FINAL ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

PROPOSED COLESKOP INFRASTRUCTURE DEVELOPMENT, EASTERN CAPE AND NORTHERN CAPE PROVINCES.

DFFE REFERENCE NUMBER: 14/12/16/3/3/1/2039

JULY 2021

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PREPARED FOR:

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JULY 2021

DEFINITIONS

For the purposes of this Environmental Management Programme report (EMPr), the following terms, abbreviations and descriptions apply:

TERMS	DESCRIPTION
Alien Vegetation	Alien vegetation is defined as undesirable plant growth which shall include, but not be limited to all declared category 1 and 2 listed invader species as set out in the Conservation of Agricultural Resources Act (CARA) regulations. Other vegetation deemed to be alien shall be those plant species that show the potential to occupy in number, any area within the defined construction area and which are declared to be undesirable. This includes plant species identified as Alien and invasive species in the National Environmental Management Biodiversity Act of 2004, Alien and Invasive Species Regulations, 2014.
Cement-laden water	Cement laden water refers to water containing cement or concrete arising from the Contractor's activities.
Contaminated water	Contaminate water refers to water that has been contaminated by the Contractor's activities such as with hazardous substances, hydrocarbons, paints, solvents and runoff from plant, workshop or personnel wash areas but excludes water containing cement/ concrete or silt.
Construction Camp	Construction camp (site camps) refers to all storage and stockpile sites, site offices, container sites, workshops and testing facilities and other areas required to undertake construction activities.
Environment	Environment refers to the surroundings within which humans exist and that could be 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	An environmental aspect is any component of a Contractor's construction activity that is likely to interact with the environment.
Environmental Authorisation (EA)	An Environmental Authorisation (EA) refers to a written statement from the relevant environmental authority, with or without conditions, that records the approval (partial approval or refusal) of a proposed project and the mitigating measures required to prevent or reduce the effects of environmental impacts during the lifespan of a contract.
Environmental Control Officer (ECO)	An Environmental Control Officer (ECO) refers to a suitably qualified and experienced person or entity appointed for the construction and/or operation of works, to perform the obligations specified in the EA.
Environmental Impact	An impact or environmental impact is the change to the environment, whether desirable or undesirable, that will result from the effect of a construction activity. An impact may be the direct or indirect consequence of a construction activity.
Environmental Management Plan/Programme (EMP/EMPr)	An Environmental Management Plan (EMP) or Programme (EMPr) is an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning specific to a project are prevented; and that the positive benefits of the project are enhanced.

TERMS	DESCRIPTION
Environmental Management System (EMS)	The internationally accepted and recognized environmental management system (EMS) which enables companies, organizations and operations to systematically manage, prevent and reduce environmental problems and associated costs. In terms of ISO 14001 an EMS is defined as, *"that part of the overall management system that includes organizational structure, planning activities, responsibilities, procedures, processes and resources for developing, implementing, reviewing and maintaining the environmental policy."*
Environmental Policy	Environmental Policy is a statement (or statements) by the organisation of its intentions and principles in relation to its overall environmental performance which provides a framework for action and for the setting of its environmental objectives and targets.
Environmental Site Officer (ESO)	An Environmental Site Officer (ESO) refers to the site-based designated person responsible for implementing the environmental provisions of the construction contract and is appointed by the service provider that carries out construction activities.
External Auditor	An External Auditor is a suitably qualified and experienced independent expert as per the required auditor qualifications (ISO 14012).
Independent Environmental Consultant (IEC)	An Independent Environmental Consultant (IEC) is a suitably qualified and IEC appointed by the Engineer to perform the obligations specified in the Contract. The IEC must provide reports to the regulatory authority, the Engineer and any other parties as specified by the regulatory authority.
Interested and/or Affected Party (I&AP)	An Interested and/or Affected Party (I&AP) is contemplated in Section 24(4)(d) of the NEMA (1998, Act No. 107) and which, in terms of that section, includes – *(i) Any person, groups of persons, organisation interested in or affected by an activity, and;* *(ii) Any organ of state that may have jurisdiction over any aspect of the activity.*
ISO 14001 Environmental Management System (ISO 14001)	The internationally accepted and recognised Environmental Management System as reflected in the document SABS ISO 14001: 1996; the most recent being the ISO 14001:2015.
Method Statement (MS)	A Method Statement (MS) is a written submission by the Contractor to the ECO in response to the EMPr or to a request by the ECO, setting out the plant (construction equipment), materials, labour and method the Contractor proposes to carry out an activity, identified by the relevant specification or the ECO when requesting the Method Statement. The MS should be in such detail that the ECO is able to assess whether the Contractor's proposal is in accordance with the EMPr and/or will produce results in accordance with the EMPr.
Mitigate/Mitigation	Mitigate (or mitigation) refers to the implementation of practical measures to reduce the adverse impacts, or to enhance beneficial impacts of a particular action.
No-Go Area	A no-go area refers to an area in which construction activities are prohibited.
Pollution	According to the NEMA (Act No. 107 of 1998), pollution can be defined as, "*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*".
Potentially hazardous substance	A potentially hazardous substance refers to a substance, which, in the reasonable opinion of the ECO, can have a harmful effect on the environment. Hazardous Chemical Substances are defined in the Regulations for Hazardous Chemical Substances published in terms of the Occupational Health and Safety Act.
Reasonable	Reasonable means reasonable in the opinion of the ECO, after consultation with the ESO - unless the context indicates otherwise.
Rehabilitation	Rehabilitation refers to re-establishing or restoring something to its original state or to a healthy, sustainable capacity or state.

TERMS	DESCRIPTION
Site	A site, in this context, refers to the area in which construction is taking place.
Solid waste	Solid waste refers to all solid waste materials, including construction debris, chemical waste, excess cement/concrete, wrapping materials, timber, tins, cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).
Species of Conservation Concern (SCC)	Species of Conservation Concern (SCC) refers to species listed in the rare, indeterminate, or monitoring categories of the South African Red Data Books, and/or species listed in globally near-threatened, nationally threatened or nationally near threatened categories (Barnes, 1998).
Threatened species	Threatened species are defined as: a) species listed in the endangered or vulnerable categories in the revised South African Red Data Books or listed in the globally threatened category; b) species of special conservation concern (i.e. taxa described since the relevant South African Red Data Books, or whose conservation status has been highlighted subsequent to 1984); c) species which are included in other international lists; or d) species included in Appendix 1 or 2 of the Convention of International Trade in Endangered Species (CITES).
Topsoil	Topsoil refers to the top 100 mm of soil and may include top material, e.g. vegetation and leaf litter.

TABLE OF CONTENTS

1 INTRODUCTION

Coleskop Wind Power (Pty) Ltd, a subsidiary of EDF Renewables (Pty) Ltd, (the Applicant) is proposing the development of infrastructure, associated with the Coleskop Wind Energy Facility (WEF), near Noupoort and Middelburg in the Pixley Ka Seme District Municipality (Northern Cape Province) and the Chris Hani District Municipality (Eastern Cape Province).

Table 1.1 below lists the proposed properties which will be affected by the proposed infrastructure.

Table 1.1: 21-Digit Surveyor General (SG) Codes of the affected properties.

FARM NAME	21 DIGIT SG NUMBER	PORTION AND FARM NUMBER	LOCAL MUNICIPALITY
Uitzicht	C04800000000000300000	Remaining Extent of Farm 3	Umsobomvu Local Municipality and Inxuba Yethemba Local Municipality
	C04800000000000300002	Portion 2 of Farm 3	
	C04800000000000300007	Portion 7 of Farm 3	
	C04800000000000300008	Portion 8 of Farm 3	
Elands Kloof	C03000000000013500000	Remaining Extent of Farm 135	Umsobomvu Local Municipality
Winterhoek	C03000000000011800000	Remaining Extent of Farm 118	Umsobomvu Local Municipality

1.1 OBJECTIVES OF THE EMPR

This Environmental Management Programme report (EMPr) has been compiled to provide mitigation, monitoring and institutional measures to be taken during the various phases of the Coleskop Infrastructure Development, situated within the Northern Cape and Eastern Cape Provinces. These measures aim to eliminate, offset and/or reduce adverse environmental and social impacts.

This EMPr informs all relevant parties, in this case, the Project Coordinator, the Contractor, the Environmental Control Officer (ECO) and all other staff employed by Coleskop Wind Power (Pty) Ltd at the site, of their duties in the fulfilment of the legal requirements for the construction and operation of the Coleskop Infrastructure, with particular reference to the prevention and mitigation of anticipated potential environmental impacts.

