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**REPORT ON**

**Environmental Management  
Programme for the  
Proposed upgrading of the 66kV  
network to 132kV network in the  
Hotazel, Kuruman and Kathu area,  
Northern Cape Province**

**Report No : 13167**

**Submitted to:**

Department of Environmental Affairs  
Private Bag X447  
Pretoria  
0001

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September 2015

13167

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## LIST OF ACROYNYS

Acronym	Description
BPEO	Best Practicable Environmental Option
BA	Basic Assessment
BAR	Basic Assessment Report
CA	Competent Authority
DEA	Department of Environmental Affairs
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
kV	Kilovolt
MS	Method Statement
NEMA	National Environmental Management Act 107 of 1998 (as amended)
NEMWA	National Environmental Management Waste Management Act 59 of 2008
NWA	National Water Act
OHS	Occupational Health and Safety Act 85 of 1993
PAIA	Promotion of Access to Information Act 2 of 2000
PPP	Public Participation Process
SHE	Safety, Health and Environment

## GLOSSARY OF TERMS

Term	Description
Best Practicable Environmental Option	Option that provides the most benefit or causes the least damage to the environment as a whole at a cost acceptable to society in the long term as well as in the short term.
Environment	Environment means 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 well-being.
Environmental Aspect	Element of an organization's activities or products or services that can

Term	Description
	interact with the environment.
Environmental Aspect	Element of an organization's activities or products or services that can interact with the environment.
Environmental Assessment Practitioner	Individual responsible for the planning, management, coordination or review of Environmental Impact Assessments, Strategic Environmental Assessments, Environmental Management Programmes or any other appropriate environmental instruments introduced through regulations.
Environmental Impact	Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's environmental aspects.
Interested and Affected Party	Interested and Affected Party for the purposes of Chapter 5 of the NEMA and in relation to the assessment of the environmental impact of a listed activity or related activity, means an interested and affected party contemplated in Section 24(4)(a)(v) of the NEMA and which includes - a) Any person, group of persons or organisation interested in or affected by such operation or activity; and b) Any organ of state that may have jurisdiction over any aspect of the operation or activity.
Pollution	Pollution means any change in the environment caused by - (i) substances; (ii) radioactive or other waves; or (iii) 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.

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## **1 INTRODUCTION**

### **1.1 Project Overview**

The proposed Upgrading of the 66kV network to 132kV network in the Hotazel, Kuruman and Kathu area project entails the decommissioning of and replacing the existing 66kV power line between the existing Hotazel Substation and Valley Substation with a 132kV power line. The proposed project also entails the construction of a new power line between the existing Valley Substation and the proposed Sekgame Switching Station. The upgrading of the network will necessitate the following to accommodate the 132kV distribution power line:

1. Upgrade of the existing 66 kV network to a 132 kV network between Hotazel Substation and Valley Substation south of Kuruman. Upgrading will include:
  - Construction of a 132kV Eldoret, Riries, Moffat and Valley substation next to existing 66kV substations;
  - Expansion of the existing Hotazel Substation;
  - Construction of a new Gamohaam substation between Riries substation and existing Mothibistad switching station;
  - Construction of a 132kV Mothibistad substation next to existing Mothibistad switching station;
  - Construction of 132kV power line between Hotazel Substation and Valley Substation.
2. Construction of a new 132 kV power line between the Valley Substation to the newly authorised Sekgame Switching Station, just south of Kathu.
3. Decommission the existing 66kV network between Hotazel and Valley Substations. This will include decommissioning of:
  - Existing 66kV infrastructure at the Hotazel substation;
  - Existing 66kV Eldoret, Riries, Asbes, Moffat and Valley substations;
  - Existing Mothibistad switching station;
  - Existing 66kV wooden pole power lines between Hotazel and Valley substations.

The proposed project will facilitate the strengthening Eskom's distribution network within the area. Furthermore the proposed project will also result in the construction of a circular feed which will ensure a secure supply in the event where one of the power lines experiences a fault. In addition to strengthening the national grid, the proposed project will also assist with ensuring adequate electricity supply to meet the growing energy demand associated with the planned mining activities in the area as well as planned developments in the local community. The proposed project will essentially result in the construction of a radial feed which will ensure a secure supply should one of the power lines experience a fault.

### **1.2 Proposed Corridor Routes**

As a means of ensuring that the preferred corridor route and Owing to the extent / length of the corridor routes between the existing Hotazel Substation and proposed Sekgame

Switching Station large area as well as ensuring the Best Practicable Environmental Option (BPEO) for the preferred corridor is identified, the following approach was adopted:

- Considering comments received from land owners whose property falls within or adjacent to the 1 kilometre buffer of the proposed corridors routes; and
- Specialists were instructed to assess key issues and impacts associated with each alternative corridor route (e.g. Hot-Eldo Alternative 1 and Hot-Eldo Alternative 2) between the existing and proposed substation and switching station, respectively. This allowed the EAP to gain a greater understanding of the baseline environmental conditions and anticipated environmental impacts specific to each corridor route section.

The alignment of the preferred corridor alternative is therefore an amalgamation of various sections between the substations, based on the sensitivity of the receiving environment and significance of potential impacts.

The preferred corridor alternative (see Table 1-1) is therefore considered as the preferred configuration of the corridor based on the sensitivity of the receiving environment, findings of Specialist Studies and comments received from I&APs<sup>1</sup>. The selection of the preferred corridor route was therefore done in a transparent manner and is supported by conclusive professional opinions.

**Table 1-1: Preferred Corridor Route Alternative**

<b>Preferred Alternative between the Hotazel Substation to Sekgame Switching Station</b>				
<b>Corridor Section</b>		<b>Latitude (S):</b>	<b>Longitude (E):</b>	
Hotazel Substation to Eldoret Substation Alternative 1	Starting point	27°13'10.010"S	23°4'59.220"E	
	Middle point	27°14'23.368"S	23°0'28.102"E	
	End point	27°20'22.046"S	23°10'52.752"E	
Eldoret Substation to Riries Substation Alternative 3	Starting point	27°13'10.010"S	23°04'59.220"E	
	Middle point	27°16'07.710"S	23°04'01.152"E	
	End point	27°20'22.046"S	23°10'52.752"E	
Riries Substation to Gamohaam Substation Alternative 1	Starting point	27°20'22.046"S	23°10'52.752"E	
	Middle point	27°21'41.470"S	23°16'15.355"E	
	End point	27°22'55.449"S	23°21'31.984"E	
Gamohaam Substation to Mothibistat Substation Alternative 1	Starting point	27°22'55.449"S	23°21'31.984"E	
	Middle point	27°24'38.670"S	23°26'06.720"E	
	End point	27°24'23.815"S	23°28'36.227"E	
Mothibistat Substation to Moffat Substation Alternative 1	Starting point	27°24'23.815"S	23°28'36.227"E	
	Middle point	27°28'06.090"S	23°26'56.100"E	
	End point	27°28'18.264"S	23°25'39.734"E	
Moffat Substation to Valley Substation Alternative 1	Starting point	27°28'18.264"S	23°25'39.734"E	
	Middle point	27°32'36.080"S	23°28'15.280"E	
	End point	27°38'30.303"S	23°22'15.995"E	
Valley Substation to	Starting point	27°38'30.303"S	23°22'15.995"E	

<sup>1</sup> I&APs: Interested and Affected Parties

Preferred Alternative between the Hotazel Substation to Sekgame Switching Station			
Corridor Section		Latitude (S):	Longitude (E):
Sekgame Switching Station Alternative 4	Middle point	27°43'17.738"S	23°13'15.738"E
	End point	27°46'35.744"S	23°03'55.194"E

**Table 1-2: Second Corridor Route Alternative**

Alternative 2 between the Hotazel Substation to Sekgame Switching Station			
Corridor Section		Latitude (S):	Longitude (E):
Hotazel Substation to Eldoret Substation Alternative 2	Starting point	27°12'19.891"S	22°57'30.361"E
	Middle point	27°12'10.904"S	23°01'21.745"E
	End point	27°13'10.010"S	23°04'59.220"E
Eldoret Substation to Riries Substation Corridor Alternative 1	Starting point	27°13'10.010"S	23°04'59.220"E
	Middle point	27°17'57.228"S	23°06'49.062"E
	End point	27°20'22.046"S	23°10'52.752"E
Riries Substation to Gamohaam Substation Corridor Alternative 2	Starting point	27°20'22.046"S	23°10'52.752"E
	Middle point	27°24'35.085"S	23°16'13.985"E
	End point	27°22'55.449"S	23°21'31.984"E
Gamohaam Substation to Mothibistat Substation Corridor Alternative 2	Starting point	27°22'55.449"S	23°21'31.984"E
	Middle point	27°25'13.920"S	23°26'06.280"E
	End point	27°24'23.815"S	23°28'36.227"E
Mothibistat Substation to Moffat Substation Corridor Alternative 2	Starting point	27°24'23.815"S	23°28'36.227"E
	Middle point	27°26'55.800"S	23°29'42.460"E
	End point	27°28'18.264"S	23°25'39.734"E
Moffat Substation to Valley Substation Corridor Alternative 2	Starting point	27°28'18.264"S	23°25'39.734"E
	Middle point	27°35'40.180"S	23°19'11.970"E
	End point	27°38'30.303"S	23°22'15.995"E
Valley Substation to Sekgame Switching Station Corridor Alternative 2	Starting point	27°38'30.303"S	23°22'15.995"E
	Middle point	27°43'21.170"S	23°11'57.570"E
	End point	27°46'35.744"S	23°03'55.194"E

## 2 CONTEXT OF DOCUMENT

As this draft Environmental Management Programme (EMPr) and the Basic Assessment Report (BAR) for the proposed project were prepared concurrently, the information that is provided in the BAR largely informed and provided the context for this document. It is advocated that draft EMPr be revised and updated subsequent to the granting of Environmental Authorisation and when more detailed project information relating to the exact power line alignment within the approved corridor becomes available. This aligned with the view of the Environmental Assessment Practitioner (EAP) that the EMPr should not be considered a static but rather a working document that requires review and amendment during the project lifecycle. Taking the aforementioned into account this EMPr is largely based on the mitigation measures proposed in the BAR, and subsequent to the granting of Environmental Authorisation (EA) any additional requirements stipulated in the EA.

It must be noted that this draft EMPr is intended to set out the mitigation measures so that the Competent Authority (CA) can determine whether the proposed mitigation and



management measures are likely to be effective. The effectiveness of the EMPr as a mitigation tool will largely be determined by its implementation (DEA, 2010:83).

### 3 DOCUMENT ROADMAP

This document has been structured and collated to conform to Regulation 33 of the National Environmental Management Act 107 of 1998 (NEMA) (as amended) Environmental Impact Assessment (EIA) Regulations 2010. The relevant document parts which addresses each of the aspects provided in Regulation 33 of the NEMA EIA Regulations 2010 is provided in Table 3-1. The requirements relating to an EMPr which are stipulated in the NEMA EIA Regulations 2010 has been taken into account during the preparation of this document. This was done to ensure that the CA (i.e. Department of the Environmental Affairs (DEA)) is provided with a comprehensive document that can be translated into a working / dynamic document during the Construction and Operational Phases of the proposed project.

**Table 3-1: Document Roadmap**

Regulation 33 of the NEMA EIA Regulations 2010			Relevant Document Part
Regulation 33	a	Details of -	
		(i) the person who prepared the environmental management programme; and	Part 4
		(ii) the expertise of that person to prepare an environmental management programme;	Part 4
Regulation 33	b	Information on any proposed management or mitigation measures that will be taken to address the environmental impacts that have been identified in a report contemplated by these Regulations, including environmental impacts or objectives in respect of -	
		(i) planning and design;	Part 14
		(ii) pre-construction and construction activities;	Part 14
		(iii) operation or undertaking of the activity;	Part 14
		(iv) rehabilitation of the environment; and	Part 14
		(v) closure, where relevant.	Not Applicable
Regulation 33 (c)		a detailed description of the aspects of the activity that are covered by the draft environmental management programme;	Part 13
Regulation 33 (d)		an identification of the persons who will be responsible for the implementation of the measures contemplated in paragraph (b);	Part 9 & Part 14
Regulation 33 (e)		proposed mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon;	Part 11 & Part 7

Regulation 33 of the NEMA EIA Regulations 2010		Relevant Document Part	
Regulation 33 (f)		as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development, including, where appropriate, concurrent or progressive rehabilitation measures;	Part 15
Regulation 33	(g)	a description of the manner in which it intends to -	
		(i) modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;	Part 11
		(ii) remedy the cause of pollution or degradation and migration of pollutants;	Part 14
		(iii) comply with any prescribed environmental management standards or practices;	Part 6
		(iv) comply with any applicable provisions of the Act regarding closure, where applicable;	Not Applicable
	(v)	comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;	Part 12
Regulation 33 (h)		time periods within which the measures contemplated in the environmental management programme must be implemented;	Part 14
Regulation 33 (i)		the process for managing any environmental damage, pollution, pumping and treatment of extraneous water or ecological degradation as a result of undertaking a listed activity;	Part 14
Regulation 33	(j)	an environmental awareness plan describing the manner in which -	
		(i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and	Part 10
	(ii)	risks must be dealt with in order to avoid pollution or the degradation of the environment;	Part 14
Regulation 33 (k)		where appropriate, closure plans, including closure objectives.	Not Applicable

## 4 DETAILS OF ENVIRONMENTAL ASSESSMENT PRACTITIONER

In keeping with the requirements of Regulation 16 and Regulation 17 of the NEMA EIA Regulations 2010 Eskom SOC Limited has appointed Zitholele Consulting (Pty) Ltd as the Environmental Assessment Practitioner (EAP) for the proposed project. Zitholele Consulting (Pty) Ltd has therefore been tasked to carry out the Basic Assessment (BA) Process for the proposed project, thereby managing the application.

### 4.1 Overview of Zitholele Consulting (Pty) Ltd

The Environmental Management Services Division is a dynamic and vibrant team of highly skilled, experienced and professionally registered Environmental Practitioners. Zitholele Consulting undertakes BA and Environmental Impact Assessment Processes according to the NEMA (as amended) regulatory requirements. Each project is assessed on its merits before the environmental process methodology is tailored to suit the requirements of the project. Zitholele utilises an unpretentious, comprehensive methodology for impact rating which is easily understood by stakeholders and the authorities. Our Environmental Authorisation (EA) Processes are conducted with the aim of identifying sensitive receiving environments, identifying significant potential impacts and providing practical and implementable mitigation measures.

### 4.2 Summary of EAP Expertise

Dr. Mathys Vosloo is the EAP for this project and holds a Ph.D. in Zoology. He is a well-qualified and technically proficient environmental and natural scientist with over 10 years in environmental management and consulting experience. He is a registered professional natural scientist (Pr. Sci. Nat.) with the South African Council for Natural Scientific Professionals. His experience ranges from EIA and Strategic Environmental Assessment services to project management and State of the Environment Reporting. Mathys has done numerous projects in the power generation, linear infrastructure and infrastructure development industries. An overview of the expertise and details of the key project team member who prepared this EMP is provided in Table 4-1.

**Table 4-1: Details of EAP on this project**

<b>Project Manager and EAP:</b>	Dr Mathys Vosloo
<b>Company Represented:</b>	Zitholele Consulting (Pty) Ltd
<b>Professional affiliation/registration:</b>	SACNASP Registered - Registration number: 400136/12
<b>Physical address:</b>	Building 1, Maxwell Office Park, Magwa Crescent West, Corner of Allandale Road & Maxwell Drive, Waterfall City, Midrand, 1685
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## 5 DETAILS OF PROJECT PROPONENT

The planned project is proposed by Eskom SOC Limited (hereafter referred to as Eskom), who is therefore the project proponent (i.e. applicant). Eskom, as the project proponent and subsequent holder of EA will be responsible for the implementation of the EMPr and the conditions provided in the EA. The details of the key individual representing Eskom are provided in the table below.

