • WUL is required.
Avifauna	• An avian flight path and a collision prone area were identified at Tower 563, 564 and Tower 569. • Anti-collision devices must be installed as soon as the wires are strung.
Geology	• Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading. Use of pneumatic tools to provide a level founding surface in hard calcrete and excavation and compaction in deep silty sands to specified density
Ecology	Tower 562 Located on a small hill ridge. Move tower to waypoint 182 (31°31'39.59"S; 18°24'37.27"E) to avoid ridge. Avoid Conophytum sp. population at waypoint 183 (31°31'46.66"S; 18°24'42.96"E).


Tower 563

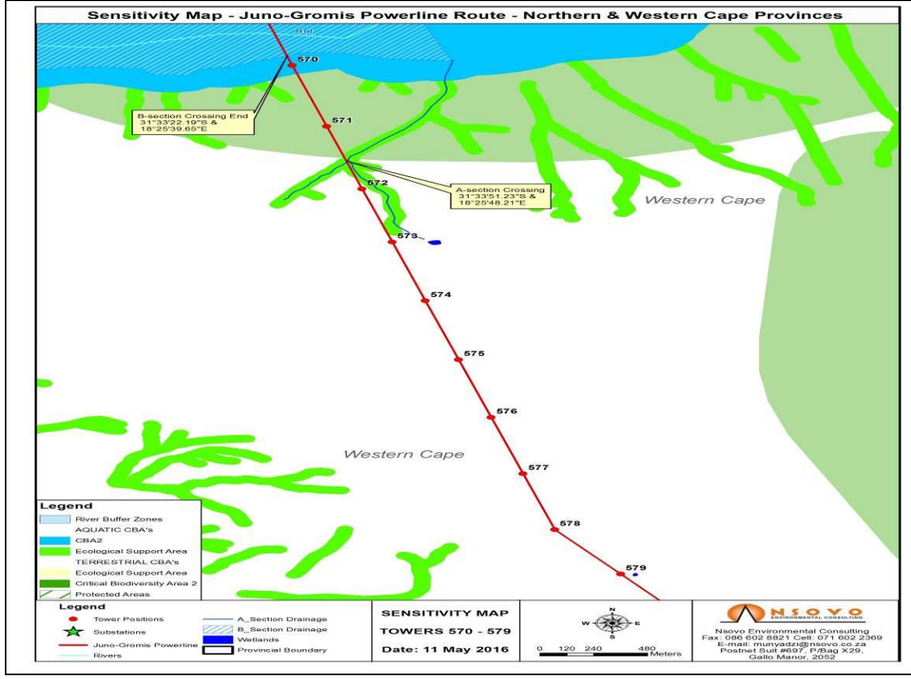

Tower 565


Tower 566


Tower 568

Tower Specific Management Plan for Towers 570 to 579

Tower Number	570	**Coordinates**	31°33'24.89"	18°25'40.39"
	571		31°33'41.68"	18°25'45.38"
	572		31°33'58.83"	18°25'50.49"
	573		31°34'13.45"	18°25'54.84"
	574		31°34'29.62"	18°25'59.65"
	575		31°34'45.80"	18°26'4.46"
	576		31°35'1.67"	18°26'9.19"
	577		31°35'17.14"	18°26'13.79"
	578		31°35'32.52"	18°26'18.37"
	579		31°35'44.77"	18°26'27.92"



Tower Specific Management Plan

Specialist	Recommendations
Heritage	• An isolated Late Stone tool was noted 30m of the area proposed for Tower 573. • Monitoring during construction of Tower 573 is recommended to determine if whether the density of this tool is consistently low or not.
Wetland	• A Section Channel was identified 90m to Tower 570, 235m to Tower 571, 53m to Tower 572, and 100m to Tower 573. • A Depression/Pan was identified 141m to Tower 573, 50m to Tower 579 and 14m to Tower 585. • WUL is required.
Avifauna	• An avian flight path and a collision prone area were identified at Tower 570. • Anti-collision devices must be installed as soon as the wires are strung
Geology	• Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading. • Use of pneumatic tools to provide a level founding surface in hard calcrete and excavation and compaction in deep silty sands to specified density
Ecology	Tower 574 Located on a heuweltjie. Move tower 20m southeast to avoid heuweltjie.


Tower 570


Tower 573


Tower 575


Tower 579

Tower Specific Management Plan for Towers 580 to 585				
Tower Number	580	**Coordinates**	31°36'0.04"	18°26'39.83"
	581		31°36'12.05"	18°26'49.19"
	582		31°36'18.87"	18°26'54.51"
	583		31°36'26.85"	18°27'0.74"
	584		31°36'33.01"	18°26'58.88"
	585		31°36'35.08"	18°26'50.98"
	586		31°36'32.13"	18°26'43.79"
	587		31°36'31.68"	18°26'42.45"

Tower Specific Management Plan

Specialist	Recommendations
Heritage	No Heritage sites were identified from these Towers. Generic conditions apply.
Wetland	A Depression/Pann was identified 14m to Tower 585 WUL is required.
Avifauna	No areas were identified for marking from Tower 580 to Tower 587.Generic conditions apply
Geology	• Hard excavation by blasting and/or the use of pneumatic tools to a suitable depth for foundation loading. • Use of pneumatic tools to provide a level founding surface in hard calcrete and excavation and compaction in deep silty sands to specified density
Vegetation	Tower 580 Located on a heuweltjie. Move tower 20m west to avoid heuweltjie.


Tower 582


Tower Tower 583


Tower 584


Tower 585