All parties should note that obligations imposed by the EMPr are legally binding in terms of the Environmental Authorisation (EA) granted by the relevant environmental permitting authority, the national Department of Forestry, Fisheries and the Environment (DFFE).

The general objectives of the EMPr are to:

- Ensure compliance with the regulatory authority stipulations and guidelines which could be local, provincial, national and/or international;
- Ensure that there is sufficient allocation of resources on the project budget so that the scale of EMPr-related activities is consistent with the significance of project impacts;
- Verify environmental performance through information on impacts as they occur;
- Respond to unforeseen events;
- Provide feedback for continual improvement in environmental performance;
- Identify a range of mitigation measures which could reduce and mitigate the potential impacts to minimal or insignificant levels;
- Detail specific actions deemed necessary to assist in mitigating the environmental impact of the project;
- Identify measures which could optimize beneficial impacts;

- Create management structures which address the concerns and complaints of I&APs with regards to the development;
- Establish a method of monitoring and auditing environmental management practices during all phases of the activity;
- Ensure that safety recommendations are complied with; and
- Specify time periods within which the measures contemplated in the final EMPr must be implemented, where appropriate.

1.2 STRUCTURE AND FUNCTION OF THE EMPR

An EMPr is focused on sound environmental management practices, which will be undertaken to minimise adverse impacts on the environment through the lifetime of a development. In addition, an EMPr identifies measures which should be in place or will be actioned to manage any incidents and emergencies that could occur during the operation of the project.

As such, the EMPr provides specifications which must be adhered to in order to minimise adverse environmental impacts associated with the various phases of the Coleskop Infrastructure Development. The contents of the EMPr are consistent with the requirements as set out in Appendix 4 of the National Environmental Management Act (NEMA, Act No. 107 of 1998 and subsequent 2014 amendments) Environmental Impact Assessment (EIA) Regulations (2014, and subsequent 2017 amendments), as stipulated below.

REQUIREMENTS OF AN ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT IN TERMS OF GN R. 982 (GN R. 326, 2017) APPENDIX 4
(1) An EMPr must comply with Section 24(N) of the Act and include - (a) Details of – (i) The EAP who prepared the EMPr; and (ii) The expertise of the EAP to prepare an EMPr, including a curriculum vitae; (b) A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description; (c) A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers; (d) A description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including – (i) Planning and design; (ii) Pre-construction activities; (iii) Construction activities; (iv) Rehabilitation of the environment after construction and where applicable post closure; and (v) Where relevant, operation activities; (f) A description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable include actions to – (i) Avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) Comply with any prescribed environmental management standards or practices; (iii) Comply with any applicable provisions of the Act regarding closure, where applicable; (iv) Comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;

(g) The method of monitoring the implementation of the impact management actions contemplated in paragraph (f);
(h) The frequency of monitoring the implementation of the impact management actions contemplated in (f);
(i) An indication of the persons who will be responsible for the implementation of the impact management actions;
(j) The time periods within which the impact management actions contemplated in paragraph (f) must be implemented;
(k) The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);
(l) A program for reporting on compliance, taking into account the requirement as prescribed by the regulations;
(m) 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
  (ii) Risks must be dealt with in order to avoid pollution or the degradation of the environment; and
(n) Any specific information that may be required by the competent authority.

(2) Where a government notice *gazetted* by the Minister provides for a generic EMPr, such generic EMPr as indicated in such notice will apply.

1.3 LEGISLATIVE REQUIREMENTS

Construction must be according to the best industry practices, as identified in the project documents. This EMPr, which forms an integral part of the contract documents, informs the Contractor of their duties in the fulfilment of the project objectives, with particular reference to the prevention and mitigation of environmental impacts caused by the activities of the various phases associated with the Coleskop Infrastructure. The Contractor should note that obligations imposed by the approved EMPr are legally binding in terms of environmental statutory legislation and in terms of the additional conditions to the general conditions of contract which pertain to this project. In the event that any rights and obligations contained in this document contradict those specified in the standard or project specifications, then the latter must prevail.

The Contractor must identify and comply with all South African national and provincial environmental legislation, including associated regulations and all local by-laws relevant to the project. Key legislation currently applicable to the construction and operational phases of the project must be complied with. The list of applicable legislation provided below is intended to serve as a guideline only and is not exhaustive:-

TITLE OF LEGISLATION, POLICY OR GUIDELINE:	DATE:
National Environmental Management Act (NEMA) (Act No. 107 of 1998) and its subsequent amendments	1998 and 2014 amendments
National Environmental Management Act (NEMA) (Act No. 107 of 1998) Environmental Impact Assessment (EIA) Regulations (2014 and subsequent 2017 amendments)	2014 and 2017 amendments
The Constitution Act (Act No. 108 of 1996)	1996
National Heritage Resources Act (NHRA) (Act No. 25 of 1999)	1999
National Water Act (NWA) (Act No. 36 of 1998) and its subsequent amendments	1998
National Environmental Management: Waste Act (NEMWA) (Act No. 59 of 2008) and its subsequent amendments	2008
National Environmental Management: Protected Areas Amendment Act (NEMPAA) (Act No. 31 of 2004)	2004
National Environmental Management: Air Quality Act (NEMAQA) (Act No. 39 of 2004) and its subsequent amendments	2004
Conservation of Agricultural Resources Act (CARA) (Act No. 43 of 1983)	1983
National Environmental Management: Biodiversity Act (NEMBA) (Act No. 10 of 2004)	2004

National Forest Act (NFA) (Act No. 84 OF 1998) and its subsequent amendments	1998
National Environmental Management: Biodiversity Act, Alien and Invasive Species Regulations (2014)	2014
Occupational Health and Safety Act (OHSA) (Act No. 85 of 1993)	1993
Hazardous Substances Act (HSA) (Act No. 15 of 1973)	1973
Spatial Planning and Land Use Management Act (SPLUMA) (Act No. 16 of 2013)	2013
Electricity Regulation Act (Act No. 4 of 2006) and its subsequent amendments	2006
Aviation Act (Act No. 74 of 1962): 13th Amendment of the Civil Aviation Regulations 1997, dated 2008	1962, 1997 and 2008
Minerals and Petroleum Resources Development Act (MPRDA) (Act No. 28 of 2002) and subsequent 2013 amendments	2002 and 2013 amendments
Provincial Nature and Environmental Conservation Ordinance (No. 19 of 1974)	1974
Northern Cape Nature Conservation Act (Act No. 9 of 2009)	2009
National Road Traffic Act (NRTA) (Act No. 39 of 1996)	1996
National Veld and Forest Fire Act (Act No. 101 of 1998)	1998
South African Bureau of Standards (SABS)	
National Infrastructure Plan (NIP, 2012)	2012
Local Government: Municipal Systems Act (Act No. 32 of 2000)	2000
Pixley Ka Seme District Municipality (Northern Cape)	Most recent
Umsobomvu Local Municipality (Northern Cape)	
Chris Hani District Municipality (Eastern Cape)	
Inxuba Yethemba Local Municipality (Eastern Cape)	

1.4 ENVIRONMENTAL AUTHORISATION

In accordance with the requirements of the National Environmental Management Act (NEMA) (Act No. 107 of 1998) and relevant EIA regulations (2014 and subsequent 2017 amendments), the proposed Coleskop Infrastructure triggers a Basic Assessment (BA) Process.

In terms of the BA Process, all reports generated from the environmental studies form part of a series of documents for the project. The Basic Assessment Report (BAR) identified potentially significant environmental impacts and is the main report in the series. Additional Specialist Assessments serve to supplement the assessment contained in the BAR.

This EMPr interprets the findings of the BAR and prescribes project-specific specifications to be achieved. The EMPr is a progressive working document which will be updated based on the relevant conditions stipulated in the Environmental Authorisation (EA). The EMPr will then be submitted to DFFE (along with the final approved layout) for approval prior to the commencement of construction.