**Table 5-1: Details of Project Proponent**

<b>Applicant name:</b>	Eskom Holdings SOC Ltd
<b>Company Registration number:</b>	20002/015527/30
<b>Responsible person:</b>	Andrea van Gensen
<b>Responsible position:</b>	Environmental Manager
<b>Physical address:</b>	4 George Street, Kimberley, 8301
<b>Postal address:</b>	P.O. Box 606, Kimberley, 8301
<b>Telephone:</b>	053 830 5775
<b>Fax:</b>	086 539 5177
<b>E-mail:</b>	vgenseal@eskom.co.za

## 6 LEGISLATIVE FRAMEWORK

### 6.1 Applicable Legislation

Eskom is responsible for compliance with the provisions for duty of care and remediation of damage in accordance with Section 28 of NEMA and its obligations regarding the control of emergency incidents in terms of Section 30. Accordingly, the DEA must immediately be notified of an incident as defined in subsection 30(1) (a) of NEMA. Various environmental legislation and policies relate to the proposed activities, including the following listed in Table 6-1.

**Table 6-1: List of Applicable Legislation**

Title of legislation, policy or guideline		Applicability to the project	Administering authority	Date
<b>Acts</b>				
1.	The Constitution of the Republic of South Africa (Act 106 of 1998)	Section 24 of the Constitution of the Republic of South Africa provides for a comprehensive environmental right.	The Judiciary	1996
2.	National Environmental Management Act 107 of 1998 (NEMA) and subsequent amendments to the Act.	The NEMA (as amended) is regarded as South Africa's environmental framework legislation which provides for environmental management.	<ul style="list-style-type: none"> <li>• National Department of Environmental Affairs and Tourism; or</li> <li>• Provincial Department responsible for environmental affairs.</li> </ul>	1998
3.	NEMA Environmental Impact Assessment (EIA) Regulations 2010 (published in Government Notice No. R.543)	The Basic Assessment Process for the proposed project was carried out in accordance with the Regulations 21 - 23 of the NEMA EIA Regulations 2010.	<ul style="list-style-type: none"> <li>• National Department of Environmental Affairs and Tourism; or</li> <li>• Provincial Department responsible for environmental affairs.</li> </ul>	2010
4.	NEMA Listing Notice 1: List of activities and Competent Authorities identified in terms of Sections 24(2) and 24D (published in Government Notice No. R.544)	The proposed project activities trigger activities which are listed in Listing Notice 1. Environmental Authorisation is therefore required before these activities may be implemented.	<ul style="list-style-type: none"> <li>• National Department of Environmental Affairs and Tourism; or</li> <li>• Provincial Department responsible for environmental affairs.</li> </ul>	2010
5.	NEMA Amendments to the EIA Regulations Listing Notice 1 of 2010 (published in Government Notice No. R.922)	All amendments that have been made to the NEMA Listing Notice 1 was taken into account in determining which listed activities are triggered by the proposed project activities.	<ul style="list-style-type: none"> <li>• National Department of Environmental Affairs and Tourism; or</li> <li>• Provincial Department responsible for environmental affairs.</li> </ul>	2013

Title of legislation, policy or guideline		Applicability to the project	Administering authority	Date
6.	NEMA Listing Notice 3: List of activities and Competent Authorities identified in terms of Sections 24(2) and 24D (published in Government Notice No. R.546)	The proposed project activities trigger activities which are listed in Listing Notice 1. Taking the aforementioned into account Environmental Authorisation (EA) is therefore required before these activities may be implemented.	<ul style="list-style-type: none"> <li>• National Department of Environmental Affairs and Tourism; or</li> <li>• Provincial Department responsible for environmental affairs.</li> </ul>	2010
7.	National Water Act 36 of 1998 (NWA)	At certain points along the proposed corridor, the power line (e.g. pylons) structure may be placed within the extent of a watercourse. Placing the pylons within the extent of a watercourse is will trigger Section 21(c) and (i) of the NWA. All Water Uses which are listed in Section 21 of the NWA may not proceed without a Water Use License granted by the Department of Water and Sanitation.	Department of Water and Sanitation	1998
8.	National Environmental Management Waste Act 59 of 2008 (as amended) (NEMWA)	All requirements / provision concerning waste producing activities and the handling of waste, as provided in the NEMWA and the regulations thereunder must be conformed to.	<ul style="list-style-type: none"> <li>• National Department of Environmental Affairs and Tourism; for all matters relating to hazardous waste; or</li> <li>• Provincial Department responsible for environmental affairs for all matters relating to general waste.</li> </ul>	2008

	Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
9.	NEMWA National Norms and Standards for the Remediation of Contaminated Land and Soil Quality (Government Notice No. 331, 2 May 2014).	It is believed that the corridor section between the Valley and Sekgame Substations extends across areas that were previously mined for asbestos and derelict asbestos mines. Owing to the hazardous nature of asbestos, the remediation of any asbestos contaminated areas must be done in accordance with the NEMWA National Norms and Standards for the Remediation of Contaminated Land and Soil Quality (Government Notice No. 331, 2 May 2014).	<ul style="list-style-type: none"> <li>• National Department of Environmental Affairs and Tourism; for all matters relating to hazardous waste; or</li> <li>• Provincial Department responsible for environmental affairs for all matters relating to general waste.</li> </ul>	2014
10.	National Environmental Management: Biodiversity Act 10 of 2004	The National Environmental Management: Biodiversity Act 10 of 2004 is aimed at providing for the management and conservation of South Africa's biodiversity within the framework of the NEMA. All reasonable measures will be taken to ensure the conservation of the biodiversity within the approved corridor alternative.	National and Provincial Department of Environmental Affairs	2004
11.	National Heritage Resources Act 25 of 1999	The findings of the Heritage Impact Study indicated that the Rir-Gamo Alternative 2 ( <i>section between the Riries and Gamohaam Substations</i> ) extends across a site that is considered to be of heritage and archaeological value. As such the provisions in the NHRA relating to the protection and management of heritage resources applies to the proposed project.	The South African Heritage Resources Agency	1999

	Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
12.	National Veld and Forest Fires Act 101 of 1998	The National Veld and Forest Fires Act 101 of 1998 provides for a variety of institutions, methods and practices for achieving the purpose. All methods and mitigation measures aimed at preventing or controlling veldfires must be aligned with the veldfire prevention provisions provided in the National Veld and Forest Fires Act 101 of 1998.	Department of Agriculture, Forestry and Fisheries	1998
13.	Electricity Regulations Act 4 of 2006	<p>The primary objectives of the implementation of the proposed project includes the following:</p> <ul style="list-style-type: none"> <li>• Improve the reliability of the network and create capacity for new customers in the greater Kuruman area;</li> <li>• Facilitate the regulating and strengthening of the current unstable network; and</li> <li>• Ensure that electricity is available for the planned mining operations in the development area.</li> </ul> <p>The primary objectives of the proposed project are aligned with the objectives of the Electricity Regulations Act 4 of 2006, in particular with reference to Section 2(a) of the act which reads “<i>achieve the efficient, effective, sustainable and orderly development and operation of electricity supply infrastructure in South Africa</i>”.</p>	National Energy Regulator	2006



	Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
14.	National Energy Act 34 of 2008	<p>The primary objectives of the implementation of the proposed project includes the following:</p> <ul style="list-style-type: none"> <li>• Improve the reliability of the network and create capacity for new customers in the greater Kuruman area;</li> <li>• Facilitate the regulating and strengthening of the current unstable network; and</li> <li>• Ensure that electricity is available for the planned mining operations in the development area.</li> </ul> <p>The primary objectives of the proposed project are aligned with the objectives of the National Energy Act 34 of 2008, in particular with reference to the following objectives of the Act:</p> <ul style="list-style-type: none"> <li>• Section 2(a): ensure uninterrupted supply of energy to the Republic; and</li> <li>• Section 2(c): facilitate effective management of energy demand and its conservation;</li> </ul>	South African National Energy Development Institute.	2008
15.	Promotion of Access to Information Act 2 of 2000 (PAIA)	As per the NEMA EIA Regulations as well as the principles / objectives of the PAIA, the Basic Assessment Report as well as all supporting documentation (e.g. specialist studies) will be made available to the public.	National Department of Environmental Affairs	2000

Title of legislation, policy or guideline		Applicability to the project	Administering authority	Date
16.	Northern Cape Nature Conservation Act 9 of 2009	A number of mammal species recorded during the field work carried out for the Terrestrial Ecology Study are listed as either protected or specially protected under the Northern Cape Conservation Act 9 of 2009.	Provincial Department responsible for environmental affairs.	2009
17.	Occupational Health and Safety Act 85 of 1993	The Occupational Health and Safety (OHS) Act 85 of 1993 is primarily intended 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. All work that is carried out for the implementation of the project activities as well as during each phase of the project lifecycle should be carried out in accordance with the provisions of the OHS Act.	<ul style="list-style-type: none"> <li>• National Department of Labour; or</li> <li>• Provincial Department of Labour.</li> </ul>	1993
18.	Occupational Health and Safety Act 85 of 1993 Asbestos Regulations, 2001	It is believed that the corridor section between the Valley and Sekgame Substations extends across areas that were previously mined for asbestos and derelict asbestos mines. Accordingly the OHS Act Asbestos Regulations 2001 must be conformed with for any activity that may potentially expose any person to asbestos dust.	<ul style="list-style-type: none"> <li>• National Department of Labour; or</li> <li>• Provincial Department of Labour.</li> </ul>	2001
19.	Ga-Segonyana Local Municipality Integrated Development Plan	The Integrated Development Plan is intended to be the principal strategic planning instrument which guides planning and development, and informs budgeting and management decisions in the local authority over a five-year period.	Ga-Segonyana Local Municipality	2013/2014 Financial Year

	Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
Guidelines				
20.	Integrated Environmental Management Guideline Series (Guideline 5) Companion to the EIA Regulations 2010 published in Government Notice 805 (10 October 2012)	The aim of the guideline is to provide a detailed considerations of the practical implementation of the NEMA EIA Regulations 2010. The guideline also provides guidance and clarity on the EA Process to be followed and interpretation of the listed activities. The guideline was used as a reference document to the applicability of the NEMA EIA Regulations 2010 on the proposed project.	<ul style="list-style-type: none"> <li>• National Department of Environmental Affairs and Tourism; or</li> <li>• Provincial Department responsible for environmental affairs.</li> </ul>	2012
21.	Integrated Environmental Management Guideline Series (Guideline 7) Public Participation in the EIA Process published in Government Notice 805 (10 October 2012)	The guideline is intended to provide information on the benefits of public participation, the minimum legal requirements for the Public Participation Process (PPP), the steps of the PPP, guidelines for planning a PPP and a description of the roles and responsibilities of the various role-players. The guideline was referred to, to facilitate an adequate understanding of the execution of the PPP.	<ul style="list-style-type: none"> <li>• National Department of Environmental Affairs and Tourism; or</li> <li>• Provincial Department responsible for environmental affairs.</li> </ul>	2012
22.	Guide Asbestos Regulations 2001	The Guide to the Asbestos Regulation 2001 was referred to, to gain an understanding of the application of the Asbestos Regulations relating to the control and prevention of exposure to asbestos.	Department of Labour	2001

Title of legislation, policy or guideline		Applicability to the project	Administering authority	Date
23.	Criteria for determining Alternatives in Environmental Impact Assessment, Integrated Environmental Management, Information Series 11, Department of Environmental Affairs and Tourism	The guideline was referred to, to ensure that all key criteria for determining project alternatives have been taken into account in the BA Process for the proposed project.	<ul style="list-style-type: none"> <li>• National Department of Environmental Affairs and Tourism; or</li> <li>• Provincial Department responsible for environmental affairs.</li> </ul>	2004
24.	Environmental Management Plans, Integrated Environmental Management, Information Series 12, Department of Environmental Affairs and Tourism	The guideline aims to provide a generic introductory information source on the purpose, objectives and content of Environmental Management Plans.	<ul style="list-style-type: none"> <li>• National Department of Environmental Affairs and Tourism; or</li> <li>• Provincial Department responsible for environmental affairs.</li> </ul>	2004
<b>Municipal By-Laws</b>				
25.	Applicable by-laws of the Ga-Segonyana Local Municipality. At the time of preparing this report no municipal by-laws were available. However in the event where any municipal by-laws are promulgated subsequent to the submission of this report, these must be adhered to throughout the Construction and Operational Phases of the proposed project.	A by-law is considered as piece of legislation that is specific to the municipal area of jurisdiction. By-laws are intended to regulate the affairs and the services it provides within the municipal boundaries. A by-law is passed by the Council of a municipality.	Ga-Segonyana Local Municipality	N/A

## 6.2 List of activities associated with the project

This Basic Assessment Report will be submitted to the National Department of Environmental Affairs (DEA) for licensing of the listed activities triggered in the table below:

**Table 6-2: Detailed description of the listed activities associated with the project**

Listed activity as described in GN R.544, 545 and 546	Description of project activity
<p>1. GN R.544, 18 June 2010, Item 10(i): <i>The construction of facilities or infrastructure for the transmission and distribution of electricity</i> <i>(i) Outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kV.</i></p>	<p>The proposed project will comprise of the following overarching elements:</p> <ul style="list-style-type: none"> <li>• Infrastructure required for the distribution of electricity ~ <i>Upgrade of the existing 66kV network to a 132kV network, which will necessitate decommissioning the existing 66kV network;</i></li> <li>• Infrastructure required for the transmission of electricity ~ <i>extending the 132kV substation at the current site and decommissioning the 66kV infrastructure at the Eldoret, Riries, Moffat and Valley Substations. The existing Mothibistat Switching Station and Asbes Substation will be decommissioned;</i></li> <li>• Infrastructure required for the transmission of electricity ~ <i>Upgrading of the existing Mothibistat 132/22kV switching station to a substation</i></li> <li>• Infrastructure required for the transmission of electricity ~ <i>Construction of the Gamohaan 132/22kV Substation; and</i></li> <li>• Infrastructure required for the transmission of electricity ~ <i>Construction of the Sekgame Switching Station.</i></li> </ul> <p>The larger part of the power line corridor extends through areas that are situated outside the urban edge of surrounding towns and built-up areas.</p>
<p>2. GN R.544, 18 June 2010 Item 11(xi): <i>The construction of infrastructure or structures covering 50 m<sup>2</sup> or more, within a watercourse or within 32 meters of a watercourse.</i></p>	<p>The proposed corridor alternatives will either fall within the delineated buffer or extend through a watercourse along the corridor alternatives. Owing to technical considerations it may not be feasible to string the power line across a distance that will allow the pylons to be placed outside the extent of the watercourse crossing listed above. Furthermore the base of the pylon structure will cover an area in excess of 50 square meters, thereby exceeding the 50 square meters threshold that is defined in activity 11(xi) of Listing Notice 1.</p>

Listed activity as described in GN R.544, 545 and 546		Description of project activity
3.	GN R.544, 18 June 2010 Item 18(i): <i>The infilling or depositing of any material of more than 5m<sup>3</sup> into, or the dredging, excavation, removal, or moving of soils, sand, shells, shell grit, pebbles or rock of more than 5 m<sup>3</sup> from a watercourse.</i>	The construction activities associated with placing the pylons within the extent of the watercourses along the pylons will inherently necessitate the infilling and excavation of soil (in excess of 5m <sup>3</sup> from the watercourses). Also refer to point 2 of this table.
4.	GN R546 18 June 2010 Item 14(a)(i): <i>The clearance of an area of 5 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation.</i>	The clearing of vegetation within the working area along the power line corridor will extend over a distance in excess of a 150 kilometres. Taking into account the width of the working area within the corridor as well as the total distance of the power line, the clearing of vegetation within this area will exceed the 5 hectare threshold. The findings of the Ecology Specialist Study indicated that the species found within the study area largely comprises of vegetation species that are indigenous to the area.

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## **7 APPROACH TO CORRECTIVE ACTION**

### **7.1 Implementation of Corrective Action**

Checking and corrective action forms part of the environmental management function and is aimed at ensuring that the necessary environmental management activities are being implemented and that the desired outcomes are achieved. When non-conformities do occur that have a negative impact on the environment, these should be rectified by the implementation of corrective actions issued by the ECO and Project Manager within a reasonable or agreed period of time. All corrective actions need to be documented and the outcome photographed and included in the next report. Broadly, the mechanisms for addressing non-compliance that are provided for in the environmental specifications and associated contract documentation can be divided into the following categories:

- Controlling performance via the certification of payments;
- Requiring the Contractor to “make good”, at their own cost, any unjustifiable environmental degradation;
- Implementing a system of penalties to dissuade environmentally risky behaviours; and
- Removing environmentally non-compliant staff/ plant from site, or suspending part or all of the activities on site.
- To confirm, upon receipt of the Tender, that the Contractor has made sufficient allowance in his Tender Price for meeting the various environmental requirements.
- During the tender adjudication process for each Contract, each Contractor should be scored in terms of the aforementioned considerations and allocated an environmental competency score. This score should form a key consideration in the final decision-making regarding the award of the various contracts.

