

ESKOM HOLDINGS SOC LTD

**PROPOSED ESKOM 400/132KV
ASTERIA MAIN TRANSMISSION SUBSTATION (MTS)
(PREVIOUSLY KNOWN AS THE HOUHOEK MTS),
INCLUDING THE BACCHUS-PALMIET 400KV
LOOP-IN AND LOOP-OUT POWER LINES AND
ESKOM DISTRIBUTION POWER LINE INTEGRATION,
NEAR BOTRIVIER, WESTERN CAPE PROVINCE**

**ENVIRONMENTAL MANAGEMENT PROGRAMME FOR
CONSTRUCTION**

Prepared For:

Eskom Holdings SOC Ltd
PO Box 1091
Johannesburg
2001

Prepared By:




ACER (Africa) Environmental Consultants
PO Box 503
Mtunzini
3867

August 2019

DECLARATION OF APPOINTED ENVIRONMENTAL CONSULTANT

ACER (Africa) Environmental Consultants (ACER) is a well established company with wide ranging expertise in environmental management and assessment processes. ACER has twice won the IAIA's National Premium Award for excellence in environmental management and assessment. The qualifications and experience of the environmental consultants who compiled the Construction EMP are provided in the table below:

NAME	EDUCATION QUALIFICATIONS	PROFESSIONAL AFFILIATIONS	EXPERIENCE IN ENVIRONMENTAL MANAGEMENT
Mr Giles Churchill (Environmental Consultant)	MSc	South African Council for Natural Scientific Professions (Reg No 116348). International Association of Impact Assessment (South African Chapter)	13 Years
Mr Duncan Keal (Environmental Consultant)	MA	International Association of Impact Assessment (South African Chapter)	9 Years
Dr R-D Heinsohn (Internal Review)	PhD	South African Council for Natural Scientific Professions (Reg No 400442/04). International Association of Impact Assessment (South African Chapter)	+25 Years

Declaration of appointed Environmental Consultant	
<p>I, declare that this report has been prepared independently of any influence or prejudice as may be specified by the Department of Environmental Affairs (DEA).</p>	
 Signed:	Date: 01 August 2019
 Signed:	Date : 01 August 2019
 Signed:	Date: 01 August 2019

PREFACE

This Environmental Management Programme has been prepared to cover environmental management for all aspects related to the construction of the 400/132 kV Asteria Main Transmission Substation (MTS) (previously known as Houhoek), including the Bacchus-Palmiet 400kV Loop-in and Loop-out (LILO) transmission power lines, located approximately 1 km south-west of the town of Botrivier within the Theewaterskloof Local Municipality in the Western Cape. The operation and maintenance of transmission lines can have a major impact on the environment. It is, therefore, imperative that precautions are taken to ensure that environmental damage is minimised. This will take a concerted effort from Eskom and the contractor, and detailed planning is of importance.

This Environmental Management Programme has been compiled in accordance with the provisions of the Record of Decision issued by DEA on the 06 March 2015 (Authorisation for the construction of the 400/132 kV Asteria MTS (previously known as Houhoek MTS), including the Bacchus-Palmiet LILo transmission power lines and Eskom distribution power line integration, Western Cape Province (14/12/16/3/3/2/401) and amendments on 24 July 2015 (14/12/16/3/3/2/401/AM1) and 07 November 2018 (14/12/16/3/3/2/401/AM2)) and in accordance with the provisions of the Constitution of South Africa and the principles of Integrated Environmental Management.

The scope of this document is to give environmental management guidelines for construction to the contractor undertaking construction work, in fulfilment of the environmental authorisation issued. This document is part of the overall contract and is supplementary to Eskom's technical specifications. The Environmental Management Programme should be viewed as a living document which should be updated if and when required to address site specific environmental impacts as encountered during construction.

TABLE OF CONTENTS

PREFACE	II
TABLE OF CONTENTS	III
LIST OF FIGURES	V
LIST OF TABLES	V
NAME AND EXPERTISE OF PERSONS RESPONSIBLE FOR COMPILING THIS ENVIRONMENTAL MANAGEMENT PROGRAMME FOR CONSTRUCTION	VI
GLOSSARY, ABBREVIATIONS AND ACRONYMS	VII
STRUCTURE OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME FOR CONSTRUCTION	X
FINAL TOWER POSITIONS FOR CONSTRUCTION	XII
ENVIRONMENTAL POLICY STATEMENT	XIII
1. INTRODUCTION.....	1
1.1 Scope of this EMPr	3
1.2 Legislative framework	4
1.2.1 <i>The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996) (as amended)</i>	4
1.2.2 <i>National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) (as amended)</i>	5
1.2.3 <i>Other applicable environmental legislation</i>	5
1.2.4 <i>Legislation and policy applicable to Eskom Transmission</i>	5
1.2.5 <i>Applicable Provincial Environmental Legislation: Western Cape</i>	5
1.3 Possible permits/authorisations/licences	12
1.4 Fines and penalties.....	12
1.4.1 <i>Fines</i>	12
1.4.2 <i>Penalties</i>	12
2. DESCRIPTION OF THE PROJECT	15
2.1 Technical specifications	15
2.1.1 <i>Asteria MTS</i>	15
2.1.2 <i>Loop-in Loop-out transmission power lines</i>	16
2.1.3 <i>132 kV Distribution power line</i>	16
2.1.4 <i>Construction camp</i>	16
2.1.5 <i>Construction process</i>	16
2.1.6 <i>Project execution area</i>	16
2.1.7 <i>Site establishment</i>	17

2.2	Responsibility matrix and reporting structure	17
2.2.1	<i>Roles and responsibilities</i>	18
2.2.2	<i>Method statements</i>	20
2.2.3	<i>Site monitoring, auditing and reporting</i>	21
3.	400/132 KV ASTERIA (MTS), CONSTRUCTION CAMP AND ASSOCIATED INFRASTRUCTURE: ENVIRONMENTAL SPECIFICATIONS.....	23
4.	TRANSMISSION LINE CONSTRUCTION AND INSTALLATION OF TOWERS: ENVIRONMENTAL SPECIFICATIONS.....	41
5.	SUMMARY OF TOWER SPECIFIC MITIGATION MEASURES	67
5.1	Site specific mitigation measures for towers AST/BAC 1 – 5.....	67
5.2	Site specific mitigation measures for towers PA/AST 71 – 77	68
6.	FAUNAL, VEGETATION AND ECOLOGY: SITE-SPECIFIC MITIGATION MEASURES.....	69
7.	AVIFAUNAL: SITE-SPECIFIC MITIGATION MEASURES.....	75
8	FRESHWATER ECOLOGY	77
10.	HERITAGE RESOURCES: SITE SPECIFIC MITIGATION MEASURES.....	80
11.	APPENDICIES.....	81

LIST OF FIGURES

Figure 1	Locality map for the 400/132kV MTS and Bacchus-Palmiet LILO transmission power line project.....	2
Figure 2	Organisational/reporting structure for implementation of the EMPr	18
Figure 3	Spans where anti-bird collision markers should be installed.....	76
Figure 4	Proposed Buffers	78
Figure 5	Location of AST/BAC 005 in relation to the proposed 15 meter buffer	78

LIST OF TABLES

Table 1	Relevant legislation that is applicable to the 400/132kV Asteria (Houhoek) MTS and Bacchus-Palmiet loop-in and loop-out power lines project.....	6
Table 2	Legislation and policy applicable to Eskom	11
Table 3	Activities requiring licences, approvals and permits prior to construction commencing.....	13
Table 4	Penalties applicable during construction	14

NAME AND EXPERTISE OF PERSONS RESPONSIBLE FOR COMPILING THIS ENVIRONMENTAL MANAGEMENT PROGRAMME FOR CONSTRUCTION

This site-specific environmental management programme (EMPr) for construction was compiled by ACER (Africa) Environmental Consultants (ACER) for the proposed Eskom 400/132 kv Asteria Main Transmission Substation (MTS) (previously known as the Houhoek MTS), including the Bacchus-Palmiet 400 kv loop-in and loop-out transmission power lines and Eskom distribution power line integration, near Botrivier, Western Cape Province. It must be read in conjunction with Eskom's environmental standards for the construction and operation of power lines and electrical infrastructure, including servitude maintenance.

Name	Highest Educational Qualification	Professional Affiliations	Experience in Environmental Management
Dr Rolf-Dieter Heinsohn	PhD	South African Association of Botanists International Association of Impact Assessment (South African Chapter) South African Institute of Ecologists and Environmental Scientists Certified Environmental Practitioner with the Interim Certification Board of South Africa Certified with the South African Council for Natural Scientific Professions (400442/04)	> 25 years
Mr Giles Churchill	MSc	Certified Environmental Practitioner with the Interim Certification Board of South Africa Certified with the South African Council for Natural Scientific Professions (116348); International Association of Impact Assessment (South African Chapter)	13 years
Mr Duncan Keal	MA	International Association of Impact Assessment (South African Chapter)	9 Years

Specialist walk downs and reports were undertaken/prepared by:

- Heritage - Mr Wouter Fourie (Professional Grave Solutions).
- Vegetation and Ecology - Mr Simon Todd (Simon Todd Consulting).
- Wetland Delineation - Mr Dean Ollis (The Freshwater Consulting Group).
- Avifauna - Mr Jon Smallie (WildSkies Ecological Services).

GLOSSARY, ABBREVIATIONS AND ACRONYMS

Audit	A verification process, which is used to obtain information regarding the implementation of the EMPr
Berm	A barrier that is designed to divert surface water flow. Berms will primarily be used along roads/tracks to prevent the concentrated flow of water over certain areas
Bunding	An impervious containment system for potential spillages from tanks/containers stored on-site. The banded area must have a capacity of 110% of the volume of the tanks/containers
CEO	The CEO is a Contractor's Environmental Officer and means a qualified senior staff member employed full time on-site by the contractor, who shall be responsible for environmental monitoring and control
Clearing	The clearing and removal of vegetation, whether partially or in whole, including trees and shrubs, as specified
Client	For the proposed project, Eskom Holdings SOC Limited is the client
Construction Activity	Any activity undertaken by the contractor, suppliers, sub-contractors or employees during the construction process
Contaminated Water	Water contaminated by the contractor's activities, e.g. concrete water and runoff from equipment/camp sites, ablution facilities and personnel wash areas
Contractor	Construction companies as well as their sub-contractors and suppliers appointed to undertake construction activities on behalf of the client
Construction Camp	The area allocated for the establishment of equipment, repair area, ablution facilities, lay down and rest areas. It also serves as a central point for the storage of fuel and construction materials
DEA	Department of Environmental Affairs
DWS	Department of Water and Sanitation
EA	Environmental Authorisation (previously referred to as a Record of Decision). This constitutes the approval or dismissal of the project as issued by the relevant environmental authority
ECO	An independent qualified Environmental Control Officer (ECO) appointed full time by the client to monitor compliance by the contractor and his staff with the environmental requirements of the EA and EMPr
EMPr	Environmental Management Programme
Environment	The 'environment' is defined in terms of the National Environmental Management Act (Act 107 of 1998) as the surroundings within which humans exist and that are made up of- (i) the land, water and atmosphere of the earth; (ii) micro-organisms, plant and animal life; (iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and (iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing
Environmental Impact	The change to the environment resulting from an environmental aspect (an activity) on the environment, whether desirable or undesirable. An impact may be the direct or indirect consequence of an activity
Establishment Period	The period that commences from the time of actual planting of individual plants or revegetation of an area until at least twelve months after planting
Fauna	All living biological creatures, usually capable of motion, including insects and predominantly of protein-based consistency

Fence	A physical barrier in the form of posts and barbed wire or any other concrete construction ('palisade'- type fencing included) constructed with the purpose of keeping humans and animals within or out of defined boundaries
Flora	All living plants, grasses, shrubs, trees, etc. usually incapable of easy natural motion and capable of photosynthesis
General Waste	Domestic, commercial, non-hazardous waste and builders' rubble
GN	Government Notice
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
Induction Training (Environmental Awareness)	Training provided to all new employees prior to them being allowed on-site
kV	Kilovolts
Method Statement	Is a written submission by the contractor to the Project Manager in response to this EMPr or a request by the Project Manager and ECO. The Method Statement must set out the equipment, plant, materials, labour and method the contractor proposes to use to carry out an activity identified by this specification or the Project Manager when requesting the Method Statement
Natural Vegetation	All existing species, indigenous or otherwise, of trees, shrubs, groundcover, grasses and all other plants found growing on the site
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
Non-compliance	Failure to comply with the requirements of the EMPr
Pollution	Any change in the environment caused by substances, radioactive or otherwise, or noise, odours, dust or heat, emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future
Pollution Incident	Any incident that may cause or has caused damage to or the contamination of the natural environment
Potentially Hazardous Substance	A substance, which can have a deleterious effect on the environment. Hazardous chemical substances are defined in the Regulations for Hazardous Chemical Substances published in terms of the Occupational Health and Safety Act (Act No. 85 of 1993).
Progressive Reinstatement	Reinstatement of disturbed areas to topsoil profile on an ongoing basis immediately after selected construction activities (e.g. backfilling of a trench) are completed. This allows for passive rehabilitation (i.e. natural recolonisation by vegetation) to commence
Rehabilitation	Rehabilitation is defined as the return of a disturbed area to a state, which approximates the state (where possible), which it was before disruption. Rehabilitation for the purposes of this specification is aimed at post-reinstatement revegetation of a disturbed area and the insurance of a stable land surface. Revegetation should aim to accelerate the natural succession processes so that the plant community develops in the desired way, i.e. promote rapid vegetation establishment
SABS	South African Bureau of Standards
SAHRA	South African Heritage Resource Agency
SME	Small and Medium Enterprise

Solid Waste	All solid waste, including construction debris, chemical waste, excess cement/concrete, wrapping materials, timber, tins, cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers)
Storm Water	Rainfall run-off from the site
Subsoil	Subsoil is the soil horizon between the topsoil horizon and the underlying parent rock. Subsoil often has more clay-like material than the topsoil. Subsoil is of less value to plants, in terms of nutrient (food) and oxygen supply, than topsoil. When subsoil is exposed it tends to erode fairly easily
TOPS	Threatened or Protected Species
Topsoil	The layer of soil covering the earth which provides a suitable environment for the germination of seed; allows the penetration of water; is a source of micro-organisms, plant nutrients and, in some cases, seed; and is not of a depth of more than 0.5 metres or such depth as the Minister may prescribe for a specific prospecting or exploration or mining area
Vegetation	Any and all forms of plants (see also flora)
Wastewater	Water containing cement washings, oil, fuel or other contaminants
Weeds and Invader Plants	Weeds and invader plants are defined as undesirable plant growth that shall include, but not be limited to all declared category 1, 2 and 3 listed invader species as set out in the Conservation of Agricultural Resources Act, Act 43 of 1983 regulations. Other vegetation deemed to be invasive should be those plant species that show the potential to occupy in number, any area within the defined construction area
Wetland	A low-lying area where the land is saturated with water, either permanently or temporarily and as characterised by specific indicator plant species and soil types

STRUCTURE OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME FOR CONSTRUCTION

This Construction Environmental Management Programme (EMPr) has been structured as outlined hereunder.

NAME AND EXPERTISE OF PERSONS RESPONSIBLE FOR COMPILING THIS ENVIRONMENTAL MANAGEMENT PROGRAMME FOR CONSTRUCTION		
GLOSSARY, ABBREVIATIONS AND ACRONYMS		
STRUCTURE OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME FOR CONSTRUCTION		
ENVIRONMENTAL POLICY STATEMENT		
CHAPTER NUMBER	HEADING	COMPONENT
1	INTRODUCTION	Scope of the EMPr
		Legislative framework
		Possible permits and authorisations
		Fines and penalties
2	DESCRIPTION OF THE PROJECT	Technical specifications
		Responsibility matrix and reporting structure
3	CONSTRUCTION CAMP AND ASSOCIATED INFRASTRUCTURE: ENVIRONMENTAL SPECIFICATIONS	Establishment of construction camps and suggested mitigation measures
4	TRANSMISSION LINE CONSTRUCTION AND INSTALLATION OF TOWERS: ENVIRONMENTAL SPECIFICATIONS	Power line construction and installation of towers and suggested mitigation measures
5	SUMMARY OF TOWER SPECIFIC MITIGATION MEASURES REQUIRED FOR THE BACCHUS-PALMIET 400KV LOOP-IN AND LOOP-OUT POWER LINES	Table summarising the required tower specific mitigation measures identified during the specialist walk downs
6	FAUNAL, VEGETATION AND ECOLOGY: SITE-SPECIFIC MITIGATION MEASURES	Summary of tower specific mitigation measures for fauna, ecology and vegetation
7	AVIFAUNAL: SITE-SPECIFIC MITIGATION MEASURES	Summary of tower specific mitigation measures for avifauna
8	WETLAND: SITE-SPECIFIC MITIGATION MEASURES	Summary of tower specific mitigation measures in relation to wetlands
9	HERITAGE RESOURCES: SITE-SPECIFIC MITIGATION MEASURES	Summary of tower specific mitigation measures in relation to heritage resources
10	APPENDICIES	APPENDIX A: Eskom Environmental Management Strategy APPENDIX B: Eskom Technical Standards APPENDIX C: Environmental Authorisation 06 March 2015 APPENDIX D: List of Landowners, Contact Details and

		<p>APPENDIX E: Special Conditions Procedure for Vegetation Clearance and Maintenance</p> <p>APPENDIX F: Herbicide Management Policy</p> <p>APPENDIX G: Standard for the Safe Use of Herbicides and Pesticides</p> <p>APPENDIX H: Alien Vegetation Clearing Manual</p> <p>APPENDIX I: Fire Protection Association Guideline</p> <p>APPENDIX J: Fire Risk Management</p> <p>APPENDIX K: Access to Farms Standard</p> <p>APPENDIX L: Eskom Transmission Servitude Gates Standard</p> <p>APPENDIX M: Eskom Erosion Guidelines</p> <p>APPENDIX N: Eskom Standard for Transmission Lines Towers and Line Construction</p> <p>APPENDIX O: Eskom Transmission Bird Collision Prevention Guideline</p> <p>APPENDIX P: Specifications for Bird Flight Diverters</p> <p>APPENDIX Q: Specialist Walk Down Reports</p>
--	--	---

FINAL TOWER POSITIONS FOR CONSTRUCTION

The final tower positions following the specialist walkdown and assessment of the biophysical environment are provided hereunder:

Structure	Original Positions		Proposed Revision	
	DMS Long	DMS Lat	DMS Long	DMS Lat
AST/BAC 001	19° 10' 52.3630" E	34° 14' 18.3151" S	None	None
AST/BAC 002	19° 10' 59.2339" E	34° 14' 08.5726" S	None	None
AST/BAC 003	19° 10' 56.7741" E	34° 13' 56.2952" S	None	None
AST/BAC 004	19° 10' 54.3881" E	34° 13' 44.3858" S	None	None
AST/BAC 005	19° 10' 49.6427" E	34° 13' 27.6869" S	19°10'49.9226" E	34°13' 27.4885" S
AST/BAC 006 EXISTING	19° 10' 58.1196" E	34° 13' 21.6768" S	None	None
PA/AST 070 EXISTING	19° 10' 10.3554" E	34° 13' 37.7722" S	None	None
PA/AST 071 EXISTING	19° 10' 21.6841" E	34° 13' 36.6709" S	None	None
PA/AST 072	19° 10' 37.0402" E	34° 13' 35.1778" S	None	None
PA/AST 073	19° 10' 52.1227" E	34° 13' 44.3752" S	None	None
PA/AST 074	19° 10' 54.5099" E	34° 13' 56.3149" S	None	None
PA/AST 075	19° 10' 56.8921" E	34° 14' 8.2285" S	None	None
PA/AST 076	19° 10' 46.2379" E	34° 14' 17.7529" S	None	None
PA/AST 077	19° 10' 48.0456" E	34° 14' 20.9605" S	None	None

ENVIRONMENTAL POLICY STATEMENT

Eskom Holdings SOC Limited is committed to minimising any negative effects of their activities on the environment (natural, cultural, historical and aesthetic), ensuring that their activities are conducted in an environmentally responsible manner. In line with Eskom's Environmental Management Strategy (Appendix A), the following environmental principles/strategies underlie this EMPr and will be implemented by Eskom as follows:

- By promoting open communication on environmental issues amongst employees and stakeholders.
- By establishing an environmental management system with a view to ensuring continual improvement in appropriate business activities, including prevention of pollution where economically viable and sustainable.
- By continuing to contribute toward sustainable development through the efficient production, distribution and use of energy.
- By educating, training and motivating its employees about the environment.

In order to achieve open communication on environmental issues amongst employees and stakeholders, the following will be undertaken:

- Ongoing communication and consultation with communities and other concerned parties about Eskom's environmental programmes and performance.
- The publishing of an annual Environmental Report which will be accessible to both employees and members of the general public.
- Training and informing staff of environmental issues.

An environmental management system will be developed with the aims of:

- Integrating environmental issues into all aspects of the organisation.
- Determining, measuring and managing the environmental impacts of Eskom's activities.
- Setting and reviewing environmental performance targets.
- Meeting legislation as a minimum requirement and developing appropriate standards where no regulations exist.
- Aligning the system to ensure compliance with ISO 14001.

Contributing towards sustainable development through the responsible reduction, distribution and use of energy shall be accomplished by:

- Ensuring the cost-effective and efficient production, transport and use of energy.
- Managing emissions, effluents and wastage.
- Ensuring the sustainable use of renewable resources and utilising finite resources efficiently.
- Promoting the efficient use of materials, products and services.
- Researching and instituting ways to monitor and manage environmental impacts.

In addition to the above, Eskom employees shall be actively educated, trained and motivated to:

- Develop a sense of environmental responsibility.
- Regard environmental considerations as important elements of their work.
- Increase their general knowledge of their surroundings.
- Integrate environmental factors into business decisions.

Responsibilities within Eskom

- I. Group Executive Directors shall be accountable for the development and implementation of the Environmental Management Systems in their respective groups whilst the Group Environmental Manager shall ensure the implementation thereof.*
- II. Functional groups shall provide advice and support to the Line Groups when requested.*
- III. The Corporate Environmental Manager (CEM) shall establish mechanisms to ensure an Eskom coordinated and aligned approach to environmental management and management systems and shall monitor and record issues relating to environmental performance. The CEM shall provide an assurance function to the Management Board Environmental Steering Committee (MBESC).*
- IV. Each business unit manager shall provide their Executive Director with the assurance that all environmental issues that are impacted by their business are being addressed.*
- V. Each Executive Director will provide the Chief Executive with an annual letter of assurance to this effect.*

1. INTRODUCTION

This EMPr has been prepared to cover environmental management for all aspects related to the construction of the 400/132 kV Asteria Main Transmission Substation (MTS) (previously known as Houhoek), including the Bacchus-Palmiet 400kV Loop-in and Loop-out (LILO) transmission power lines, located approximately 1 km south-west of the town of Botrivier within the Theewaterskloof Local Municipality in the Western Cape (Figure 1). The proposed Asteria MTS and associated LILO transmission power lines is required in order to ensure supply for the long-term future load growth anticipated in the Southern Cape.

The construction, refurbishment or upgrading of transmission lines can have a major impact on the environment. It is, therefore, imperative that precautions are taken to ensure that environmental damage is minimised. This will take a concerted effort from Eskom and the Contractor, and detailed planning is of importance.

The Environmental Control Officer (ECO) shall convey the contents of this document, the conditions of the Environmental Authorisation (EA) from the Department of Environmental Affairs (DEA) as well as Landowner Special Conditions to the contractor's site staff, and discuss the contents in detail with the Eskom Project Manager and contractor at a pre-construction meeting. This formal induction training is a requirement of ISO 14001 and shall be done with all main and sub-contractors. The ECO shall keep a record of training dates, people who attended and discussion points.