2 DETAILS OF THE ENVIRONMENTAL TEAM

2.1 EXPERTISE OF THE ENVIRONMENTAL TEAM

EAP: Dr Alan Carter, *Pri.Sci.Nat, EAPSA*

NEMA registered Company: Coastal and Environmental Services (Pty) Ltd. t/a CES

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DR ALAN CARTER
EAP, Project Leader and Report Reviewer

Dr Alan Carter is an Executive and the East London Branch Manager at CES. He has extensive training and experience in both financial accounting and environmental science disciplines with international accounting firms in South Africa and the USA. He is a member of the American Institute of Certified Public Accountants (licensed in Texas) and holds a PhD in Plant Sciences. He is also a certified ISO14001 EMS auditor with the American National Standards Institute. Alan has been responsible for leading and managing numerous and varied consulting projects over the past 25 years. He is a registered professional with the South African Council for Natural Scientific Professionals (SACNASP) and through Environmental Assessment Practitioners Association of South Africa (EAPASA).

MS CAROLINE EVANS
Report Reviewer

Ms Caroline Evans is a Principal Environmental Consultant with eight (8) years' experience, and she is based in the Grahamstown branch. She holds a BSc with majors in Environmental Science (distinction) and Zoology, as well as a BSc (Hons) in Environmental Science (distinction) both from Rhodes University. Her undergraduate degree included both commerce and natural sciences. Caroline's honours dissertation evaluated the economic impacts of degradation of the xeric subtropical thicket through farming practices, focusing on the rehabilitation potential of the affected areas in terms of carbon tax. She has a broad academic background including statistics, economics, management, climate change, wetland ecology, GIS, rehabilitation ecology, ecological modelling, and zoology. Caroline has a strong focus on renewable energy and South African policy and legislation related to development.

MS ROSALIE EVANS
Project Manager, Lead Report Writer and GIS Mapping

Ms Rosalie Evans is a Senior Environmental Consultant with seven (7) years' experience and she is based in the Port Elizabeth branch. She holds a BA Honours Degree in Geography and Environmental Studies and a Degree in Social Dynamics with majors in Geography and Psychology, both from Stellenbosch University. Rosalie's honours dissertation analysed the role of small grains in soil carbon sequestration in the agricultural sector of the Western Cape. In 2016, Rosalie completed the Introduction to Environmental Impact Assessment Procedure Short Course by Coastal and Environmental Services and the Department of Environmental Science Rhodes University as well as the Estuary Management Short Course by Nelson Mandela University (NMU). In addition, Rosalie is a member of the Land Rehabilitation Society of Southern Africa (LaRSSA) and a member of the International Association for Impact Assessment (IAIA). Rosalie's key focus areas include renewable energy developments, linear developments, residential developments, and agricultural developments. Her main focuses include Project Management, Basic Assessment Processes, Scoping and EIA Processes, Part 1 and Part 2 Environmental Authorisation (EA) Amendment Processes, Reviewing Reports, the Public Participation Process (PPP), NEMA Section 24 (G) Applications and associated reports, MPRDA Section 53 Applications and GIS Mapping.

3 PROPOSED ACTIVITY

The proposed Coleskop Infrastructure Development includes the following (Figure 3.1):

→ Creating a new access point and upgrading existing jeep tracks and farm roads of approximately 7.1 km in length to create new access road routes. This includes the construction of a new section of road of approximately 1.4 km in length and the upgrade of approximately 5.7 km in length. These roads will be expanded to 12 m in width during the construction phase and rehabilitated to 5 m in width during the operational phase;

→ The construction of three (3) concrete batching plants, temporary laydown areas and construction areas. Each will consist of a concrete and/or steel batching plant of approximately 11 250 m^2, a temporary laydown area of approximately 22 500 m^2 and a construction compound area of approximately 11 250 m^2 within the red polygons indicated in Figure 3.1 below. The combined total area to be cleared for these three (3) concrete batching plants, temporary laydown areas and construction areas is approximately 45 000 m^2 (4.5 ha) within the 135 000 m^2 (13.5 ha) assessed area;

→ The construction of electrical infrastructure which includes an Operation and Maintenance Services (OMS) building of up to 60 m x 60 m, requiring the clearance of up to 3 600 m^2 (0.36 ha); and

→ Two (2) 500 m corridors for the construction of a 132 kV overhead line of approximately 7.6 km in length, which will be routed from the Coleskop Substation to the MTS Substation. This will include a double circuit, twin Tern 132 kV conductor. The overhead line will connect the proposed infrastructure to the existing electrical grid.

*In addition to this EMPr, all recommendations, management and mitigation measures stipulated in the Generic EMPrs should be implemented during the relevant phases of the development. Please refer to:

→ Appendix 1: Generic EMPr for the Development and Expansion for Overhead Electricity Transmission and Distribution Infrastructure: **Corridor Options for the Construction of a 132 kV Overhead Line**; and

→ Appendix 2: Generic EMPr for the Development and Expansion of **Substation** Infrastructure for the Transmission and Distribution of Electricity.

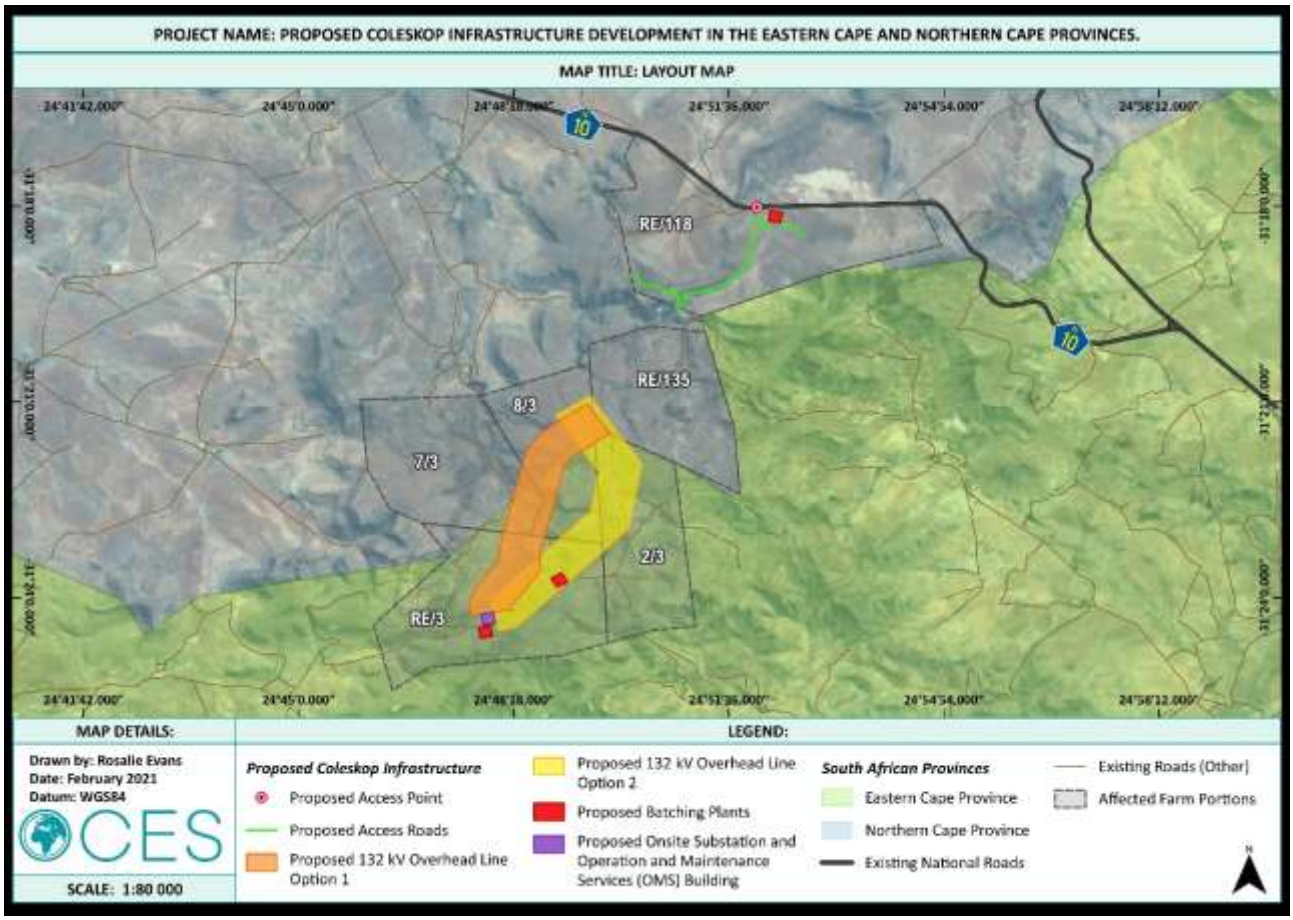

Figure 3.1: Layout Map of the Proposed Coleskop Infrastructure Development site.