## **8 METHOD STATEMENTS**

A Method Statement (MS) must be compiled for every activity undertaken by the Contractor which poses a risk to the environment (natural, biophysical and social), and includes the following:

- The MS should be submitted at least 7 working days prior to the commencement of work to the ECO;
- A MS describes the scope of the intended work in a step by step description to ensure that the ECO / EO understand the Contractors intentions. This will enable them to assist in devising any mitigation measures which would minimise environmental impact during these tasks;

- 
- The ECO may require changes to a MS if it does not comply with the specification or if, in the reasonable opinion of the ECO, the proposal may result in, or carries a greater than reasonable risk of damage to the environment in excess of that permitted by the EMPr or any legislation;
  - The Contractor shall carry out the activities in accordance with the approved MS;
  - Approved MS shall be readily available on the site and shall be communicated to all relevant personnel;
  - Approval of the MS shall not absolve the Contractor from any of his obligations or responsibilities in terms of the contract;
  - No claim for delay or additional cost incurred by the Contractor shall be entertained due to inadequacy of a MS;
  - For each instance where it is requested that the Contractor submit a MS to the satisfaction of the ECO, the format should clearly indicate as a minimum the following:
    - Responsible person (Name and Identity Number) and an alternative (Name and Identity Number);
    - The applicable requirements provided in all legislation and policies which have a bearing on the proposed activities (refer to Table 6-1);
    - Training Requirements;
    - Timing of activities as per the Project / Construction Schedule;
    - Materials, plant and equipment to be used;
    - Proposed construction procedure, including the order in which the activities making up the procedure will be carried out, designed to implement the relevant environmental specifications;
    - The system to be implemented to ensure compliance with the above;
    - PPE required;
    - A detailed description of the process of work, methods and materials;
    - Emergency Procedures;
    - Response in the case of a non-compliance; and
    - Other information deemed necessary by the ECO.
  - All Method Statements must be signed by the Engineer; and
  - Work may not commence until the method statement has been approved by the ECO. All method statements will form part of the EMPr documentation and are subject to all terms and conditions contained within the EMPr main document.



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The following Method Statements shall be prepared by the Contractor for approval:

- **Site Layout:** The graphical representation with detailed notes of the location, layout and method of establishment of the construction camp must be provided and must include the following:
  - All Contractor's buildings, and/or offices;
  - Lay down areas;
  - Vehicle and plant storage areas, including wash areas;
  - Workshops, if required and approved by ECO;
  - Fuel storage and dispensing areas, if required and approved by ECO;
  - Cement/concrete batching areas, if required and approved by ECO (including the methods employed for the mixing of concrete and particularly the containment of runoff water from such areas and the method of transportation of concrete);
  - Other infrastructure required for the running of the project.
- **Access Routes:** Details, including a drawing, showing where and how the access points and routes will be located and managed must be provided in a Method Statement. Final locations of planned new access roads will be subject to successful negotiations with landowners. Details of fences and gates affected or used during the construction activities, including a drawing showing the location of fences and access gates must be provided.
- **Pollution control:** Expected solid waste types, quantities, methods and frequency of collection and disposal as well as location of disposal sites must be identified and stated in a Method Statement. The Method Statement shall further include methods of minimising, controlling, collecting and disposing of contaminated water, and details of any hazardous substances/materials to be used, together with the transport, storage, handling and disposal procedures for the substances.
- **Safety considerations:** The Contractor shall provide details identifying what safety precautions will be implemented to ensure the safety of all staff, and the general public at large, on site during the life of the project. This will include protective clothing requirements for all types of construction activities on site, including protection against dust, noise, falling objects, and work associated with electricity and working at heights.
- **Emergency procedures:** The Contractor shall provide details regarding all relevant emergency procedures that will be implemented for fire control and accidental leaks and spillages of hazardous substances (including fuel and oil). The Contractor shall further include details of risk reduction measures to be implemented including firefighting equipment, fire prevention procedures and spill kits.
- **Waste management control:** The Contractor shall provide details regarding how solid and liquid waste generated on the construction site and site camp will be collected,

stored, transported and disposed of. Details of any service provider(s) appointed to manage this task must also be provided.

- **Storm water and erosion control:** The Contractor shall provide details of how storm water emanating within or adjacent to the construction site may impact on construction activities. Details on how the Contractor will deal with storm water runoff and potential erosion within the construction footprint and servitude must be provided. Details of any service provider(s) appointed to manage this task must also be provided.

## 9 ROLES AND RESPONSIBILITIES

As the effectiveness of the EMPr as a mitigation tool will largely be determined by its implementation, it is fundamental that the roles and responsibilities for specific actions associated with mitigation are clearly defined and allocated. This section of the EMPr therefore specifies responsibilities for the management and mitigation actions contained in this EMPr.

### 9.1 Environmental Assessment Practitioner

Within the context of this EMPr the role of the Environmental Assessment Practitioner (EAP) is largely confined to ensuring that the document conforms to the requirements of Regulation 33 of the NEMA EIA Regulations 2010. Furthermore, in keeping with the instruction provided by the Competent Authority (i.e. Department of Environmental Affairs) in correspondence received from the DEA, dated 06 January 2015, this EMPr provides “remediation activities” (i.e. mitigation and management measures) which will be legally binding upon the granting of Environmental Authorisation (EA) by the DEA. Due diligence has been exercised to ensure that the EMPr meets the requirements of the relevant national and provincial standards and guidelines specific to Environmental Management Programmes / Plans.

### 9.2 Project Proponent

As the Proponent, Eskom must ensure that the implementation of all components of the proposed project complies with the requirements of the Environmental Authorisation (once received), this EMPr, as well as any obligations emanating from other relevant environmental legislation. It must be noted that Eskom cannot delegate out of this responsibility to adhere to these environmental conditions for the project. Accordingly, Eskom retains various key roles and responsibilities during the construction, maintenance and decommissioning of the substation and associated power line infrastructure. These are outlined below.

The Eskom Project Manager must:

- Be fully conversant with the EMPr in its entirety, the conditions of the Environmental Authorisation (once received), the EMPr and all relevant environmental legislation;

- 
- Ensure that all the specifications and, legal constraints pertaining to the project, specifically with regards to environment management, are highlighted to Eskom and its Contractor(s) so that they are aware of these; and
  - Ensure that the environmental specifications are correctly implemented throughout the project by means of site inspections and meetings. This will be documented as part of the site meeting minutes.

Eskom's Representative (Eskom's Construction Manager) must:

- Be fully conversant with the contents of the EMPr;
- Be fully knowledgeable with the contents and conditions of the Environmental Authorisation;
- Be fully conversant with the contents of the EMPr, specifically as articulated into the environmental specifications attached to each Contract;
- Be fully knowledgeable with the contents of all relevant environmental legislation and ensure compliance with these;
- Have overall responsibility of the environmental specifications and their proper implementation;
- Ensure that regular audits are conducted to confirm compliance with the environmental specifications;
- Ensure there is communication with the Eskom Project Manager or his delegate, the ECO and the relevant Site Engineers on matters concerning the environment; and
- Ensure that no actions are taken which will harm or may indirectly cause harm to the environment, and take steps to prevent pollution on the site.

### **9.3 Environmental Control Officer**

It must be ensured by the holder of the EA, that the appointed Environmental Control Officer (ECO) has appropriate qualifications and experience in the implementation of environmental management specifications. The appointed ECO must meet the following requirements:

- Have an appropriate Environmental Management / Science qualification / degree and be registered with a recognised professional affiliation (e.g. International Association of Impact Assessment and the South African Council for Natural Scientific Profession);
- Appropriate training and experience in the implementation of environmental management specifications; and

- 
- Have no vested interest in the proposed project.

The ECO's specific duties would include the following:

- Review and approval of Method Statements prepared by the Contractor for activities on the construction site;
- Conduct weekly site inspections / audits and record compliance / non-compliance with the management and mitigation measures provided in the EMPr and EA Conditions observed during the inspection;
- Based on the observations made during weekly site inspections issue site instructions to the contractor for any corrective actions which may be required;
- Document the findings of the site inspection / audits;
- Monthly Environmental Compliance Audit Reports should be submitted to the Competent Authority. The Environmental Compliance Report should provide an overview of any trends in non-compliance recorded;
- Develop and maintain an I&APs Complaints Register in which all complaints are recorded, as well as remedial action taken and the response provided to the I&APs;
- Verify that the management and mitigation measures provided in the EMPr as well as the EA Conditions have been communicated to, and are understood by all personnel on site including the Contractors and Sub-contractors;
- Report incidents which have lead / may lead to substantial danger to the surrounding communities /public or significant environmental damage, to the Competent Authority. Any remediation or corrective measures which have been / proposed to be implemented to prevent danger to the surrounding communities /public or significant environmental damage from occurring must also be reported to the Competent Authority;
- Maintain a record of environmental incidents (spills, impacts, legal transgressions etc.) as well as corrective and preventive actions taken, for submission to the Project Proponent and / or Competent Authority (upon request);
- Ensure that a copy of the approved revised EMPr and EA is kept onsite and is accessible to all personnel on site; and
- Provide Environmental Awareness Training to all personnel on site, Contractor and Sub-contractor. Documented proof of the Environmental Awareness Training as well as the content of the training must be kept onsite and should be made available to the

Competent Authority upon request. All visitors to the site (including project team members which are not based onsite), must undergo Environmental Induction before being permitted to the construction and associated area. The Environmental Induction should be structured so as to provide a condensed version of the comprehensive Environmental Awareness Training that will be provided to the workforce / onsite staff.

#### **9.4 Contractor and Sub-Contractors**

Where specific EMPr responsibilities are assigned to Contractors or Sub-contractors, these must be clearly stipulated and included in the contract documentation. Any construction activities or actions of onsite personnel which results in environmental damage, non-compliance with the EA and EMPr, must be reported to the project proponent by the Contractor. The roles and responsibilities of the Contractor will also include the following:

- To prepare Method Statements which sets out the manner in which the management actions contained in the EMPr will be implemented;
- Ensure that all sub-contractors and onsite personnel understand and are familiar with the management measures provided in the EMPr;
- Ensure that all mitigation and management measures relating to construction activities are implemented;
- Report any non-compliance with the EMPr and / or EA Conditions to the project proponent and ECO;
- Rehabilitate the construction footprint as well as any sensitive environment damage resulting from negligence on the part of the Contractor, to the satisfaction of the ECO; and
- All personnel shall be required to familiarise themselves with the content of this EMPr.

#### **9.5 Interested and Affected Parties**

The roles of I&APs will include the following:

- Request updates on the progress of the Construction Phase and the effectiveness of the EMPr implementation;
- Provide input into corrective actions where appropriate and to the revisions of the EMPr;
- Report any non-conformance with the EA Conditions and EMPr observed to the Competent Authority and ECO; and

- 
- Ensure that the communication platforms provided, such as the Community Consultative Forum are utilised to communicate any queries or concerns relating to the Construction Phase Activities.

## **9.6 Contractor's SHE Officer and Fire Officer**

The name and letter of appointment of the Contractors Safety Health and Environment (SHE) Officer and Fire Officer must be given to the ECO and the terms of reference for the work to be undertaken must be detailed including time on site, roles and responsibility, interaction with the Contractor and environmental offices, etc.

## **10 ENVIRONMENTAL AWARENESS PLAN**

Training is required for all personnel involved in the proposed project. This includes all employees working on the site including temporary labourers, contractors and subcontractors.

Training should cover:

- The importance of the EMPr;
- Specific details of the EMPr;
- Employees role in compliance with the EMPr;
- Environmental effects associated with the activities;
- Training targeted at specific personnel for example operators of heavy machinery;
- The environmental impacts, actual or potential, of their work activities;
- The environmental benefits of improved personal performance;
- Their roles and responsibilities in achieving conformance with the environmental policy and procedures;
- Emergency preparedness and response requirements;
- The potential consequences of departure from specified operating procedures;
- The mitigation measures required to be implemented when carrying out their work activities;
- Environmental legal requirements and obligations;
- Details regarding floral/faunal species of special concern and protected species, and the procedures to be followed should these be encountered;

- 
- The impacts and consequences of poaching of animals or removal of indigenous vegetation;
  - The importance of not littering;
  - The importance of using supplied toilet facilities;
  - The need to use water sparingly;
  - Details of and encouragement to minimise the production of waste and re-use, recover and recycle waste where possible.
  - Details regarding archaeological and/or historical sites which may be unearthed during construction and the procedures to be followed should such be encountered.

Training should be conducted by a suitably qualified person and if necessary in more than one language to ensure it is understood by all workers. Copies of the environmental training must be available on site in languages appropriate to the work force. Records of training session including attendance, nature of training and date of training should be kept to ensure all staff members have received the necessary training.

In addition to training, general environmental awareness must be fostered among the project's workforce to encourage the implementation of environmentally sound practices throughout its duration. Environmental awareness and training is an important aspect of the implementation of the EMPr.

Environmental awareness could be fostered in the following manner:

- Induction course for all workers on site, before commencing work on site.
- Refresher courses as and when required.
- Daily toolbox talks at the start of each day with all workers coming on site, where workers might be alerted to particular environmental concerns associated with their tasks for that day or the area/habitat in which they are working.
- Courses must be given by suitably qualified personnel and in a language and medium understood by workers/employees.

## **11 MONITORING**

This chapter deals with Compliance Monitoring as well as specific monitoring requirements, as per the Specialist Studies, during and after construction. The key to a successful EMPr is appropriate monitoring and review to ensure effective functioning of the EMPr and to identify and implement corrective measures in a timely manner. An audit of the environmental monitoring and management actions undertaken is essential to ensure that it is effective in operation, is meeting specified goals, and performs in accordance with relevant regulations and standards.

Regular monitoring of all the environmental management measures and components shall be carried out by the Eskom EO and independent ECO to ensure that the provisions of this plan are adhered to. Ongoing and regular reporting of the progress of implementation of this Programme should be done. Various points of compliance will be identified with regard to the various impacts that the construction will have on the environment.

Prior to the start of construction activities, an audit schedule should be drawn up, on basis of the environmental authorisation requirements and with input from ECO. The audit schedule should include target dates for implementation of recommendations and timeframes for submission to the Eskom Environmental Officer, Eskom appointed Project Manager and DEA. The audits should be timed to coincide with scheduled project meetings, where possible.

## **12 FINANCIAL PROVISIONING**

Section 30 of Chapter five of NEMA proposes penalties for non-compliance with the provisions of Chapter five. Any person who contravenes the regulations set out here or commits an offence as described in this section is liable for a fine or jail term. The responsible person, who is undertaking an activity, that contravenes these regulations, will be liable for these penalties. Fines and penalties shall be managed in accordance with the Public Management Finance Act.

A penalties and fines system shall be developed for this project and shall take the following in consideration:

- Penalties will be issued for the transgressions and non-compliances where the Contractor inflicts non-repairable damage upon the environment or fails to comply with any of the environmental specifications. The Contractor shall be liable to pay a penalty over and above any other contractual consequence.
- Penalties may be issued per incident at the discretion of the PM and ECO. The exact value of the penalty imposed shall be at the discretion of the PM and ECO, and enforcement shall be at the discretion of the Eskom Sustainability Division. The Contractor will also be responsible for remediation costs.
- Such fines will be issued in addition to any remedial costs incurred as a result of non-compliance with the EMPr. The PM will inform the Contractor of the contravention and the amount of the penalty, and will deduct the amount from monies due under the Contract.
- The PM and ECO shall be the judge as to what constitutes a transgression in terms of this clause subject to the provisions of the General Conditions of Contract.
- For each subsequent similar offence, the penalty may, at the discretion of the PM and ECO be doubled in value to a maximum value to be determined.



- Payment of any penalty in terms of the contract shall not absolve the offender from being liable from prosecution in terms of any law.

A guideline of minimum fine values is provided for minor, moderate and serious offences in Table 12-1 below.