Good relations with the landowner/legal occupier (hereafter referred to as the landowner), Grid and Transmission staff and communities need to be established and sustained. This will help to prevent and solve problems should they arise. Lines of communication should always be open to ensure proper and timeous reaction to complaints. The contact numbers of the ECO and/or Eskom Site Supervisor and the Contractors' ECO (CECO) shall be made available to landowners and Grid and Transmission staff. The reputation of both the contractor and Eskom are at stake and it should be the drive for everybody involved to perform in excellence.

During the construction period, environmental personnel shall monitor the works for compliance with the recommendations of the EMPr and conditions of the EA. During the construction period, Environmental Audits shall be conducted every month to determine compliance with the recommendations of the EMPr and conditions of the EA. These can be internal audits or external audits undertaken by DEA or ISO 14001 auditors, or combined audits. The Transmission Environmental Advisor shall inspect the works when completed, and if satisfied, the works shall be taken over by the Grid.

All environmentally sensitive areas shall be shown on the site plan and project profiles, and the Project Manager and contractor shall take note of these. The Contractor shall take all the necessary precautions to prevent damage to these areas.

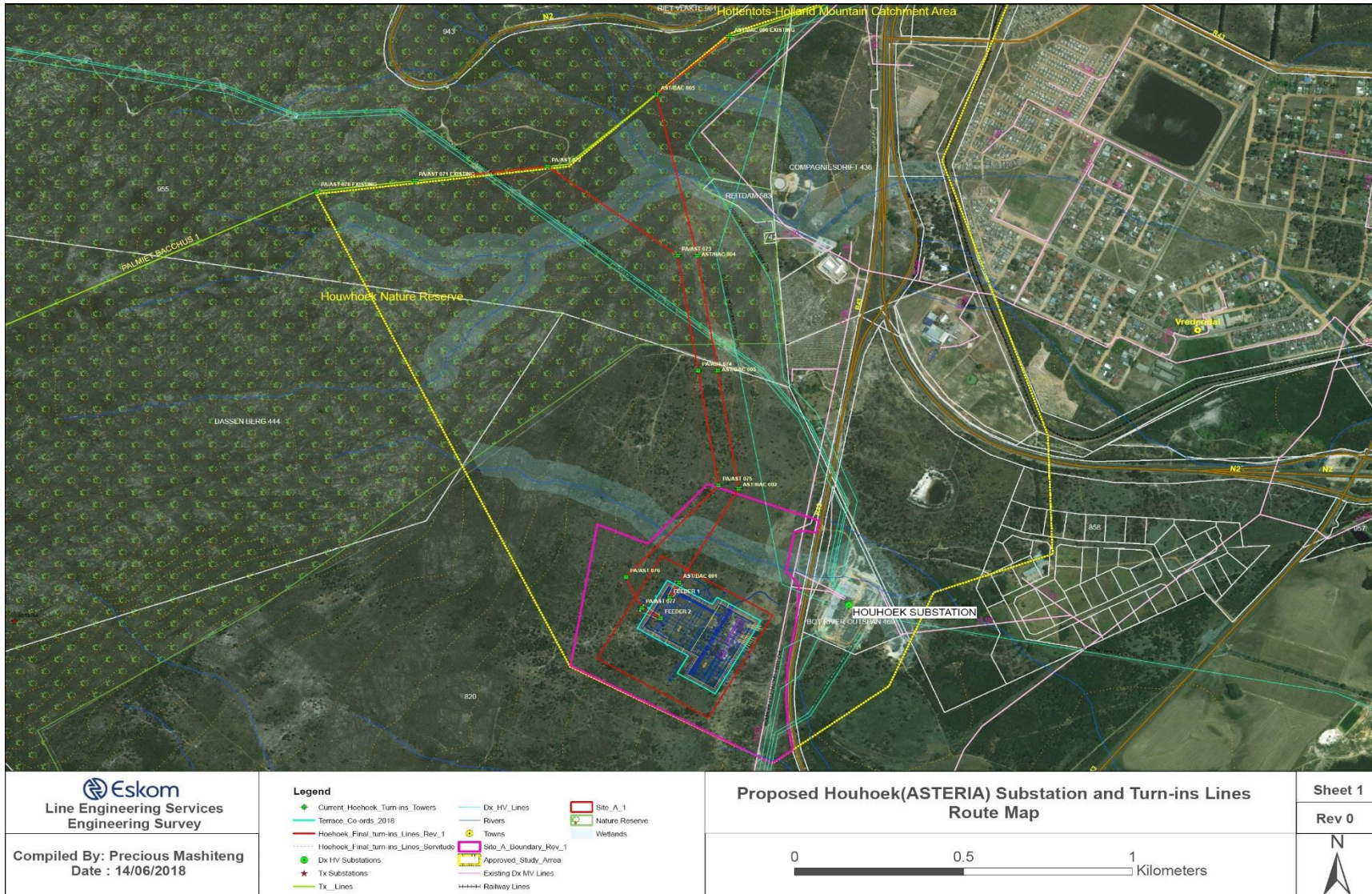


Figure 1 Locality map for the 400/132kV MTS and Bacchus-Palmiet LILo transmission power line project

1.1 Scope of this EMPr

The scope of this document is to give environmental management guidelines for construction to the contractor undertaking construction work, in fulfilment of the Environmental Authorisation issued (Appendix C) and ISO 14001¹ requirements. This document is part of the overall contract and is supplementary to Eskom's technical specifications (TRMSCAAC1, as amended) (Appendix B). Therefore, the recommendations and constraints, as set out in this document, are enforceable under the general conditions of contract. The EMPr has long-term objectives to ensure that:

- ❑ Environmental management considerations are implemented, starting from the design phase of the project.
- ❑ The contractor can and shall include any costs of compliance with this EMPr into the tender price.
- ❑ Precautions against environmental damage and claims arising from such damage are taken timeously.
- ❑ The completion date of the contract is not delayed due to environmental problems with landowners, Grid and Transmission staff, communities or regulatory authorities arising during the project execution.
- ❑ The assets created conform to the environmental standards required by ISO 14001 and Eskom's policies.

In order to give effect to the above, Eskom requires a commitment from the Eskom Project Manager and the contractor on the following matters:

- ❑ To underwrite Eskom's Environmental Management Strategy (as amended), (Appendix A) at all times.
- ❑ To ensure that environmental conditions stipulated in the Environmental Authorisation (EA) are implemented (Appendix C).
- ❑ To immediately resolve problems and claims arising from damage to ensure a smooth flow of operations.
- ❑ To implement this EMPr for the benefit of all involved.
- ❑ To protect the natural environment by limiting destructive actions on-site.
- ❑ To take into consideration any landowners' special conditions, as the line traverses private property and the Houhoek Nature Reserve.

The Project Manager and contractor must take into consideration that this EMPr will be amended as required over the duration of the contract. The management of the environment changes over time and, therefore, this document shall be updated regularly to ensure that environmental management is implemented optimally during all phases of the project.

¹ ISO 14001 forms a part of the ISO 14000 environmental management series. This standard (ISO 14001) specifies requirements for an environmental management system to enable an organisation to develop and implement a policy and objectives which take into account legal requirements and other requirements to which the organisation subscribes, and information about significant environmental aspects. It applies to those environmental aspects that the organisation identifies as those which it can control and those which it can influence. It does not itself define specific environmental performance criteria.

The scope of this EMPr includes the following construction activities comprising the project:

- ❑ Construction of a 400/132 kV Asteria main transmission substation.
- ❑ Loop-in loop-out transmission power lines that connect the existing Bacchus-Palmiet 400 kV Transmission power lines to the proposed Asteria Eskom MTS.
- ❑ A double circuit 132 kV Distribution power line that connects the proposed Asteria Eskom MTS to the existing Houhoek Eskom Distribution Substation and all related 132kV line deviations to accommodate the above.
- ❑ All associated and related activities for the aforementioned project (e.g. access roads, appurtenant works, construction camp, and the like).

This EMPr also describes the institutional framework for responsibilities and reporting on environmental issues during construction, identifies environmental requirements, describes environmental mitigation measures and defines the mechanism for review and reporting.

1.2 Legislative framework

All legislation applicable to the development must be strictly enforced, during both the construction and operational phases. The contractor must be acquainted with the relevant environmental legislation, including provincial and local government regulations, which are in place to ensure the protection of the environment.

This EMPr has been compiled in accordance with the provisions of the Record of Decision issued by DEA on the 06 March 2015 (Authorisation for the construction of the 400/132 kV Asteria MTS (previously known as Houhoek MTS), including the Bacchus-Palmiet LILO transmission power lines and Eskom distribution power line integration, Western Cape Province (14/12/16/3/3/2/401)) including relevant amendments and in accordance with the provisions of the Constitution of South Africa and the principles of Integrated Environmental Management.

The environmental legislation applicable to the project includes but is not limited to that outlined hereunder.

1.2.1 *The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996) (as amended)*

The Constitution is the supreme law of South Africa, against which all other laws are measured. It sets out of a number of fundamental environmental rights, which include:

The Environmental Clause

Section 24 of the Constitution outlines the basic framework for all environmental policy and legislation: It states:

“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 –*
 - i) prevent pollution and ecological degradation;*
 - ii) promote conservation; and*
 - iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development”.*

Access to Information

Section 32 of the Constitution provides that everyone has the right of access to any information held by the State or another juristic person, and that is required for the exercise or protection of any rights.

Fair Administrative Action

Section 33 of the Constitution provides the right to lawful, reasonable and procedurally fair administrative action.

Enforcement of Rights and Administrative Review

Section 38 of the Constitution guarantees the right to approach a court of law and to seek legal relief in the case where any of the rights that are entrenched in the Bill of Rights are infringed or threatened.

1.2.2 National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) (as amended)

NEMA is South Africa's overarching environmental legislation. It provides the legislative framework for Integrated Environmental Management in South Africa. The Act gives meaning to the right to an environment that is not harmful to health or well-being, entrenched in Section 24 of the Constitution. In addition, NEMA provides for: equitable access to natural resources, environmental protection and the formulation of environmental management frameworks. The Act is underpinned by the global concept of sustainable development. Section 2 of NEMA provides a set of principles that apply to the actions of all organs of state that may significantly affect the environment.

The interpretation, administration and application of NEMA are guided by fundamental principles of sustainable development, provided in Chapter 1 of the Act. "Development must be socially, environmentally and economically sustainable" (s 2(3)) and requires the consideration of all relevant factors, which are elaborated by eight sub-principles, including:

- ❑ The sustainability principle.
- ❑ The life-cycle, cradle-to-grave principle.
- ❑ The 'polluter pays' principle.
- ❑ The precautionary principle.
- ❑ The duty of care principle.
- ❑ Fair and transparent public consultation.

1.2.3 Other applicable environmental legislation

Table 1 provides a list of other relevant legislation that is applicable to the project.

1.2.4 Legislation and policy applicable to Eskom Transmission

Legislation and policy applicable to Eskom Transmission are outlined in Table 2.

1.2.5 Applicable Provincial Environmental Legislation: Western Cape

- ❑ Constitution of the Western Cape, 1997.
- ❑ Western Cape Nature Conservation Laws Amendment Act 3 of 2000.
- ❑ Western Cape Nature Conservation Regulations promulgated in terms of Section 82 of the 1974 Ordinance.
- ❑ Noise Control Regulations in terms of Section 25 of the Environment Conservation Act of 1989, (Act No. 73 of 1989).

Table 1 Relevant legislation that is applicable to the 400/132kV Asteria (Houhoek) MTS and Bacchus-Palmiet loop-in and loop-out power lines project

Name of Act	Applicability	Administrative Authority
Promotion of Administrative Justice Act, No. 3 of 2000	To give effect to the constitutional right to administrative action that is lawful, reasonable and procedurally fair and to the right to written reasons for administrative action.	Department of Justice and Constitutional Development
Promotion of Access to Information Act, No. 2 of 2000	To give effect to constitutional right of access to information that is required for the exercise or protection of constitutional rights. The Act requires the State or another person to provide such information.	Department of Justice and Constitutional Development
National Environmental Management: Biodiversity Act (Act No 10 of 2004)	<p>To provide for the management and conservation of South Africa's biodiversity, to protect species and ecosystems, to ensure sustainable use of indigenous biological resources, to ensure fair and equitable sharing of benefits arising from the commercial use of these resources, and to establish a South African National Biodiversity Institute.</p> <p>The Act also covers alien and invasive species and genetically modified organisms that pose a threat to biodiversity.</p> <p>The Act also provides for regulations and lists regarding Threatened and Protected Species (TOPS).</p>	Department of Environmental Affairs
National Environmental Management Amendment Act (Act 62 of 2008)	To amend the National Environmental Management Act.	Department of Environmental Affairs
National Environmental Management: Air Quality Act (Act No 39 of 2004)	To provide for the management of air quality in South Africa.	Department of Environmental Affairs

Name of Act	Applicability	Administrative Authority
National Environmental Management: Waste Act (Act 59 of 2008)	The National Environmental Management: Waste Act, 2008 (Act 59 of 2008) (WA) has various sections of relevance to the construction of the transmission line. The aims of the Act are to provide laws regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation, and for securing ecologically sustainable development.	Department of Environmental Affairs
National Environmental Management: Protected Areas Act (Act No 57 of 2003) and the National Environmental Management: Protected Areas Amendment Act (Act 31 of 2004)	To provide for the administration and management of protected areas in South Africa.	Department of Environmental Affairs
Environment Conservation Act (Act No 73 of 1989)	Matters relating to conservation, waste management (minimum requirements for waste disposal by landfill), and the regulation of noise.	Department of Environmental Affairs
Development Facilitation Act (Act No 67 of 1995)	This Act sets the overall framework and administrative structures for development within South Africa. And will include the rezoning of the proposed servitude from agriculture to institutional use by Eskom.	Department of Mineral Resources and the Western Cape Department of Rural Development and Land Reform.
National Mineral and Petroleum Resources Development Act (Act No 28 of 2002)	Controls land use and infrastructure on mining and prospecting areas. Controls environmental matters in areas to which this Act applies, for example, the removal of trees and bushes.	Department of Mineral Resources
National Water Act (Act No 36 of 1998)	The National Water Act (Act 36 of 1998) (NWA) has various sections of relevance to the proposed transmission line. The Department of Water and Sanitation (DWS) is the responsible authority with regard to matters affecting water resource management, including water quality. Added to this, certain provincial and local authority powers also influence the regulation of water resources, including agriculture, the environment, health services, nature conservation, pollution control, regional planning and development, soil conservation, and water and sanitation services. The development or modification of water courses or wetlands in any form are governed by conditions provided in Chapter 4, Part 1 of the Act, which sets out	Department of Water and Sanitation.

Name of Act	Applicability	Administrative Authority
	<p>general principles for regulating water use. In general, water use must be licensed unless:</p> <ul style="list-style-type: none"> <input type="checkbox"/> It is listed in Schedule 1 of the Act. <input type="checkbox"/> Is an existing lawful water use. <input type="checkbox"/> It is permissible under a general authorisation. <input type="checkbox"/> A responsible authority waives the need for a license. <p>As development or modifications of watercourses or wetlands are not included in Schedule 1, a license is required to carry out any activity involving modifications to watercourses or wetlands.</p>	
<p>National Forests Act (Act No 84 of 1998)</p>	<p>In terms of the National Forests Act, 1998 (Act 84 of 1998), trees in natural forests or protected tree species (as listed in Government Gazette Notice 1012 of 27 August 2004) may not be cut, disturbed, damaged, destroyed and their products may not be possessed, collected, removed, transported, exported, donated, purchased or sold, except under licence granted by the Department of Agriculture, Fisheries and Forestry. Each application is evaluated on merit (including site visits) before a decision is taken whether or not to issue a licence (with or without conditions). Such decisions must be in line with national policy and guidelines.</p>	<p>Department of Agriculture, Forestry and Fisheries (DAFF)</p>
<p>Conservation of Agricultural Resources Act (Act No 43 of 1983) (CARA)</p>	<p>The aim of CARA is to provide for control over the utilisation of the natural agricultural resources within South Africa and to promote the conservation of soil and water resources, indigenous vegetation and the control of invasive plants. Regulations applicable to the proposed power line include:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Section 2 (2)(a). The provisions of the Act relating to weeds and invader plants shall also apply to land that is situated within an urban area. <input type="checkbox"/> Section 6 (2)(e). The utilisation and protection of vleis, marshes, water sponges, water courses and water resources². <input type="checkbox"/> Section 6 (2)(l). The control of weeds and invader plants. <p>Thus, in terms of CARA, a landowner or land user is responsible for the</p>	<p>Department of Agriculture, Forestry and Fisheries (DAFF)</p>

² Wetlands are inadequately protected in South Africa. The loss of wetlands is of international concern (in the last century more than 50% of wetlands have disappeared worldwide), thus, the Ramsar Convention, to which South Africa is a signatory.

Name of Act	Applicability	Administrative Authority
	maintenance of all soil conservation works located on his/her property. Added to this, the maintenance and improvement of the structure and function of wetlands furthers the aims of CARA.	
National Veld and Forest Fire Act (Act No 101 of 1998)	The purpose of this Act is to prevent and combat veld, forest and mountain fires throughout the Republic. The Act provides for a variety of institutions, methods and practices for achieving the purpose.	Department of Agriculture, Forestry and Fisheries (DAFF)
National Heritage Resources Act (Act No 25 of 1999)	<p>The Act aims to promote an integrated system for the identification, assessment, and management of the heritage resources of South Africa. Furthermore, it established the South African Heritage Resources Agency (SAHRA) to implement the Act.</p> <p>The primary objective of the Act is the care, maintenance, repair and management, as well as the protection, of all forms of historically and culturally important sites, including, for example, public monuments and archaeological sites, important cultural objects and traditional burial sites.</p>	South African Heritage Resources Agency
Animal Protection Act (Act No 71 of 1962)	The Act is to regulate the exhibition and training of performing animals and use of dogs for safeguarding. This Act aims to prevent cruelty to animals. Any person(s) found guilty of an offence shall be liable to a fine or imprisonment not exceeding two years.	South African Police Services
Game Theft Act (Act No 105 of 1991)	This Act aims to regulate the ownership of game in certain instances; to combat theft and wrongful and unlawful hunting, catching and taking into possession of game; and to provide for matters connected herewith.	South African Police Services
Hazardous Substances Act (Act No 15 of 1973)	This Act provides for minimum requirements for the handling, classification and disposal of hazardous waste.	
Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (Act No 36 of 1947)	This Act aims to improve the legislative framework to ensure that South Africans are better protected from health and environmental risks posed by pesticides; to encourage the development and use of alternative products and techniques, and reduce dependence on chemical plant protection products; to integrate relevant international agreements and initiatives from other government departments and	Department of Agriculture, Forestry and Fisheries

Name of Act	Applicability	Administrative Authority
	to ensure increased transparency, access to information and improve public participation in the registration of pesticides.	
Road Traffic Act (Act No 29 of 1989)	This Act aims to provide for road traffic matters which shall apply uniformly throughout the Republic and for matters connected therewith.	Department of Transport
Explosives Act (Act No 15 of 2003)	The Act aims to provide for the control of explosives and to provide for matters therewith	South African Police Services
Advertising on Roads and Ribbon Development Act (Act No 21 of 1940)	This Act Aims to regulate the display of advertisements outside certain urban areas at places visible from public roads, and the depositing or leaving of disused machinery or refuse and the erection, construction or laying of structures and other things near certain public roads, and the access to certain land from such roads.	Department of Transport and the Department of Public Works

Table 2 Legislation and policy applicable to Eskom

Name of Act	Applicability	Administrative Authority
Eskom Act (Act No 40 of 1987)	<p>The Act sets out the objectives of Eskom, being the provision of a system by which the electricity needs of the consumers may be satisfied in the most cost-effective manner, subject to resource constraints and the national interest. The National Energy Regulator of South Africa exercises control over the performance of Eskom's functions and the execution of its powers and duties</p> <p>Section 12 of the Act sets out the functions, powers, and duties of Eskom</p>	Department of Energy
Eskom Conversion Act (Act No 13 of 2001)	The objective of the Eskom Conversion Act is to convert Eskom into a public company in terms of the Companies Act, and to provide for powers and duties of Eskom	Department of Energy
Electricity Regulation Act (Act No 4 of 2006)	The Act governs the control of the generation and supply of electricity in South Africa, and the existence and functions of the Electricity Control Regulator	National Energy Regulator of South Africa (NERSA)
White Paper on the Energy Policy of the Republic of South Africa (1998)	Policy objectives identified include increasing access to affordable energy services, improving energy governance, stimulating economic development (including the encouragement of cost-effective energy prices which include quantifiable externalities), managing energy-related environmental and health impacts and securing supply through diversity	Department of Energy
Occupational Health and Safety Act (Act 85 of 1993)	To provide for the health and safety of persons at work and for the health and safety of persons in connection with the activities of persons at work and to establish an advisory council for occupational health and safety	Department of Labour

1.3 Possible permits/authorisations/licences

Although the 400/132 kV Asteria (Houhoek) MTS and Bacchus-Palmiet LILO transmission power lines have been issued an EA, some activities during construction may require a permit, licence, authorisation or consent use from different government bodies prior to construction commencing. The contractor is to ensure that any activity performed complies with the relevant legislation and that the relevant approvals, licences and consent have been obtained prior to construction commencing. Some of the activities that could require a license, permit or consent use are outlined in Table 3.

1.4 Fines and penalties

1.4.1 Fines

During construction, fines and penalties for non-compliance can be issued to the contractor at the discretion of the Project Manager. Such fines will be issued in addition to any remedial costs incurred as a result of non-compliance with the EMP. The ECO will inform the Project Manager of any contraventions to the EMP and request that a fine be issued to the contractor. It is important to note that while the ECO can recommend fines only the Project Manager can issue fines on-site. The value of fines for various transgressions are provided in the Eskom document *Environmental Requirements for Contractors and/or Suppliers PDPMAN-SP-37 Revision 1* which forms part of the contract with the appointed contractor.

1.4.2 Penalties

Where the contractor and/or his subcontractors inflict non-repairable damage upon the environment or fail to comply with any of the environmental specifications, he shall be liable to pay a penalty fine over and above any other contractual consequence.

- The Contractor is deemed not to have complied with this specification if:
 - Within the boundaries of the site, site extensions and haul/access roads there is evidence of contravention of the EMP.
 - Environmental damage ensues due to negligence.
 - The contractor fails to comply with corrective or other instructions issued by the ECO within a specific time.
 - The Contractor fails to respond adequately to complaints from the public.
- The payment of any fines in terms of the contract shall not absolve the offender from being liable from prosecution in terms of any law. The applicable penalties for such transgressions are provided in Table 5.