Preliminary technical specification of the overhead transmission and distribution with approximate values. **Please note that all electrical infrastructure to be built to Eskom specifications, which will be determined post-preferred bidder status. The below are indicative.**

→ Length: ± 7.6 km
→ Tower parameters: Wooden Poles
→ Number and types of towers:
- Angle strains: 7
- In-line strains: 4
- Suspensions: 23
- TOTAL: ± 34

→ Tower spacing: ± 230 m
→ Tower height: ± 21 m (for most common structure), with a possible range of approximately 15 – 55 m in height.
→ Conductor attachment height
- OPGW: ± 20.8 m
- Top phase: ± 17.2 m
- Mid-phase: ± 15.2 m
- Bottom phase: ± 13.2 m

→ Minimum ground clearance: ± 6.3 m (@ 70°)

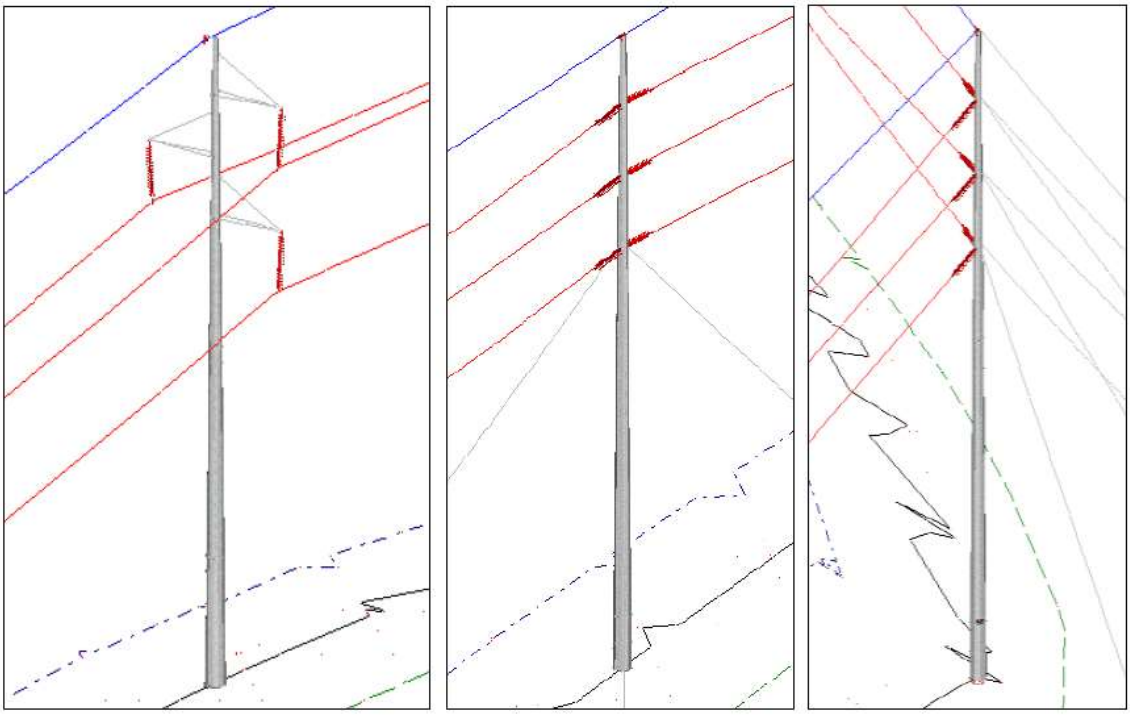

Figure 3.2: Examples of Common Suspension (left), In-Line Strain (middle), and Angle Strain (right).

Table 3.1: Coordinates of the Proposed Coleskop Infrastructure.

1.	**Feature:**	**Batching Plant 1**
	Colour in Layout Map (Figure 3.1):	Red Polygon (north)
	Corner Point Coordinates (degrees, minutes, seconds):	1. 31°18'4.48"S, 24°52'14.21"E
		2. 31°18'5.85"S, 24°52'25.43"E
		3. 31°18'15.51"S, 24°52'23.73"E
		4. 31°18'14.03"S, 24°52'12.64"E
	Centre Point Coordinates:	31°18'9.65"S, 24°52'18.81"E

2.	**Feature:**	**Batching Plant 2**
	Colour in Layout Map (Figure 3.1):	Red Polygon (middle)
	Corner Point Coordinates	1. 31°23'37.34"S, 24°49'2.21"E

	(degrees, minutes, seconds):	2. 31°23'45.74"S, 24°49'7.68"E
		3. 31°23'50.51"S, 24°48'57.79"E
		4. 31°23'41.97"S, 24°48'52.31"E
	Centre Point Coordinates:	31°23'43.37"S, 24°49'0.05"E

3.	**Feature:**	**Batching Plant 3**
	Colour in Layout Map (Figure 3.1):	Red Polygon (south)
	Corner Point Coordinates (degrees, minutes, seconds):	1. 31°24'27.67"S, 24°47'45.51"E
		2. 31°24'25.76"S, 24°47'56.58"E
		3. 31°24'35.33"S, 24°47'58.83"E
		4. 31°24'37.15"S, 24°47'47.72"E
	Centre Point Coordinates:	31°24'31.09"S, 24°47'52.06"E

4.	**Feature:**	**Onsite Substation**
	Colour in Layout Map (Figure 3.1):	Purple Polygon
	Corner Point Coordinates	1. 31°24'15.35"S, 24°47'48.00"E

	(degrees, minutes, seconds):	2. 31°24'13.52"S, 24°47'59.17"E
		3. 31°24'23.07"S, 24°48'1.30"E
		4. 31°24'24.88"S, 24°47'50.17"E
	Centre Point Coordinates:	31°24'18.88"S, 24°47'54.77"E

5.	**Feature:**	**132 kV Overhead Line Corridor Option 1**
	Colour in Layout Map (Figure 3.1):	Orange Polygon *(proposed linear development buffer – the line will be routed within this corridor based on pre-construction ground-truthing)*
	Corner Point Coordinates (degrees, minutes, seconds): **Feature:**	1. 31°21'3.52"S, 24°49'24.77"E
		2. 31°21'28.86"S, 24°49'47.02"E
		3. 31°21'59.27"S, 24°49'4.98"E
		4. 31°23'37.25"S, 24°48'41.73"E
		5. 31°24'11.87"S, 24°48'16.99"E
		6. 31°24'16.52"S, 24°47'39.38"E
		7. 31°23'27.53"S, 24°48'4.13"E
		8. 31°21'46.60"S, 24°48'29.38"E

6.	**Feature:**	**132 kV Overhead Line Corridor Option 2**

	Colour in Layout Map (Figure 3.1):	Yellow Polygon *(proposed linear development buffer – the line will be routed within this corridor based on pre-construction ground-truthing)*
	Corner Point Coordinates (degrees, minutes, seconds): **Feature:**	1. 31°20'54.65"S, 24°49'28.22"E
		2. 31°21'57.16"S, 24°50'16.20"E
		3. 31°22'55.44"S, 24°50'4.84"E
		4. 31°24'27.08"S, 24°48'20.94"E
		5. 31°24'30.46"S, 24°48'3.61"E
		6. 31°23'58.36"S, 24°47'55.21"E
		7. 31°22'41.08"S, 24°49'28.73"E
		8. 31°22'3.92"S, 24°49'36.64"E
		9. 31°21'12.81"S, 24°48'57.07"E

7.	**Feature:**	**Amended Access Roads**
	Colour in Layout Map (Figure 3.1):	Green Line 1
	Starting Point Coordinates:	31°18'1.36"S, 24°52'1.61"E (location of access point)
	Centre Point Coordinates:	31°18'54.62"S, 24°51'52.64"E
	End Point Coordinates:	31°19'34.28"S, 24°50'51.69"E

8.	**Feature:**	**Amended Access Roads**
	Colour in Layout Map (Figure 3.1):	Green Line 2
	Starting Point Coordinates:	31°19'32.60"S, 24°50'47.38"E
	Centre Point Coordinates:	31°19'14.49"S, 24°50'31.68"E
	End Point Coordinates:	31°19'4.36"S, 24°50'6.26"E

9.	**Feature:**	**Additional Access Road**
	Colour in Layout Map (Figure 3.1):	Green Line 3
	Starting Point Coordinates:	31°18'17.10"S, 24°52'2.46"E
	Centre Point Coordinates:	31°18'15.75"S, 24°52'23.66"E
	End Point Coordinates:	31°18'27.89"S, 24°52'45.26"E

4 LAYOUT OF THE EMPR

In order to ensure a holistic approach to the management of environmental impacts during the planning and design, construction, operational and decommissioning phases of the proposed Coleskop Infrastructure, this EMPr sets out the methods by which proper environmental controls are to be implemented by the Contractor and all other parties involved. These phases of development are discussed in more detail below and has specific issues unique to that phase.