**Table 12-1: Guideline to fines for minor, moderate and serious offences**

	<b>Offences</b>	<b>Fine</b>
<b>Minor offences</b>	<ul style="list-style-type: none"> <li>• Littering</li> <li>• Possession of intoxication substances on site.</li> <li>• Failure to use ablutions.</li> <li>• Moving on areas recently landscaped.</li> <li>• Disturbing grassed areas.</li> <li>• Not parking in demarcated areas.</li> <li>• Not using safety equipment</li> <li>• Wasting of water and electricity.</li> <li>• Not removing domestic waste off site.</li> <li>• Not stockpiling topsoil adequately.</li> </ul>	R 1500 - 00
<b>Moderate offences</b>	<ul style="list-style-type: none"> <li>• Oil spills</li> <li>• Persistent oil leaks on vehicles.</li> <li>• Generation of excessive dust and noise.</li> <li>• Transgression of the speed limit.</li> <li>• Illegal fires.</li> <li>• Burying of waste.</li> <li>• Use of intoxicate substances on site.</li> <li>• Lack of erosion control.</li> <li>• Entering non-demarcated areas.</li> <li>• Hunting and snaring.</li> <li>• Damaging of pre- identified trees.</li> </ul>	R 5000-00
<b>Serious offences</b>	<ul style="list-style-type: none"> <li>• Large oil/ hazardous waste spill.</li> <li>• Removal of pre-identified trees.</li> <li>• Damage of pre- identified heritage sites or objects.</li> <li>• Continually exceed noise limits.</li> <li>• Transgression of legal requirements.</li> <li>• Sanitation facilities not adequate.</li> <li>• Pollution of groundwater.</li> <li>• Removal of any protected plant or other species.</li> <li>• Damage or pollution of wetlands.</li> </ul>	R15 000.00

### 13 SUMMARY OF IMPACTS

Developing and the subsequent implementation of mitigation and management measures aimed specifically at avoiding, minimising or remedying adverse impacts on the receiving environment. It is therefore important that the management of the anticipated environmental remains the golden thread and central theme in this document. A summary of the anticipated environmental impacts associated with each of the project lifecycle phases of the proposed project that were identified during the Basic Assessment (BA) Process is presented in Table 13-1 and Table 13-2.

Table 13-1: Summary of Construction Phase Impacts

Id.	Impact	Description	Nature of Impact (Negative / Positive)	Management Objective / Principle	Level of Mitigation
<b>Construction Phase</b>					
1.	Disturbance and fragmentation of natural habitat.	Construction activities associated with the assembling of distribution towers as well as the site preparation for the upgrading and extending the existing 66kV Substations as well as the construction of the switching station will inherently necessitate the clearing of vegetation within the working area.	Negative	No disturbance to or loss of protected flora species outside of construction footprint / working area.	Minimise extent of impact.
2.	Exotic vegetation encroachment following soil disturbances.	Areas disturbed by vegetation clearing will create conditions conducive to the establishment of alien / invasive plant species.	Negative	Eradication of and prevention of the establishment of alien plants and invasive species.	Minimise extent of impact.
3.	Killing or injuring of fauna.	Increased human presence, movement of the construction vehicles as well as the operation of equipment will constitute an intrusion in the natural habitat of the fauna found within the development footprint and adjacent areas. Furthermore the aforementioned factors also represent possible sources of harm to fauna found within the development footprint and adjacent areas.	Negative	No harm that may be caused to the animal life by the execution of any construction and / or related activity.	Prevent the impact from transpiring.
4.	The power line, distribution towers extended existing substations and proposed switching station will constitute a visual obstruction / impact (i.e. adverse impact on visual receptors and visual resources).	The construction of the distribution towers, stringing the conductors between towers as well as extending the footprint of the existing and proposed substation and switching station (respectively) will result in a change in the existing atmosphere, landscape character and sense of place.	Negative	Ensure the implementation of all reasonable management measures to reduce the significance of the impact on the aesthetic character of the area. No complaints raised by I&APs <sup>2</sup> relating specifically to the impacts to visual quality associated with the proposed project.	Minimise extent of impact.

<sup>2</sup> I&APs: Interested and Affected Parties

Id.	Impact	Description	Nature of Impact (Negative / Positive)	Management Objective / Principle	Level of Mitigation
<b>Construction Phase</b>					
5.	Exposure to airborne asbestos fibres from abandoned and un-rehabilitated asbestos mines and randomly discarded asbestos fibre dumps. The inhalation of asbestos fibres adversely affects the respiratory system.	<p><b>Description</b> It cannot be said with certainty whether the derelict Wandrag and Bosrand Asbestos Mines which are situated along the Riries-Gamohaam Alternative 2 and Moffat-Valley Alternative 2 (<i>respectively</i>) corridor routes have been rehabilitated to the satisfaction of the Department of Mineral Resources. The condition of the remaining infrastructure at the abandoned asbestos mines however suggests that these mines have not been rehabilitated and therefore the risk of exposure to airborne asbestos fibres from the abandoned, unrehabilitated mines and discarded asbestos fibre dumps and associated health risks cannot be ruled out. Furthermore owing to the significance of the environmental impacts posed by unrehabilitated abandoned asbestos mines, aligning the power line route to bypass the derelict Wandrag and Bosrand Asbestos Mines is considered the Best Practicable Environmental Option.</p> <p><b>Visual Observations</b> The infrastructure and remains of the old Wandrag Asbestos Mine were identified at this location. The infrastructure included several houses, offices, a labour compound and storerooms. The staff accommodation is still in use and the houses are being occupied. The labour compound and several other structures are not being used and are in a derelict state. The remains and some of the infrastructure of the old Bosrand Asbestos Mine were identified at this location. Several mine dumps were situated next to the road and some derelict structures were situated on the other side of the road.</p>	Negative	Aligning the power line route between the Riries Substation and Valley Substation so as to bypass the derelict Wandrag and Bosrand Asbestos Mines. No human exposure to airborne asbestos fibres.	Prevent the impact from transpiring.

Id.	Impact	Description	Nature of Impact (Negative / Positive)	Management Objective / Principle	Level of Mitigation
<b>Construction Phase</b>					
6.	The nature of the construction activities (e.g. excavations, site clearing) associated with the assembly of distribution towers, upgrading of the substations and construction of the switching station may damage and disturb sites of heritage importance.	The nature of the activities to be carried out during construction of the distribution towers including clearing of vegetation within the working area and excavations may heritage resources, including ( <i>but not limited to</i> ) the following: <ul style="list-style-type: none"> <li>• Cemeteries;</li> <li>• Historic farmsteads;</li> <li>• Historic asbestos mines;</li> <li>• Sacred / religious sites;</li> <li>• Provincial Monuments; and</li> <li>• Memorial Sites.</li> </ul>	Negative	No disturbance to or damaging sites of heritage importance.	Prevent the impact from transpiring.
7.	The nature of the construction activities and magnitude of the proposed project activities inherently have the potential to impact on the health and safety of the construction workers and the community.	Unsafe working conditions and the absence of a Health and Safety Plan may result in injury to workers and loss of life.	Negative	Provision of a safe working environment to construction workers and the public.	Prevent the impact from transpiring.
8.	Ensure that the local communities benefit from employment opportunities that are generated during the Construction Phase.	Ensure that the local communities benefit from employment opportunities that are generated during the Construction Phase.	Positive	Ensure that the local communities benefit from employment opportunities that are generated during the Construction Phase.	None required.
9.	The intrinsic nature of construction activities will generate domestic and solid waste.	The inappropriate storage and disposal of solid waste will result in environmental pollution.	Negative	The adoption of the waste management hierarchy will result in continual reduced volumes of waste being generated and disposed of at an appropriate, registered landfill site.	Minimise extent of impact.

Id.	Impact	Description	Nature of Impact (Negative / Positive)	Management Objective / Principle	Level of Mitigation
<b>Construction Phase</b>					
10.	Erosion of stockpiled topsoil and disturbance of soils due to vegetation stripping leading to erosion and habitat inundation.	All bare and exposed areas will be vulnerable to erosion.	Negative	Ensure that all reasonable measures are taken to prevent any impacts on the characteristics of the watercourses associated with the development area.	Reduce the extent of the impact.
11.	Soil stripping, soil compaction and vegetation removal will increase rates of erosion and entry of sediment into the general aquatic ecosystem.	All bare and exposed areas will be vulnerable to erosion.	Negative	Ensure that all reasonable measures are taken to prevent any impacts on the characteristics of the watercourses associated with the development area.	Reduce the extent of the impact.
12.	Biodiversity impacts due to riparian vegetation loss.	Power line corridors may be placed within the extent of a watercourse.	Negative	Ensure that all reasonable measures are taken to prevent any impacts on the characteristics of the watercourses associated with the development area.	Reduce the extent of the impact.
13.	Impacts on riparian vegetation leading to decrease in runoff filtration.	Site preparation activities will necessitate the clearing of vegetation.	Negative	Ensure that all reasonable measures are taken to prevent any impacts on the characteristics of the watercourses associated with the development area.	Reduce the extent of the impact.
14.	Poorly designed watercourse crossings that will create perpetuating impacts on the aquatic systems.	Poorly designed watercourse crossings that will create perpetuating impacts on the aquatic systems.	Negative	Formal watercourse crossings must be structurally sound to withstand expected flooding regimes of the aquatic system. Adequate culvert capacity must be provided to ensure effects of increased water velocity through the culverts due to restrictions must be provided. This would typically lead to erosion of the watercourse.	Reduce the extent of the impact.

Id.	Impact	Description	Nature of Impact (Negative / Positive)	Management Objective / Principle	Level of Mitigation
<b>Construction Phase</b>					
15.	Contamination of surface water features leading to loss of sensitive biota.	Sediment laden runoff from construction areas will result in elevated levels suspended solids in the watercourse.	Negative	Ensure that all reasonable measures are taken to prevent any impacts on the characteristics of the watercourses associated with the development area.	Reduce the extent of the impact.
16.	Destruction of aquatic habitat to accommodate towers and overhead power lines	Depending on the maximum power line corridors may be placed within the extent of a watercourse.	Negative	Ensure that all reasonable measures are taken to prevent any impacts on the characteristics of the watercourses associated with the development area.	Reduce the extent of the impact.
17.	The increased noise levels caused by the movement of construction activities, construction vehicles and heavy machinery as well as construction personnel, and which is audible by the surrounding receptors may cause a nuisance and disturbance.	The movement of construction activities, construction vehicles and heavy machinery as well as construction personnel will alter the ambient noise levels in the area.	Negative	Increased noise levels must be maintained below levels which will be audible by the surrounding receptors.	Minimise extent of impact.
18.	The release of pollutants generated by gaseous emissions and the release of particulate matter into the air, will reduce the quality of air in the immediate areas surrounding the construction footprint.	The movement of construction vehicles across bare soil surfaces and the exhaust fumes gaseous pollutants (e.g. sulphur dioxide) released from vehicle exhausts will alter the ambient air quality of the immediate area. High wind speeds is likely to generate dust particles from topsoil and spoil stockpiles.	Negative	It must be ensured that the volumes of dust generated by the construction and associated activities, do not exceed the National Ambient Air Quality Standards and Minimum Emissions Standards and may not result in any adverse impacts on human health.	Prevent the impact from transpiring.

Table 13-2: Summary of Operational Phase Impacts

Id.	Impact	Description	Nature of Impact (Negative / Positive)	Management Objective / Principle	Level of Mitigation
<b>Operational Phase</b>					
19.	Loss of vegetation due to veld fires.	Ignition of veld due to conductor failure or flash overs.	Negative	Regular inspections and maintenance to ensure the integrity of the power line.	Prevent the impact from transpiring.
20.	Killing or injuring of avifauna	Electrocution of avifauna and collisions with the conductor.	Negative	Regular inspections and maintenance to ensure the integrity of the power line.	Prevent the impact from transpiring.
21.	Poor management on Eskom servitude gates exposes landowners to illegal trespassers and provides access to criminals and creates a poaching risk.	Poor management on Eskom servitude gates exposes landowners to illegal trespassers and provides access to criminals.	Negative	Servitude maintenance to be carried out regularly.	Prevent the impact from transpiring.
22.	Faulting causing loss of stable electricity supply i.e. outages which impacts negatively on businesses hospitals, schools etc.	Faulting causing loss of stable electricity supply i.e. outages which impacts negatively on businesses hospitals, schools etc.	Negative	Regular inspections and maintenance to ensure the integrity of the power line.	Prevent the impact from transpiring.

Table 13-3: Summary of Decommissioning Phase Impacts

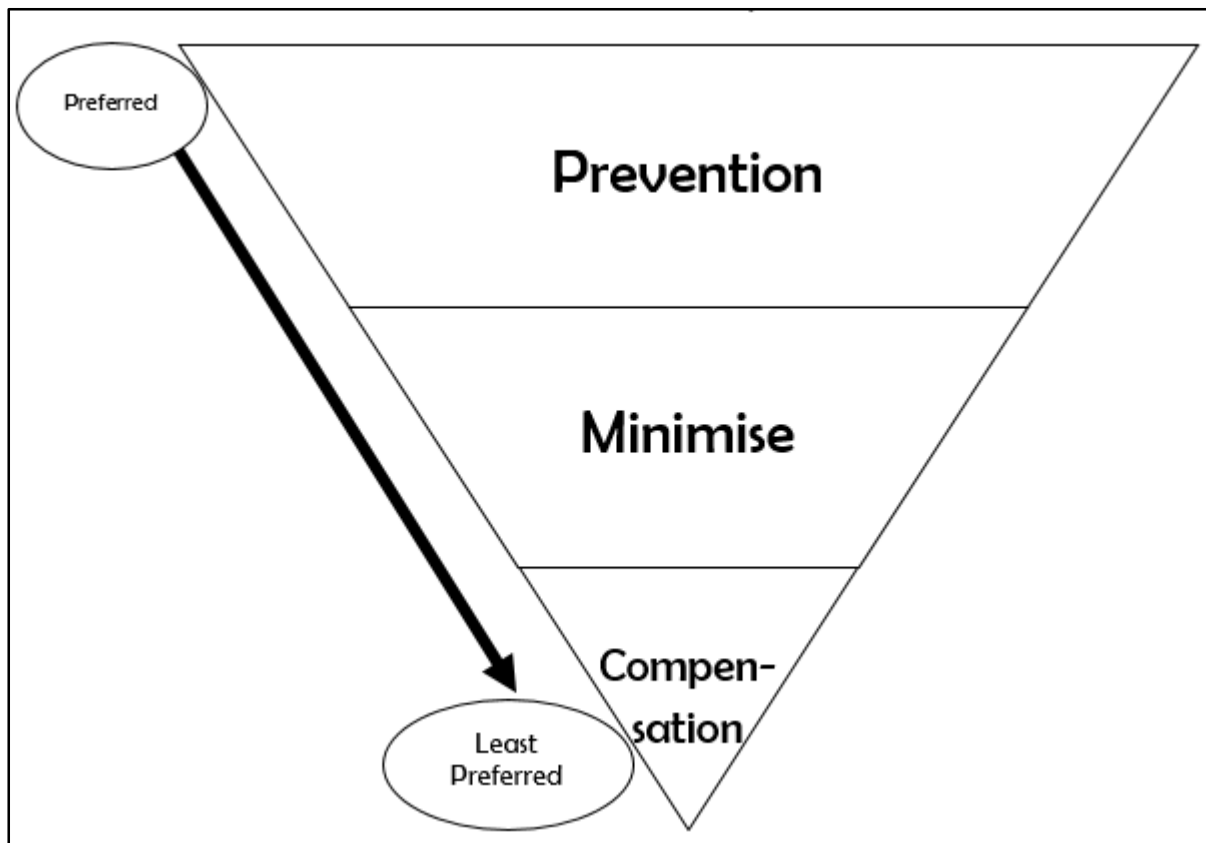
NB: The impacts below have been determined for the decommissioning of the redundant 66kV infrastructure once the 132kV network has become operational is included in this application for environmental authorisation. All activities relating to the future decommissioning of the power line infrastructure does not form part of this application and as such would be subject to a separate Environmental Authorisation Process.