Table 3 Activities requiring licences, approvals and permits prior to construction commencing

General Activities	Type of permit/licence/consent	Issuing Authority
Effects on water resources, including the following: <ul style="list-style-type: none"> <input type="checkbox"/> Taking water from a water resource. <input type="checkbox"/> Impeding the flow of a water course. <input type="checkbox"/> Diverting the flow of a water course. <input type="checkbox"/> Discharging waste or water containing waste into a water resource. <input type="checkbox"/> Use of treated waste water (dust suppression). <input type="checkbox"/> Storage of water. 	Licence from the Department of Water and Sanitation.	DWS
The handling and management of waste, including the following: <ul style="list-style-type: none"> <input type="checkbox"/> The storage and transfer of waste, recycling and recovery, and the disposal of waste on land. <input type="checkbox"/> Storage, disposal and handling of hazardous waste. 	Licence from the Department of Environmental Affairs.	DEA
Way leave applications for access to provincial roads.	Approval from the Department of Transport.	DOT
Impacts on heritage resources, including: <ul style="list-style-type: none"> <input type="checkbox"/> Graves. <input type="checkbox"/> Historical buildings. <input type="checkbox"/> Known heritage resources. 	Permit from Heritage Western Cape (HWC) as well as the South African Heritage Resources Agency (SAHARA).	HWC and SAHARA
The establishment of construction camps and associated infrastructure, including the following: <ul style="list-style-type: none"> <input type="checkbox"/> Applications for health permits for sanitation and hostels. <input type="checkbox"/> Site establishment and sewage disposal. <input type="checkbox"/> Storm water and pollution control. 	Health permits are required from the Department of Health (DOH). Approval from the local municipality is required for sewage disposal and storm water and pollution control.	DOH and Local Municipalities
Blasting activities.	Permits.	DEA and South African Police Service (SAPS)
The removal of protected trees and plants.	Permits required from the Department of Agriculture, Fisheries and Forestry (DAFF).	DAFF
Compliance with the Veld and Forest Fire Act.	Drafting of a fire Management Plan.	DAFF
Fuel storage.	Approval as issued in the Environmental Authorisation.	DEA
Access to the servitude along the transmission line alignment.	Approval from affected land owners.	Land owners
Notification of the commencement of construction.	Approval from DEA.	DEA

Table 4 Penalties applicable during construction

Transgression		Penalty (ZAR)
A	Erosion	A penalty equivalent to the cost of rehabilitation plus 20%
B	Oil spills	A penalty in the value to the cost of the cleanup operation plus 20%
C	Damage to indigenous vegetation	A penalty equivalent in value to the cost of restoration plus 20%
D	Damage to sensitive environments	A penalty equivalent in value to the cost of restoration plus 20%
E	Damage to cultural sites	A penalty to a maximum of R 100,000 shall be paid for any damage caused to cultural and/or historical sites
F	Damage to protected trees	A penalty to a maximum of R 100,000 shall be paid for each protected tree removed without prior permission, or a maximum of R 5,000 for damage to any protected tree, which is to be retained on-site
G	Penalties for removing or damaging protected trees: girth of trunk (1 m above ground level) 0 – 15 mm 16 – 30 mm 31 – 50 mm 51 – 75 mm 76 – 100 mm 101 – 150 mm 150 – 300 mm > 300 mm	Replacement value per protected tree at R 100 R 200 R 500 R 1,000 R 2,500 R 5,000 R 10,000 R 15,000 to R 100,00

2. DESCRIPTION OF THE PROJECT

The Asteria MTS project entails the construction of the 400/132 kV Asteria MTS, linking to the existing 132 kV Houhoek Eskom Distribution Substation, and, the LILO transmission power lines connecting the Asteria MTS into the existing Bacchus-Palmiet 400 kV Transmission power line (Refer to Figure 1). In order to connect the LILO transmission power lines with the existing Bacchus-Palmiet 400kV transmission power line, the Bacchus-Palmiet 400 kV transmission power line is required to be split at the intersection with the proposed LILO 400 kV transmission power lines. To ensure that the exiting Bacchus- Palmiet 400 kV transmission power line remains live during this period, temporary by-pass wooden pylons will be inserted into the ground within the existing 55 m servitude of the Bacchus-Palmiet 400 kV Transmission power line.

The Asteria Eskom MTS project requires the following:

- ❑ A 2x500 MVA, 400/132 kV MTS of approximately 14.5 hectares in area, near the existing 132 kV Houhoek Eskom Distribution Substation-site.
- ❑ LILO transmission power lines that connect the existing Bacchus-Palmiet 400 kV transmission power line to the proposed Asteria MTS. This would entail two adjoining 400 kV Transmission power lines on 12 pylon positions of approximately 3 km in length. Temporary by-pass wooden poles will be placed within the existing servitude of the Bacchus-Palmiet 400 kV transmission power line to maintain the live connection.
- ❑ A double circuit 132 kV Distribution power line that connects the proposed Asteria Eskom MTS to the existing Houhoek Eskom Distribution Substation and 132kV line deviations to enable the connection.
- ❑ Existing access roads will be used for the construction of the LILO 400 kV transmission power lines. These access roads would be widened to accommodate abnormal heavy vehicles. A temporary access road will need to be constructed to link the existing access road to the substation from the R43 to the construction camp site.

2.1 Technical specifications

2.1.1 Asteria MTS

The proposed Asteria Eskom MTS will contain the following infrastructure:

- ❑ 4 x 500 MVA Transformers (including 2 for future planning);
- ❑ 2 x 400 kV line bays for the 400 kV LILO from the Bacchus-Palmiet 400 kV transmission power line;
- ❑ Busbars, bus couplers and bus sections;
- ❑ 12 x 132 kV feeder bays (including 6 for future planning);
- ❑ Foundations, steel structures and equipment;
- ❑ Stormwater drainage system;
- ❑ Outdoor switchgear (in a breaker and half configuration or double busbar configuration);
- ❑ Fibre optic cables for telecommunication;
- ❑ Surge and lightning protection equipment/mast;
- ❑ Control and metering equipment;
- ❑ Office and ancillary buildings;
- ❑ Approximately 3.5 m high fencing around the substation-site;
- ❑ Security lighting in and around the perimeter of the substation-site.
- ❑ Platforms– the longest length of the cut platform required for the site is 270 m. The proposed cut height is approximately 20 m and the fill height is approximately 15 m;
- ❑ A temporary access road to link the existing access road to the substation from the R43 to the construction camp site.

-
- A transformer oil holding dam that is between 10,000 m³ and 12,000 m³ capacity (transformer oil will only be stored during the commissioning of the Asteria MTS). The oil holding dam is a safety mechanism in case of leakage of the oil from the MTS during commissioning.

2.1.2 Loop-in Loop-out transmission power lines

The 400 kV LILO transmission power lines connecting the Asteria Eskom MTS with the existing Bacchus-Palmiet 400 kV Transmission power line will be an estimated 3 km in length. Due to the technical requirement Self-Supporting Pylons (typically between 26 m and 29 m in height) will be used for the 400 kV LILO transmission power lines. Due to the steeper terrain in the study area, the horizontal distance between pylons is estimated between 150 m to 500 m.

2.1.3 132 kV Distribution power line

The project intends establishing a double 132 kV Distribution power line to link the proposed Asteria MTS and the existing Houhoek Eskom Distribution Substation. The 132 kV Distribution power line is estimated between 250 m to 300 m in length. The existing Bacchus-Houhoek 132kV line needs to be deviated into the new Asteria MTS to release an existing 132kV feeder bay at Houhoek Eskom Distribution Substation for the connection to the Asteria MTS. A standard Eskom Distribution steel monopole pylon would be used with the height of the pylon above ground ranging from 8 m to 15 m.

2.1.4 Construction camp

The contractor will require a construction camp located close to the Asteria MTS site for the duration of the contract period. The location of the construction camp is to be determined by the contractor however it must either be within the development footprint or on a site appropriately zoned or authorised for such use and that has already been cleared or disturbed by previous human activity. The location of the construction-site camp must be approved by the Environmental Control Officer (ECO).

2.1.5 Construction process

The contractor shall ensure that the correct equipment for construction purposes is always available to ensure construction proceeds without unnecessary damage to the environment. Should alternative methods be used, pre-approval is required from the Eskom Project Manager, in consultation with the ECO.

2.1.6 Project execution area

Construction activities will be limited to the area as demarcated by Eskom and shown on the site plans. Any area outside the Eskom servitude areas required to facilitate access, construction activities, construction camps or material storage areas, shall be negotiated with the affected landowners and written agreements shall be obtained. In the case of the Houhoek Nature Reserve any changes will be negotiated with the reserve manager with written agreement obtained. This is the responsibility of the contractor.

Construction areas shall be cleared in accordance with Eskom's Procedure for Vegetation clearing (as amended) (Appendix E) or other suitable methods, as required, in sensitive environments. Any additional areas to be cleared outside the servitude shall be negotiated by the contractor with the relevant landowners (the reserve manager if within the Houhoek Nature Reserve) and approved by Eskom. All areas marked as "no-go" areas inside the servitude shall be treated with the utmost care and responsibility.

Should water be required from sources other than an Eskom supply, a written agreement shall be reached between the contractor and the landowners (the reserve manager if within the Houhoek Nature Reserve) in the presence of Eskom. Should the contractor be required to use water from a natural source, the contractor shall supply a method statement to that effect and obtain the required permits from the Department of Water Affairs. Strict control shall be maintained, and the ECO shall regularly inspect the abstraction points and methods used.

Where possible and as applicable (for example, in construction camps) works shall be fenced to prevent livestock and/or local community members from wandering into the area and being injured. The Contractor's workforce shall refrain from venturing outside of work areas and onto private property.

No work shall commence until permission is granted from the Environmental Advisor from Transmission Services and this EMPr has been approved by DEA. The Project Manager shall ensure that all conditions in the EA are fulfilled before the contractor occupies the site.

2.1.7 Site establishment

Site establishment shall take place in an orderly manner and all amenities shall be installed at campsites before the main workforce moves onto site. The contractor's camp shall have the necessary ablution facilities with chemical toilets where such facilities are not available at the commencement of construction. The contractor shall supply a wastewater management system that will comply with legal requirements and is acceptable to Eskom. A conservancy tank system is recommended to ensure a best practice environmental solution.

Where Eskom facilities are available, the contractor shall make use of such facilities where it is viable. The contractor shall inform all site staff to make use of supplied ablution facilities and under no circumstances shall indiscriminate excretion and urinating be allowed.

2.2 Responsibility matrix and reporting structure

During construction, all instructions and official communications regarding environmental matters shall follow the organisational structure shown in Figure 2. The organisational structure identifies and defines the authorities' structure, and the communication structure for the various parties involved in the construction of the proposed development.

This institutional structure will be maintained throughout construction until such time as the final construction phase Environmental Report has been prepared and accepted.

Eskom Transmission shall appoint an independent Environmental Control Officer (ECO) to monitor the implementation of the EMPr on-site. It will be the responsibility of the ECO to consult the Eskom appointed Senior Site Supervisor regarding instructions pertaining to contraventions, corrective actions, fines and penalties or working methods. This reporting structure is to be maintained except in an emergency situation where the ECO may give instructions directly to the contractor.

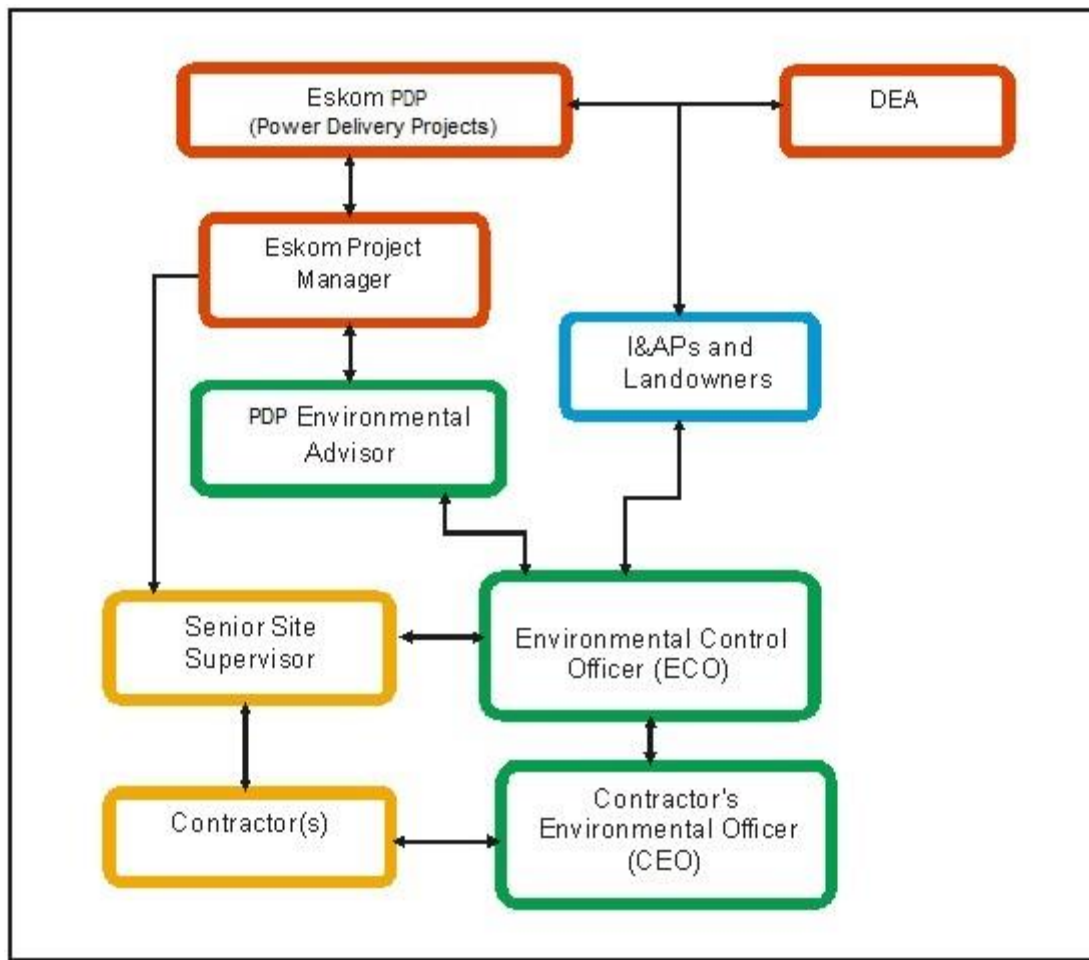


Figure 2 Organisational/reporting structure for implementation of the EMPr

2.2.1 Roles and responsibilities

PROJECT MANAGER/SITE MANAGER

The Project Manager/Site Manager is responsible for overall management of project and EMPr implementation. The following tasks will fall within his/her responsibilities:

- Be aware of the conditions stated within the Environmental Authorisation.
- Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures.
- Ensure that all contractors appoint an Environmental Officer (CEO)
- Monitor site activities on a daily basis for compliance.
- Confine the construction-site to the demarcated area.
- Rectify transgressions through the implementation of corrective action.
- Attend and chair the Monthly Environmental Site Meetings.

ESKOM SENIOR SITE REPRESENTATIVE

The Eskom Senior Site Representative reports directly to the Eskom Project Manager, oversees site works, liaises with the contractor(s) and the ECO. The Eskom Senior Site Representative is responsible for the day to day operation of the EMPr and for ensuring the compliance of all contractors to the conditions and requirements stipulated in the EMPr. The following tasks will fall within his/her responsibilities:

- Ratify the Monthly Environmental Report.
- Issue all non-compliances to contractors.

ENVIRONMENTAL CONTROL OFFICER

The Environmental Control Officer is responsible for monitoring the implementation of the EMPr during construction as well as for liaison between Eskom, the Contractor and landowners. The following tasks will fall within his/her responsibilities:

- Be aware of the conditions stated within the Environmental Authorisation.
- Be familiar with the recommendations and mitigation measures of this EMPr.
- Convey the contents of this document, the conditions of the EA, any additional DEA specifications and the Landowner Special Conditions to the contractor and discuss the contents in detail with Eskom Project Manager and contractor at a pre-construction meeting.
- Educate the construction team about the management measures stipulated within the EMPr and EA. This formal induction training is a requirement of ISO 14001 and shall be done with all main and sub-contractors. Records of the training date, people who attended and discussion points shall be kept by the ECO.
- Undertake regular liaison with the construction team and the project leader.
- Conduct weekly/monthly audits of the construction-site according to the EMPr and EA.
- Maintain records of non-compliance with the conditions of the EA and the EMPr.
- Recommend corrective action for any non-compliance incidents on the construction-site.
- Report progress made on a monthly basis to the Project Manager/Site Manager and Senior Site Supervisor. These reports shall be available at all times, on-site or in project files and on request by auditors, DEA and I&APs.
- All negotiations for any reason shall be between the ECO, the affected parties and the contractor. No verbal agreements shall be made. All agreements shall be recorded in writing and all parties shall co-sign the documentation.
- The affected parties shall always be kept informed about any changes to the construction programme should they be involved. If the ECO is not on-site, the contractor should keep the affected parties informed. The contact numbers of the contractor and the ECO shall be made available to the affected parties. This will ensure open channels of communication and prompt response to queries and claims.

CONTRACTOR

The contractor is responsible for the implementation and compliance with recommendations and conditions of the EMPr, as outlined hereunder:

- Ensure compliance with the EMPr at all times during construction.
- Provide all necessary supervision during the execution of the project. He/she should be available on-site all the time.
- Comply with special conditions as stipulated by landowners.
- Inform and educate all employees about the environmental risks associated with the various activities to be undertaken and highlight those activities which should be avoided during the construction process in order to minimise significant impacts to the environment.

-
- ❑ Maintain an environmental register which keeps a record of all incidents which occur on the site during construction. These incidents include:
 - Public involvement/complaints.
 - Health and safety incidents.
 - Hazardous materials stored on-site.
 - Non-compliance incidents.
 - ❑ Where construction activities are undertaken close to any inhabited area, the necessary precautions shall be taken by the contractor to safeguard the lives and property of the inhabitants.
 - ❑ The contractor shall under no circumstances interfere with the property of landowners, Grid staff or nearby communities.
 - ❑ Should the contractor require clarity on any aspect of the EMPr, the contractor must contact the ECO for advice.

CONTRACTOR ENVIRONMENTAL OFFICER (CEO)

The delegated CEO will be responsible for ensuring that all work, activities, and actions of the contractor will be in compliance with, and conform to, the EMPr and that required method statements are implemented as described. The CEO will further ensure environmental best practice by their company and all of their staff. Duties that the CEO must perform on-site include the following:

- ❑ Be on-site throughout the duration of the project.
- ❑ Ensure all their staff are aware of the environmental requirements and conditions on-site (EMPr and EA) with respect to work being undertaken on-site. This information should form part of the Toolbox Talks undertaken with staff on-site.
- ❑ Implementing the environmental conditions, guidelines and requirements as stipulated within the EA, EMPr and method statements.
- ❑ Attend all Environmental Site Meetings.
- ❑ Undertake corrective actions where non-compliances are registered within the stipulated timeframes.
- ❑ Environmental monitoring as required by applicable legislation.
- ❑ Report back formally on the completion of corrective actions.
- ❑ Prepare the Monthly Environmental Report for submission to the ECO.

2.2.2 Method statements

A method statement is a written submission by the contractor to the Project Manager, Senior Site Representative or ECO in response to the EMPr, setting out the plant, materials, labour and method the contractor proposes using to carry out an activity. The method statement will be done in such detail that the ECO is enabled to assess whether the contractor's proposal is in accordance with the EMPr and/or will produce results in accordance with the EMPr.

The method statement shall state clearly:

- ❑ Timing of activities.
- ❑ Materials to be used.
- ❑ Equipment and staffing requirements.
- ❑ The proposed construction procedure designed to implement the relevant environmental specifications.
- ❑ The system to be implemented to ensure compliance to the above and the EMPr.
- ❑ Other information deemed necessary by the ECO.

Method statements are to be submitted at least 14 working days before the projected commencement of work on an activity to allow the ECO time to study and approve the method

statement. No work may commence prior to the ECO approving the method statement in writing, which should be submitted within seven days of receiving the method statement from the contractor. Where changes to method statements are required due to unforeseen circumstances, the updated method statement must be agreed to by the ECO and Senior Site Representative in writing, and records must be retained of any amendments to ensure the most current method statements are been used by the contractor.

The following method statements must be supplied to the ECO:

- Crossing of erosion gullies and drainage lines.
- Contaminated water management plan, including the containment of runoff and polluted water.
- Materials and equipment to be used.
- Location, layout and preparation of cement/concrete batching facilities, including the methods employed for mixing concrete and the management of runoff from these areas.
- Emergency construction method statements, including details of methods to be employed for fuel spills and clean-up operations.
- Location, layout and preparation of the construction camp(s) and materials storage areas.
- Rehabilitation of disturbed areas and re-vegetation after construction is complete.
- The transport of materials to and from site.
- Construction procedures to be employed.

Additional method statements may be required by the ECO during the course of works, depending on the nature of the construction works being undertaken and the locations thereof.

2.2.3 Site monitoring, auditing and reporting

An approved filing system (in accordance with ISO 9000) will be established at the outset of the construction phase and will be maintained throughout the lifespan of the project. The CEO is solely responsible for the upkeep and management of the EMPr file. A hardcopy of all documentation must be filed, while electronic copies must be maintained in the office of the Senior Site Representative. The maintenance and filling of electronic and hard copies will be the responsibility of the CEO and must remain current and up to date. The filing system must be updated and relevant documents added as required. The EMPr file must always be made available on-site on request by Eskom Transmission, DEA, ECO or other relevant authorities. The EMPr file will form part of any Environmental Audits undertaken.

A monitoring programme shall be implemented for the duration of the construction phase of the project. This programme must include:

- Daily incident logs and daily pre-warning reports to be compiled by the CEOs. The pre-warning reports are intended to record any issues which might occur based on observations of on-site procedures by the CEO while the incident logs are intended to record all environmental incidents on-site. All incidents, regardless of severity, must be reported to Eskom within 24 hours of occurrence and kept in the EMPr file controlled by the CEO. The daily incident logs should contain the following:
 - The date and time of the incident.
 - Description of the incident.
 - The name of the contractor responsible.
 - The incident must be listed as significant or minor.
 - If the incident is listed as significant, a non-compliance must be issued, and a record of that listed in the log.
 - Remedial or corrective action taken to mitigate the incident.

-
- Record of repeat minor offences by the same contractor or staff member.
 - The Daily Environmental Incident Logs must be presented as part of the weekly and monthly reports.
 - Weekly environmental checklists must be completed by the CEO. These checklists must be submitted to the Senior Site Supervisor on a weekly basis and be incorporated into the monthly audit reports.
 - Monthly compliance audits should be conducted by the ECO, and are to be undertaken in accordance with the conditions outlined in the EMPr and EA. These audits can be conducted randomly and do not require prior arrangement with the Project Manager.
 - Monthly Environmental Site Meetings will be held which the Project Manager and all contractors' CEOs will be required to attend. All environmental issues reported on-site will be tabled at the meeting for discussion and resolution. Eskom will keep minutes of the Monthly Environmental Site Meetings which must include an attendance register and will be attached to the final Monthly Report that is distributed.
 - Compilation of a monthly audit report with a rating of the compliance with the EMPr. This report must be submitted to the relevant authorities (i.e. DEA). At a minimum, the monthly audit report should include the following documentation:
 - Copies of the weekly environmental checklists.
 - Non-compliance to the conditions of the EMPr and EA during the reporting period.
 - Completed and reported corrective actions.
 - Minutes of any environmental meetings conducted during the reporting period.
 - Findings from the monthly site audits and any non-compliance to the EMPr and EA.
 - Non-compliances issued to the contractor or Eskom Transmission.
 - The ECO shall keep a photographic record of any damage to areas outside the demarcated site area. The date, time of damage, type of damage and reason for the damage shall be recorded in full to ensure the responsible party is held liable. All claims for compensation emanating from damage shall be directed to the ECO for appraisal.
 - The Contractor shall be held liable for all unnecessary damage to the environment. A register shall be kept of all complaints from the landowner, Grid or community. All complaints/claims must be handled immediately to ensure timeous rectification/payment by the responsible party.