4.1 PLANNING AND DESIGN PHASE

The Planning and Design Phase is an integral component of the project life cycle and requires interaction between the design engineers and environmental consultants to ensure that the engineers are aware of the environmental constraints that must be considered and incorporated into the final design of the project.

The format of the Planning and Design Phase section is to ensure that all specifications are included in the design phase. It requires ongoing and in-depth discussions between the final design team and the appointed Environmental Control Officer (ECO). The engineer will have to cost for and be available for, ongoing discussions with the ECO at all stages of final design.

4.2 CONSTRUCTION PHASE

The Construction Phase section details the environmental management system/framework within which construction activities will be governed, and it consists of various actions, initiatives, and systems which the Contractor will have to ensure are in place and are undertaken. It consists of both a management system and environmental specifications which contain detailed specifications that will need to be undertaken or adhered to by the Contractor.

The Construction Phase section will need to be developed parallel to the final design stages, and constructive input should be invited from the selected Contractor. Sound environmental management is orientated around a pragmatic, unambiguous but enforceable set of guidelines and specifications, and for this reason it is imperative that the Contractor, while being bound by the EMPr, fully understands it, and has had input into its final development. For this reason, the final construction EMPr will need to be signed off after input from the selected Contractor prior to the initiation of construction activities. It should, however, be noted that the Contractor must tender on the existing document and that in areas of uncertainty, a precautionary approach to the environmental guidelines and specifications must be adopted.

4.3 OPERATIONAL PHASE

The Operational Phase section provides specific guidance related to operational activities associated with a particular development. By taking pro-active measures during the Construction Phase, potential environmental impacts emanating during the Operational Phase will be minimised. Monitoring of certain issues, such as the success of vegetation re-establishment and erosion control, will be required to continue during operation. The final Operational Phase section should be developed in conjunction with any other relevant stakeholders prior to the adoption thereof.

4.4 DECOMMISSIONING PHASE

This section includes principles for the Decommissioning Phase of the Coleskop Infrastructure. This section will require revisiting and updates at the time of decommissioning.

5 IMPACT MANAGEMENT ACTIONS

5.1 GENERAL CONSTRUCTION PHASE MITIGATION AND MANAGEMENT MEASURES

In addition to the impact management actions which are stipulated in the Coleskop Infrastructure Development BAR, and included in Section 5.2 of this report, the following general Construction Phase mitigation and management measures will apply.

GENERAL CONSTRUCTION PHASE		
ACTIVITY		**MITIGATION AND MANAGEMENT MEASURES**
1.	**SITE DEMARCATION**	The location, layout, and method of establishment of the construction camp, including the following, must be clearly indicated, and demarcated prior to the commencement of construction: → All Contractors' offices; → Lay down areas; → Vehicle wash areas (if any); → Workshops and drip trays; → Fuel storage areas (including filling and dispensing from storage tanks); → Cement/concrete mixing areas (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); and → Other infrastructure required for the running of the project.
		→ The Contractor must erect and maintain permanent and/or temporary fences in the locations directed by the ECO. Such fences should, if so specified, be erected before undertaking designated activities; and → Should "no-go" areas exist on the site, the Contractor must ensure that, insofar as he/she has the authority, no person, machinery, equipment, or materials enter the "no-go" areas at any time.
2.	**SITE ACCESS**	Details, including a drawing, showing where and how the access points and routes will be located and managed must be submitted to the ECO and the Applicant. These should be supported by the following management requirements: → On the site and within such distance of the site as may be stated, the Contractor should control the movement of all vehicles, including vehicles of suppliers so that they remain on designated routes, are distributed so as not to cause an undue concentration of traffic and that all relevant laws are complied with. In addition, such vehicles should be routed and operated in a manner that minimises the disruption to regular users of the routes; → On gravel or earth roads on-site and within 500 m of the site, the Contractor's vehicles as well as the suppliers' must not exceed a speed of 40 km/h or as directed by the ECO; and → The Contractor must supply the ECO with a Method Statement detailing the location and management of all access points and roads.
3.	**MATERIALS HANDLING, USE AND STORAGE**	→ The Contractor must ensure that any delivery drivers are informed of all procedures and restrictions (including identified "no-go" areas) required to comply with this EMPr; → The Contractor must ensure that these delivery drivers are supervised during offloading, by someone with an adequate understanding of the requirements of the EMPr; → Materials must be appropriately secured to ensure safe passage between destinations. Loads including, but not limited to, sand, stone chip, fine vegetation, refuse, paper and cement, should have appropriate cover to prevent them spilling from the vehicle during transit.; → The Contractor will be responsible for any clean up resulting from the failure by his/her employees or suppliers to properly secure transported materials;

GENERAL CONSTRUCTION PHASE		
ACTIVITY		**MITIGATION AND MANAGEMENT MEASURES**
		→ All manufactured and/or imported material should be stored within the Contractor's camp, and, if required by the EMPr, out of the rain; → All laydown areas outside of the construction camp will be subject to the ECO's approval; and → Imported gravel, fill, soil, and sand materials should be free of weeds, alien invasive seed matter, plant material, litter and contaminants and must be obtained from sources approved by the ECO.
4.	**STOCKPILING**	→ Any stockpiling of gravel, cut, fill or any other material including spoil must only be in areas that have been approved by the ECO within the defined working area; → The Contractor should ensure that the material does not blow or wash away. If the stockpiled material is in danger of being washed or blown away, the Contractor should spray it with Dustex or cover it with a suitable material, such as hessian or plastic. Stockpiles of topsoil must not be covered with plastic; and → No stockpiling of any material will be allowed within 20 m of any "no-go" areas (if applicable).
5.	**SOLID WASTE MANAGEMENT**	→ Onsite burning, burying, or dumping of any waste materials, litter or refuse must not occur; → The Contractor should provide vermin and weatherproof bins with lids of sufficient number and capacity to store the solid waste produced on a daily basis. The lids must be kept firmly on the bins at all times; → Bins must not be allowed to become overfull and should be emptied daily; → The waste from bins may be temporarily stored onsite in a central waste area that is weatherproof and scavenger proof, and which the ECO has approved; → Recyclable waste should be disposed of into separate skips/bins and removed offsite for recycling; → All solid waste must be disposed of offsite at an approved registered landfill site. The Contractor must supply the ECO with the appropriate disposal certificates; and → The Contractor must submit a solid waste management plan, as part of the Pollution Control Method Statement, to the ECO.
6.	**WATER USE**	→ All sources of water for construction purposes must be approved by the ECO in writing before any such sources can be used to obtain water; and → All wash water should be recycled for use as wash water again or for dust suppression, where applicable.
7.	**HAZARDOUS SUBSTANCES**	→ The transportation and handling of hazardous substances must comply with the provisions of the Hazardous Substances Act (Act No.187 of 1993) and associated regulations as well as SABS 0228 and SABS 0229; → The Contractor must also comply with all other applicable regional and local legislation and regulations with regard to the transport, use and disposal of hazardous substances. Hazardous chemical substances (as defined in the Regulations for Hazardous Chemical Substances) used during construction must be stored in secondary containers. The relevant Material Safety Data Sheets (MSDS) must be available onsite; → Procedures detailed in the MSDSs must be followed in the event of an emergency situation; → The Contractor will be responsible for the training and education of all personnel onsite who will be handling hazardous materials about their proper use, handling and disposal; and → If potentially hazardous substances are to be stored or used onsite, the Contractor must submit a Method Statement to the ECO detailing the substances/materials to be used, together with the transport, storage, handling, and disposal procedures for the substances.