Id.	Impact	Description	Nature of Impact (Negative / Positive)	Management Objective / Principle	Level of Mitigation
<b>Decommissioning Phase</b>					
1.	Disturbance and fragmentation of natural habitat.	Activities associated with the decommissioning of existing 66kV infrastructure will inherently necessitate the clearing of vegetation within the working area.	Negative	No disturbance to or loss of protected flora species outside of the 31m servitude area.	Minimise extent of impact.
2.	Exotic vegetation encroachment following soil disturbances.	Areas disturbed by vegetation clearing will create conditions conducive to the establishment of alien / invasive plant species.	Negative	Eradication of and prevention of the establishment of alien plants and invasive species.	Minimise extent of impact.
3.	Soil stripping, soil compaction and vegetation removal will increase rates of erosion and entry of sediment into the general aquatic ecosystem.	All bare and exposed areas will be vulnerable to erosion.	Negative	Ensure that all reasonable measures are taken to prevent any impacts on the characteristics of the watercourses associated with the decommissioning footprint area.	Reduce the extent of the impact.
4.	Killing or injuring of fauna.	Increased human presence, movement of the vehicles as well as the operation of equipment will constitute an intrusion in the natural habitat of the fauna and represent possible sources of harm to fauna found within the decommissioning footprint and adjacent areas.	Negative	No harm that may be caused to the animal life by the execution of any decommissioning and / or related activity.	Prevent the impact from transpiring.
5.	Visual impacts from the decommissioning activities	Decommissioning of the redundant 66kV distribution lines, existing substations and switching stations will result in a change in the existing atmosphere, landscape character and sense of place.	Negative	Ensure the implementation of all reasonable management measures to reduce negative visual impacts and enhance the aesthetic character of the area during and after the decommissioning phase.	Minimise extent of impact.



6.	The intrinsic nature of decommissioning activities will generate domestic and solid waste.	The inappropriate storage and disposal of solid waste will result in environmental pollution.	Negative	The adoption of the waste management hierarchy will result in continual reduced volumes of waste being generated and disposed of at an appropriate, registered landfill site.	Minimise extent of impact.
7.	The increased noise levels caused by the decommissioning activities, vehicles and heavy machinery as well as workers, which may be audible by the surrounding receptors may cause a nuisance and disturbance.	The activities associated with the decommissioning phase, will temporarily alter the ambient noise levels in the area.	Negative	Increased noise levels must be maintained below levels which will be audible by the surrounding receptors.	Minimise extent of impact.
8.	The release of pollutants generated by gaseous emissions and the release of particulate matter into the air, will reduce the quality of air in the immediate areas surrounding the decommissioning footprint.	The movement of vehicles across bare soil surfaces and the exhaust fumes gaseous pollutants (e.g. sulphur dioxide) released from vehicle exhausts will alter the ambient air quality of the immediate area. High wind speeds is likely to generate dust particles from topsoil and spoil stockpiles.	Negative	It must be ensured that the volumes of dust generated by the decommissioning and associated activities, do not exceed the National Ambient Air Quality Standards and Minimum Emissions Standards and may not result in any adverse impacts on human health. Dust suppression during movement of vehicles must be undertaken when necessary.	Prevent the impact from transpiring.

A comprehensive description of and significance rating of the environmental impacts before and after the implementation of mitigation measures is provided in the Final BA Report. Furthermore the application of the mitigation hierarchy (see Figure 12-1) which is widely regarded as a best practice approach to managing environmental impacts will also be central to the implementation of the EMPr. As per the mitigation hierarchy, efforts should firstly be made to prevent or avoid impacts to, where prevention of the impact is not possible the mitigation measures are aimed at reducing the significance of the impact.



**Figure 13-1: Mitigation Hierarchy**

## **14 ENVIRONMENTAL MANAGEMENT PLAN**

It was the intention of the EAP to produce an EMPr that is practical and which can be easily implemented post EA. Furthermore the EAP has also drawn on methods that have been proven to be effective in minimising, managing and controlling environmental impacts (refer to Section 12) as well as from the specialist input received. The EMPr is therefore essentially an action plan that deals with the measures required to mitigate and manage impacts and therefore provides detail of:

- The mitigation measures (what needs to be done and how);

- 
- Roles and responsibilities for implementation (by whom actions need to be undertaken);
  - Timeframe or programme (by when actions need to be completed or if they are ongoing);  
and
  - Monitoring requirements.

It must be noted that this draft EMPr is intended to set out the mitigation measures so that the Competent Authority (CA) can determine whether the proposed mitigation and management measures are likely to be effective. The effectiveness of the EMPr as a mitigation tool will largely be determined by its implementation (DEA, 2010:83). The management measures documented in each of the sub-sections below have been compiled using the following information:

- Impact Assessment and mitigation measures documented in the BAR for the proposed substation and associated 132 kV lines;
- Mitigation and management recommendations provided by the specialist studies.

In addition to the abovementioned information sources, the EMPr will be updated to include the conditions documented in the EA to be received upon approval of the BA. Refer to the table below for mitigation and management measures proposed for potential impacts predicted during the project lifecycle. The mitigation and management measures relating to each anticipated impact (refer to Table **13-1** and Table **13-2**) is described in Table **14-1** and Table **14-2**. To facilitate cross-referencing, each identified Listed Activity was assigned a reference number, as indicated in the first column of Table **13-1** and Table **13-2**, below.

Table 14-1: Construction Phase - Mitigation and Management Measures

Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Construction Phase</b>					
1.	Construction Phase	Disturbance and fragmentation of natural habitat.	<ul style="list-style-type: none"> <li>• The clearing of vegetation at proposed substation sites and at pylon footprints should be kept to a minimum necessary for construction. No unnecessary clearing should be permitted outside of these areas.</li> <li>• Where proposed power line corridors lie adjacent to existing linear infrastructure/disturbances (e.g. power lines and roads) these new corridors should be as closely aligned to the existing corridors.</li> <li>• The width of the power line corridors where woody vegetation is actively maintained during the operational phase must be kept to an absolute minimum that permits safe operation of the power line.</li> <li>• The power line servitudes within each of the preferred corridors should be aligned to avoid sensitive ecological features.</li> <li>• A walkdown of each preferred power line corridor, prior to servitude finalisation, thus needs to be undertaken by an ecological specialist to identify sensitive ecological features and to guide the alignment the actual power line servitude to avoid these features. Sensitive ecological features may inter alia include: <ul style="list-style-type: none"> <li>• Large protected tree specimens;</li> <li>• Prominent protected tree patches, specifically <i>Acacia erioloba</i> woodland patches;</li> <li>• Raptor nests and large Sociable Weaver nests; and</li> <li>• If clearing of plant species of conservation importance is unavoidable, a removal permit from the relevant authority must be obtained. For species listed under the provinces ordinances, the relevant authority is the Northern Cape Department of Environment and Nature Conservation.</li> </ul> </li> </ul>	Contractor & Proponent	Duration of Construction Phase.

Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Construction Phase</b>					
			<p>For protected trees, the National Department of Agriculture, Forestry and Fisheries is the relevant authority. For regional Red List species and those listed under NEMBA the National Department of Environmental Affairs is the relevant authority.</p> <ul style="list-style-type: none"> <li>• An ECO needs to be appointed during construction to oversee the recommendations provided by the ecological specialist following the corridor walkdown regarding, inter alia, power line alignment in relation to sensitive features and obtaining removal/relocation permits.</li> <li>• Employees and contractors should be prevented from harvesting natural products.</li> <li>• Alternative wood fuel should be supplied to employees and contractors to prevent the collecting of <i>Acacia erioloba</i> wood for fuel.</li> </ul>		
2.	Construction Phase	Exotic vegetation encroachment following soil disturbances.	<ul style="list-style-type: none"> <li>• Vegetation cover should be retained for as long as possible, and vegetation clearance should occur in a phased manner from one side of the site to the other.</li> <li>• The movement of construction vehicles and the use of equipment should only be permitted on predetermined access routes and predetermined area, respectively, thereby limiting the area disturbance and necessity for the removal of vegetation.</li> <li>• The removal of vegetation, in particular protected and endangered species outside the construction footprint will not be permitted.</li> <li>• All reasonable measures must be taken to control and eradicate any alien invasive species that has been listed in terms of Section 70(1) of the National Environmental Management Biodiversity Act (10 of 2004). The relevant Competent Authority must be notified of the occurrence of any listed invasive species occurring and be provided with an Alien</li> </ul>	Contractor & Proponent	Duration of Construction Phase.

Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Construction Phase</b>					
			<p>Invasive Control and Management Plan.</p> <ul style="list-style-type: none"> <li>The reseeding (indigenous vegetation) of disturbed areas should be carried out at the end of the dry season to ensure optimum conditions for germination and rapid vegetation establishment.</li> </ul>		
3.	Construction Phase	Killing or injuring of fauna.	<ul style="list-style-type: none"> <li>An ECO or professionally trained individual should be available during the construction phase to manage any wildlife-human interactions.</li> <li>A low speed limit should be enforced on site to reduce wildlife-collisions.</li> <li>Employees and contractors should be made aware of the presence of, and rules regarding fauna and the prohibition of hunting through suitable induction training.</li> <li>No clearing of large Sociable Weaver nests or raptor nests should be permitted. New power lines should be aligned to avoid the clearing of trees containing Sociable Weaver and raptor nests.</li> <li>Power lines should be designed to be 'raptor friendly' Devices/designs that could be considered include staggered insulators, raptor-protectors and/or perch deterrents. The Endangered Wildlife Trust's</li> <li>Birds of Prey Programme should be consulted in this regard.</li> </ul>	Contractor, Proponent & ECO	Duration of Construction Phase.
4.	Construction Phase	The power line, distribution towers extended existing substations and proposed switching station will constitute a visual obstruction / impact (i.e. adverse impact on visual receptors and visual resources).	<ul style="list-style-type: none"> <li>The stockpiles may not exceed a height of 1.5 meters, thereby reducing the visibility of the stockpiles beyond the demarcated stock area. Where practical stockpiles should also be located in areas which are not in the line of sight of surrounding land users;</li> <li>The movement of construction vehicles and workers must as far as reasonably possible be restricted to the immediate site and access roads;</li> <li>As far as reasonably possible construction activities should be confined to daylight hours. In the event where construction</li> </ul>	Contractor	Duration of Construction Phase.

Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Construction Phase</b>					
			<p>activities cannot be confined to daylight hours all Interested and Affected Parties should be notified of the extended working hours, which will be approved by the ECO and project manager, and provided with the reason for the extended working hours, at least 24 hours beforehand;</p> <ul style="list-style-type: none"> <li>• It must be ensured that rubble, litter and construction rubble are collected and appropriately stored until the collection and disposal thereof at an appropriate registered landfill site;</li> <li>• Appropriately site the construction camp as well as other storage areas and consider screening through the erection of shade cloth; and</li> <li>• The visual intrusion associated with lighting of the construction site must be managed through the implementation of the following (but not limited to):                             <ul style="list-style-type: none"> <li>• The light fixtures must be mounted to face downwards and only be erected where lighting is necessary; and</li> <li>• Making use of motion detectors on security lighting, to ensure that area remains dark until lighting is required for security purposes.</li> <li>• Security lighting should only be used where absolutely necessary and carefully directed.</li> <li>• The negative impact of night lighting, glare and spotlight effects, can be mitigated using the following methods:</li> <li>• Install light fixtures that provide precisely directed illumination to reduce light “spillage” beyond the immediate surrounds of the project.</li> <li>• Avoid using bright, white colour lights where possible. Preferably use lights emitting a yellow light which travels less than white coloured lights.</li> <li>• Avoid high pole top security lighting where possible.</li> </ul> </li> <li>• Areas of disturbance must be reduced as far as possible during the construction phase.</li> </ul>		

Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Construction Phase</b>					
			<ul style="list-style-type: none"> <li>• Retain as much as possible of the existing vegetation along the substation footprint as possible.</li> <li>• Implement dust suppression techniques at all times.</li> <li>• Rehabilitate / restore exposed areas as soon as possible after construction activities are complete.</li> <li>• Only indigenous vegetation should be used for rehabilitation / landscaping purposes.</li> </ul>		
5.	Construction Phase	Exposure to airborne asbestos fibres from abandoned and un-rehabilitated asbestos mines and randomly discarded asbestos fibre dumps. The inhalation of asbestos fibres adversely affects the respiratory system.	<ul style="list-style-type: none"> <li>• It is believed that the corridor section between the Valley Substation and Sekgame switching station extends across areas that were previously mined for asbestos and derelict asbestos mines. Accordingly, the OHS Act Asbestos Regulations 2001 must be conformed with for any activity that may potentially expose any person to asbestos dust.</li> <li>• Eskom's Management of Asbestos Standard (Ref: 34-1544) must also be adhered to at all times during construction and maintenance activities.</li> </ul>	Contractor & Proponent	Duration of Construction Phase.
6.	Construction Phase	The nature of the construction activities (e.g. excavations, site clearing) associated with the assembly of distribution towers, upgrading of the substations and construction of the switching station may damage and disturb sites of heritage importance.	<ul style="list-style-type: none"> <li>• In the event where cemeteries cannot be excluded from the development footprint a grave relocation process must be implemented.</li> <li>• Mitigation in the form of a watching brief and monitoring at these sites during construction if any construction is to take place closer than 100 meters from Historical Structures;</li> <li>• All Historical Structures will require a destruction permit under Section 34 of the NHRA. The permit will entail initial documentation of the layout and condition of the structures and its structures with layout sketches and detailed photography, after which the destruction permit can be applied for with the backing of the documentary evidence. A qualified heritage practitioner must assist with the preparation of the required documentation.</li> <li>• If the Riries-Gamohaam Alternative 2 is considered and selected a consultation process with local spiritual and religious</li> </ul>	Contractor	Duration of Construction Phase.



Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Construction Phase</b>					
			<p>groupings will be required to consult on the possible impacts and consequences of construction activities on the site and intangible heritage.</p> <ul style="list-style-type: none"> <li>• Mitigation in the form of a watching brief and monitoring at these sites during construction if any construction is to take place closer than 200 meters from the Moffat Mission site. A buffer of at least 500 meters must be kept from the monument. This distance can however be negotiated with the Provincial Heritage Authority – Heritage Northern Cape.</li> <li>• These derelict asbestos mines are considered as Historic Mine and structures and are protected under Section 34 of the NHRA. Due to the sensitive nature of asbestos and its history of negative health effects, heritage mitigation efforts will be prohibitively expensive, and avoidances of these areas is recommended.</li> <li>• An analysis of the SAHRIS paleontological sensitivity map indicates that 70% of the study area is underlain by paleontological sensitive geology. Interpreting this data according to the SAHRIS guidelines indicates that a field assessment and protocol for finds will be required for large sections of the alternative alignments. It is recommended that a full Paleontological Impact Assessment be initiated during the pre-construction phase when the heritage walk down of the final alignment will be done.</li> </ul>		
7.	Construction Phase	The nature of the construction activities and magnitude of the proposed project activities inherently have the potential to impact on the health and safety of the construction workers and the community.	<ul style="list-style-type: none"> <li>• The safety of all construction and operational personnel, as well as any member of the public on the site is the responsibility of the Contractor. The Contractor shall also ensure the site is managed to ensure the unauthorised persons does not come to harm;</li> <li>• Control access onto and off the site by means of a register system;</li> <li>• Ensure that first aid / emergency facilities / procedures are in</li> </ul>	Contractor	Duration of Construction Phase.

Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Construction Phase</b>					
			<p>place;</p> <ul style="list-style-type: none"> <li>• Ensure that all personnel are trained in basic site safety procedures;</li> <li>• A register with contact numbers of all people employed and one emergency contact person for each employee;</li> <li>• Keep a list of all relevant emergency numbers in an easily accessible location on site;</li> <li>• Maintain a record of all incidents and illnesses on site and make the information available at meetings;</li> <li>• Ensure that proper footwear is worn by employees at all times;</li> <li>• Ensure that employees are issued with and make use of the necessary safety equipment when working in dusty, noisy and / or dangerous situations. Personal Protective Equipment, including, but not limited to hardhats, goggles, masks, earplugs, gloves, safety footwear and safety ropes as required;</li> <li>• Ensure that adequate drinking water, wash water and sanitary facilities are available at all times and on all work sites;</li> <li>• A designated area for food storage, preparation and consumption must be provided on site;</li> <li>• Ensure that all vehicle and machine operators are qualified and licensed to operate their vehicles / machines;</li> <li>• The Contractor will prepare and submit a Health and Safety Plan, prepared in accordance with the Health and Safety Specification, for approval by a Health and Safety Officer prior to the commencement of the construction activities. The Health and Safety Plan must be prepared in accordance with Regulation 7(1)(a) of the Occupational Health and Safety Act ( 85 of 1993) Construction Regulations 2014 (Government Notice No. R.84);</li> <li>• Fencing and barriers must be put in place in accordance with the Occupational Health and Safety Act 85 of 1993;</li> <li>• Applicable notice boards and hazard warning notices will be put</li> </ul>		

Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Construction Phase</b>					
			<p>in place and secured;</p> <ul style="list-style-type: none"> <li>All construction personal must be clearly identifiable and provided with employee cards for identification purposes; and</li> <li>All workers will be supplied with the required Personal Protective Equipment as per the Occupational Health and Safety Act 85 of 1993.</li> </ul>		
8.	Construction Phase	Ensure that the local communities benefit from employment opportunities that are generated during the Construction Phase.	A Workforce Recruitment Policy aimed at controlling the influx of speculative job seekers and ensuring that the local community benefit from employment opportunities that are generated during the Construction Phase, should be developed. The Workforce Recruitment Policy should be developed by the Contractor in consultation with the Local Municipalities and Eskom. The Workforce Recruitment Policy must strictly adhere to the principles of the Public Finance Management Act (No.1 of 1999).	Contractor	Duration of Construction Phase.
9.	Construction Phase	The intrinsic nature of construction activities will generate domestic and solid waste.	<ul style="list-style-type: none"> <li>All domestic waste must be placed in litter bins located as required on the Work Site and within the Contractors camp;</li> <li>The waste hierarchy, i.e. waste minimisation, the re-use, recycling and recovery of waste must be promoted;</li> <li>Where possible, waste must be separated at source (e.g. containers for glass, paper, metals, plastics, organic waste and hazardous wastes);</li> <li>Litter bins must be equipped with a closing mechanism to prevent their contents from blowing out, and must be animal proof to prevent animals from toppling the litter bins and accessing it's content;</li> <li>Ensure that personnel make use of the litter bins provided. Keep all Work Sites and Contractor camps tidy and litter free at all times;</li> <li>A sufficient number of litter bins which are animal-proof (i.e. scavenger proof) and weatherproof, with lids shall be provided to temporarily store the solid waste produced on a daily basis;</li> <li>All litter bins shall be emptied weekly (or as required before they</li> </ul>	Contractor	Duration of Construction Phase.

Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Construction Phase</b>					
			<p>reach capacity);</p> <ul style="list-style-type: none"> <li>• A dedicated temporary waste storage area must be identified within the construction footprint. A sufficient number of waste skips, to cater for the anticipated volumes of waste, must be placed in the waste storage area. The temporary waste storage area should be kept clean (e.g. all waste to be placed in the skips) at all times. In the event where the temporary storage of waste is stored for periods longer than 90 days, and where the capacity of the waste storage area exceeds 100m<sup>3</sup>, the National Norms and Standards for the Storage of Waste (Government Notice No. 926) in terms of the NEMWA (2013) must be conformed to;</li> <li>• A Safe Disposal Slip Register must be maintained by the Contractor;</li> <li>• Ensure suitable housekeeping;</li> <li>• The Contractor will ensure that no burying, dumping or burning of waste materials, vegetation, litter or refuse occurs;</li> <li>• All solid waste will be disposed of at suitable licensed disposal sites; and</li> <li>• As far as reasonably possible wastes should be removed during off-peak periods to reduce the impact on the movement of local traffic.</li> </ul>		
10.	Construction Phase	Erosion of stockpiled topsoil and disturbance of soils due to vegetation stripping leading to erosion and habitat inundation.	<ul style="list-style-type: none"> <li>• The implementation of dust-control activities which entails dampening the surface through wetting may not result in run-off volumes that are large enough to result in erosion;</li> <li>• All reasonable measures must be taken to avoid the surface water or storm water to be concentrated (i.e. avoid ponding of water);</li> <li>• Erosion control measures including the use of berms to direct runoff to settling ponds as well as the construction and maintenance of coffer dams to settle sediments must be employed, if needed and where necessary. Settling ponds with</li> </ul>	Contractor	Duration of Construction Phase.

Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Construction Phase</b>					
			<p>accumulated sediments need to be cleared before the onset of winter rains, and the construction of roads and causeways should be confined to the period October to May, where possible. Where the above activities are planned outside the recommended periods, management of the construction activities must take cognisance of weather patterns and secure the construction site during extreme weather events;</p> <ul style="list-style-type: none"> <li>Monitoring of the sediment load within the watercourse should take place both upstream and downstream of the construction site and in accordance with the approved Riverine Monitoring Programme. The maximum turbidity must be determined by an aquatic ecosystem specialist prior to the commencement of construction activities;</li> <li>Any erosion channels caused by construction activities must be suitably stabilised and rehabilitated to an acceptable condition.</li> </ul>		
11.	Construction Phase	Biodiversity impacts due to riparian vegetation loss.	<ul style="list-style-type: none"> <li>Vegetation cover must be retained for as long as possible and only clear areas of the site where it is necessary for construction;</li> <li>Indiscriminate destruction of riparian habitat should be avoided by demarcating No-Go areas around construction areas close to the riparian habitat;</li> <li>The riparian habitat should be clearly identified in the site layout map and communicated to all construction staff through awareness training;</li> <li>Riparian vegetation surrounding the construction suite should be monitored daily for signs of disturbance and any disturbance found rectified immediately.</li> </ul>	Contractor	Duration of Construction Phase.
12.	Construction Phase	Impacts on riparian vegetation leading to decrease in runoff filtration.	<ul style="list-style-type: none"> <li>Vegetation cover must be retained for as long as possible and only clear areas of the site where it is necessary for construction;</li> <li>Indiscriminate destruction of riparian habitat should be avoided by demarcating No-Go areas around construction areas close to</li> </ul>	Contractor	Duration of Construction Phase.

Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Construction Phase</b>					
			<p>the riparian habitat;</p> <ul style="list-style-type: none"> <li>The riparian habitat should be clearly identified in the site layout map and communicated to all construction staff through awareness training;</li> <li>Riparian vegetation surrounding the construction suite should be monitored daily for signs of disturbance and any disturbance found rectified immediately.</li> </ul>		
13.	Construction Phase	Poorly designed watercourse crossings that will create perpetuating impacts on the aquatic systems.	<ul style="list-style-type: none"> <li>Formal watercourse crossings must be structurally sound to withstand expected flooding regimes of the aquatic system.</li> <li>Adequate culvert capacity must be provided to ensure effects of increased water velocity through the culverts due to restrictions must be provided. This would typically lead to erosion of the watercourse.</li> </ul>	Contractor	Duration of Construction Phase.
14.	Construction Phase	Contamination of surface water features leading to loss of sensitive biota.	<ul style="list-style-type: none"> <li>Construction vehicles should be properly serviced in order to avoid fluid leaks;</li> <li>Proper sewerage management should be implemented in order to avoid contamination of the surface waters through untreated sewerage;</li> <li>Implement site specific and suitable storm water measures during construction to prevent the ingress of runoff into watercourses;</li> <li>Ensure proper storage and safe handling of hazardous substances;</li> <li>All hazardous substances (including paint and fuel) must be stored in secure, safe and weatherproof facilities, underlain by a bunded concrete slab to protect against soil and water pollution. The bunded area must be able to contain 110% of the total volume of the stored hazardous substance;</li> <li>In the event of a significant hazardous substance spillage or leakage, the ECO must Investigate the incident and prepare a report which documents the following information: <ul style="list-style-type: none"> <li>Environmental Aspect associated with the incident;</li> </ul> </li> </ul>	Contractor & ECO	Duration of Construction Phase.

Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Construction Phase</b>					
			<ul style="list-style-type: none"> <li>○ The manner in which the incident happened;</li> <li>○ Indicate whether any preventative measures were not implemented;</li> <li>○ Determine the reason why the incident occurred;</li> <li>○ Required and appropriate rehabilitation and remediation measures;</li> <li>○ Indicate whether the actions which resulted in the incident were aligned with the applicable Method Statements;</li> <li>○ The type of work, process or equipment involved; and</li> <li>○ Recommendations to avoid future such incidents and/or occurrences.</li> <li>● A copy of the Incident Report should be submitted to the competent authority within 7 days of the incident.</li> <li>● Any accidental spills must be cleaned immediately, treating the spilled material using absorbent material. Spill kits must be kept on site to use in the event of a hazardous substance spillage;</li> <li>● All cleaning of equipment, batching plants, trucks and flushing of mixers will not result in pollution, with all contaminated wash water (including water from the batching plants) entering the waste water collection system (e.g. be diverted to sedimentation / settling ponds). Contaminated water may therefore not be discharged to the environment;</li> <li>● Unused cement bags will be stored in an area not exposed to the weather and packed neatly to prevent hardening or leakage of cement;</li> <li>● Used cement bags will be stored so as to prevent windblown dust and potential water contamination and will be appropriately disposed of;</li> <li>● The release / discharge of (cement) contaminated water to the environment will not be permitted. The re-use of water should be promoted;</li> <li>● Unused cement bags will be stored in a sealed container;</li> </ul>		

Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Construction Phase</b>					
			<ul style="list-style-type: none"> <li>• Contaminated and wastewater generated by the cleaning of equipment and flushing of mixers will not be released into the environment;</li> <li>• Controlled loading / unloading areas must be underlain by impervious paving or PVC sheet to protect against soil and water pollution;</li> <li>• Environmental Awareness Training must include the correct handling, use and disposal of any spilled hazardous substance;</li> <li>• Material Safety Data Sheets which provides all information relating to the specific hazardous substances stored on site must be prepared and be readily accessible;</li> <li>• Empty containers in which hazardous substances were kept are to be treated as hazardous waste and disposed of at a licenced hazardous waste disposal facility;</li> <li>• All storage tanks containing hazardous materials must be placed in bunded areas with impermeable surfaces. The bunded area must be able to contain 110% of the total volume of the stored hazardous material.</li> </ul> <p>The following management and mitigation relate specifically to the <b>temporary storage of fuel onsite</b>:</p> <ul style="list-style-type: none"> <li>• The fuel tanks must be designated and installed in accordance with the relevant Oil Industry Standards and SANS codes where applicable for above ground storage tanks;</li> <li>• Fuel storage tanks must be located within bund (110% of the tank's storage capacity);</li> <li>• During fuel tanker delivery, the tanker driver must be present at all times during product offloading. Should an incident occur, and emergency cut-off switch must be used to immediately stop fuel delivery. Flexible hoses with beak couplings and emergency isolation must be used;</li> <li>• The project proponent must ensure that effective stock inventory</li> </ul>		



Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Construction Phase</b>					
			<p>monitoring, recording and regular auditing takes place for early identification of possible leaks and maintain a leak history for the site;</p> <ul style="list-style-type: none"> <li>• The requirements of the Occupational Health and Safety Act (85 of 1993) must be adhered to;</li> <li>• Crash barriers must be installed around the fuel tanks;</li> <li>• An onsite emergency plan must be developed and implemented and must be drafted in consultation with the relevant Municipality's Emergency Services; and</li> <li>• Within six months of the tanks ceasing to be functional for the purpose of temporary fuel storage, the tanks and associated infrastructure must be removed from site at the expense of the project proponent. The area associated with the fuel storage tanks and associated infrastructure must be rehabilitated to the satisfaction of the ECO and relevant local municipality.</li> </ul>		
15.	Construction Phase	Destruction of surface water resources and habitat to accommodate towers and overhead power lines	<ul style="list-style-type: none"> <li>• Careful planning so that all infrastructure footprints avoid surface water habitat units within the survey area will negate this impact;</li> <li>• If this is found to be unavoidable, then the size of the impacting footprint must be reduced as far as possible, indiscriminate habitat destruction must be avoided, use of existing roads and access points must be used as far as possible; and</li> <li>• Correct site reinstatement and vegetation rehabilitation must be implemented within impacted areas following completion of the construction phase.</li> </ul>	Contractor	Duration of Construction Phase.
16.	Construction Phase	The increased noise levels caused by the movement of construction activities, construction vehicles and heavy machinery as well as construction personnel, and which is audible by the surrounding receptors may	<ul style="list-style-type: none"> <li>• Noise mufflers and/or soft explosives must be used during blasting to minimise the impact on humans and animals;</li> <li>• No amplified music will be permitted on site and in construction camps;</li> <li>• All noise levels must be controlled at the source;</li> <li>• If the noise levels at the boundaries of the site exceed 7 dB above ambient levels, the local health authorities must be informed;</li> </ul>	Contractor	Duration of Construction Phase.

Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Construction Phase</b>					
		cause a nuisance and disturbance.	<ul style="list-style-type: none"> <li>• All onsite workers must be provided with the necessary ear protection gear;</li> <li>• I&amp;APs must be informed of the excessive noise factors;</li> <li>• Local municipal by-laws specific to noise must be adhered to;</li> <li>• The SANS10103 (2008) should be applied to provide guidance for determining the community's response to the increase in the general ambient noise level caused by the Construction Phase;</li> <li>• Blasting and noise intensive operations must be restricted to normal working hours (7 am to 5 pm);</li> <li>• Amplified noise such as sirens and announcements limited to restricted hours other than cases of emergency;</li> <li>• Ensure that employees and staff conduct themselves in an acceptable manner while on site, both during work hours and after hours; and</li> <li>• Respond to community complaints with regard to noise generation, taking reasonable action to ameliorate the impact. Where complaints cannot be addressed to the satisfaction of all parties, the Contractor will, upon instruction by the Project Manager, provide an independent and registered Noise Monitor to undertake a survey of the noise output levels.</li> </ul>		
17.	Construction Phase	The release of pollutants generated by gaseous emissions and the release of particulate matter into the air, will reduce the quality of air in the immediate areas surrounding the construction footprint.	<ul style="list-style-type: none"> <li>• Appropriate dust suppression measures or temporary stabilising mechanisms must be used in instances where dust generation is unavoidable (e.g. dampening with water, chemical soil binders, straw, brush packs, chipping), particularly during prolonged periods of dry weather;</li> <li>• Dust suppression to be undertaken for all bare areas;</li> <li>• Within the construction area, construction / heavy vehicles and light vehicles will not be permitted to travel at speeds exceeding 20 km/h and 40 km/h, respectively; and</li> <li>• The Contractor will take preventative measures to minimise complaints regarding dust nuisances (e.g. screening, dust control, timing, pre-notification of I&amp;APs);</li> </ul>	Contractor	Duration of Construction Phase.

Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Construction Phase</b>					
			<ul style="list-style-type: none"> <li>In the event that dust nuisance is highlighted by an Interested and Affected Party, the deposition of dust (i.e. dustfall) within the development footprint and the immediate adjacent area must be monitored. Dustfall must remain within the Acceptable Dustfall Rates provided in the National Environmental Management: Air Quality Act (39 of 2004) National Dust Control Regulations 2013 (R.8273). The method (including the selection of sampling points) to be employed applied for measuring the dustfall must be aligned with the technique provided in the ASTM D1739:19704. The data generated by the recorded dustfall rates must be used to prepare a Dustfall Monitoring Report which conforms to Regulation 5 of NEMAQA National Dust Control Regulations 2013 (R.827).</li> </ul>		

<sup>3</sup> South Africa. 2004. National Environmental Management: Air Quality Act (39 of 2004) National Dust Control Regulations, 2013. (Notice 827). *Government gazette*, 3697:4, 1 Nov.

<sup>4</sup> ASTM D1739: American Standard for Testing and Materials method D1739, which is the standard test method for the collection and measurement of dustfall.

Table 14-2: Operational Phase - Mitigation and Management Measures

Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Operational Phase</b>					
18.	Operational Phase	Loss of vegetation due to veld fires.	<ul style="list-style-type: none"> <li>• Eskom to ensure that the vegetation clearance and line maintenance occurs as per Eskom Policies and Standards;</li> <li>• The width of the power line corridor where vegetation is actively maintained during the operational phase must be kept at an absolute minimum that permits safe operation of the power line, as per Eskom's Vegetation Management and Maintenance within Eskom Land, Servitudes and Rights of Way Standard (24070172585); and</li> <li>• Regular line inspections to ensure the integrity of the power line.</li> </ul>	Eskom	Duration of Operational Phase.
19.	Operational Phase	Killing or injuring of avifauna	<ul style="list-style-type: none"> <li>• Periodic monitoring along operational power lines should be undertaken by an ornithologist to ensure that raptor friendly devices installed on power lines are effective.</li> </ul>	Eskom	Duration of Operational Phase.
20.	Operational Phase	Poor management on Eskom servitude gates exposes landowners to illegal trespassers and provides access to criminals and creates a poaching risk.	<ul style="list-style-type: none"> <li>• Eskom to ensure that the access maintenance servitude gates and locks occurs as per Eskom Policies and Standards;</li> <li>• Pro-active and effective management of all contractors that will be undertaking construction activities on privately owned property must be maintained by Eskom;</li> <li>• The Eskom project manager must ensure that all land owners are informed of the construction periods and times;</li> <li>• The Eskom project manager must ensure that each affected land owner is introduced to the appointed contractor that will be undertaking construction activities on their property and that any special</li> </ul>	Eskom, Contractor	Duration of Operational Phase.

Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Operational Phase</b>					
			<p>requirements from the land owners are formally captured and communicated to the contractor;</p> <ul style="list-style-type: none"> <li>• The contractor undertaking construction activities on a land owner's property must inform the land owner of arrival and departure times prior to arrival and departure on a daily basis;</li> <li>• Eskom shall develop and implement a Works Completion Register that will be signed off by each land owner and contractor upon completion of the construction activities on the property in question;</li> <li>• The works completion register shall contain details of the construction activities, photo record of each construction area prior and post-construction and will represent the land owner consent that the construction area has been rehabilitated to the satisfaction of the land owner and in compliance to rehabilitation measures stipulated in this EMP;R;</li> <li>• The contractor shall submit the Works Completion Register to Eskom for review and acceptance within 7 days of completion of the construction activities on the farm portion or property in question.</li> </ul>		
21.	Operational Phase	Faulting causing loss of stable electricity supply i.e. outages which impacts negatively on businesses hospitals, schools etc.	<ul style="list-style-type: none"> <li>• Regular line inspections to ensure the integrity of the power line.</li> </ul>	Eskom	Duration of Operational Phase.

Table 14-3: Decommissioning Phase - Mitigation and Management Measures

Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Decommissioning Phase</b>					
1.	Decommissioning Phase	Disturbance and fragmentation of natural habitat.	<ul style="list-style-type: none"> <li>The clearing of vegetation at decommissioning sites should be kept to a minimum and within the 31m servitude area. No unnecessary clearing should be permitted outside of these areas.</li> <li>If clearing of plant species of conservation importance is unavoidable, a removal permit from the relevant authority must be obtained. For species listed under the provinces ordinances, the relevant authority is the Northern Cape Department of Environment and Nature Conservation. For protected trees, the National Department of Agriculture, Forestry and Fisheries is the relevant authority. For regional Red List species and those listed under NEMBA the National Department of Environmental Affairs is the relevant authority.</li> </ul>	Contractor & Proponent	Duration of Decommissioning Phase.
2.	Decommissioning Phase	Exotic vegetation encroachment following soil disturbances.	<ul style="list-style-type: none"> <li>The movement of vehicles and the use of equipment should only be permitted on predetermined access routes and predetermined area, respectively, thereby limiting the area disturbance and necessity for the removal of vegetation.</li> <li>The removal of vegetation, in particular protected and endangered species outside the decommissioning footprint area will not be permitted.</li> <li>All reasonable measures must be taken to control and eradicate any alien invasive species that are listed in terms of Section 70(1) of the National Environmental Management Biodiversity Act (10 of 2004). The relevant Competent Authority must be notified of the occurrence of any listed invasive species occurring and be provided with an Alien Invasive Control and Management Plan.</li> </ul>	Contractor & Proponent	Duration of Decommissioning Phase.

Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Decommissioning Phase</b>					
			<ul style="list-style-type: none"> <li>The reseeding (indigenous vegetation) of disturbed areas should be carried out at the end of the dry season to ensure optimum conditions for germination and rapid vegetation establishment.</li> </ul>		
3.	Decommissioning Phase	Soil stripping, soil compaction and vegetation removal will increase rates of erosion and entry of sediment into the general aquatic ecosystem.	<ul style="list-style-type: none"> <li>The implementation of dust-control activities which entails dampening the surface through wetting may not result in run-off volumes that are large enough to result in erosion;</li> <li>All reasonable measures must be taken to avoid the surface water or storm water to be concentrated (i.e. avoid ponding of water);</li> <li>Erosion control measures must be employed.</li> <li>Monitoring of the sediment load within the watercourse should take place both upstream and downstream of the decommissioning site.</li> <li>Vegetation cover must be retained for as long as possible and only clear areas of the site where it is necessary for decommissioning, within the 31m servitude area;</li> <li>Any erosion channels caused by decommissioning activities must be suitably stabilised and rehabilitated to an acceptable condition.</li> </ul>	Contractor	Duration of Decommissioning Phase.
4.	Decommissioning Phase	Killing or injuring of fauna.	<ul style="list-style-type: none"> <li>An ECO or trained individual should be available during the decommissioning phase to manage any wildlife-human interactions.</li> <li>A low speed limit should be enforced on site to reduce potential wildlife-collisions.</li> <li>Employees and contractors should be made aware of the presence of, and rules regarding fauna and the prohibition of hunting through suitable induction training.</li> <li>No clearing of large Sociable Weaver nests or raptor</li> </ul>	Contractor, Proponent & ECO	Duration of Decommissioning Phase.

Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Decommissioning Phase</b>					
			<ul style="list-style-type: none"> <li>nests should be permitted.</li> <li>The Endangered Wildlife Trust's Birds of Prey Programme should be consulted in this regard.</li> </ul>		
5.	Decommissioning Phase	Visual impacts from the decommissioning activities	<ul style="list-style-type: none"> <li>The movement of vehicles and workers must as far as reasonably possible be restricted to the immediate site and access roads;</li> <li>As far as reasonably possible decommissioning activities should be confined to daylight hours. In the event where decommissioning activities cannot be confined to daylight hours all Interested and Affected Parties should be notified of the extended working hours, which will be approved by the ECO and project manager, and provided with the reason for the extended working hours, at least 24 hours beforehand;</li> <li>It must be ensured that rubble, litter and construction rubble are collected and appropriately stored until the collection and disposal thereof at an appropriate registered landfill site;</li> <li>The visual intrusion associated with lighting of the decommissioning site must be managed through the implementation of the same mitigation measures proposed for the construction activities for lighting.</li> <li>Areas of disturbance must be reduced as far as possible during the decommissioning phase.</li> <li>Retain as much as possible of the existing vegetation along the substation footprint as possible.</li> <li>Implement dust suppression techniques at all times.</li> <li>Rehabilitate / restore exposed areas as soon as possible after construction activities are complete.</li> <li>Only indigenous vegetation should be used for rehabilitation / landscaping purposes.</li> </ul>	Eskom	Duration of Decommissioning Phase.
6.	Decommissioning Phase	The intrinsic nature of	<ul style="list-style-type: none"> <li>All domestic waste must be placed in litter bins located</li> </ul>	Contractor	Duration of



Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Decommissioning Phase</b>					
		decommissioning activities will generate domestic and solid waste.	as required on the Work Site and within the Contractor camp areas; <ul style="list-style-type: none"> <li>• The waste hierarchy, i.e. waste minimisation, the re-use, recycling and recovery of waste must be promoted;</li> <li>• Where possible, waste must be separated at source (e.g. containers for glass, paper, metals, plastics, organic waste and hazardous wastes);</li> <li>• Litter bins must be equipped with a closing mechanism to prevent their contents from blowing out, and must be animal proof to prevent animals from toppling the litter bins and accessing it's content;</li> <li>• Ensure that all workers make use of the litter bins provided. Keep all Work Sites and Contractor camps tidy and litter free at all times;</li> <li>• A sufficient number of litter bins which are animal-proof (i.e. scavenger proof) and weatherproof, with lids shall be provided to temporarily store the solid waste produced on a daily basis;</li> <li>• All litter bins shall be emptied weekly (or as required before they reach capacity);</li> <li>• A dedicated temporary waste storage area must be identified within the decommissioning footprint. A sufficient number of waste skips, to cater for the anticipated volumes of waste, must be placed in the waste storage area. The temporary waste storage area should be kept clean (e.g. all waste to be placed in the skips) at all times. In the event where the temporary storage of waste is stored for periods longer than 90 days, and where the capacity of the waste storage area exceeds 100m<sup>3</sup>, the National Norms and Standards for the Storage of Waste (Government Notice No. 926) in</li> </ul>		Decommissioning Phase.

Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Decommissioning Phase</b>					
			terms of the NEMWA (2013) must be conformed to; <ul style="list-style-type: none"> <li>• A Safe Disposal Slip Register must be maintained by the Contractor;</li> <li>• Ensure suitable housekeeping;</li> <li>• The Contractor will ensure that no burying, dumping or burning of waste materials, vegetation, litter or refuse occurs;</li> <li>• All solid waste will be disposed of at suitable licensed disposal sites; and</li> <li>• As far as reasonably possible wastes should be removed during off-peak periods to reduce the impact on the movement of local traffic.</li> </ul>		
7.	Decommissioning Phase	The increased noise levels caused by the decommissioning activities, vehicles and heavy machinery as well as workers, which may be audible by the surrounding receptors may cause a nuisance and disturbance.	<ul style="list-style-type: none"> <li>• No amplified music will be permitted on site;</li> <li>• All noise levels must be controlled at the source;</li> <li>• If the noise levels at the boundaries of the site exceed 7 dB above ambient levels, the local health authorities must be informed;</li> <li>• All onsite workers must be provided with the necessary ear protection gear;</li> <li>• I&amp;APs must be informed if there are excessive noise factors;</li> <li>• Local municipal by-laws specific to noise must be adhered to;</li> <li>• The SANS10103 (2008) should be applied to provide a guidance for determining the community's response to the increase in the general ambient noise level caused by the decommissioning phase;</li> <li>• Noise intensive operations must be restricted to normal working hours (7 am to 5 pm);</li> <li>• Amplified noise such as sirens and announcements limited to restricted hours other than cases of emergency;</li> </ul>	Contractor	Duration of Decommissioning Phase.

Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Decommissioning Phase</b>					
			<ul style="list-style-type: none"> <li>• Ensure that employees and staff conduct themselves in an acceptable manner while on site, both during work hours and after hours; and</li> <li>• Respond to community complaints with regard to noise generation, taking reasonable action to ameliorate the impact. Where complaints cannot be addressed to the satisfaction of all parties, the Contractor will, upon instruction by the Project Manager, provide an independent and registered Noise Monitor to undertake a survey of the noise output levels.</li> </ul>		
8.	Decommissioning Phase	The release of pollutants generated by gaseous emissions and the release of particulate matter into the air, will reduce the quality of air in the immediate areas surrounding the decommissioning footprint.	<ul style="list-style-type: none"> <li>• Appropriate dust suppression measures or temporary stabilising mechanisms must be used in instances where dust generation is unavoidable (e.g. dampening with water, chemical soil binders, straw, brush packs, chipping), particularly during prolonged periods of dry weather;</li> <li>• Dust suppression to be undertaken for all bare areas;</li> <li>• Within the decommissioning area, heavy vehicles and light vehicles will not be permitted to travel at speeds exceeding 20 km/h and 40 km/h, respectively; and</li> <li>• The Contractor will take preventative measures to minimise complaints regarding dust nuisances (e.g. screening, dust control, timing, pre-notification of I&amp;APs);</li> <li>• The deposition of dust (i.e. dustfall) within the decommissioning footprint and the immediate adjacent area must remain within the Acceptable Dustfall Rates provided in the National Environmental Management:</li> </ul>	Contractor	Duration of Decommissioning Phase.

Reference Number (Id)	Project Lifecycle Phase	Impact	Mitigation / Management Measures	Responsible Party	Time Period
<b>Decommissioning Phase</b>					
			Air Quality Act (39 of 2004) National Dust Control Regulations 2013 (R.8275). The method (including the selection of sampling points) to be employed applied for measuring the dustfall must be aligned with the technique provided in the ASTM D1739:19706. The data generated by the recorded dustfall rates must be used to prepare a Dustfall Monitoring Report which conforms to Regulation 5 of NEMAQA National Dust Control Regulations 2013 (R.827). In the event where quantities of dust exceeding the dustfall standard provided in Regulation 3 NEMAQA National Dust Control Regulations 2013 (R.827), must upon receipt of a notice form an Air Quality Officer, implement a dustfall monitoring programme.		

<sup>5</sup> South Africa. 2004. National Environmental Management: Air Quality Act (39 of 2004) National Dust Control Regulations, 2013. (Notice 827). *Government gazette*, 3697:4, 1 Nov.

<sup>6</sup> ASTM D1739: American Standard for Testing and Materials method D1739, which is the standard test method for the collection and measurement of dustfall.

## **15 SITE REHABILITATION**

### **15.1 Removal of structures and infrastructure**

During and following the completion of the construction activities, the area must be rehabilitated by appropriate landscaping, levelling, topsoil dressing, land preparation, alien plant eradication and vegetation establishment. All construction plant, equipment, storage containers and temporary fencing must be removed from site.

### **15.2 Waste and pollution control**

- Waste minimisation, the re-use, recycling and recovery of waste must be promoted;
- Rubble, including surplus rock, foundations and batching plant aggregates will be removed from the construction site and firstly recycled and re-used, where possible, before disposed of at a registered landfill site;
- All waste storage containers will be removed from site on a regular basis;
- All portable sanitation facilities will be removed by a certified contractor. It must be ensured that no leaks or spillage from sanitation facilities occurs during the removal thereof; and
- All hazardous waste which is temporary stored on site, including the storage containers must be removed from site and disposed of at a registered hazardous landfill site.

### **15.3 Final Shaping**

- Where possible all disturbed areas must be shaped so as to blend in with the surrounding landscape;
- Programme the backfill of excavations so that subsoil is deposited first, followed by the topsoil;
- Monitor backfilled areas for subsidence (as the backfill settles) and fill depressions using available material; and
- Ensure that no excavated material or stockpiles are left on site and that all material remaining after backfill is smoothed over to blend in with the surrounding landscape.

### **15.4 Grassing**

- Grassing must be undertaken by a suitably qualified Contractor;
- Grass areas using the method specified on the plant plans;
- Only indigenous seeds (seed mixes) common to the area must be used in rehabilitation and re-seeding of the disturbed areas;

- 
- Sodding may be done at any time of the year, but seeding must be done during the summer when the germination rate is higher; and
  - Hydro-seeding with a winter mix will only be specified where re-grassing is urgent, and cannot be postponed until summer.

### **15.5 Ripping and Scarifying**

- Rip and / or scarify all areas following the application of topsoil to facilitate re-growth of vegetation. The ECO will specify whether ripping and / or scarifying is necessary, based on the site conditions immediately before these works begin;
- Rip and / or scarify all disturbed (and other specified) areas of the construction site, including temporary access routes and roads, compacted during the execution of the works; and
- Areas may not be ripped / scarified under wet conditions, as the soil will not break up.

### **15.6 Topsoil replacement and soil amelioration**

- The principle of Progressive Reinstatement must be followed wherever possible. This includes the reinstatement of disturbed areas on an ongoing basis, immediately after the specified construction activities for that area are concluded;
- Execute top soiling activity prior to the rainy season or any expected wet weather conditions;
- Execute topsoil placement concurrently with construction where possible, or as soon as construction in an area has ceased;
- Replace and redistribute stockpiled topsoil together with herbaceous vegetation, overlying grass and other fine organic matter in all disturbed areas of the construction site, including temporary access routes and roads. Replace topsoil to the original depth. These areas will be quantified by the ECO;
- Place topsoil in the same area from where it was stripped. If there is insufficient topsoil available from a particular soil zone to produce the minimum specified depth, topsoil of similar quality may be brought from other areas of similar quality;
- The suitability of substitute material will be determined by means of a soil analysis addressing soil fraction, fertility, pH and drainage, and approved by the ECO; and
- Do not use topsoil suspected to be contaminated with the seed of alien vegetation.

### **15.7 Maintenance of rehabilitated areas**

- Allow for a maintenance period of one year following practical completion;

- 
- Landscape maintenance must be undertaken by a suitably qualified professional or landscape architect;
  - Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access.
  - Re-vegetation must match the vegetation type which previously existed, unless otherwise indicated in the Contract or specified by the ECO.
  - Water all transplanted, planted and grassed areas;
  - For planted areas that have failed to establish, replace plants with the same species as originally specified. The same species as originally specified must be used unless otherwise specified by the ECO; and
  - A minimum grass cover of 80% is required, and individual plants must be strong and healthy growers at the end of the Maintenance Period.