3. 400/132 KV ASTERIA (MTS), CONSTRUCTION CAMP AND ASSOCIATED INFRASTRUCTURE: ENVIRONMENTAL SPECIFICATIONS

ESTABLISHMENT OF THE MTS AND CONSTRUCTION CAMPS

Prior to the establishment of the MTS, the following items are to be undertaken by Eskom Project Manager and the ECO:

- As stipulated in the EA (Item 26), all woody alien vegetation must be properly cleared from within 100 meters of the MTS within one year of the project commencing. This should be undertaken by suitably qualified contractors, using DAFF approved methodology. This should be repeated annually for 5 years after project completion in order to allow for the removal or regrowth and germination of seed banks.
- As stipulated in the EA (Item 27) prior to development of the approved development footprint for the MTS, this must be surveyed and clearly fenced off so that the contractor knows exactly the area that is involved and does not disturb the adjacent areas of natural vegetation.

Prior to the establishment of construction and site camps, the following items are to be undertaken by Eskom Project Manager and the ECO:

- Identify suitable areas for the establishment of construction and site camps.
- Compile a site specific EMPr Addendum (to this document) should the necessity arise through site specific impacts not covered in this EMPr.

Once these items have been addressed, site establishment shall take place in an orderly manner and all amenities shall be installed before the main workforce moves onto site.

Method statements are required from the contractor at the tender stage that include the layout of the construction camp in the form of a plan showing the location of key infrastructure and services, including but not limited to: offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous storage areas (including fuels), the batching plant (if one will be located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation (if required), cooking and ablution facilities, and waste and wastewater management.

The contractor's camp will be located in a suitable area that does not impact on sensitive vegetation. The location and geographic extent of the contractor's camp will be detailed in the method statement and approved by the Project Manager, Senior Site Representative and ECO.

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
1	<p>Camp Site Selection The Construction Camp will be located in a suitable area that does not impact on the sensitive environments.</p>	<ul style="list-style-type: none"> <input type="checkbox"/> The ECO must be consulted and give approval on all proposed locations and layouts for construction/site camps. <input type="checkbox"/> If the contractor chooses to locate the camp on private land, he must get prior permission from both the Project Manager and the landowner. <input type="checkbox"/> Ensure that the construction camps are planned so as to have no impact on sensitive vegetation. <input type="checkbox"/> Ensure that the construction camps do not “spread” or “creep” and that they remain within the agreed footprints. Adequate fencing must be erected to ensure the construction camps remain within the agreed footprints. <input type="checkbox"/> The construction camps should be located in previously disturbed areas and not closer than 100 m from a water course or drainage line. <input type="checkbox"/> The construction camp may not be situated within the 1:100 year flood line or on slopes greater than 1:3. <input type="checkbox"/> Negotiations regarding water supply to the construction camps must be had with landowners and DWS prior to site establishment. <input type="checkbox"/> Upon completion of construction, the construction camps shall be rehabilitated as per the conditions of this EMPr. 	<ul style="list-style-type: none"> <input type="checkbox"/> Ensure that the location identified in the method statement is appropriate and does not impact on any sensitive environments as identified by the specialists appointed to do the site inspections of the proposed sites. The ECO is to retain copies of the Specialists’ Reports on file at the construction camp as well as with the Senior Site Supervisor. <input type="checkbox"/> Ensure that the final site conforms with that as described in the method statement. <input type="checkbox"/> A photographic record of the site prior to establishment, during construction, during rehabilitation and post rehabilitation is required and must be submitted to DEA upon completion of construction and rehabilitation.
2	<p>Site Clearing The following mitigation measures are required prior to site clearing commencing.</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Ensure that all site personnel have a basic level of environmental awareness training prior to commencement of site clearing activities. The Contractor must submit a proposal for this training to the ECO for approval. Topics covered should include: <ul style="list-style-type: none"> ▪ What is meant by “environment”. ▪ Why the environment needs to be protected and conserved. ▪ How construction activities can impact on the environment. ▪ What can be done to mitigate against environmental impacts. ▪ Awareness of emergency and spill response provisions. ▪ Social responsibility during construction e.g. being aware of surrounding communities and considerate of their needs. <input type="checkbox"/> Use should be made of environmental awareness posters on-site. 	<ul style="list-style-type: none"> <input type="checkbox"/> No clearing or impacting of any sensitive vegetation identified during the specialist site inspections. <input type="checkbox"/> The ECO is to ensure that the search, rescue and replanting of all endangered and protected species is completed prior to any construction or clearing taking place. <input type="checkbox"/> The ECO is to monitor that all alien invasive vegetation is removed from site by the contractor. <input type="checkbox"/> The ECO is to ensure that no

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<ul style="list-style-type: none"> ❑ The need for a “clean site” policy must to be explained to the workers. ❑ Staff operating equipment (such as excavators, loaders, etc.) shall be adequately trained and sensitised to any potential hazards associated with their tasks. ❑ The contractor shall provide a method statement for vegetation clearing prior to construction commencing which must be approved by the ECO. This method statement must conform to Eskom’s Procedure for Vegetation Clearing (See Appendix E). ❑ The contractor appointed to undertake vegetation clearing will have the necessary knowledge to be able to identify different species, declared weeds and alien species and be in possession of a valid herbicide applicator’s license. ❑ In order to reduce erosion and the pollution of water entering watercourses and water bodies, vegetation clearance shall occur in a planned manner. Clearing operations shall be programmed to minimise the time that cleared areas are exposed before construction activities start and to ensure that cleared areas are stabilised as soon as possible. ❑ In the event that herbicide is used by the contractor, herbicides will be used strictly within Eskom’s Guidelines (See Appendix F - Eskom’s Herbicide Management Policy & Appendix G - Eskom’s Safe Use of Pesticides and Herbicide Standard). All surplus herbicide will be removed from site and disposed in accordance with the supplier’s specifications. ❑ All areas of natural vegetation within the area controlled by Eskom shall be cleared of all alien invasive species according to best environmental practice (See Appendix H Eskom’s Alien Vegetation Clearing Manual). 	<p>contractor or their staff move out of designated areas and off designated access points or roads.</p> <ul style="list-style-type: none"> ❑ The Final Environmental Close-Out Report confirms that all sensitive vegetation identified in the Vegetation Assessment of the site has been rescued and replanted. ❑ Photographic evidence of the rescue and replanting of sensitive vegetation must be kept by the ECO and included in the Final Environmental Close-Out Report.
3	Storage of Materials including Hazardous Materials	<ul style="list-style-type: none"> ❑ Choice of location for storage areas must take into account prevailing winds, distances to water bodies, general onsite topography and water erosion potential of the soil. Impervious 	<ul style="list-style-type: none"> ❑ The ECO is to monitor the construction camp daily and include his/her findings into the weekly

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<p>surfaces must be provided where necessary.</p> <ul style="list-style-type: none"> ❑ Storage areas should be secure so as to minimize the risk of crime. They should also be safe from access by unauthorised persons, children, animals, etc. ❑ Storage areas must be designated, demarcated and fenced, if necessary. ❑ Adequate storage facilities for the storage of oils, paints, grease, fuels, chemicals and any hazardous materials to be used must be provided to prevent the migration of spillage into the ground and groundwater regime around the temporary storage area(s). These pollution prevention measures for storage should include a bund wall high enough to contain at least 110% of any stored volume, and this should be sited away from drainage lines in a site with the approval of the Project Manager. ❑ These storage facilities (including any tanks) must be on an impermeable surface that is protected from the ingress of storm water from surrounding areas in order to ensure that accidental spillage does not pollute local soil or water resources. ❑ Material Safety Data Sheets (MSDSs) shall be readily available on-site for all chemicals and hazardous substances to be used on-site. Where possible the available MSDSs should additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases or escapes. ❑ A register shall be kept on all substances and be available for inspection at all times. ❑ Hazardous and flammable substances must be stored and used in compliance with the applicable regulations and safety instructions (EA Condition 3.2.4.2). ❑ Staff dealing with these materials/substances must be aware of their potential impacts and follow the appropriate safety measures. ❑ Storage areas containing hazardous substances/materials must be 	<p>environmental checklists and the bi-monthly and monthly audit reports.</p> <ul style="list-style-type: none"> ❑ Any issues identified by the ECO with regards to the conditions of this EMPr are to be addressed immediately by the contractor. ❑ The ECO is to ensure that copies of all waste disposal certificates are kept on file. ❑ The ECO is to ensure that the hazardous substances register is up to date and includes all materials stored on-site. ❑ The ECO is to ensure that the CEO has a comprehensive list of MSDSs. ❑ The ECO is to monitor storage areas and report any transgressions to the conditions of this EMPr. ❑ The ECO is to ensure that emergency spill kits are on-site at all times.

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<p>clearly signed.</p> <ul style="list-style-type: none"> ❑ An approved waste disposal contractor must be employed to remove waste oil. These wastes should only be disposed at DWS licensed landfill sites designed to handle hazardous wastes. A disposal certificate must be obtained from the waste disposal contractor. ❑ Any spillage, which may occur, shall be investigated and immediate action must be taken. This must also be reported to the ECO and DWS, and local authorities, where necessary. ❑ The contractor shall be in possession of at least two (2) recognised hazardous chemical spill kits that, at a minimum, shall have a supply of absorbent material readily available to absorb any emergency spills. The spill kits will be easily accessible and clearly marked and known to all senior contractor's staff as well as the ECO. 	
4	<p>Stockpiling of Topsoil The following mitigation measures must be enforced to ensure the protection of topsoil.</p>	<ul style="list-style-type: none"> ❑ A topsoil management strategy must be developed for approval by the ECO (preservation of topsoil for reinstatement). ❑ The contractor should, prior to the commencement of earthworks, determine the average depth of topsoil, and agree on this with the ECO. The full depth of topsoil should be stripped from areas affected by construction and related activities prior to the commencement of major earthworks. This should include building footprints, working areas and storage areas. Topsoil must be reused where possible to rehabilitate disturbed areas. ❑ Care must be taken not to mix topsoil and subsoil during stripping. ❑ Should any topsoil become polluted, the contractor must remove the polluted soil to the full depth of pollution and replace it at his own expense with approved topsoil, which should be at least equal to the Department of Agriculture's approved topsoil specifications. ❑ Stockpile topsoil separately from subsoil³. 	<ul style="list-style-type: none"> ❑ A method statement for the removal and stockpiling of topsoil is required which must be approved by the ECO and Senior Site Supervisor prior to the stripping of soil commencing. ❑ The ECO is to approve the seeding program should topsoil be stockpiled for longer than four months. ❑ The ECO is to monitor all topsoil stockpiles for signs of erosion and alien weeds.

³ Subsoil is the soil horizons between the topsoil horizon and the underlying parent rock. Subsoil often has more clay-like material than the topsoil. Subsoil is of less value to plants, in terms of nutrient (food) and oxygen supply, than topsoil. When subsoil is exposed it tends to erode fairly easily.

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<ul style="list-style-type: none"> ❑ Stockpile in an area that is protected from storm water runoff and wind. ❑ Topsoil stockpiles are not to exceed 1.0 m in height. ❑ Topsoil, which is to be stockpiled for periods exceeding four months, is to be seeded with a suitable plant material to prevent wind and water erosion of soil surfaces. 	
<p>5</p>	<p>Visual Impacts The following mitigation measures must be enforced to ensure that visual impacts at the construction camp are minimised, where possible.</p>	<ul style="list-style-type: none"> ❑ All point sources of light must be directed away from any residences of landowners. Lighting should be inward and downward facing. ❑ Storage facilities, elevated tanks and other temporary structures on-site should be located such that they have as little visual impact on local residents as possible. ❑ Where required, the campsite shall be screened by the contractor to ensure that there is no unacceptable visual intrusion in the area of the site. Screening can be done by use of shade cloth. ❑ Security and perimeter lighting should also be shielded so that no light falls outside the area needing to be lit. ❑ Overly tall light poles are to be avoided. ❑ Energy saving bulbs must be used where practical and possible. ❑ The construction camp is to be kept neat and tidy at all times. ❑ Screened areas for the drying of clothes should be provided to reduce visual impacts. 	<ul style="list-style-type: none"> ❑ Lighting at the construction camp must be approved by the ECO and Senior Site Supervisor prior to the installation of lighting on-site. ❑ The ECO is to monitor the construction camp and ensure that appropriate screening is erected to reduce visual impacts. ❑ The ECO is to inspect the construction camp to make sure that it is being kept neat and tidy at all times by the CEO. ❑ The ECO is to ensure that no clothes are dried on the perimeter fence of areas not designated and screened for this purpose.
<p>6</p>	<p>Dust and Air Pollution The following mitigation measures must be enforced to minimise dust and air pollution at the construction camp.</p>	<ul style="list-style-type: none"> ❑ Stockpiles of soil/building rubble must be kept covered or have a suitable dust palliative applied, such as water or commercial dust suppressant. ❑ The impact of dust emissions must be minimal and must not be allowed to cause a nuisance to surrounding landowners. ❑ Contractors will commence rehabilitation of exposed soil surfaces as soon as is practical after completion of earthworks. ❑ Excessive dust conditions are to be reported to the ECO, who must 	<ul style="list-style-type: none"> ❑ The ECO is to monitor on an ongoing basis and implement dust and air pollution control measures, when necessary. ❑ Incidents of dust and air pollution are to be recorded and included in the weekly environmental checklists and the bi-monthly and monthly

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<p>take appropriate remedial actions.</p> <ul style="list-style-type: none"> ❑ All machinery and equipment to be used on-site shall be properly serviced and in good working order to avoid excessive exhaust fumes and smoke. ❑ Potable water is not to be used for dust suppression. ❑ Extraction of water near or in a permanent drainage system may have implications in terms of the National Water Act, 1998 (Act No. 36 of 1998) and, therefore, may require a Water Use License. Therefore, the contractor must, in consultation with the ECO, assess all areas along the alignment well in advance in order to ensure the relevant Water Use Licenses are applied for, where required. ❑ Excavation, handling and transport of erodible materials shall be avoided under high wind conditions or when a visible dust plume is present. ❑ During high wind conditions, the ECO will evaluate the situation and make recommendations as to whether dust-damping measures are adequate, or whether working will cease altogether until the wind speed drops to an acceptable level. ❑ Appropriate dust suppression measures shall be used when dust generation is unavoidable, e.g. dampening with water, particularly during prolonged periods of dry weather in summer. Such measures shall also include the use of temporary stabilising measures (e.g. chemical soil binders, straw, brush packs, chipping, etc). ❑ Keep construction and operation of heavy machinery to normal working hours. ❑ The contractor shall be responsible for dust control on-site to ensure no nuisance is caused to the landowner or neighbouring communities. ❑ A speed limit of 30 km/h must be enforced within the construction camp which not be exceeded. <p>Odour control</p>	<p>audit reports</p>

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<ul style="list-style-type: none"> <input type="checkbox"/> Regular servicing of vehicles in order to limit gaseous emissions (to be done off-site). <input type="checkbox"/> Regular servicing of onsite toilets to avoid potential odours. <input type="checkbox"/> Adequate and sufficient cooking areas must be provided for staff. <input type="checkbox"/> The contractor must make alternative arrangements (other than fires) for cooking and/or heating requirements. LP gas cookers may be used provided that all safety regulations are followed. 	
7	Solid Waste	<ul style="list-style-type: none"> <input type="checkbox"/> The construction camp must be kept clear of litter at all times. <input type="checkbox"/> Spillages within the construction camp need to be cleaned up immediately and disposed in the hazardous skip/bin for correct disposal at a licensed waste disposal site. <input type="checkbox"/> The contractor and CEO must ensure that solid waste collection and sanitation are managed effectively in order to avoid any chance of ground and surface water pollution. <input type="checkbox"/> Solid waste separation and recycling should take place for the duration of the construction and operational phases of the construction camps. <input type="checkbox"/> Provide a sufficient number of refuse bins/skips that are wind, water and scavenger proof, for the temporary storage of waste. <input type="checkbox"/> Make provision for regular waste collection and disposal at a licensed waste disposal site. 	<ul style="list-style-type: none"> <input type="checkbox"/> The ECO is to ensure that certificates of disposal are received and included in the Environmental File on-site. <input type="checkbox"/> The ECO is to ensure waste segregation, recycling and re-use is taking place and the measures being undertaken are included in the Final Environmental Close-Out Report. <input type="checkbox"/> The ECO is to ensure that waste bins are regularly emptied and maintained. <input type="checkbox"/> The ECO is to monitor the construction camp for litter. <input type="checkbox"/> The ECO is to maintain a photographic record of the construction camp and any transgressions recorded.
8	Fire Prevention	<ul style="list-style-type: none"> <input type="checkbox"/> No open fires are allowed within the construction camp and no wood from surrounding vegetation may be used to create a fire. <input type="checkbox"/> Training should be provided to staff members in the use of the appropriate fire-fighting equipment. Translators are to be used where necessary. <input type="checkbox"/> Ensure that the construction camp and all living quarters are 	<ul style="list-style-type: none"> <input type="checkbox"/> The ECO is to ensure that no open fires are started within the construction camp. <input type="checkbox"/> An inventory of all fire fighting equipment on-site must be included in the weekly checklists and bi-

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<p>equipped with adequate fire fighting equipment, specific to the classes of fire likely to occur.</p> <ul style="list-style-type: none"> ❑ Do not permit any smoking within 3 m of any fuel or chemical storage area, or refuelling area. ❑ If fire damage to the construction camp and/or adjacent properties is caused by the contractor or any staff involved in construction activities, the contractor will be responsible for the costs incurred for control or repair activities. ❑ The contractor is to ensure he is aware of the requirements of landowners, especially forestry plantation owners, in terms of fire control regulations on their property. ❑ Store flammable materials under conditions that will limit the potential for ignition and the spread of fires. Create a fire-break around the storage area, if necessary. ❑ Observe all regulations governing the storage of flammable materials, including those outlined in the Occupational Health and Safety Act (Act No 85 of 1993). ❑ See Appendix I for Eskom's Fire Protection Association Guideline TGL31-336 and Appendix J for Eskom's Transmission Fire Risk Management Plan TST41-243. 	<p>monthly and monthly audit reports.</p> <ul style="list-style-type: none"> ❑ The ECO is to ensure that the CEO maintains all the listed fire fighting equipment in an operational order and is stored at the designated locations. ❑ The ECO must be familiar with the use of the fire fighting equipment on-site. ❑ The ECO is to be issued by the CEO with a list of names of the contractor's staff who are responsible for fire fighting on-site.
9	Noise Pollution	<ul style="list-style-type: none"> ❑ Eskom must ensure that noise levels at the construction camp adhere to the relevant noise regulations. ❑ Ambient noise levels must not exceed the acceptable standards for a suburban residential district or, at most, must not exceed the levels for an urban residential district, namely 55 dBA during the day and 45 dBA during the night. ❑ Standardised operating hours must be adhered to during the construction phase of the construction camp. ❑ If required, the CEO will periodically conduct noise monitoring tests. These tests will be undertaken at the discretion of the ECO. ❑ Personal electronic equipment (radios, TVs, etc) shall be played at levels that are acceptable to the ECO. 	<ul style="list-style-type: none"> ❑ If complaints by a landowner or surrounding community are registered, noise readings are to be undertaken and the findings of these must be included in the monthly audit reports.

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<ul style="list-style-type: none"> ❑ Construction activities generating output levels of 85 dBA or more (excessively noisy near human settlements), are to be confined to working hours (08h00 - 17h00) Mondays to Fridays. 	
10	Access Roads	<ul style="list-style-type: none"> ❑ Construction routes and required access roads must be clearly defined. ❑ Delivery of equipment must be undertaken with the minimum amount of trips. ❑ Access of all construction and material delivery vehicles should be strictly controlled, especially during wet weather to avoid compaction and damage to the topsoil structure. ❑ Planning of site delivery hours must be scheduled to avoid peak hour traffic, weekends and evenings. ❑ Planning of access routes to the construction-site for construction purposes shall be done in conjunction with the contractor, Eskom and the landowner. All agreements reached should be documented and no verbal agreements should be made. The contractor shall clearly mark all access roads. Roads not to be used shall be marked with a "NO ENTRY for Construction Vehicles" sign. ❑ All existing private access roads used for construction purposes, shall be maintained at all times to ensure that the local people have free access to and from their properties. Speed limits shall be enforced in such areas and all drivers shall be made aware of these speed limits. ❑ Where new access roads are constructed, this must be done according to design and contract specifications. Drainage channels shall be suitably designed to ensure erosion does not occur, especially at the outflow points. The new access road shall be designed to allow for the natural flow of water, where applicable. Crossings of dongas and eroded areas on access routes to new sites shall be thoroughly planned and installed according to design and contract specifications. All areas susceptible to erosion shall be protected with suitable erosion control measures from the onset of 	<ul style="list-style-type: none"> ❑ The Final Environmental Close-Out Report must confirm that all existing roads are in the same condition as that prior to the construction phase, with specific reference to the road surface, erosion, damage to vegetation along the length of the road and the width of the road. ❑ The ECO is to maintain a photographic record of access roads both prior, during and post construction of the construction camps.

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<p>construction as prevention is the ultimate aim, and restoration is normally very difficult and costly.</p> <ul style="list-style-type: none"> ❑ Contractors should ensure that access roads are maintained in good condition by attending to potholes, corrugations and storm water damages as soon as these develop. ❑ Any possible disruptions to essential services must be kept to a minimum and should be well advertised and communicated to the landowners and surrounding communities. Care must be taken not to damage irrigation equipment, lines, channels and crops, as this could lead to major claims being instituted against the contractor. 	
11	Ablution Facilities	<ul style="list-style-type: none"> ❑ Adequate sanitary facilities and ablutions must be provided for construction workers (1 toilet per every 15 workers). ❑ The facilities must be regularly serviced to reduce the risk of surface or groundwater pollution. ❑ Portable chemical toilets must be used. ❑ Facilities for washing of persons or personal effects will be provided within the ablution area. Washing facilities will be fitted with flow reduction devices. ❑ These washing points will be closed systems (conservancy tanks) and all wastewater will be removed as part of the wastewater management system. The disposal of contaminated water will only be permitted at a licensed water treatment works. ❑ All portable/temporary toilets must be secured to the ground to the satisfaction of the ECO to prevent them toppling due to wind or any other activity. ❑ All waste from the ablutions will be removed from site to a licensed wastewater treatment works for disposal. The contractor will provide documentation/certificate of disposal. ❑ Discharge of waste from the ablution facilities into the environment or the burial of waste is strictly prohibited. ❑ No ablution facilities will be placed closer than 100 metres to any water body. 	<ul style="list-style-type: none"> ❑ The ECO is to regularly inspect the ablutions and ensure that they are adequately screened. ❑ Copies of the waste disposal certificates must be kept by the ECO in the EMP file. The ECO must also ensure that certificates of disposal are included in the Final Environmental Close-Out Report.