GENERAL CONSTRUCTION PHASE		
ACTIVITY		**MITIGATION AND MANAGEMENT MEASURES**
8.	**CEMENT AND MIXING OF CONCRETE**	→ The proposed location of cement mixing areas (including the location of cement stores and sand and aggregate stockpiles) must be indicated on the site layout plan and approved by the ECO; → All wastewater generated from the operation and cleaning of concrete mixing equipment and other sources of concrete should be passed through a concrete wastewater settlement system; → The Contractor must ensure that minimal water is used for washing of concrete and cement mixing equipment; → Used cement bags must be disposed of in weatherproof bins onsite to prevent the generation of wind-blown cement dust and the bags from blowing away; → The Contractor must ensure that concrete is mixed on mortar boards, all visible remains of concrete are removed and disposed of as waste and that all surplus aggregate is removed; and → As part of the Pollution Control and Concrete Mixing Method Statement, a plan detailing all actions to be taken to comply with the requirements must be submitted to the ECO.
9.	**FUELS AND OIL**	<u>Fuel Storage</u> → All construction materials including fuels and oil should be stored in demarcated areas that are contained within berms/bunds. Washing and cleaning of equipment should also be done in berms or bunds, in order to trap any cement and prevent excessive soil erosion; → All necessary approvals with respect to fuel storage and dispensing must be obtained from the appropriate authorities. Symbolic safety signs depicting “No Smoking” and “Danger”, conforming to the requirement of SABS 1186, must be prominently displayed in and around the fuel storage area. There must be adequate fire-fighting equipment at the fuel storage area; → The Contractor must ensure that all liquid fuels and oils are stored in tanks with lids, which are kept firmly shut and under lock and key at all times. The capacity of the tank should be clearly displayed, and the product contained within the tank clearly identified using the emergency information system detailed in SABS 0232 part 1. Fuel storage tanks capacity must not exceed 9 000 litres and must be kept on-site only for as long as fuel is needed for construction activities, on completion of which they must be removed; → Tanks onsite should not be linked or joined via any pipe work but should remain as separate entities. The tanks must be situated on a smooth impermeable base with a bund. The volume inside the bund should be 110% of the total capacity of the largest storage tank. The base may be constructed of concrete, or of plastic sheeting with impermeable joints with a layer of sand over to prevent perishing. The impermeable lining should extend to the crest of the bund. The floor of the bund should be sloped to enable any spilled fuel and/or fuel-contaminated water to be removed. Appropriate material, approved by the ECO that absorbs / breaks-down or encapsulates minor hydrocarbon spillage and which is effective in water should be installed in the sump; → The tanks and bunded areas should be covered by a roofed structure, taken offsite to a disposal site approved by the ECO, and the material that absorbs / breaks-down or encapsulates minor hydrocarbon spillage should be replenished; → Adequate precautions should be provided to prevent spillage during the filling of any tank and during the dispensing of the contents. The dispensing mechanism for the fuel storage tanks should be stored in a waterproof container when not in use; and → As part of the required site layout for the construction camp, a plan must be submitted to the ECO detailing the design, location and construction of the fuel storage area as well as for the filling and dispensing from storage tanks and for the type of absorbing / breaking-down or encapsulating material to be used.

GENERAL CONSTRUCTION PHASE		
ACTIVITY		**MITIGATION AND MANAGEMENT MEASURES**
		Refuelling → Where reasonably practical, the plant should be refuelled at a designated re-fuelling area/depot or at a workshop as applicable. If this is not reasonably practical, then the surface under the refuelling area must be protected and appropriately bunded against pollution to the reasonable satisfaction of the ECO prior to any refuelling activities; → If fuel is dispensed from 200-litre drums, the proper dispensing equipment must be used, and the drum should not be tipped in order to dispense fuel. The Contractor should ensure that the appropriate fire-fighting equipment is present during refuelling operations; and → The Contractor must ensure that there is always a supply of absorbent material readily available to absorb / breakdown or where possible, be designed to encapsulate minor hydrocarbon spillages. The quantities of such materials should be able to handle a minimum of 200 ℓ of hydrocarbon liquid spill. Prior to any refuelling or maintenance activities, the ECO must approve this material. → Used oil and hydrocarbon contaminated materials → Used oil should be stored at a central location onsite prior to removal offsite for disposal at an approved disposal or recycling site; and → Old oil filters and oil, petrol and diesel-soaked material must be treated as hazardous waste. The Contractor should remove all oil, petrol, and diesel-soaked sand immediately and should dispose of it as hazardous waste or treat it onsite with material that breaks down or encapsulates such spillages as approved by the ECO.
10.	**WORKSHOP, EQUIPMENT MAINTENANCE AND STORAGE**	→ The Contractor should ensure that in his workshop and other plant maintenance facilities, including those areas where, after obtaining the ECO's approval, the Contractor carries out emergency plant maintenance, there is no contamination of the soil or vegetation. The workshop must have a smooth impermeable (concrete or thick plastic covered with sand) floor; → The floor should be bunded and sloped towards an oil trap or sump to contain any spillages. When servicing equipment, drip trays should be used to collect the waste oil and other lubricants. Drip trays should also be provided in construction areas for stationary plant (such as compressors) and for "parked" plant (such as scrapers, loaders, vehicles); → All vehicles and equipment must be kept in good working order and serviced regularly. Leaking equipment must be repaired immediately or removed from the site; → All vehicle and equipment washing must be undertaken in the workshop or maintenance areas, and these areas must be equipped with a suitable impermeable floor and sump/oil trap. The use of detergents for washing should be restricted to low phosphate and nitrate products and low sudsing-type detergents; and → As part of the site layouts, a plan must be submitted to the ECO detailing the design of the bunding of the workshop and how run-off from the workshop will be managed as well as how drip trays used under plant will be managed.
11.	**ABLUTION FACILITIES**	→ Washing, whether of a person or of personal effects, and acts of excretion and urination are strictly prohibited other than at the facilities provided. The Contractor must provide the necessary ablution facilities for all his/her personnel prior to the commencement of work; → Ablution facilities must be supplied by the Contractor for the workers at a ratio of at least 1 toilet per 20 workers in areas approved by the ECO. Toilets should be situated within 200 m of any area where work is taking place in numbers sufficient to meet the ratio depicted above for the workers in the area; → The facilities should be maintained in a hygienic state and serviced regularly. Toilet paper must be provided. Temporary/portable toilets should be secured to the ground to prevent them toppling due to wind or any other cause, to the satisfaction of the ECO; and

GENERAL CONSTRUCTION PHASE		
ACTIVITY		**MITIGATION AND MANAGEMENT MEASURES**
		→ Discharge into the environment and burial of waste is strictly prohibited. The Contractor must ensure that no spillage occurs when the toilets are cleaned or emptied and that the contents are removed from the site. Toilets must be emptied before any temporary site closure.
12.	**EATING AREAS**	→ The Contractor should designate eating area(s), subject to the approval of the ECO. No cooking is allowed outside of the Contractor's camp area onsite; → At mealtimes, all workers must eat in designated eating areas. These areas should have shade for the workers; → Sufficient bins must be present in these areas. All disposable food packaging must be disposed of in the bins after every meal; and → The feeding- or leaving of food for animals is strictly prohibited.
13.	**SITE STRUCTURES**	→ All site establishment components (as well as equipment) should be positioned to limit visual intrusion on neighbouring areas and the size of the land area disturbed. The type and colour of roofing and cladding materials of the Contractor's temporary structures should be selected to reduce reflection; and → The Contractor should supply and maintain adequate and suitable sheds for the storage of materials. Sheds for the storage of materials that may deteriorate or corrode if exposed to the weather should be weatherproof, adequately ventilated and provided with raised floors.
14.	**LIGHTING**	→ The Contractor should ensure that any lighting installed on the site for his/her activities does not cause a reasonably avoidable disturbance to neighbouring residents or the naturally occurring fauna.
15.	**NOISE**	→ The Contractor should take precautions to minimise noise generated on-site (e.g. install and maintain silencers on machinery); → The Contractor must comply with the Noise-Induced Hearing Loss Regulations published under the Occupational Health and Safety Act; → Appropriate directional and intensity settings are to be maintained on all hooters and sirens; and → No amplified music must be allowed on site. The Contractor must not use sound amplification equipment on-site unless in emergency situations.
16.	**DUST CONTROL**	→ The Contractor will be responsible for the continued control of dust arising from his/her operations. The Contractor must take all reasonable measures to minimize the generation of dust as a result of construction activities to the satisfaction of the ECO. Appropriate dust suppression measures include spraying or dampening with water, using a commercial dust binder (such as Hydropam or Dustex), rotovating straw bales, planting of open cleared space and the scheduling of dust-generating activities. If the conditions are such that the Contractor cannot satisfactorily dampen the dust, then the ECO may halt operations until such time as the conditions are more suitable for lower dust-generating construction activities; → Areas that are to have the topsoil stripped for construction purposes must be limited and only stripped when work is about to take place; → Other activities and situations that may result in a dust nuisance include site clearance and other earth moving operations, open cleared space, stockpiles of topsoil or sand and activities associated with concrete mixing; and → The appropriate health and safety equipment (e.g. dust masks) should be worn by workers during the phases of dust-producing construction activity.
17.	**ENVIRONMENTAL AWARENESS TRAINING**	→ Environmental awareness training courses should be run for all personnel onsite (See Annexure A for a proposed Basic Environmental Education Course). Two courses should be run, one for the Contractor's and Subcontractor's management and one for all site staff and labourers. Courses should be run in the morning during normal working hours at a suitable venue provided by the Contractor. All attendees should remain for the duration of the course and sign an attendance register on completion, that clearly indicates participant's names, a copy of which must be handed to the ECO;