## **16 CONCLUSION**

It is the opinion of the EAP that the implementation of the management and mitigation measures provided in the EMPr is sufficient to manage the environmental impacts associated with the proposed project. This EMPr will furthermore contribute to realising the following over-arching objectives set out to be reached by the use of the document as an environmental management tool:

- Ensure that sufficient monetary provision, aligned with the significance of the environmental impact and scale of the project, is made to remediate and rehabilitate the environment impacted on by the construction activities;
- Verify environmental performance through information on impacts as they occur;
- Respond to unforeseen events and environmental incidents; and
- Provide feedback to drive continual improvement in environmental performance.

The effectiveness of this EMPr will to a large degree rest on adherence to and fulfilling the roles and responsibilities of each role player and stakeholder. The roles and responsibilities for management actions contained in the EMPr (refer to Part 8 of this document) and arrangements for coordination among the role players are clearly defined in this document.

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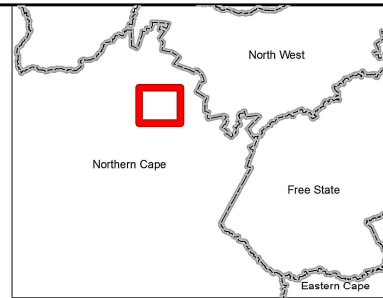
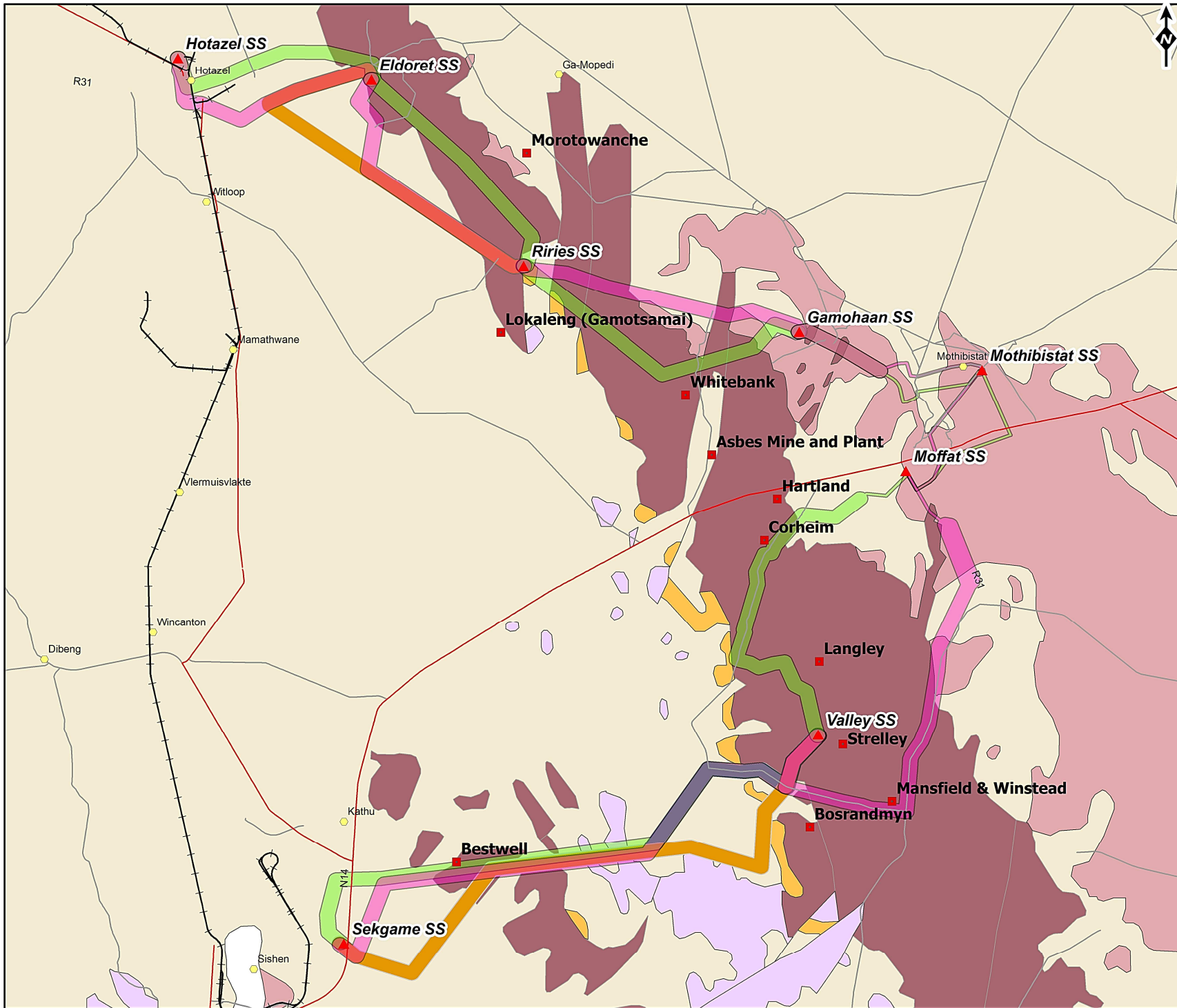
Dr Mathys Vosloo  
**Project Manager**

Sharon Meyer-Douglas  
**Project Associate**

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**APPENDIX A: Asbestos Distribution Map**

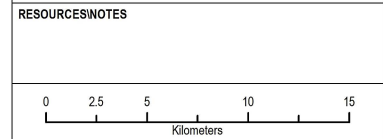
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**LEGEND**

- ▲ SubStations
- Asbestos Mines**
- Towns\_DWAF
- Towns\_DWAF
- Rail
- Main road
- National freeway
- National route
- Secondary road
- Alternative 1
- Alternative 2
- Alternative 3
- Alternative 4
- Geology (DWAF, 2006)**
- ANDESITE
- DIAMICTITE
- DOLOMITE
- IRON FORMATION
- SAND

**DRAFT**



**REFERENCE**  
Coordinate System: GCS WGS 1984

**PROJECT**  
BA FOR KURUMAN 132 KV UPGRADES

**TITLE**  
**GEOLOGY AND OLD ASBESTOS MINES**

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CHECK	KT 2015/08/25
REVIEW	MV 2015/08/25



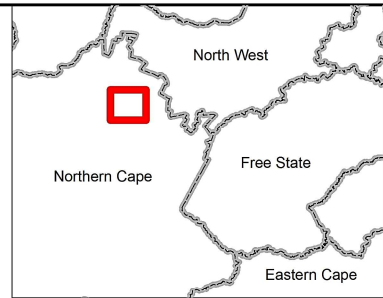
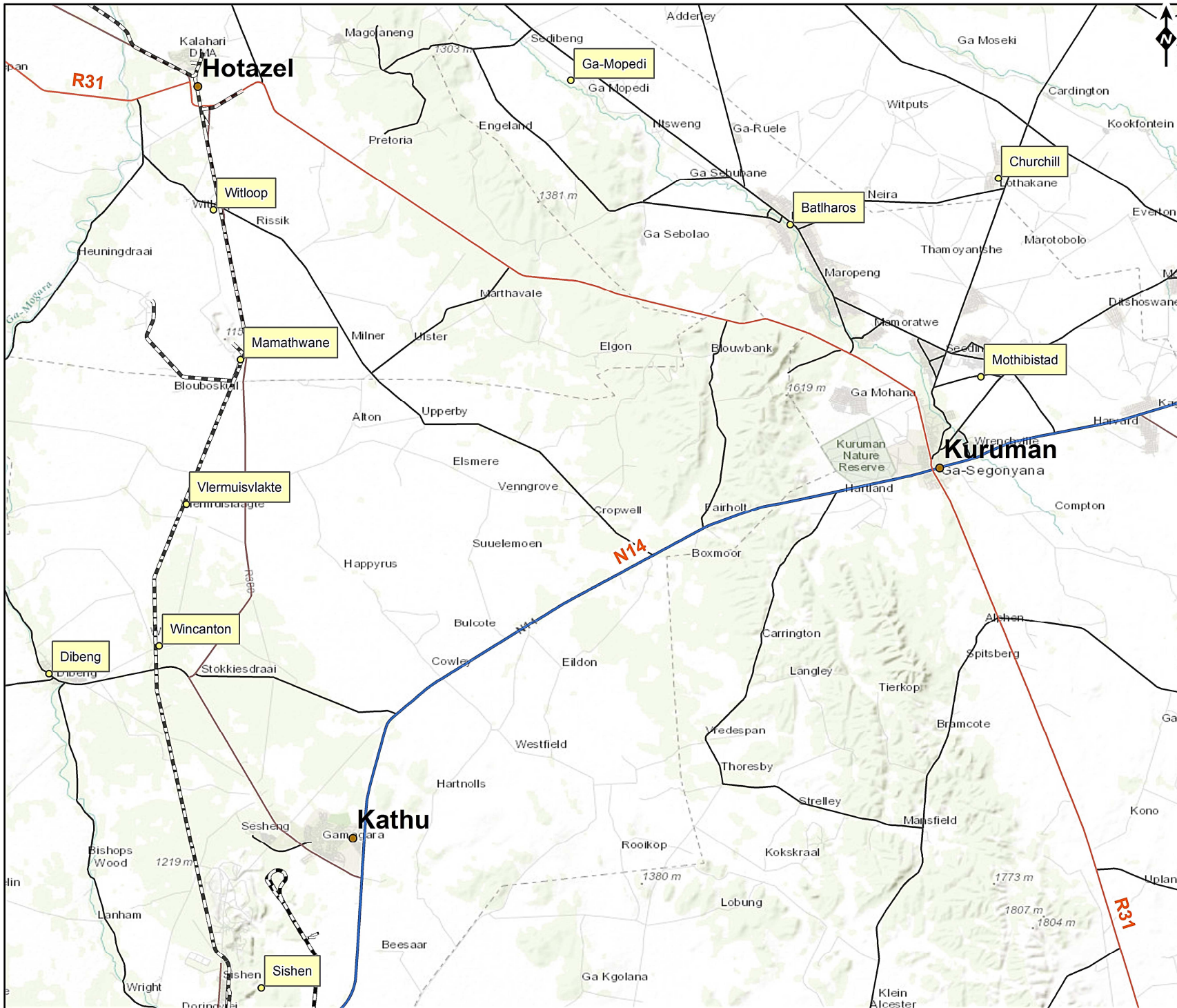
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**B:**

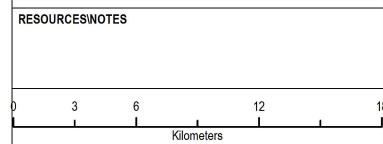
**Locality**

**Map**

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- LEGEND
- Main Places
  - Rail
  - National Road
  - Regional Road
  - Main Road
  - Secondary Road



REFERENCE  
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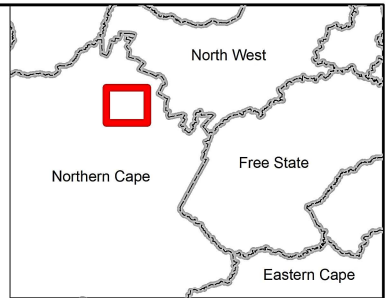
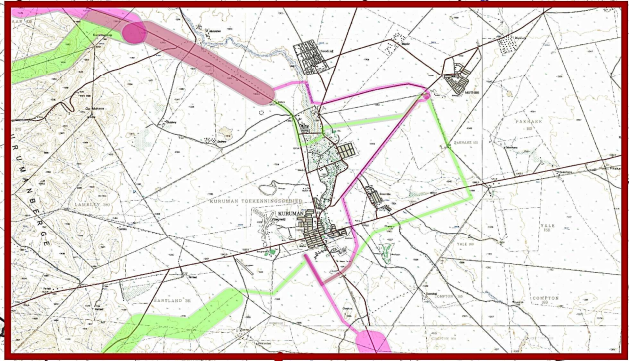
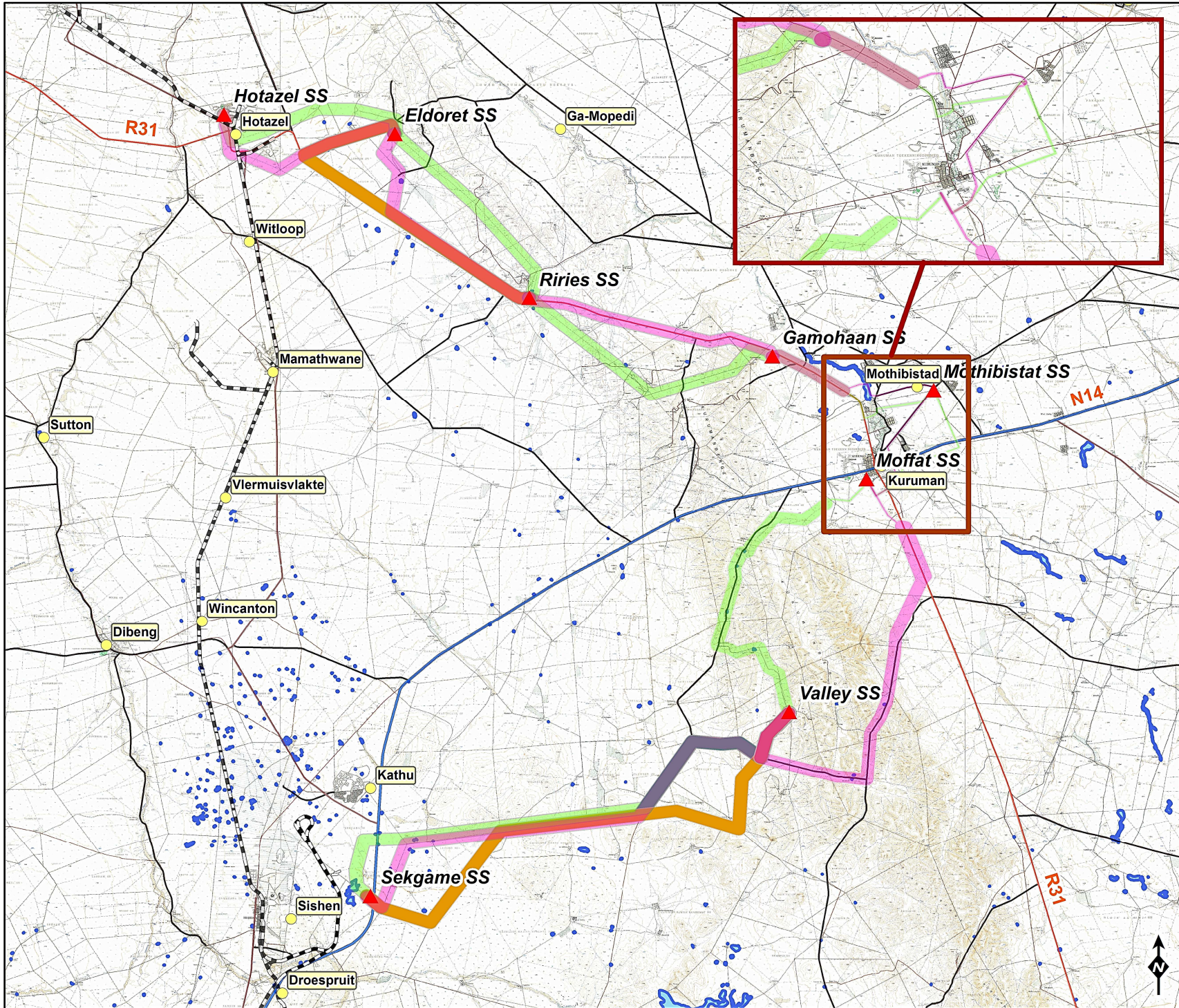
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TITLE  
**PROJECT LOCALITY**

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CHECK	SL 2015/08/25
REVIEW	MV 2015/08/25



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**LEGEND**

- Main Places
- SubStations
- Rail
- Alternative 1
- Alternative 2
- Alternative 3
- Alternative 4
- National Road
- Regional Road
- Main Road
- Secondary Road
- Waterbodies

**RESOURCES/NOTES**

**REFERENCE**  
Coordinate System: GCS WGS 1984

**PROJECT**  
BA FOR KURUMAN 132 KV UPGRADES

**TITLE**  
**LOCALITY - ALTERNATIVES**

PROJECT No. 13167	REV 0
SCALE 1:300 000	A3
GIS	VR 2015/08/28
CHECK	SL 2015/08/28
REVIEW	MV 2015/08/28