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<ul style="list-style-type: none"> ❑ The contractor shall ensure that the ablution facilities are adequately screened. 	
12	<p>Canteen/Eating Areas The contractor is to provide staff with suitable facilities to eat meals.</p>	<ul style="list-style-type: none"> ❑ The feeding or leaving of food for animals is strictly prohibited. ❑ Sufficient closed waste bins will be provided in the eating area and these bins must be serviced regularly to prevent odours. ❑ The eating areas must be provided with a waterproof roof and must be clearly demarcated. 	<ul style="list-style-type: none"> ❑ The ECO is to routinely check the designated eating areas and ensure that these areas are clean and free of litter and uneaten foodstuffs.
13	<p>Workshop Areas</p>	<ul style="list-style-type: none"> ❑ Workshops and other noisy fixed facilities should be located well away from noise sensitive areas. Once the proposed final layouts are made available by the contractor(s), the sites must be evaluated in detail and specific measures designed in the system. ❑ Method statements for the construction and operation of workshops are to be provided to the ECO and Senior Site Supervisor for approval prior to construction of workshop areas taking place. ❑ Where possible and practical, all maintenance of vehicles and equipment shall take place in the workshop area. ❑ During servicing of vehicles or equipment, a suitable drip tray shall be used to prevent spills onto the soil, especially where emergency repairs are affected outside the workshop area. ❑ Leaking equipment shall be repaired immediately or removed from site to facilitate repair. ❑ All potentially hazardous and non-degradable waste shall be collected and removed to a licensed hazardous waste site. A certificate of disposal shall be obtained by the contractor and kept on file. ❑ Workshop areas shall be monitored for oil and fuel spills and such spills shall be cleaned and remediated to the satisfaction of the ECO. The contractor shall be in possession of an emergency spill kit that must be complete and available at all times on-site. ❑ The following shall apply to hazardous substance spills: <ul style="list-style-type: none"> ▪ All contaminated soil/yard stone shall be removed and be placed in containers. 	<ul style="list-style-type: none"> ❑ The ECO is to ensure the Workshop and Equipment Storage Areas conform to that planned in the method statement provided by the contractor. ❑ The ECO is to be provided with certificates of disposal for solid waste from the workshops and these are to be included in the Final Environmental Close-Out Report. ❑ The ECO is to be provided with certificates of disposal for liquid effluent (including hazardous waste) and these are to be included in the Final Environmental Close-Out Report ❑ The ECO to ensure that the workshop areas remain within the agreed footprint as outlined in the approved method statement. ❑ The ECO to routinely monitor the workshop areas to ensure that all materials are stored as per the conditions of this EMPr. Findings of these inspections must be included

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<ul style="list-style-type: none"> ▪ Contaminated material can be taken to one central point where bio-remediation can be done. ▪ A clean up kit must be available so that smaller spills can be treated on-site. ▪ A specialist contractor shall be used for the bio-remediation of contaminated soil where the required remediation material and expertise are unavailable on-site. ▪ All spills of hazardous substances must be reported to the ECO and appointed Transmission Engineering Environmental Advisor. (Only registered service providers are permitted to undertake bio-remediation on-site) ☐ The Workshop and Equipment Storage Area shall have a smooth impermeable surface (concrete) and should be sloped towards a sediment collecting sump after which it is directed to an oil separator to enable incidental spillage to be removed. The outflow is to be monitored on a monthly basis. If there is no oil separator (or it is non-functional), then contaminated runoff from fuel depots/workshops/truck washing areas and concrete swills shall be directed into a conservancy tank and disposed of at a licensed disposal site approved by the ECO and Local Authority. 	<p>into the monthly audit reports.</p>
14	Servicing of Vehicles	<ul style="list-style-type: none"> ☐ Unless an emergency, all maintenance and repair of vehicles and equipment will take place in the workshop area. ☐ During servicing, repair and maintenance of vehicles and equipment, a suitable drip tray will be used to prevent hydrocarbon spills. ☐ Drip trays are to be provided for emergency repairs in the “field” and spill kits must be present on-site when these emergency repairs are being undertaken. ☐ The CEO must ensure that drip trays are inspected and emptied daily and serviced when necessary. In particular, drip trays shall be closely monitored during rain events to ensure that they do not overflow. 	<ul style="list-style-type: none"> ☐ The ECO is to ensure that vehicles and equipment are serviced regularly to avoid the contamination of soil from oil and hydraulic fluid leaks, etc. ☐ The ECO is to ensure that no washing or servicing of vehicles takes place on-site other than in the workshop areas. ☐ The ECO is to ensure that drip trays are used when vehicles are serviced.

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<ul style="list-style-type: none"> ❑ Leaking equipment will be repaired immediately or removed from site to facilitate repair. 	<ul style="list-style-type: none"> ❑ The ECO is to maintain a photographic record of these sites for inclusion into the monthly audit reports.
15	Concrete Batching	<ul style="list-style-type: none"> ❑ Method statements for the construction and operation of concrete batching sites are to be provided to the ECO and Senior Site Supervisor for approval prior to construction of the batching sites taking place. ❑ Specific areas must be designated for cement batching plants. ❑ Sufficient drainage for these plants must be in place to ensure that soils do not become contaminated. ❑ The concrete batching plant must be contained within a bunded area. ❑ Concrete mixing must only take place within designated areas. ❑ Ready mixed concrete must be utilised, where possible. ❑ No vehicles transporting concrete to the site may be washed on-site. ❑ If a batching plant is necessary, run-off should be managed effectively to avoid contamination of other areas of the site. Runoff from the batch plant must not be allowed to get into storm water systems or natural drainage lines. ❑ Empty cement bags shall be disposed on a regular basis via the solid waste management system, and shall not be used for any other purpose. A certificate of disposal is required. ❑ Sand, aggregate, cement or additives used during the mixing process are to be contained and covered to prevent contamination of the surrounding environment. The batching plant must not be sited on or within 200 m of any of the areas identified as sensitive vegetation. ❑ No batching activities shall occur directly on unprotected ground. ❑ A certificate of disposal at a licensed waste water disposal site is required for runoff from the batching sites. 	<ul style="list-style-type: none"> ❑ No “waste” concrete is left in the environment. ❑ The ECO is to be provided with certificates of disposal for concrete spoil and these are to be included in the Final Environmental Close-Out Report. ❑ The ECO is to be provided with certificates of disposal for liquid effluent and these are to be included in the Final Environmental Close-Out Report ❑ The ECO to ensure that the batching sites remain within the agreed footprint as outlined in the approved method statement. ❑ The ECO is to ensure that all cement on-site is appropriately stored above (off) ground level to ensure no contact with water. ❑ The ECO is to routinely monitor the batching sites and maintain a photographic record of these sites for inclusion into the monthly audit reports.
16	Fauna	<ul style="list-style-type: none"> ❑ During construction of the construction camps, the contractor shall under no circumstances interfere with livestock from surrounding 	<ul style="list-style-type: none"> ❑ The ECO is to ensure that no poaching or harvesting of livestock

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<p>landowners or communities without the landowner or community members being present. This includes the moving of livestock where they interfere with construction activities.</p> <ul style="list-style-type: none"> <input type="checkbox"/> The transportation of meat for consumption shall take into consideration any legal requirements regarding the spreading of disease. <input type="checkbox"/> No poaching shall be tolerated under any circumstances. <input type="checkbox"/> Avoid vegetation clearing by locating construction camps in transformed habitats or at existing construction-sites. <input type="checkbox"/> Construction camps should not be located in sensitive habitats. <input type="checkbox"/> All cleared areas must be rehabilitated. <input type="checkbox"/> Construction camps must be fenced to control the movement of staff. <input type="checkbox"/> Prohibit the collection of wood for fuel and provide alternative fuels. <input type="checkbox"/> Implement the strict control of the movement of staff. <input type="checkbox"/> Dogs will not be allowed on-site. <input type="checkbox"/> No wildlife (snakes, etc) shall be killed, removed or disturbed in any way. The ECO will be requested to remove wildlife from work and camp areas after the requisite approval has been received from the relevant department. 	<p>or wildlife takes place.</p> <ul style="list-style-type: none"> <input type="checkbox"/> The ECO is to monitor that all relevant camp and work areas are appropriately fenced and secured. <input type="checkbox"/> Any loss of livestock as a result of construction activities is immediately reported to the landowner or community, and compensation paid and recorded. <input type="checkbox"/> Loss of livestock and wildlife is documented and reported in the Final Environmental Close-Out Report.
17	Flora	<ul style="list-style-type: none"> <input type="checkbox"/> <u>Permits for removal of any protected species must be obtained from Provincial Nature Conservation should such species be affected.</u> <input type="checkbox"/> Areas which are identified by the ECO as being ecologically sensitive are to be suitably demarcated to prevent damage by labour and equipment. <input type="checkbox"/> Existing indigenous vegetation must be retained, where possible. <input type="checkbox"/> A botanist is required to conduct a Search and Rescue of all Rare and Endangered Plant species prior to site clearing commencing. <input type="checkbox"/> Ensure that NO Category 1 invasive alien plant species as per the 	<ul style="list-style-type: none"> <input type="checkbox"/> The ECO shall be responsible for ensuring that any required demarcation, removal, relocation and/or rescue of plants occurs. <input type="checkbox"/> The ECO must ensure that, prior to clearance, protected tree species and plants are identified and marked so that they are not interfered with⁴. <input type="checkbox"/> The ECO is to ensure that the Final

⁴ Prior to construction, a suitably qualified specialist shall identify protected trees on-site as listed under the National Forests Act, 1998. Removal of these trees is to be avoided. Where unavoidable, they should be translocated if possible.

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<p>Conservation of Agricultural Resources Act 1983 regulations are used for landscaping or introduced into the area. Only indigenous plants may be used as per the requirements of the EA condition 3.2.5.1.</p> <ul style="list-style-type: none"> ❑ All staff are aware that all areas outside the camp and work areas are out of bounds. 	<p>Environmental Close-Out Report details that no Category 1 invasive alien plant species as per the Conservation of Agricultural Resources Act 1983 have been introduced.</p> <ul style="list-style-type: none"> ❑ The ECO is to ensure that the Final Environmental Close-Out Report confirms that all identified species have been rescued and replanted. Photographic records of this must be included in the report.
18	Heritage Resources	<ul style="list-style-type: none"> ❑ If, during construction, archaeological or palaeontological objects or material or a meteorite is discovered, the find must immediately be reported to the ECO and the responsible heritage resources authority notified. No person may, without a permit, destroy damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite. 	<ul style="list-style-type: none"> ❑ The ECO is to ensure that any heritage resources uncovered must be reported to the nearest National Monuments office to comply with the National Heritage Resources Act (Act No 25 of 1999). ❑ The ECO is to ensure that work stops immediately should a heritage resource be uncovered. ❑ The ECO is to ensure that the contractor is aware of the findings of the Heritage Assessment which was conducted. ❑ Photographic records of all heritage resources uncovered must be kept and included into the Final Environmental Close-Out Report.
19	Rehabilitation The objective of reinstatement and	<ul style="list-style-type: none"> ❑ All damaged areas shall be rehabilitated upon completion of the contract in accordance with design specifications. ❑ Reinstatement and rehabilitation are required for all areas disturbed 	<ul style="list-style-type: none"> ❑ The contractor is to provide a method statement for the rehabilitation and reinstatement of

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
	<p>rehabilitation is to ensure that all areas disturbed by the project are returned to a state not worse than before the project commenced</p>	<p>by the project. This includes the entire development site, access roads and footprint of the construction camps.</p> <ul style="list-style-type: none"> ❑ The contractor shall reinstate and rehabilitate all disturbed areas outside the demarcated working area at his own cost and to the satisfaction of the ECO. ❑ The concept of <u>progressive reinstatement</u> is fundamental to cost effective (both financial and environmental) rehabilitation of a site. This concept must be followed at all times. ❑ All areas are to be cleared of rubble associated with construction. This includes the removal of surplus materials, excavation and disposal of consolidated waste concrete and concrete wash water, litter, etc. ❑ All soil contaminated by hydrocarbons, for example, from leaking machines, refuelling spills, etc is to be excavated to the depth of contaminant penetration, placed in containers and removed to a licensed hazardous waste landfill site. ❑ Final levels of all disturbed areas are, where feasible, to be consistent with the natural topography of the area. ❑ All drainage lines affected by construction are to be reinstated to approximate their original profile. Where this is not feasible due to technical constraints, the profile is to be agreed upon by the ECO and Senior Site Supervisor. ❑ All compacted (disturbed) areas (including stockpile areas) are to be ripped (along the contour) to a depth of 150 mm prior to the replacement of topsoil. ❑ Methods of vegetation removal and re-establishment, where required, shall be specified by the ECO, in terms of: <ul style="list-style-type: none"> ▪ Removal and storage of vegetation. ▪ Source of vegetative material. ▪ Ground preparation. ▪ Weed removal. ▪ Irrigation. 	<p>the construction camp footprints. Prior to rehabilitation and reinstatement commencing, the ECO and Senior Site Supervisor must approve the method statement.</p> <ul style="list-style-type: none"> ❑ The ECO shall identify those plants that require removal during both the construction and maintenance period, for the contractor's action. ❑ The ECO shall provide advice as to effective methods of removal and control of alien plant species.

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<ul style="list-style-type: none"> ▪ Planting times. ❑ Seeding and planting will be done in accordance with the method statement (including an approved indigenous plant species list). 	
20	Disease Prevention	<ul style="list-style-type: none"> ❑ The contractor must ensure that all construction workers are well educated about HIV/AIDS and the risks surrounding this disease. The location of the local clinic where more information and counselling is offered must be indicated to workers. ❑ Ensure that the workforce is sensitised to the effects of sexually transmitted diseases, especially HIV/AIDS. The contractor shall ensure that information posters on HIV/AIDS are prominently displayed in the contractor's camp area. ❑ Information and education relating to sexually transmitted diseases is to be made available to both construction workers and the local community. ❑ Free condoms will be made available to all staff on-site at central points in the camp area. ❑ Construction workers staying at the construction camps will not be permitted to leave the camps after hours and over weekends. ❑ The construction camps must be off limits to members of the general public and surrounding communities, and entrance to the camps must be controlled. ❑ Manned security gates are to be installed at the construction camps to control the movement of people in and out of the camps. 	<ul style="list-style-type: none"> ❑ The ECO is to maintain a record of HIV/AIDS awareness posters erected on-site for inclusion into the monthly audit reports. ❑ The ECO is to monitor the movement of people in and out of the camp.

4. TRANSMISSION LINE CONSTRUCTION AND INSTALLATION OF TOWERS: ENVIRONMENTAL SPECIFICATIONS

POWER LINE CONSTRUCTION AND INSTALLATION OF TOWERS

Prior to the construction of the transmission line and tower structures, the following items are to be undertaken by Eskom Project Manager and the ECO:

- Identify suitable areas for the establishment of construction camps.
- Compile a site specific construction EMP addendum should the necessity arise through site specific impacts not covered in this EMP.
- Ensure that Eskom's appointed Servitude Negotiator has notified all affected landowners and I&APs that construction is about to commence.
- Ensure that special conditions set by the landowners during servitude negotiations are known and that they are respected by the contractor during construction.

Once these items have been addressed, site establishment shall take place in an orderly manner and all amenities shall be installed before the main workforce moves onto site. A method statement is required from the contractor at the tender stage that includes the layout of the transmission lines, a plan showing the location of key access points, site preparation and vegetation clearing. The method statement must show a clear timeframe for construction and completion of the transmission line.

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
1	Transmission Line - Planning	<ul style="list-style-type: none"> ❑ The success of any project depends mainly on the good relations between the relevant project and construction managers and affected landowners/parties. It is, therefore, required that the ECO and the contractor establish good relations and an open channel of communication with all affected parties along the servitude. ❑ The ECO will ensure the contact numbers of the ECO and the contractor are made available to the affected parties. This will ensure open channels of communication and the prompt response to queries and claims. ❑ All negotiations for any reason shall be between Eskom's appointed servitude negotiator, the landowner and/or affected parties and the contractor. No verbal agreements shall be made. All agreements shall be recorded properly and all parties shall co-sign the documentation. Furthermore, a photographic record shall be kept, for example, of access roads, and made available should affected parties institute claims. Claims instituted by affected parties shall be investigated and resolved timeously. Unnecessary delays should be avoided at all costs. ❑ The landowners and affected parties shall always be kept informed about any changes to the construction programme should they be involved. If the ECO is not on-site, the contractor should keep the affected parties informed. ❑ All contact with the affected parties shall be courteous at all times. The rights of the affected parties shall be respected at all times and all staff shall be sensitised to this. ❑ Importantly, the contractor shall not be released from site until all landowners have signed off the release documentation to the satisfaction of the ECO. 	<ul style="list-style-type: none"> ❑ The ECO and Senior Site Supervisor are to review method statements for the construction of the tower positions in sensitive areas. ❑ Where possible, the ECO and Senior Site Supervisor are to ensure that tower positions are not placed in any sensitive environments as identified by the specialists appointed to do the walk down of the proposed tower sites. The ECO is to retain copies of the Specialists Reports on file at the construction camp as well as with the Senior Site Supervisor. ❑ The ECO is to ensure that the tower footprint and construction methods for those towers located in sensitive areas conform to the method statement. ❑ A photographic record of the tower positions prior to establishment, during construction, during rehabilitation and post rehabilitation is required and must be submitted to DEA upon completion of construction and rehabilitation. ❑ Eskom will negotiate directly with

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
			<p>affected landowners on an individual basis and determine the most appropriate timing (considering climate, holidays, tourist potential, etc.) for construction activities to occur.</p> <ul style="list-style-type: none"> ❑ Construction activities should accommodate harvesting practices, where possible.
2	Placement and site preparation	<ul style="list-style-type: none"> ❑ Final tower positions within the natural environment must be placed so as to avoid wetlands and rocky outcrops. ❑ Based on the vegetation assessment conducted of the servitude and tower sites, search and rescue within the servitude line is required at certain tower sites (Appendix Q) as outlined in the tower specific impact table in Section 6 of this report. ❑ Once the final placements of tower positions and the alignment of the transmission line has been fixed, the contractor shall demarcate the boundaries of each tower position, the stockpiling and lay down area, assembly area, the winch and tension stations and the entire construction servitude/corridor. ❑ Demarcation shall be done using wooden posts of which at least 1.5 m must protrude from the ground once placed. NO cement bases are to be used for demarcation posts. ❑ The top 300 mm of the post shall be painted white to make them clearly visible. They will be placed on both sides of the corridor at intervals of 250 m. ❑ The site layout and demarcation will be formally signed off by the Project Manager and ECO prior to any clearing or construction taking place. ❑ Demarcation of the site within the Houhoek Nature Reserve must be undertaken in consultation with the reserve manager. ❑ All areas outside of the demarcated area will be considered NO GO 	<ul style="list-style-type: none"> ❑ The ECO is to ensure that the final tower placements, work corridor and construction areas have been demarcated and correctly placed. ❑ The ECO is to ensure that the demarcated areas do not encroach on areas of sensitive vegetation. ❑ The ECO is to ensure that a copy of the signed written approval for the final demarcated corridor is filed and attached to the Final Environmental Close-Out Report. ❑ The ECO is to maintain a photographic record of the demarcated servitude corridor and construction-sites.

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<p>areas for the entire construction phase to the contractor, the contractor's staff and the contractor's vehicles and machinery.</p>	
3	<p>Access Access to the transmission line servitude during construction.</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Planning of any new access routes must be done in conjunction between the contractor, Eskom and the land owner. <input type="checkbox"/> Existing roads and services must be utilised as far as possible. <input type="checkbox"/> Within the Houhoek Nature Reserve the reserve manager must be consulted and agreement reached on access routes to site. <input type="checkbox"/> No unauthorised access is permitted. <input type="checkbox"/> Any damage or degradation to the environment outside of the agreed access corridors will be investigated and fines issued; the affected areas must be immediately rehabilitated. <input type="checkbox"/> No driving off the marked roads is permitted and designated parking areas must be identified and demarcated with applicable signage. <input type="checkbox"/> Any work or access near or in a permanent drainage system may have implications in terms of the National Water Act, 1998 (Act No. 36 of 1998) and, therefore, may require application for a water use licence. <input type="checkbox"/> No vehicular access is allowed in permanently wet areas. <input type="checkbox"/> "NO ENTRY" signs must be strategically placed along rivers, streams and other natural or man-made drainage lines which are in close proximity to access routes. <input type="checkbox"/> The contractor must not clear more than an 8 m strip of vegetation along the centre of the servitude for access purposes. Where existing roads are available, these should be used to access the construction-sites. Approval from the landowner must be obtained to use existing roads. <input type="checkbox"/> The condition of existing access/private roads to be used shall be documented, with photographs. <input type="checkbox"/> When working near provincial or municipal roads, the construction footprint shall be clearly signposted and motorists made aware of the presence of construction workers and associated dangers. <input type="checkbox"/> Property accesses shall be kept in a passable condition at all times 	<ul style="list-style-type: none"> <input type="checkbox"/> The Final Environmental Close-Out Report must confirm that all existing roads are in the same condition as that prior to the construction phase, with specific reference to the road surface, erosion, damage to vegetation along the length of the road and the width of the road. <input type="checkbox"/> The ECO is to maintain a photographic record of access roads both prior, during and post construction of the towers and transmission line. <input type="checkbox"/> The ECO must consult with the reserve manager of the Houhoek Nature Reserve to ensure that working servitudes and access to site have been agreed on.

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<p>in accordance to Eskom's Standard for the Access of Farms (Appendix K).</p> <ul style="list-style-type: none"> ❑ The installation of drainage structures, to facilitate access, shall be at the discretion of the ECO. All structures shall be properly designed and drawings shall be available for reference purposes. Any dangerous crossings shall be marked as such and, where necessary, speed limits shall be enforced. 	
4	<p>Gates and Fences Mitigation measures for the installation of gates and fences along the transmission line servitude in accordance to Eskom's Transmission Servitude Gate Standard (Appendix L).</p>	<ul style="list-style-type: none"> ❑ Minimise damage to existing fences and gates. ❑ All fences and gates are to be properly and neatly installed according to Eskom's specifications. ❑ Where the transmission line crosses fence lines, gates will be installed by the contractor. The contractor will provide specific locks to allow access on the site as stipulated in Eskom's Transmission Servitude Gate Standard (Appendix L). ❑ The CEO is to negotiate with the landowners for access points and routes to each site. ❑ Farm gates need to remain closed unless agreed with the landowner. ❑ Where possible, current Eskom gates should be used rather than installing new gates. ❑ Security control of gates must be agreed with the landowner (dual locks, etc). ❑ The affected landowners should be informed of the timing of construction activities and/or movement through farm gates. ❑ Special conditions set by the landowners during servitude negotiations need to be respected. The CEO is to ensure that these conditions are met by the construction staff. 	<ul style="list-style-type: none"> ❑ All access points are controlled and new access points are minimised. ❑ Where new access points are needed, impacted areas are to be minimised through the use of two track access points. ❑ The ECO is to ensure that all existing roads are in the same condition as that prior to the construction phase, with specific reference to the road surface, erosion, damage to vegetation along the length of the road and the width of the road. The ECO is to include this in the Final Environmental Close-Out Report which must be supported by a photographic record.
5	<p>Control of Pollution Mitigation measures for the control of pollution within the transmission line</p>	<ul style="list-style-type: none"> ❑ Do not locate any depot for any substance which causes or is likely to cause pollution within the 1:100 year flood line, or within a horizontal distance of 100 m (whichever is greater) of a watercourse, drainage line or identified wetland. 	<ul style="list-style-type: none"> ❑ The ECO is to ensure that certificates of disposal are received and included in the Final Environmental Close-Out Report.