GENERAL CONSTRUCTION PHASE		
ACTIVITY		**MITIGATION AND MANAGEMENT MEASURES**
		→ The size of each session should be limited to 30 people. The Contractor should allow for sufficient sessions to train all personnel. Subsequent sessions should be run for any new personnel coming onto site. A Method Statement with respect to the organisation of these courses should be submitted; and → Notwithstanding the specific provisions of this clause it is incumbent upon the Contractor to convey the sentiments of the EMPr to all personnel and Subcontractors involved with the Works.
18.	**FIRE CONTROL**	→ The Contractor must take all the necessary precautions to ensure that fires are not started as a result of site activities; → No open fires must be permitted on the site; → Smoking must not be permitted in areas where there is a fire hazard. Such areas include the workshop and fuel storage areas and any areas where the vegetation or other material is such as to support the rapid spreading of an initial flame; → The Contractor should appoint a Fire Officer who will be responsible for ensuring immediate and appropriate actions in the event of a fire and will ensure that employees are aware of the procedures to be followed. The Contractor must forward the name of the Fire Officer to the ECO for approval within 7 days of being on-site; → The Contractor must ensure that there is basic firefighting equipment available onsite at all times. This should include at least rubber beaters when working in urban open spaces and natural areas, and at least one fire extinguisher of the appropriate type when welding or other "hot" activities are undertaken; and → The Contractor will be liable for any expenses incurred by any organisations called to assist with fighting fires that were started as a result of his/her activities or personnel, and for any cost relating to the rehabilitation of burnt areas, or consequential damages.
19.	**EMERGENCY PROCEDURES**	→ Emergency procedures, including the names and contact details of responsible personnel and emergency services must be made available to all staff and should be clearly displayed at relevant locations at the site. The Contractor should advise the ECO of any emergencies onsite, together with a record of action taken, within 24 hours of the emergency occurring; and → The Contractor must submit a Method Statement covering the procedures for the following emergencies: <u>Fire</u> → The Contractor should advise the relevant authority of a fire as soon as one starts and must not wait until it is out of control; and → The Contractor must ensure that all employees are aware of the procedures to be followed in the event of a fire. <u>Accidental leaks and spillages</u> → The Contractor must ensure that all employees are aware of the procedures to be followed for dealing with spills and leaks, which must include notifying the ECO and the relevant authorities. The Contractor must ensure that all the necessary materials and equipment for dealing with spills and leaks are available onsite at all times. Treatment and remediation of the spill areas must be undertaken to the reasonable satisfaction of the ECO; → In the event of a hydrocarbon spill, the source of the spillage must be isolated, and the spillage contained. The area should be cordoned off and secured. The Contractor should ensure that there is always a supply of absorbent material readily available to absorb / breakdown or where possible, be designed to encapsulate minor hydrocarbon spillages. The quantities of such materials should be able to handle a minimum of 200 ℓ of hydrocarbon liquid spill; and

GENERAL CONSTRUCTION PHASE		
ACTIVITY		**MITIGATION AND MANAGEMENT MEASURES**
		→ Any spills must be cleared, and the contaminated soil or sludge disposed of in an appropriate manner, approved by the ECO, or at a licensed hazardous waste disposal site.
20.	**PROTECTION OF NATURAL FEATURES**	→ The Contractor must not deface, paint, damage or mark any natural features (e.g. rock formations or trees) situated in or around the site for survey or other purposes unless agreed upon beforehand with the ECO. Any features affected by the Contractor in contravention of this clause must be restored/rehabilitated to the satisfaction of the ECO; and → The Contractor and onsite staff must not at any stage enter dense, intact vegetation without written approval from the ECO.
21.	**PROTECTION OF FAUNA AND FLORA**	→ A Botanist should identify the need for plant search and rescue (prior to construction) to identify Species of Conservation Concern (SCC) to be relocated; → Protected plant species should then be removed from the designated construction footprint and relocated to adjacent areas of similar habitat that should not be affected by construction activities. The plants should be used in landscaping once construction is complete (if applicable); → Except to the extent necessary for the carrying out of the works, flora should not be removed, damaged or disturbed; → The removal and stockpiling of topsoil must also be carried out in accordance with this EMPr; → Trapping, poisoning and/or shooting of animals is strictly forbidden. No domestic pets or livestock are permitted onsite; → The use of chemicals of all forms should be carefully controlled and monitored to avoid contamination of surrounding areas; and → Construction phases should allow for education of staff as to the significance of species of conservation concern.
22.	**PROTECTION OF HERITAGE FEATURES**	→ Construction managers and/or foremen must be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites; → If concentrations of palaeontological and/or archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the Eastern Cape Provincial Heritage Resources Authority (ECPHRA) and/or the South African Heritage Resources Agency (SAHRA) (021 642 4502) so that systematic and professional investigation/ excavation can be undertaken; and → Any person who causes intentional damage to archaeological or historical sites and/or artefacts could be penalised or legally prosecuted in terms of the National Heritage Resources Act (Act No. 25 of 1999).
23.	**VEGETATION CLEARANCE**	→ Vegetation clearing and trampling should be avoided in areas demarcated as “no-go” areas (if any); → Temporary infrastructure such as the site camp, lay down areas and storage areas must not be placed in any other area than the area approved by the ECO; → The Contractor must work according to a plan, which demarcates areas to be cleared. The plan should be part of the Project Layout Plan developed in the Site Design Phase; → The minimum amount of vegetation clearance must take place; and → Collection of, or wilful damage to, any plants outside of the areas demarcated for clearing is not allowed.
24.	**TOPSOIL**	→ Topsoil should only be stripped from the areas as indicated below: ○ Any area which is to be used for temporary storage of materials; ○ Areas which could be polluted by any aspect of the construction activity; and ○ Areas designated for the dumping of soil. → Stripping of topsoil should be undertaken in such a manner as to minimise erosion by wind or runoff;