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
	servitude and construction footprint of the proposed towers.	<ul style="list-style-type: none"> ❑ Do not dump waste of any nature, or any foreign material into any river, stream, drainage line or wetland. ❑ Do not allow the use of any river, stream drainage line or wetland for swimming, bathing, or the cleaning of clothing, tools or equipment. ❑ Prevent the discharge of water containing polluting matter or visible suspended materials, fines and sediments directly into drainage lines or wetlands. ❑ Take special care during rainy periods to prevent the contents of sumps and drip trays from overflowing. ❑ Vehicles may not be serviced or repaired on-site (other than in emergencies). ❑ Ensure that an emergency preparedness plan is in place for implementation in the case of a spill of substances that can be harmful to an individual or the receiving environment. ❑ Conduct regular visual assessments to identify any pollution issues within and downstream/down slope of work areas. These include death of fish and other aquatic organisms, unexplained dieback of vegetation, unusual discoloration of water/soil/vegetation, silt plumes, and unusual odours emanating from riparian zones or water bodies. ❑ Construction activity areas, in close proximity to riparian zones, which produce waste and polluted runoff must be lined with a suitable material and bunded to prevent leakages of sediments, waste, chemicals, oils, fuels and other harmful substances from infiltrating into the soil and washing into these sensitive environments. ❑ Carefully control all on-site operations that involve the use of cement and concrete (this applies to areas other than the batching plant). ❑ The contractor is liable for the costs of remedying damages resulting from pollution, in accordance with Section 28 of the National Environmental Management Act, 1998 (Act No 107 of 1998) (NEMA). 	<ul style="list-style-type: none"> ❑ The ECO is to ensure waste segregation, recycling and re-use is taking place and the measures being undertaken are included in the Final Environmental Close-Out Report. ❑ The ECO is to ensure that waste bins are regularly emptied and maintained. ❑ The ECO to monitor the transmission line servitude and construction-sites for litter. ❑ The ECO is to maintain a photographic record of the transmission line servitude and construction-sites and any transgressions recorded.

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
6	Protection of Sensitive Environments	<ul style="list-style-type: none"> ❑ Stockpile and construction processing areas must fall outside of wetlands, riparian and buffer zones, and areas of undisturbed vegetation, steep topography and drainage lines. These include hazardous material and re-fuelling sites, vehicle parking and servicing areas, soil and rock crush stockpiles, concrete mixing and rock crushing areas. ❑ Roads must be planned and constructed outside of wetlands, riparian and buffer zones, steep topography and drainage lines. ❑ The development site consists of no-development areas that are environmentally sensitive. These sensitive environments are to be excluded from the development footprint and managed as open space areas and include: <ul style="list-style-type: none"> ▪ All ecologically sensitive areas, including permanent, seasonal and temporary wetlands, seepage areas, areas of preferential groundwater recharge and areas. ▪ Steep slopes in excess of 1:3 at the limit of their stability. ❑ All no-development areas must be clearly demarcated by appropriate measures (e.g. fencing or hazard tape). The type of demarcation used must be robust enough to remain intact during the entire construction phase. ❑ The contractor must regularly monitor the condition of demarcation. 	<ul style="list-style-type: none"> ❑ The ECO is to ensure that the search, rescue and replanting of all endangered and protected species is completed prior to any construction or clearing taking place. ❑ The ECO is to monitor that all alien invasive vegetation is removed from site by the contractor. ❑ The ECO is to ensure that no contractors or their staff may move out of designated areas and off designated access points or roads. ❑ The Final Environmental Close-Out Report must confirm that all sensitive vegetation identified in the Vegetation Assessment of the site have been rescued and replanted. ❑ Photographic evidence of the rescue and replanting of sensitive vegetation must be kept by the ECO and included in the Final Environmental Close-Out Report.
7	Site Clearing Vegetation clearing to allow for site establishment as well as construction purposes will be required. The object of vegetation clearing is to trim, cut or clear the minimum amount of vegetation necessary for	<ul style="list-style-type: none"> ❑ Sensitive and “no go” areas are to be marked (using maps, GPS readings or physical cordoning off, as appropriate). ❑ The contractor shall ensure that all areas marked as “no-go” are respected as such. ❑ The contractor shall not automatically clear the entire servitude width but clear only what is actually required for tower erecting, access and to enable stringing operations, as advised by the “walk-down” conducted by the Vegetation Specialist (Appendix Q). ❑ Where clearance of woody vegetation is required to string 	<ul style="list-style-type: none"> ❑ No unnecessary clearing or impacting on of any sensitive vegetation identified in the Vegetation and Ecological Assessments as outlined in Appendix Q. ❑ The ECO is to ensure that the search, rescue and replanting of all endangered and protected species

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
	<p>the safe mechanical construction and electrical operation of the transmission line. Construction areas shall be cleared in accordance with Eskom's procedure for Vegetation Clearance and Maintenance (Appendix E).</p>	<p>conductors, it is recommended that no groundcover be removed (i.e. grasses and forbs). Trimming of trees and shrubs is preferable to clearance. Where clearance of trees and shrubs is unavoidable, it is recommended that:</p> <ul style="list-style-type: none"> ▪ Clearance is kept to a minimum and the vehicle access ways are routed through stands of alien plants where this is an option. ▪ Clearance is done by hand and not with a bulldozer or other earth working machinery as this will exacerbate soil erosion. No de-stumping or uprooting is permitted. ▪ Cleared areas are brush-packed to reduce soil erosion, using cut branches which are placed parallel to the contour of the slope. ▪ Clearance in riparian forest/thicket be done by hand and limited to the minimum necessary to allow for the passage of the pilot-cables. Clearance for formation of a vehicle access way through riparian forest/thicket is not permitted. Vehicular access across streams should be done at existing crossing points wherever possible. Where new crossing points are required, these should be sited in transformed/degraded vegetation away from areas of riparian forest/thicket. <ul style="list-style-type: none"> ❑ Clearance of indigenous forest/thicket across ravines and gullies is not permitted, as these areas will very rarely interfere with minimum conductor clearance requirements. ❑ Alien invasive plants should be hand pulled or cut and the stumps poisoned from cleared areas. Ongoing control of alien invasive plants during the construction period shall be undertaken in cleared areas. ❑ The use of herbicides will be in accordance with the guidelines prescribed by the Eskom standard for the safe use of Pesticides and Herbicides (Appendix G). ❑ Any additional areas to be cleared outside the servitude shall be negotiated with the relevant landowners and approved by Eskom. 	<p>is completed prior to any construction or clearing taking place.</p> <ul style="list-style-type: none"> ❑ The ECO is to monitor that all alien invasive vegetation is removed from site by the contractor. ❑ The ECO is to ensure that no contractor or their staff may move out of designated areas and off designated access points or roads. ❑ The Final Environmental Close-Out Report must confirm that all sensitive vegetation identified in the Vegetation Assessment of the site has been rescued and replanted. ❑ Photographic evidence of the rescue and replanting of sensitive vegetation must be kept by the ECO and included in the Final Environmental Close-Out Report.

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<ul style="list-style-type: none"> <input type="checkbox"/> Clearance that is required to take place within and adjacent to cultivated areas shall be in consultation with the relevant landowners and approved by Eskom. <input type="checkbox"/> Vegetation should not be cleared to a height less than 100 mm, ensuring that the groundcover still remains. No further vegetation may be removed. <input type="checkbox"/> The area of exposed ground (i.e. exposed soil) shall be minimised at any point in time to reduce the risk of erosion and dust pollution. <input type="checkbox"/> All cleared areas shall be stabilised as soon as possible. The contractor shall keep the soil in any unstabilised areas wet in order to control wind-blown dust. <input type="checkbox"/> Cleared vegetation shall be removed from the site by the contractor and disposed of at a licensed waste disposal site. No vegetative matter shall be burnt or removed for firewood under any circumstances by any Eskom or contractor employee. <input type="checkbox"/> Rehabilitation and re-vegetation of cleared areas shall be done as soon as possible after the completion of construction. This is important to prevent topsoil loss and, particularly, to prevent colonisation by alien invasive plant species. <input type="checkbox"/> The contractor must have the necessary knowledge to be able to identify different species. <input type="checkbox"/> The contractor must be able to identify declared weeds and alien species that can be totally eradicated. <input type="checkbox"/> The contractor must be in possession of a valid herbicide applicator's license. 	
8	Transmission Line Stringing Operations	<ul style="list-style-type: none"> <input type="checkbox"/> All necessary scaffolding and/or protection measures must be installed to prevent damage to structures supporting certain high yield agricultural crops. <input type="checkbox"/> All structures supplying services, such as telephone and smaller power lines, as well as national, provincial and local/farm roads shall be safeguarded by measures to prevent disruption of services. The use of "rugby" posts to protect roads and telephone lines will be 	<ul style="list-style-type: none"> <input type="checkbox"/> The ECO is to ensure that the stringing operations undertaken conform to the specifications of the Eskom Standard for Transmission Line Tower and Line Construction (Appendix N). <input type="checkbox"/> The ECO is to maintain a

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		required.	photographic record of the stringing operations.
9	Compensation for the damage to the environment or infrastructure	<ul style="list-style-type: none"> <input type="checkbox"/> All claims for compensation emanating from damage should be directed to the servitude negotiator for appraisal. <input type="checkbox"/> The servitude negotiator shall keep a record of the date, time and type of damage, as well as the reason for the damage, including a photographic record, to ensure that the responsible party is held liable. <input type="checkbox"/> The contractor shall be held liable for all unnecessary damage to the environment and/or infrastructure. <input type="checkbox"/> The contractor shall keep a register of all complaints from landowners and community members. The responsible party shall handle all complaints and/or claims immediately to ensure timeous rectification/payment. 	<ul style="list-style-type: none"> <input type="checkbox"/> The ECO is to ensure that in the event of an accident or incident, corrective action, and where necessary, compensation, is addressed immediately. <input type="checkbox"/> The ECO is to keep a record of all environmental damage or damage to infrastructure. <input type="checkbox"/> The ECO is to report on all damaged infrastructure and the settlement of claims in the Environmental Close-Out Report.
10	Natural Drainage	<ul style="list-style-type: none"> <input type="checkbox"/> Under no circumstances shall the contractor interfere with natural drainage and wetlands. <input type="checkbox"/> No equipment shall be used which may cause irreparable damage to wet areas. The contractor shall use alternative methods of construction in such areas. <input type="checkbox"/> If necessary, rivers, streams, drainage lines and wetlands shall be adequately protected from siltation due to erosion on-site. <input type="checkbox"/> Rubble from the construction process shall be removed from site and may under no circumstances be dumped into any natural drainage channels or wetlands. <input type="checkbox"/> It is important that pollution spills are prevented near drainage lines, rivers, streams and wetlands by strict control/handling of materials such as paints, petrochemicals, and any other chemicals to be used on-site. <input type="checkbox"/> Natural water bodies must not be used to wash out construction vehicles, concrete mixers, nor for domestic ablutions. <input type="checkbox"/> The normal flow of runoff water must not be impeded, as this will 	<ul style="list-style-type: none"> <input type="checkbox"/> All wetlands are left untouched unless due process has been followed. <input type="checkbox"/> The Final Environmental Close-Out Report will confirm that no persisting damage to natural drainage channels and wetlands remains. <input type="checkbox"/> The ECO is to monitor the construction-sites during construction and include a photographic record of any impacts associated with drainage lines or wetlands.

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<p>enhance erosion.</p> <ul style="list-style-type: none"> <input type="checkbox"/> No unauthorised vehicles are to enter any natural drainage areas or wetlands without prior consent from the ECO and Construction Manager. <input type="checkbox"/> Wetland boundaries and their buffer zones shall be clearly marked by the ECO on a diagram and indicated to the Construction Manager and Contractors. 	
11	<p>Spoil Surplus or unsuitable material obtained from any excavations as well as rubble not required elsewhere in the works shall be spoiled.</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Only existing disturbed areas are to be utilised as spoil areas. The ECO must be consulted prior to spoiling material to find a suitable site. <input type="checkbox"/> Topsoil that would have been buried as a result of the spoiling of material is to be moved to one side and either replaced over the spoil site on completion or used for rehabilitation elsewhere on the site <input type="checkbox"/> The spoil disposed in the spoil areas must be free of contamination. <input type="checkbox"/> The spoil areas are to be shaped to blend with the local topography as far as is practicable and do not have slopes with a gradient exceeding 1:3. <input type="checkbox"/> Surface water runoff must be appropriately channelled through or around the spoil areas. The surface of the spoil area is to be rehabilitated. <input type="checkbox"/> The contractor shall dispose of all waste material in an appropriate manner and at licensed waste disposal facilities within the region. <input type="checkbox"/> No waste material including concrete rubble and packaging material may be buried or burned on-site. (Soil contaminated with cement washings can, however, be placed in foundation excavations). <input type="checkbox"/> No material shall be left on-site that may harm humans or animals. Broken, damaged and unused spares such as porcelain, glass, nuts, bolts, washers and insulators shall be picked up and removed from site. 	<ul style="list-style-type: none"> <input type="checkbox"/> The ECO is to ensure that spoil areas do not impact on natural vegetation. <input type="checkbox"/> The ECO is to ensure that drainage and erosion are adequately managed. <input type="checkbox"/> The ECO is to ensure that topsoil and spoil are not mixed. <input type="checkbox"/> The ECO is to keep a photographic record of these activities.
12	<p>Handling and Disposal of Hazardous Materials and</p>	<ul style="list-style-type: none"> <input type="checkbox"/> The contractor shall comply with all national, regional and local legislation with regard to the storage, transport and use of 	<ul style="list-style-type: none"> <input type="checkbox"/> The ECO is to monitor the construction-sites daily and include

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
	Waste	<p>hydrocarbons, chemicals, solvents and any other harmful and hazardous substances and materials.</p> <ul style="list-style-type: none"> ❑ A register shall be kept on-site of all substances and be available for inspection at all times. ❑ The contractor shall ensure that personnel handling hazardous substances have been educated in terms of the correct handling, use and disposal thereof. ❑ A specific procedure for emergency situations, including accidental spills, must be formulated and must be available on-site at all times. ❑ Leaking equipment shall be repaired immediately or be removed from site to facilitate repair. ❑ Empty containers in which hazardous substances were kept are to be treated as hazardous waste. ❑ Cement shall not be mixed directly on the ground. Protective boards or other appropriate means shall be used. ❑ No vehicles, machinery or containers shall be washed directly onto the ground after depositing cement into foundations. They should be washed off site where proper containment facilities are available for the wash water. ❑ Any spilled wet cement shall be cleaned up immediately and disposed at a licensed landfill site. ❑ Equipment, storage and batching areas shall be monitored for spills and all spills shall be cleaned and remediated to the satisfaction of the ECO. ❑ The contractor shall be in possession of an emergency spill kit that must be complete and available at all times on-site. ❑ The following shall apply to hazardous substance spills: <ul style="list-style-type: none"> ▪ All spills of hazardous substances shall be reported to the ECO. ▪ All contaminated soil/yard stone shall be removed and be placed in containers. Contaminated material can be taken to one central point for bio-remediation or disposed at a licensed landfill site. ▪ A clean up kit must be available so that smaller spills can be 	<p>his/her findings into the weekly environmental checklists and the monthly audit reports.</p> <ul style="list-style-type: none"> ❑ Any issues identified by the ECO with regards to the contraventions of the conditions of this EMPr are to be addressed immediately by the contractor. ❑ The ECO is to ensure that copies of all waste disposal certificates are kept on file. ❑ The ECO to ensure that the hazardous substances register is up to date and includes all materials stored on-site. ❑ The ECO to ensure that the CEO has a comprehensive list of MSDSs. ❑ The ECO to monitor storage areas daily and report any transgressions to the conditions of this EMPr. ❑ The ECO to ensure that emergency spill kits are on-site at all times.

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<p>treated on-site.</p> <ul style="list-style-type: none"> ▪ A specialist contractor shall be used for the bio-remediation of contaminated soil where the required remediation material and expertise are unavailable on-site. 	
13	Concrete Batching	<ul style="list-style-type: none"> ❑ Method statements for the construction and operation of concrete batching sites are to be provided to the ECO and Senior Site Supervisor for approval prior to construction of the batching sites taking place. ❑ Specific areas must be designated for cement batching plants. ❑ Sufficient drainage for these plants must be in place to ensure that soils do not become contaminated. ❑ The concrete batching plant must be contained within a bunded area. ❑ Concrete mixing must only take place within designated areas. ❑ Ready mixed concrete must be utilised, where possible. ❑ No vehicles transporting concrete to the site may be washed on-site. ❑ If a batching plant is necessary, run-off should be managed effectively to avoid contamination of other areas of the site. Runoff from the batch plant must not be allowed to get into storm water systems or natural drainage lines. ❑ Empty cement bags shall be disposed of on a regular basis via the solid waste management system and shall not be used for any other purpose. A certificate of disposal is required. ❑ Sand, aggregate, cement or additives used during the mixing process are contained and covered to prevent contamination of the surrounding environment. The batching plant is not sited on or within 200 m of any of the areas identified as sensitive vegetation. ❑ No batching activities shall occur directly on unprotected ground. ❑ Small batching plants (concrete mixers etc.) may not be located within wetlands or wetland buffers as prescribed by the DWA. Batching plants should be located at least 30 m away from any natural water body or water course. 	<ul style="list-style-type: none"> ❑ No “waste” concrete is left in the environment. ❑ The ECO is to be provided with certificates of disposal for concrete spoil and these are to be included in the Final Environmental Close-Out Report. ❑ The ECO is to be provided with certificates of disposal for liquid effluent and these are to be included in the Final Environmental Close-Out Report. ❑ The ECO is to ensure that the batching sites remain within the agreed footprint as outlined in the approved method statement. ❑ The ECO is to ensure that all cement on-site is appropriately stored above (off) ground level to ensure no contact with water. ❑ The ECO is to routinely monitor the batching sites and maintain a photographic record of these sites for inclusion into the monthly audit reports.

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<ul style="list-style-type: none"> ❑ A certificate of disposal at a licensed waste water disposal site is required for runoff from the batching sites. 	
14	Fencing off of tower foundation-sites	<ul style="list-style-type: none"> ❑ The foundation holes and sites are to be fenced off. ❑ Fencing may be removed at the start of construction each day but must be replaced each day when the contractor leaves the site. ❑ In areas where game and livestock can access the demarcated works areas, plastic danger (candy) tape must not be used as the game/livestock eat this and can die. ❑ Fencing will be installed in such a way so as to minimise environmental impacts on the landscape and vegetation and, where appropriate, facilitate removal of the fence and rehabilitation of the fence line. ❑ On completion of the foundations, all fences are to be removed and, where possible, re-used by the contractor. ❑ The contractor will ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but completely removed. 	<ul style="list-style-type: none"> ❑ The ECO is to regularly inspect the fenced off foundation-sites and include photographs of the sites in the monthly audit reports. ❑ The ECO is to monitor the removal of the barrier fence around construction works and the rehabilitation of these areas. ❑ The Final Environmental Close-Out Report must confirm that all removed fenced areas are satisfactorily rehabilitated, all uprights properly removed and fencing material removed from site. ❑ The ECO is to maintain a photographic record of the construction activities at each tower position.
15	Fire Prevention The use of open flames and fires will be kept to an absolute minimum	<ul style="list-style-type: none"> ❑ Take reasonable and active steps to avoid increasing the risk of fire through activities on-site. Accidental fires should be prevented through proper sensitisation of the contractors and their workers towards the associated risks, dangers and damage of property. ❑ Ensure that no open fires are lit on-site under any circumstances. The use of open fires for cooking of food, etc. by construction personnel should be strictly prohibited. Enclosed areas for food preparation shall be provided. ❑ Report any fires that occur to the ECO as soon as possible. ❑ Ensure that there is basic fire-fighting equipment available on-site at all times. ❑ Educate specific members of the construction force regarding the 	<ul style="list-style-type: none"> ❑ The ECO is to ensure that no open fires are started on-site during construction of the transmission line. ❑ An inventory of all fire fighting equipment on-site is to be included in the weekly checklists and monthly audit reports. ❑ The ECO is to ensure that all the listed fire fighting equipment is operational and in its designated location. ❑ The ECO must be familiar with the

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<p>location and use of fire-fighting equipment.</p> <ul style="list-style-type: none"> ❑ Restrict smoking activities to demarcated smoking areas. ❑ Ensure that an emergency preparedness plan is in place in order to fight accidental veld fires should they occur. The adjacent land owners/users/managers should also be informed and/or involved. ❑ The contractor is to ensure he is aware of the requirements of landowners in terms of fire control regulations on their property. ❑ Store flammable materials under conditions that will limit the potential for ignition and the spread of fires. Create a fire-break around the storage area, if necessary. ❑ Observe all regulations governing the storage of flammable materials, including those outlined in the Occupational Health and Safety Act (Act No 85 of 1993). ❑ See Appendix I for Eskom's Fire Protection Association Guideline TGL31-336 and Appendix J for Eskom's Transmission Fire Risk Management Plan TST41-243. 	<p>use of the fire fighting equipment on-site.</p> <ul style="list-style-type: none"> ❑ The ECO is to be issued with a list of names from the CEO who are responsible for fire fighting on-site. ❑ The ECO must ensure that the Fire Management Plan (Appendix J) is implemented.
16	<p>Noise Pollution</p> <p>The contractor shall ensure that noise levels remain within acceptable limits especially after working hours and during the night</p>	<ul style="list-style-type: none"> ❑ The contractor shall ensure that noise levels remain within acceptable limits. This applies especially after working hours and during the night. ❑ The South African National Standard for noise levels (SANS 10103: <i>The Measurement and Assessment of Environmental Noise with Respect to Land Use, Health, Annoyance and Speech Communication</i>) shall be adhered to at all times. ❑ Standardised operating hours must be adhered to during the construction phase of the construction camp. ❑ If required, the CEO will periodically conduct noise monitoring tests. These tests will be undertaken at the discretion of the ECO. ❑ Personal electronic equipment (radios, Hi-Fis) shall be played at levels that are acceptable to the ECO. ❑ Construction activities generating output levels of 85 dBA or more (excessively noisy near human settlements) are to be confined to 	<ul style="list-style-type: none"> ❑ The ECO is to ensure that noise readings are undertaken by the contractor at regular intervals. ❑ If complaints by a landowner or surrounding community are registered, noise readings are to be undertaken and the findings of these must be included into the monthly audit reports.

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		working hours (08h00 - 17h00) Mondays to Fridays.	
17	<p>Litter Control Littering by the employees of the contractor shall not be allowed under any circumstances</p>	<ul style="list-style-type: none"> <input type="checkbox"/> The construction-sites must be kept clear of litter at all times. <input type="checkbox"/> Spillages within the construction-sites need to be cleaned up immediately and disposed in the hazardous skip/bin for correct disposal. <input type="checkbox"/> The contractor and CEO must ensure that solid waste collection and sanitation are managed effectively in order to avoid any chance of ground and surface water pollution. <input type="checkbox"/> Solid waste separation and recycling should take place for the duration of the construction phase of the transmission line. <input type="checkbox"/> Provide a sufficient number of refuse bins/skips that are wind, water and scavenger proof, for the temporary storage of waste. <input type="checkbox"/> Make provision for regular waste collection and disposal at a licensed waste disposal site. 	<ul style="list-style-type: none"> <input type="checkbox"/> The ECO is to ensure that certificates of disposal are received and included in the Final Environmental Close-Out Report. <input type="checkbox"/> The ECO is to ensure waste segregation, recycling and re-use are taking place and the measures being undertaken are included in the Final Environmental Close-Out Report. <input type="checkbox"/> The ECO is to ensure that waste bins are regularly emptied and maintained. <input type="checkbox"/> The ECO is to monitor the construction camp for litter. <input type="checkbox"/> The ECO is to maintain a photographic record of the construction-sites along the transmission line and any transgressions are recorded.
18	<p>Dust and Air Pollution The contractor shall be solely responsible for the control of dust arising from the contractor's operations</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Stockpiles of soil/building rubble must be kept covered or have a suitable dust palliative applied, such as water or commercial dust suppressants. <input type="checkbox"/> The impact of dust emission must be minimal and must not be allowed to cause a nuisance to landowners of surrounding areas. <input type="checkbox"/> Contractors will commence rehabilitation of exposed soil surfaces as soon as is practical after completion of earthworks. <input type="checkbox"/> Excessive dust conditions are to be reported to the ECO, who must take appropriate remedial actions. <input type="checkbox"/> All machinery and equipment to be used on-site shall be properly serviced and in good working order to avoid excessive exhaust 	<ul style="list-style-type: none"> <input type="checkbox"/> The ECO is to monitor on an ongoing basis and implement dust and air pollution control measures when necessary. <input type="checkbox"/> Incidents of dust and air pollution are to be recorded and included in the weekly environmental checklists and the monthly audit reports

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<p>fumes and smoke.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Potable water is not to be used for dust suppression. <input type="checkbox"/> Abstraction of water near or in a permanent drainage system may have implications in terms of the National Water Act, 1998 (Act No. 36 of 1998) and, therefore, may require the application for a water use license. Therefore, the contractor must, in consultation with the ECO, assess all areas along the alignment well in advance in order to ensure the relevant water use licenses are applied for, where required. <input type="checkbox"/> Excavation, handling and transport of erodible materials shall be avoided under high wind conditions or when a visible dust plume is present. <input type="checkbox"/> During high wind conditions, the ECO will evaluate the situation and make recommendations as to whether dust-dampening measures are adequate, or whether working will cease altogether until the wind speed drops to an acceptable level. <input type="checkbox"/> Appropriate dust suppression measures shall be used when dust generation is unavoidable, e.g. dampening with water, particularly during prolonged periods of dry weather in summer. Such measures shall also include the use of temporary stabilising measures (e.g. chemical soil binders, straw, brush packs, chipping). <input type="checkbox"/> Keep construction and the operation of heavy machinery to normal working hours. <input type="checkbox"/> The contractor shall be responsible for dust control on-site to ensure no nuisance is caused to the landowner or neighbouring communities. <p>Odour control</p> <ul style="list-style-type: none"> <input type="checkbox"/> Regular servicing of vehicles in order to limit gaseous emissions (to be done off-site). <input type="checkbox"/> Regular servicing of on-site toilets to avoid potential odours. 	
19	Fauna	<ul style="list-style-type: none"> <input type="checkbox"/> As specified in the EA (item 25) suitably qualified person must be 	<ul style="list-style-type: none"> <input type="checkbox"/> The ECO is to ensure that no

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
	<p>The contractor shall under no circumstances interfere with livestock without the landowner or communities being present</p>	<p>appointed to search and rescue low mobility fauna to be translocated from the development footprint to suitable adjacent areas that will not be developed.</p> <ul style="list-style-type: none"> <input type="checkbox"/> During construction of the transmission line, the contractor shall under no circumstances interfere with livestock from surrounding landowners or communities without the landowner or community members being present. This includes the moving of livestock where they interfere with construction activities. <input type="checkbox"/> No poaching shall be tolerated under any circumstances. <input type="checkbox"/> Where possible, tower positions should be moved so as not to impact on sensitive habitats. <input type="checkbox"/> All cleared areas must be rehabilitated. <input type="checkbox"/> Construction-sites along the transmission line must be fenced to control the movement of staff. <input type="checkbox"/> Prohibit the collection of wood for fuel and provide alternative fuels. <input type="checkbox"/> Implement the strict control of the movement of staff. <input type="checkbox"/> Dogs should not be allowed on-site. <input type="checkbox"/> No wildlife (snakes etc) shall be killed, removed or disturbed in any way. The ECO will be requested to remove wildlife from work and camp areas after the requisite approval has been received from the relevant department. 	<p>poaching or harvesting of livestock or wildlife takes place.</p> <ul style="list-style-type: none"> <input type="checkbox"/> The ECO is to monitor that all relevant construction-sites and work areas are appropriately fenced and secured. <input type="checkbox"/> Any loss of livestock as a result of construction activities is immediately reported to the landowner or community, and compensation paid and recorded. <input type="checkbox"/> Loss of livestock and wildlife is documented and reported in the Final Environmental Close-Out Report.
<p>20</p>	<p>Flora Bush clearing to be undertaken during construction of the transmission line</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Construction work must be confined to the construction-sites and interference with indigenous plant and animal species must be avoided. <input type="checkbox"/> Any plants or trees of value, close to or within the construction footprint that will remain, must be marked and must not be disturbed, defaced, destroyed or removed. <input type="checkbox"/> The contractor will be held liable for the replacement of any plant or feature under the protection of these specifications that is removed 	<ul style="list-style-type: none"> <input type="checkbox"/> The ECO shall be responsible for ensuring that any required demarcation, removal, relocation and/or rescue of plants is undertaken according to the EMP's specifications. <input type="checkbox"/> The ECO must ensure that, prior to clearance, protected tree species

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<p>or damaged by the contractor’s negligence or mismanagement.</p> <ul style="list-style-type: none"> ❑ No open fires or material storage or lay-down is permitted under trees. ❑ No vegetative matter may be removed for firewood. ❑ Indigenous species should be retained, where possible. Where retention of indigenous species is not possible, the areas should be rehabilitated back to natural vegetation. Where possible, indigenous species should be translocated and used in landscaping in and around the development area. ❑ As specified in the EA (item 25) a suitably qualified person must be appointed to search and rescue species of special concern. All translocated plant specimens must be translocated from the development footprint to suitable adjacent areas that will not be developed. ❑ If required, the contractor shall transplant designated plants to alternative locations as identified by the ECO, upon the instruction of the Project/Resident Engineer, at the cost of the Employer. Undertake transplanting as follows: <ul style="list-style-type: none"> ▪ Mark the orientation of the tree/shrub (for example, the north-facing side of the trunk indicated by a small arrow made with indelible ink). Do not scratch a mark on the surface of the trunk. ▪ Delineate a circle from the trunk with a radius equivalent to the drip-line of the tree, or as indicated by the ECO on-site. ▪ Excavate the tree with an intact root ball. ▪ When replanting, excavate a hole 500 mm larger in diameter than the anticipated root ball, which must be prepared in advance of the tree removal in order that the tree can be replanted immediately. ▪ Fill holes with water, which must be allowed to seep in before 	<p>and plants are identified and marked so that they are not interfered with⁵.</p> <ul style="list-style-type: none"> ❑ The ECO is to ensure that the Final Environmental Close-Out Report details that no Category 1 invasive alien plant species as per the Conservation of Agricultural Resources Act 1983 have been introduced. ❑ The ECO is to ensure that the Final Environmental Close-Out Report confirms that all identified species have been rescued and replanted. Photographic records of this must be included in the report.

⁵ Prior to construction, a suitably qualified specialist shall identify protected trees on-site as listed under the National Forests Act, 1998. Removal of these trees is to be avoided. Where unavoidable, they should be translocated, if possible.

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<p>planting.</p> <ul style="list-style-type: none"> ▪ Position the tree as per its original orientation. ▪ A planting method known as “puddling” must be employed. This method involves the addition of soil and water simultaneously to expel air from the planting hole. Place the tree in its new hole, making sure the top surface of the root ball is level with the ground level. Place a hosepipe in the hole and leave it running whilst extra soil is added around the root ball. ▪ “Compact” the tree in the hole and support with stays for stabilisation. ▪ Water trees at least once a week or as instructed by the ECO. 	
21	<p>Archaeology/Heritage The EIAR notes that no significant archaeological sites are expected.</p>	<ul style="list-style-type: none"> ❑ Prior to construction of the towers commencing, the CEO must familiarise himself/herself with the site specific Heritage Assessment undertaken for the proposed transmission line (Appendix Q). Site specific mitigation measures as outlined in this report are to be implemented as described. ❑ If, during construction, archaeological or palaeontological objects or material or a meteorite is discovered, the find must immediately be reported to the ECO and the responsible heritage resources authority notified. No person may, without a permit, destroy damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite. 	<ul style="list-style-type: none"> ❑ The ECO is to ensure that any heritage resources uncovered must be reported to the nearest National Monuments office to comply with the National Heritage Resources Act (Act No 25 of 1999). ❑ The ECO is to ensure that work stops immediately should a heritage resource be uncovered. ❑ Photographic records of all heritage resources uncovered must be kept and included in the Final Environmental Close-Out Report.
22	<p>Existing Infrastructure No interruptions other than those negotiated shall be allowed to any essential services</p>	<ul style="list-style-type: none"> ❑ Any incidental damage to infrastructure shall be rectified immediately. ❑ The ECO shall be informed of any incidental damage to infrastructure. ❑ In the event of damage to infrastructure, a corrective action shall be completed by the contractor and issued to the ECO to be recorded in the CEMP file. 	<ul style="list-style-type: none"> ❑ Ensure that in the event of an accident or incident, corrective action, and where necessary, compensation, are addressed immediately. ❑ The ECO is to keep a record of all damaged infrastructure. A report on all damaged infrastructure must be

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
			included in the Final Environmental Close-Out Report.
23	Ablutions Basic field ablation facilities will be provided within the constructions corridor	<ul style="list-style-type: none"> ❑ Adequate sanitary facilities and ablutions must be provided for construction workers (1 toilet per every 15 workers). ❑ The facilities must be regularly serviced to reduce the risk of surface or groundwater pollution. ❑ Portable chemical toilets must be used. ❑ All portable/temporary toilets must be secured to the ground to the satisfaction of the ECO to prevent them toppling due to wind or any other activity. ❑ All waste from the ablutions will be removed from site to a licensed waste water treatment works for disposal. The contractor will provide documentation/certificate of disposal. ❑ Discharge of waste from the ablation facilities into the environment or the burial of waste is strictly prohibited. ❑ No ablation facilities will be placed closer than 100 metres to any water body. ❑ The contractor shall ensure that the ablation facilities are adequately screened. 	<ul style="list-style-type: none"> ❑ The ECO is to regularly inspect the ablutions and ensure that they are adequately screened. ❑ Copies of the waste disposal certificates must be kept by the ECO in the EMPr file. The ECO must also ensure that certificates of disposal are included in the Final Environmental Close-Out Report.
24	Handling of Topsoil	<ul style="list-style-type: none"> ❑ Where areas are to be cleared, topsoil (the uppermost 250 mm of soil, together with plant roots and organic matter) shall be collected and retained for the purpose of re-use later to rehabilitate disturbed areas. ❑ Topsoil is to be handled twice only – once to strip and stockpile, and once to replace and level. ❑ Stockpile height of topsoil shall not exceed 1 m unless approved by the ECO. ❑ Stockpile topsoil stripped from different sites separately, as reapplication during rehabilitation shall preferably be site specific. ❑ Protect topsoil stockpiles from erosion by wind and water. ❑ Keep topsoil stockpiles free of alien plants (by hand pulling). ❑ Do not compact topsoil in any way. 	<ul style="list-style-type: none"> ❑ A method statement for the removal and stockpiling of topsoil is required which must be approved by the ECO and Senior Site Supervisor prior to the stripping of soil commencing. ❑ The ECO is to monitor all topsoil stockpiles for signs of erosion and alien weeds.

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<ul style="list-style-type: none"> ❑ Ensure that topsoil is at no time buried, mixed with spoil (excavated subsoil), rubble or building material, or subjected to compaction or contamination by vehicles or machinery. This will render the topsoil unsuitable for use during rehabilitation. ❑ Retained topsoil shall be spread evenly over areas to be rehabilitated and suitably compacted to effect re-vegetation of such areas to prevent erosion. Where required, re-vegetation can also be enhanced using a vegetation seed mixture. ❑ The exposure of the soil due to bush clearing and land levelling should be timed to occur during the dry winter months of the year (as far as practically possible). 	
25	Erosion and Soil Compaction	<ul style="list-style-type: none"> ❑ The control of soil erosion and siltation associated with construction and operation is important at all locations on-site, and particularly adjacent to drainage lines, streams and wetland communities. Both temporary and permanent soil erosion control measures must be used during the construction and operation phases as specified in the Eskom's Erosion Guideline(Appendix M). ❑ As soon as is technically possible, erosion control measures (temporary and permanent) shall be implemented to exposed surface areas as guided by the ECO. ❑ Any earth-worked areas, which may lay bare for extended periods, should be temporarily grassed. ❑ Design drainage so that water accumulation across the ground surface is kept to below that volume which might cause erosion. ❑ Soil compaction should be minimised by keeping vehicle and construction plant access ways and parking areas confined to the minimum areas needed, and making use of existing compacted/hardened surfaces wherever possible. ❑ Soil erosion controls must be inspected and maintained on a regular basis. ❑ As stipulated in the EA (item 36) an erosion management plan for monitoring and rehabilitating erosion events associated with the 	<ul style="list-style-type: none"> ❑ The ECO is to inspect all likely erosion areas with landowners before the contractor leaves site. Findings from these visits are to be included in the Final Environmental Close-Out Report. ❑ A revisit before the 12 month contract period closes is also required so that the contractor can remediate any unstable areas.

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<p>footprint area must be developed. Appropriate erosion mitigation must form part of this plan to prevent and reduce risk of potential erosion. The plan must clearly indicate how soil erosion will be prevented and must be submitted together with final layout for approval by DEA prior to construction.</p>	
26	Avifauna	<ul style="list-style-type: none"> ❑ Anti-collision devices such as bird flappers must be installed where power lines cross avifaunal corridors ❑ The input of an avifaunal specialist must be obtained for the fitting of the anti-collision devices onto specific sections of the line once the exact positions of the towers have been surveyed and pegged. ❑ On the sections of line identified by the Avifauna specialist suitable anti bird collision line marking devices will need to be installed as follows: <ul style="list-style-type: none"> ▪ Both earth wires must be marked, for their full length (not only the middle 66% as done previously) ▪ The effective spacing between marking devices should be 10 metres. This means that the spacing on each earth wire can be 20 metres if the devices are staggered on each earth wire ▪ Light colour and dark colour devices must be alternated. This is important in order to provide contrast against both light (e.g. clouds) and dark backgrounds (e.g. mountains). ▪ These devices should be installed as soon as the earth wires are strung as this is when the collision risk commences, not only once the line is commissioned. ▪ It is recommended that the device used should be the 'Large Bird Flight Diverter' made by 'Pre-formed Line Products (PLP)' in Pietermaritzburg. Although this device lacks any movement it is extremely durable which gives it an advantage over dynamic devices, with which there have been problems in the past. ❑ The mitigation measures above should be implemented in conjunction with Eskom Transmissions Bird Collision Prevention Guideline (Appendix Q) and Eskom Transmissions specifications for 	<ul style="list-style-type: none"> ❑ The ECO must ensure that, prior to clearance of trees and plants any nesting bird species are identified and their position recorded so that they are not interfered with. ❑ Bird diverters and bird guards are installed in the correct locations and Reported on in the Final Environmental Close-Out Report.

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
27	General Environmental Requirements	<p>Bird Flight Diverters (Appendix P).</p> <ul style="list-style-type: none"> ❑ The contractor is to provide a method statement indicating how all equipment will be monitored with regards to leakage or the spillage of coolants from oil containing equipment in their use as per Condition 3.2.4.1 of the EA (see Appendix C). ❑ The contractor shall not work within a flood plain or any watercourses or water bodies without the necessary authorisations from DWS. ❑ All vehicles and equipment shall be kept in good working order and serviced regularly. Vehicles noticeably emitting excessive fumes will not be permitted to continue working on-site. ❑ The contractor or their staff shall not deface, paint, damage or mark any natural features (e.g. rock formations) situated in or around the site for survey or other purposes. ❑ The contractor shall not permit his employees to make use of any natural watercourse or water body for the purposes of swimming, personal washing and the washing of machinery or clothes ❑ Unless otherwise agreed to by the Project Manager, the contractor shall ensure that all activities are restricted to within the defined work area. The areas outside of the defined area as well as any other areas identified by the Project Manager shall be regarded as “no go” areas. 	<ul style="list-style-type: none"> ❑ The ECO is to monitor the compliance of the contractors to the general environmental requirements as listed in this EMPr. ❑ The ECO is to include an evaluation of the contractor’s compliance in the Final Environmental Close-Out Report.
28	Environmental Education and Awareness	<ul style="list-style-type: none"> ❑ Ensure that all site personnel have a basic level of environmental awareness training prior to commencement of site clearing activities. The contractor must submit a proposal for this training to the ECO for approval. Topics covered should include: <ul style="list-style-type: none"> ▪ What is meant by “environment”. ▪ Why the environment needs to be protected and conserved. ▪ How construction activities can impact on the environment. ▪ What can be done to mitigate against such impacts. 	<ul style="list-style-type: none"> ❑ The ECO must keep a record of all environmental awareness sessions undertaken by the contractor. ❑ The ECO must be provided with staff attendance at these sessions by the CEO. ❑ The ECO must keep a record of all environmental awareness pamphlets

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<ul style="list-style-type: none"> ▪ Awareness of emergency and spills response provisions. ▪ Social responsibility during construction, e.g. being aware of surrounding communities and considerate of their needs. ❑ Use should be made of environmental awareness posters on-site. ❑ The need for a “clean site” policy also needs to be explained to the workers. ❑ Staff operating equipment (such as excavators, loaders, etc.) shall be adequately trained and sensitised to any potential hazards associated with their tasks. 	<p>and posters.</p> <ul style="list-style-type: none"> ❑ The ECO must report on environmental awareness training in the Final Environmental Close-Out Report. ❑ The ECO must actively engage with staff on-site to capacitate skills development for all levels of workers on environmental issues. ❑ The ECO must be available at all times to give clear and concise environmental advice. ❑ The ECO must conduct himself/herself on-site in a manner that sets an example and advocates environmental awareness.
29	<p>Rehabilitation All work areas and storage areas no longer part of the ongoing operational plan, as well as all damaged areas, will be rehabilitated during and on completion of the contract in accordance with design specifications</p>	<ul style="list-style-type: none"> ❑ Ensure that all areas affected by the construction works are rehabilitated and re-vegetated. This includes the areas beyond the works area, such as temporary access roads, construction campsites, lay down areas, etc. ❑ Ensure that areas where plant rescue and off-site mitigation have taken place are included in the rehabilitation management and monitoring activities. ❑ Ensure that rehabilitation is undertaken as soon as possible after completion of construction activities in any one area of the site, to minimise time of exposure of cleared areas. The progressive rehabilitation measures will allow the maximum growth period before the completion of the project. ❑ Ensure that the rehabilitation and stabilisation by vegetation of all new landforms (e.g. side slopes, road fill, cut slopes) has been completed as soon as the landforms are complete. ❑ Undertake general rehabilitation landscaping which shall reflect the 	<ul style="list-style-type: none"> ❑ The ECO is to ensure that the area is rehabilitated to acceptable standards. ❑ The ECO is to ensure that all waste products are removed from the servitude and adjacent areas. ❑ The ECO is to ensure that all demarcation poles have been removed from the transmission line servitude. ❑ The ECO is to ensure that the Final Environmental Close-Out Report presents before, during and post-rehabilitation photographs of the transmission line servitude and tower sites.

ITEM	ACTIVITY/ISSUE	CONTRACTOR REQUIREMENTS (RESPONSIBILITY OF THE CEO)	ECO REQUIREMENTS AND RESPONSIBILITIES
		<p>existing surrounding landscape.</p> <ul style="list-style-type: none"> ❑ During rehabilitation, ensure that topsoil is reinstated to ensure rapid re-establishment of groundcover on bare areas. This must be done on cleared areas, and after any rare/threatened or protected species have been translocated. ❑ Implement erosion control where necessary (such as berms, brushpacking, appropriate direction of drainage and/or re-vegetation). ❑ Remove from the site all construction equipment, surplus material, waste and temporary structures and works of every kind. ❑ Remove all excavated material (rocks, excess soil, etc.) and construction rubble after construction is completed. ❑ Rehabilitate any environmental damage caused by construction activities before the final hand-over, including degraded and disused roads. ❑ If disturbance has occurred in wetlands or pans, compile a method statement for remediation and rehabilitation, which is approved by the ECO, with specialist input as required, and rehabilitation shall be timeously undertaken. 	<ul style="list-style-type: none"> ❑ The ECO is to ensure that the correct application methods for topsoil are used during rehabilitation. ❑ The ECO is to ensure that there is no introduction of invasive alien species, plants or seeds. ❑ The ECO is to monitor that there are no visible erosion scars one year after completion of the project. ❑ The Final Environmental Close-Out Report must confirm complete and successful rehabilitation and landscaping.

5. SUMMARY OF TOWER SPECIFIC MITIGATION MEASURES




5.1 Site specific mitigation measures for towers AST/BAC 1 – 5


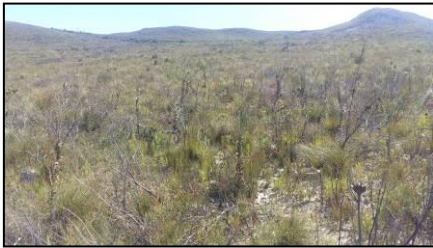
Tower Number	Discipline	Mitigation Measures Required
AST/BAC 1	Avifauna	None
	Ecology (Fauna and Vegetation)	None
	Heritage	None
	Wetlands	Temporary erosion protection and runoff prevention structures should be placed down-slope of the construction footprint area
AST/BAC 2	Avifauna	None
	Ecology (Fauna and Vegetation)	None
	Heritage	None
	Wetlands	Temporary erosion protection and runoff prevention structures should be placed down-slope of the construction footprint area
AST/BAC 3	Avifauna	Install anti-bird collision line marking devices
	Ecology (Fauna and Vegetation)	None
	Heritage	None
	Wetlands	Temporary erosion protection and runoff prevention structures should be placed down-slope of the construction footprint area
AST/BAC 4	Avifauna	Install anti-bird collision line marking devices
	Ecology (Fauna and Vegetation)	Construction areas for the pylon should avoid adjacent rocky areas.
	Heritage	None
	Wetlands	Temporary erosion protection and runoff prevention structures should be placed down-slope of the construction footprint area
AST/BAC 5	Avifauna	Install anti-bird collision line marking devices
	Ecology (Fauna and Vegetation)	None.
	Heritage	None
	Wetlands	Temporary erosion protection and runoff prevention structures should be placed down-slope of the construction footprint area. Proposed new position for pylon/tower is 19°10'49.83" S 34°13'27.40" E.
AST/BAC 6	Avifauna	Install anti-bird collision line marking devices
	Ecology (Fauna and Vegetation)	None.
	Heritage	None
	Wetlands	Temporary erosion protection and runoff prevention structures should be placed down-slope of the construction footprint area



5.2 Site specific mitigation measures for towers PA/AST 71 – 77




Tower Number	Discipline	Mitigation Measures Required
PA/AST 70 (existing)	Avifauna	Install anti-bird collision line marking devices
	Ecology (Fauna and Vegetation)	None.
	Heritage	None
	Wetlands	Temporary erosion protection and runoff prevention structures should be placed down-slope of the construction footprint area
PA/AST 71	Avifauna	Install anti-bird collision line marking devices
	Ecology (Fauna and Vegetation)	None
	Heritage	None
	Wetlands	Temporary erosion protection and runoff prevention structures should be placed down-slope of the construction footprint area
PA/AST 72	Avifauna	Install anti-bird collision line marking devices
	Ecology (Fauna and Vegetation)	None
	Heritage	None
	Wetlands	Temporary erosion protection and runoff prevention structures should be placed down-slope of the construction footprint area
PA/AST 73	Avifauna	Install anti-bird collision line marking devices
	Ecology (Fauna and Vegetation)	
	Heritage	None
	Wetlands	Temporary erosion protection and runoff prevention structures should be placed down-slope of the construction footprint area
PA/AST 74	Avifauna	Install anti-bird collision line marking devices
	Ecology (Fauna and Vegetation)	None
	Heritage	None
	Wetlands	Temporary erosion protection and runoff prevention structures should be placed down-slope of the construction footprint area
PA/AST 75	Avifauna	None
	Ecology (Fauna and Vegetation)	None
	Heritage	None
	Wetlands	Temporary erosion protection and runoff prevention structures should be placed down-slope of the construction footprint area
PA/AST 76	Avifauna	None
	Ecology (Fauna and Vegetation)	None
	Heritage	None
	Wetlands	Temporary erosion protection and runoff prevention structures should be placed down-slope of the construction footprint area
PA/AST 77	Avifauna	None
	Ecology (Fauna and Vegetation)	None
	Heritage	None
	Wetlands	Temporary erosion protection and runoff prevention structures should be placed down-slope of the construction footprint area




6. FAUNAL, VEGETATION AND ECOLOGY: SITE-SPECIFIC MITIGATION MEASURES



Tower Number	Tower site	Description	Species present	Species of Conservation Concern within footprint area	Specific Mitigation Measures
AST/BAC 1		Disturbed ground dominated by grasses and aliens. Area appears to be previously transformed.	<i>Erharta villosa</i> , <i>Hyparrhenia hirta</i> , <i>Pinus, Acacia longifolia</i> , <i>Athanasia trifurcata</i> , <i>Pentaschistis</i> sp., <i>Aristida</i> sp., <i>Chrysocoma ciliata</i> and <i>Stoebe plumosa</i> .	No species of conservation concern observed	No specific changes or recommendations required for this position
AST/BAC 2		Dominated by weedy and alien species	<i>Ehrharta villosa</i> , <i>Hyparrhenia hirta</i> , <i>Aristida</i> sp., <i>Chrysocoma ciliata</i> , <i>Cynodon dactylon</i> , <i>Athanasia trifurcata</i> , <i>Watsonia borbonica</i> , <i>Pinus, Acacia longifolia</i> and <i>Stoebe plumosa</i>	No species of conservation concern observed	No specific changes or recommendations required for this position
AST/BAC 3		Disturbed ground dominated by <i>Stoebe plumosa</i> , <i>Hyparrhenia hirta</i> , <i>Carpobrotus edulis</i> , <i>Ehrharta villosa</i> , <i>Trichocephalus stipularis</i> , <i>Anthospermum</i>	<i>Stoebe plumosa</i> , <i>Hyparrhenia hirta</i> , <i>Carpobrotus edulis</i> , <i>Ehrharta villosa</i> , <i>Trichocephalus stipularis</i> , <i>Anthospermum spathulatum</i> , <i>Acacia</i>	No species of conservation concern observed	No specific changes or recommended avoidance required at this position

Tower Number	Tower site	Description	Species present	Species of Conservation Concern within footprint area	Specific Mitigation Measures
		<p>spathulatum and Acacia longifolia, with occasional Leucodendron salignum shrubs present. .</p>	<p><i>longifolia</i> and <i>Leucodendron salignum</i></p>		
<p>AST/BAC 4</p>		<p>Within the Houhoek Nature Reserve. Characterised by mature fynbos that has not burnt.</p>	<p><i>Leucospermum truncatulum</i>, <i>Leucodendron tinctum</i>, <i>Elegia capensis</i>, <i>Protea repens</i>, <i>Phaenocoma prolifera</i>, <i>Tetaria thermalis</i>, <i>Aulax cancellata</i>, <i>Erica placentiflora</i>, <i>Saltera sarcocolla</i> and <i>Steobe plumosa</i>.</p>	<p>Large number of individuals of protected species within the pylon footprint, the vegetation is typical of the area and it would not be possible to avoid some impact on these species. Permits for the removal of these species is required (Refer to Appendix Q – Ecological Walkdown Report).</p>	<p>No specific changes to the pylon position are recommended. The pylon construction area should however avoid the adjacent rocky areas.</p>
<p>AST/BAC 5</p>		<p>Recently burnt fynbos, with a high density of seedlings of various proteaceae. Located on a steep slope.</p>	<p><i>Protea repens</i> and <i>Protea nerifolia</i>. <i>Tetaria thermalis</i>, <i>Serruria fasciflora</i>, <i>Senecio sp.</i> <i>Protea scabra</i>, <i>Erepsia anceps</i>, <i>Tritonia triticea</i>, <i>Cliffortia ruscifolia</i>, <i>Erica coccinea</i>, <i>Erica pulchella</i>, <i>Elegia sp.</i> and <i>Syncarpha cenescens</i></p>	<p>Large number of individuals of protected species within the pylon footprint, the vegetation is typical of the area and it would not be possible to avoid some impact on these species. Permits for the removal of these species is required (Refer to Appendix Q – Ecological Walkdown Report).</p>	<p>No changes to the pylon position are recommended but as the position is on a steep slope, there is a high risk of erosion and the access road should include runoff control features. Based on the recommendations of the freshwater specialist, this tower position has been relocated approximately 15m to the north-east of</p>

Tower Number	Tower site	Description	Species present	Species of Conservation Concern within footprint area	Specific Mitigation Measures
					the proposed position. As this area is homogenous, this would be similar to the area pictured and is considered acceptable from a botanical point of view.
AST/BAC 6		Existing pylon tower.		None	No changes or specific mitigation is recommended at this position.
PA/AST 70		Existing pylon tower. Area is relatively sensitive.	<i>Tetradlea thermalis</i> , <i>Protea cyanroides</i> , <i>Chrysanthemoides monilifera</i> , <i>Searsia rosmarinifolia</i> , <i>Retzia capensis</i> , <i>Diastella divaricata</i> , <i>Pentaschistis sp</i> , <i>Brunia laevis</i> and <i>Erepsia anceps</i> .	None	Any work in the area should minimise disturbance.

Tower Number	Tower site	Description	Species present	Species of Conservation Concern within footprint area	Specific Mitigation Measures
PA/AST 71		<p>Existing pylon tower. The tower is located on a steep slope.</p>	<p><i>Tetralia thermalis</i>, <i>Elegia sp.</i>, <i>Senecio sp.</i> <i>Agathosma sp.</i> and <i>Pelargonium scabrum</i>.</p>	<p>None</p>	<p>No specific avoidance is recommended but as the area is steep and vulnerable to erosion, disturbance and vegetation loss should be minimised.</p>
PA/AST 72		<p>New pylon to be positioned in the foreground compared to the existing pylon</p>	<p><i>Tetralia thermalis</i>, <i>Erepsia anceps</i>, <i>Tritonia triticea</i>, <i>Cliffortia ruscifolia</i>, <i>Erica placentiflora</i>. <i>Elegia sp.</i> and <i>Syncarpha cenescens</i></p>	<p>None</p>	<p>No specific changes or recommendations required for this position</p>
PA/AST 73		<p>Located in a small patch of vegetation that did not burn during the previous fire, with the result that it contains mature vegetation compared to the surroundings.</p>	<p><i>Protea repens</i> and <i>Protea nerifolia</i> with <i>Tetralia thermalis</i>, <i>Gnidia subulata</i> and <i>Steobe plumosa</i>.</p>	<p>None</p>	<p>No specific changes or recommendations required for this position</p>

Tower Number	Tower site	Description	Species present	Species of Conservation Concern within footprint area	Specific Mitigation Measures
PA/AST 74		<p>Located within the previously transformed area. The area is considered of low sensitivity.</p>	<p><i>Erharta villosa</i>, <i>Acacia longifolia</i> and <i>Stoebe plumosa</i>.</p>	<p>None</p>	<p>No specific changes or recommendations required for this position</p>
PA/AST 75		<p>Located within the previously transformed area. The area is considered of low sensitivity.</p>	<p><i>Pinus</i>, <i>Erharta villosa</i>, <i>Chrysocoma ciliata</i>, <i>Acacia longifolia</i> and <i>Stoebe plumosa</i>.</p>	<p>None</p>	<p>No specific changes or recommendations required for this position</p>
PA/AST 76		<p>Located within the previously transformed area. The area is considered of low sensitivity.</p>	<p><i>Pinus</i>, <i>Erharta villosa</i>, <i>Chrysocoma ciliata</i>, <i>Acacia longifolia</i> and <i>Stoebe plumosa</i>.</p>	<p>None</p>	<p>No specific changes or recommendations required for this position</p>

Tower Number	Tower site	Description	Species present	Species of Conservation Concern within footprint area	Specific Mitigation Measures
PA/AST 77		<p>Located within the previously transformed area. The area is considered of low sensitivity.</p>	<p><i>Pinus, Erharta villosa, Anthansia trifurcata, Chrysocoma ciliata, Acacia longifolia and Stoebe plumosa.</i></p>	<p>None</p>	<p>No specific changes or recommendations required for this position</p>
PA/AST Feeder		<p>Located within the previously transformed area. The area is considered of low sensitivity.</p>	<p><i>Pinus, Erharta, Anthansia trifurcata, Chrysocoma ciliata, Acacia longifolia and Stoebe plumosa.</i></p>	<p>None</p>	<p>No specific changes or recommendations required for this position</p>

7. AVIFAUNAL: SITE-SPECIFIC MITIGATION MEASURES

7.1 Key concerns and general recommendations

Key concerns and general recommendations from an avifaunal perspective for the proposed route of the Bucchus-Palmiet Loop in and Loop out lines during construction and operation are as follows:

Habitat destruction (impact on birds)

Any destruction or alteration to the natural habitat will have a negative effect on the various bird species within the affected area. The eastern part of the study area is untransformed fynbos and thus more sensitive for avifauna than the more transformed western part of the study area. While the impacts of habitat destruction are not considered significant for the proposed project the following general recommendation are made:

- ❑ All removal and alteration of natural vegetation should be kept to an absolute minimum.
- ❑ No unnecessary new roads must be built or driven.
- ❑ Access by staff, vehicles and machinery should be strictly controlled and restricted to necessary areas.

Collision related impacts

Collisions with power lines is one of the biggest threats facing birds in southern Africa. In areas where the transmission lines span structurally untransformed areas of fynbos, the earth wires of both transmission lines should be fitted with anti-bird collision marking devices. (This replaces the recommendation made in the already authorised EMPr which states that only the spans that cross untransformed areas of fynbos against the slopes should have Bird Flight Diverters attached). The devices should be installed as soon as the conductors are strung and not only once the lines are commissioned. The towers between which anti-bird collision marking devices should be installed are identified in the table below and illustrated in Figure 3.

7.2 Site Specific Mitigation Measures

The following site specific mitigation measures for construction and operation should be adhered to.

Tower Number	Potential Impacts	Specific Mitigation Measures
PA/AST 70 (existing) to PA/AST 74	Collision	Install anti-bird collision line marking devices on earth wires between these towers.
AST/BAC 06 (existing) to AST/BAC 03	Collision	Install anti-bird collision line marking devices on earth wires between these towers.
Notes: <ul style="list-style-type: none"> • The anti-bird collision devices should be installed as soon as the conductors are strung and not only once the lines are commissioned. 		

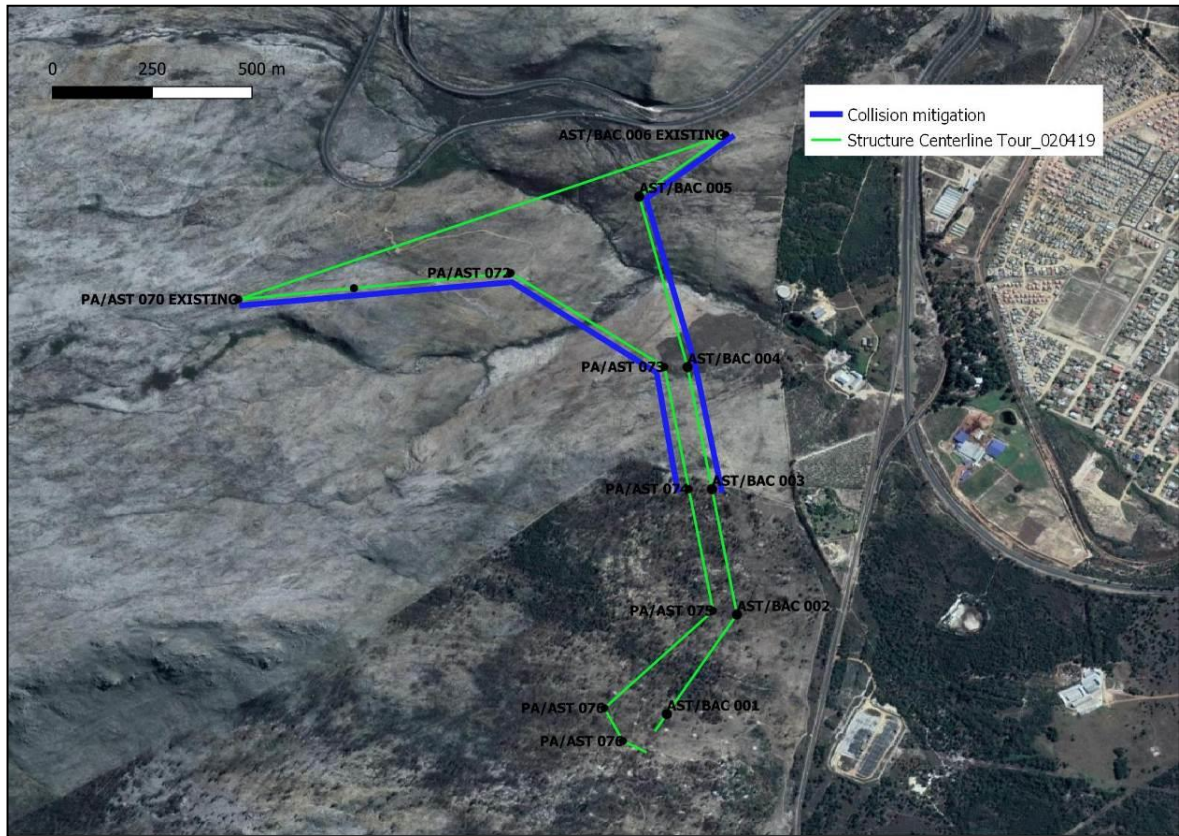


Figure 3 Spans where anti-bird collision markers should be installed

8 FRESHWATER ECOLOGY

8.1 Key concerns and general recommendations

Key concerns and general recommendations relating to freshwater ecology for the proposed route of the Bucchus-Palmiet Loop in and Loop out lines during construction and operation are as follows:

Control of sediment and contaminant runoff (Construction)

- ❑ Temporary erosion protection and runoff prevention structures should be placed down-slope of the construction footprint area for each tower/pylon prior to construction commencing.
- ❑ As far as possible 'bio-engineering' approaches should be used for erosion protection and runoff prevention. Examples include 'eco-logs', brush fences, fibre mats, fibre rolls, etc.
- ❑ A Method Statement should be compiled prior to construction commencing.

Recommended buffer areas (Construction)

Based on the assumption that all mitigation measures detailed in the approved EMP as well as those measures detailed above will be implemented, the following buffers are recommended:

- ❑ A 15 meter buffer between tributaries (to the main rivers) and the tower footprint area.
- ❑ A 30 meter buffer for the main rivers flowing through the prominent valleys in the study area.
- ❑ A 20 meter buffer for the river to the north of the substation-site.

These buffer areas should also be applied to any other pylon/towers required for the proposed project. Figure 2 illustrates these buffers.

Daylighting of subsurface seepage water (Construction and operation)

- ❑ Surface runoff from exposed seepage water may result in localised erosion during construction and operation at the sub-station-site. It is recommended that swales be constructed on the down-slope side of excavations.

8.2 Site specific mitigation measures

The following site-specific concerns have been identified.

Construction		
Tower Number	Potential Impacts	Specific Mitigation Measures
AST/BAC 005	Encroachment within the recommended buffer area for tributaries (15 meters) (Figure 4 and 5).	If possible, move AST/BAC 005 outside of the 15 meter buffer area.
<p><u>Notes:</u> Proposed new position for pylon/tower AST/BAC 005 is 19°10'49.83" S 34°1327.40" E.</p>		
Construction and Operation		
Substation	Potential Impacts	Specific Mitigation Measures
Substation	Localised erosion due to daylighting of subsurface	Construct swales on the down-slope side of excavations.

Construction		
Tower Number	Potential Impacts	Specific Mitigation Measures
	seepage flow.	

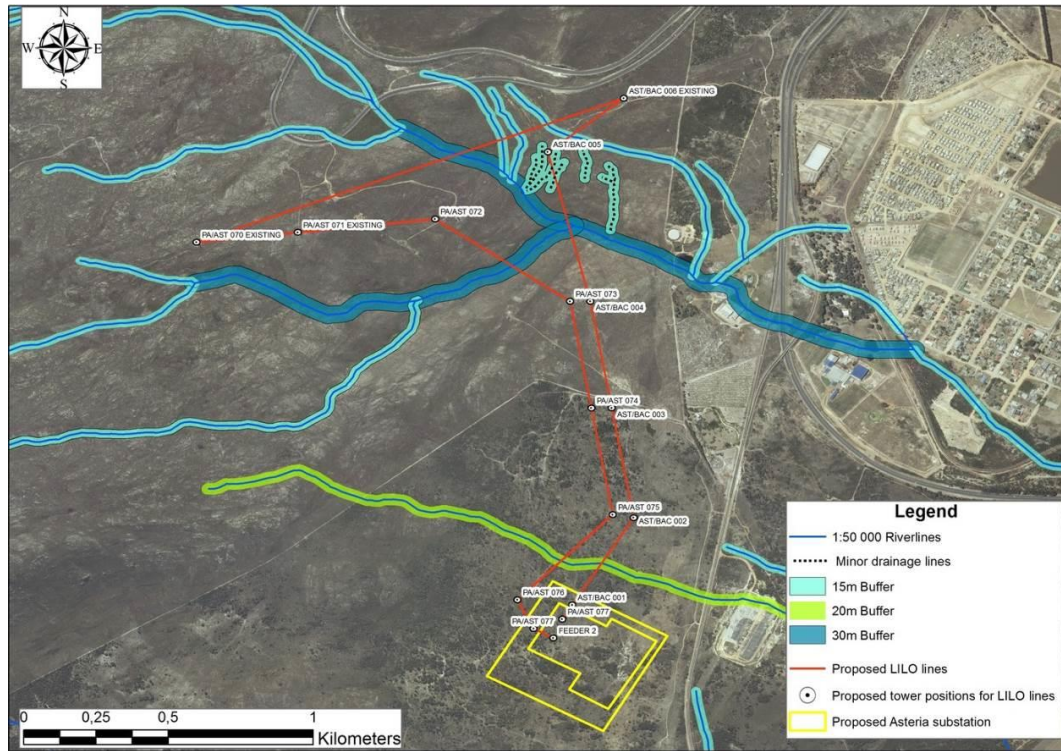


Figure 4 Proposed Buffers

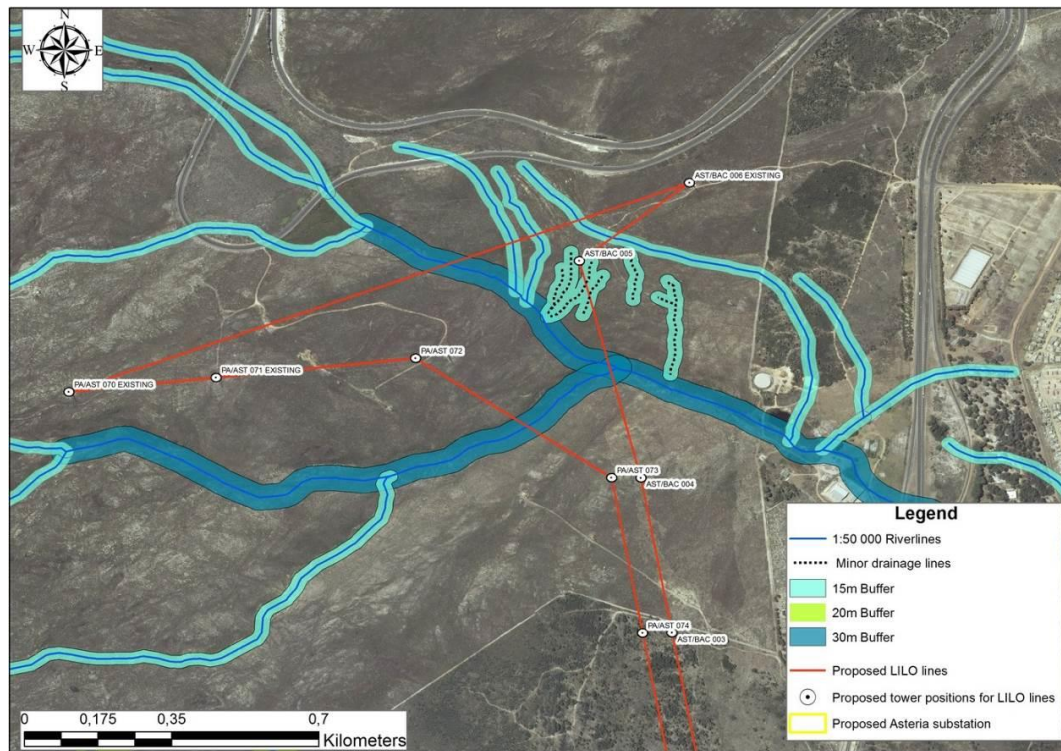


Figure 5 Location of AST/BAC 005 in relation to the proposed 15 meter buffer

9 GROUNDWATER

9.1 Key concerns and general recommendations

The impact on the groundwater reserves are considered insignificant and are uniform across all the pylon/tower sites. However the potential impacts that may occur during construction and operation are listed below as well as recommended mitigation measures.

Disturbing vadose/unsaturated zone during soil excavations/construction activities (construction and operation).

- ❑ Only excavate areas applicable to the project area.
- ❑ Backfill material in the same order it was excavated.
- ❑ Cover excavated soils with a temporary liner to prevent contamination.

Degradation of water quality of non-perennial streams due to seepage into surface water bodies (construction and operation).

- ❑ Water quality monitoring of downstream surface water and non-perennial streams as per the monitoring requirements detailed in Section 8.3 of the previously authorised EMPr.
- ❑ Installation of piezometric seepage boreholes if pollution is evident.
- ❑ Routine inspection of all infrastructure, specifically transformers filled with oil.

9.2 Site specific mitigation measures

A two phase (construction and operation) monitoring programme should be implemented. Details of the monitoring plan, including the proposed monitoring sites, are provided in Section 4 of the Geohydrological Report included in Appendix Q to this construction EMPr.

10. HERITAGE RESOURCES: SITE SPECIFIC MITIGATION MEASURES

10.1 Key concerns and general recommendations

No heritage resources were identified within a concerning distance of the proposed tower positions or the associated servitudes between the tower positions. However, in the event of an archaeological site or a cultural material being discovered during construction or operation, the measures detailed in the approved EMPr should be applied.

10.2 Site specific mitigation measures

No site-specific mitigation measures are required.

11. APPENDICIES

This EMP is to be read along with the following appendices to ensure the recommended mitigation measures and prescribed Eskom Standards are implemented throughout the construction phase of the proposed development:

APPENDIX A:	Eskom Environmental Management Strategy
APPENDIX B:	Eskom Technical Standards
APPENDIX C:	Environmental Authorisation 06 March 2015
APPENDIX D:	List of Landowners, Contact Details and Special Conditions
APPENDIX E:	Procedure for Vegetation Clearance and Maintenance
APPENDIX F:	Herbicide Management Policy
APPENDIX G:	Standard for the Safe Use of Herbicides and Pesticides
APPENDIX H:	Alien Vegetation Clearing Manual
APPENDIX I:	Fire Protection Association Guideline
APPENDIX J:	Fire Risk Management
APPENDIX K:	Access to Farms Standard
APPENDIX L:	Eskom Transmission Servitude Gates Standard
APPENDIX M:	Eskom Erosion Guidelines
APPENDIX N:	Eskom Standard for Transmission Lines Towers and Line Construction
APPENDIX O:	Eskom Transmission Bird Collision Prevention Guideline
APPENDIX P:	Specifications for Bird Flight Diverters
APPENDIX Q:	Specialist Walk Down Reports