GENERAL CONSTRUCTION PHASE		
ACTIVITY		**MITIGATION AND MANAGEMENT MEASURES**
		→ Outside of the development footprint, topsoil will be stripped to a depth not exceeding 150 mm from the original ground level; → Areas from which the topsoil is to be removed must be cleared of any foreign material which could form part of the topsoil during removal including bricks, rubble, any waste material, litter, excess vegetation and any other material which could reduce the quality of the topsoil; → The Contractor must ensure that subsoil and topsoil are not mixed during stripping, excavation, reinstatement and rehabilitation. If mixed with clay sub-soil, the usefulness of the topsoil for rehabilitation of the site will be lost; → Soils should be exposed for the minimum time possible once cleared; → Topsoil should be temporarily stockpiled, separately from (clay) subsoil and rocky materials; → Topsoil should only be stockpiled in areas designated by the ECO; → Stockpiles will either be vegetated with indigenous grasses or covered by a suitable fabric to prevent erosion and invasion of weeds; and → Stockpiled topsoil must not be compacted.
25.	**STORMWATER MANAGEMENT**	→ Stormwater should be managed using suitable structures such as swales, gabions and rock rip-wrap so that any run-off from the development site is attenuated prior to discharge. Silt and sedimentation should be kept to a minimum, through the use of the above-mentioned structures by also ensuring that all structures don't create any form of erosion; and → Natural run-off must be diverted to stormwater drains where these are available.
26.	**EROSION AND SEDIMENTATION CONTROL**	→ The Contractor must take all reasonable measures to limit erosion and sedimentation due to construction activities and must comply with such detailed measures as may be required by the EMPr; → Revegetate areas that have been disturbed as soon as possible; → Where erosion and/or sedimentation occur, whether on or off the site, despite the Contractor complying with the aforementioned, rectification should be carried out in accordance with details specified by the ECO. Where erosion and/or sedimentation occur due to the fault of the Contractor, rectification must be carried out to the reasonable requirements of the ECO and at the expense of the Contractor; and → Actions must also be taken in the event of heavy rains and potential flooding, whereby diversion barriers must not cause excessive erosion.
27.	**AESTHETICS**	→ The Contractor must take reasonable measures to ensure that construction activities do not have an unreasonable impact on the aesthetics of the area.
28.	**COMMUNITY RELATIONS**	→ The Contractor must keep a "Complaints Register" onsite. The Register should contain all contact details of the person who made the complaint, and information regarding the complaint itself as well as the date and time that the complaint was resolved; → The ECO will be responsible for responding to queries and/or complaints and may request assistance from the Contractor's Management Staff; and → Construction materials and other purchases relating to the project should be done, where possible, within the nearby community and at local shops.
29.	**TEMPORARY SITE CLOSURE**	→ If the Site is closed for a period exceeding 5 days, the Contractor's Safety, Health and Environment (SHE) Officer in consultation with the ECO should carry out the following checklist procedure and ensure that the following conditions pertain and report on compliance with this clause: <u>Fuels / flammables / hazardous materials stores</u> → Fuel stores are as low in volume as practicable; → There are no leaks; → The outlet is secure and locked; → The bund is empty; → Fire extinguishers are serviced and accessible;

GENERAL CONSTRUCTION PHASE		
ACTIVITY		**MITIGATION AND MANAGEMENT MEASURES**
		→ The area is secure from accidental damage through vehicle collision and the like; → Emergency and contact numbers are available and displayed; and → There is adequate ventilation in enclosed spaces. <u>Safety</u> → Check that site safety checks have been carried out in accordance with the Occupational Health and Safety Act (No. 85 of 1993) prior to site closure; → An inspection schedule and log for use by security or contracts staff is developed; → All trenches and manholes are secured; → Applicable notice boards are in place and secured; → Emergency and Management contact details are prominently displayed; → Security personnel have been briefed and have the facilities to contact or be contacted by relevant management and emergency personnel; → Night hazards such as reflectors, lighting, traffic signage etc. have been checked; → Fire hazards identified and the local authority notified of any potential threats, e.g. large brush stockpiles, fuels etc.; → Pipe stockpiles are wedged / secured; → Scaffolds are secure; and → Structures vulnerable to high winds are secure. <u>Erosion</u> → Wind and dust mitigation measures such as straw, brush packs, irrigation etc. are in place; → Excavated and filled slopes and stockpiles are at a stable angle; → Re-vegetated areas have a watering schedule and the supply to such areas is secured; and → There are sufficient detention ponds or channels in place. <u>Water contamination and pollution</u> → Hazardous fuel stores are secure; → Cement and materials stores are secure; → Toilets are empty and secured; → Refuse bins are empty and secured; → Bunding is clean and treated with appropriate material that will absorb / breakdown and where possible be designed to encapsulate minor hydrocarbon spillage; and → Drip trays are empty and secure.

5.2 BAR, SPECIALIST AND STAKEHOLDER MITIGATION AND MANAGEMENT MEASURES

The following table sets out the potential environmental, social and specialist issues that could occur during the lifespan of the Coleskop Infrastructure Development, as identified by the BA Process. The BAR, the associated specialists and stakeholders provided mitigation measures and recommendations in an effort to reduce the significance of potential negative impacts and enhance potential benefits for the Planning and Design, Construction, Operational and Decommissioning Phases of the Coleskop Infrastructure Development.

PLANNING & DESIGN PHASE			
IMPACT		**IMPACT DESCRIPTION**	**MITIGATION**
1.	**COMPLIANCE WITH RELEVANT LEGISLATION**	During the planning and design phase, failure to obtain the necessary authorisations and/or permits, as well as failure to	→ Activities, which trigger listed activities in terms of the NEMA (Act No. 107 of 1998, as amended) EIA Regulations (2014 and subsequent 2017

		adhere to existing policies and legal obligations, could lead to the project conflicting with local, provincial and national policies and legislation. This could result in a lack of institutional support for the project, overall project failure and undue social and environmental impacts.	amendments), must not commence prior to receipt of an EA from the national DFFE. → All identified water uses in terms of Section 21 of the NWA must not commence prior to receipt of the necessary water use authorisation(s) from the DWS. → All additional permitting and authorisation requirements, including plant removal permits, must be obtained prior to the commencement of any vegetation clearance and/or construction activities. → A suitably qualified Environmental Control Officer (ECO) must be appointed prior to the commencement of the construction phase to monitor the Applicant's compliance with the conditions of all the relevant permits and authorisations. → All phases of the Coleskop Infrastructure Development must comply with the relevant municipal by-laws and should consider the available best practice guidelines.
2.	**IMPACT ON HERITAGE AND PALAEONTOLOGY RESOURCES**	SAHRA recommends these mitigation measures in accordance with section 3(4) of the NEMA Regulations and section 38(8) of the NHRA in the format provided in section 38(4) of the NHRA to reduce adverse impacts on sensitive heritage and palaeontology resources.	→ The Final BAR and EMPr must be submitted to SAHRA for record purposes. → The decision regarding the EA Application must be communicated to SAHRA and uploaded to the SAHRIS Case application. → Should it not be possible to avoid the identified heritage site, a permit in terms of section 35 of the NHRA and Chapter II and IV of the NHRA regulations must be applied for from SAHRA prior to the construction phase. No mitigation may occur without a permit issued in this regard.
3.	**IMPACT ON ESKOM INFRASTRUCTURE**	Eskom has the following requirements for work in or near Eskom servitudes.	→ Eskom's rights and services must be acknowledged and respected at all times. → Eskom shall at all times retain unobstructed access to and egress from its servitudes. → Eskom's consent does not relieve the developer from obtaining the necessary statutory, landowner or municipal approvals. → Any cost incurred by Eskom as a result of non-compliance to any relevant environmental legislation will be charged to the developer. → If Eskom has to incur any expenditure in order to comply with statutory clearances or other regulations as a result of the developer's activities or because of the presence of his equipment or installation within the servitude restriction area, the developer shall pay such costs to Eskom on demand. → Eskom's rights and duties in the servitude shall be accepted as having prior right at all times and shall not be obstructed or interfered with. → In spite of the restrictions stipulated by Regulation 15 of the Electrical Machinery Regulations of the Occupational Health and Safety Act, 1993 (Act 85 of 1993), as an additional

			safety precaution, Eskom will not approve the erection of houses, or structures occupied or frequented by human beings, under the power lines or within the servitude restriction area. → Eskom may stipulate any additional requirements to highlight any possible exposure to Customers or Public to coming into contact or be exposed to any dangers of Eskom plant. → It is required of the developer to familiarise himself with all safety hazards related to Electrical plant. → Any third-party servitudes encroaching on Eskom servitudes shall be registered against Eskom's title deed at the developer's own cost. If such a servitude is brought into being, its existence should be endorsed on the Eskom servitude deed concerned, while the third party's servitude deed must also include the rights of the affected Eskom servitude.
4.	**IMPACT ON BIODIVERSITY**	DFFE: Biodiversity and Conservation recommends these impact management actions to reduce the impact on biodiversity.	→ A final avifaunal walk through must be conducted prior to construction to ensure that all the avifaunal aspects have been adequately managed and to ground truth the final layout of all infrastructure. → Anti-collision devices such as bird flappers must be installed on all high risk sections of the powerline to forewarn birds of the risk. → All areas with habitat rich and high concentration of flora and fauna must be avoided. → The proposed development footprints must be surveyed during peak flowering season prior to construction. → The proposed development must comply with all the requirements as outlines in the EIA guideline for renewable energy projects and the Best Practice Guideline for Birds and Wind Energy for assessing and monitoring the impact of wind energy facilities on birds in Southern Africa.
CONSTRUCTION PHASE			
IMPACT		**IMPACT DESCRIPTION**	**MITIGATION**
5.	**INCREASE IN AIR EMISSIONS**	During the construction phase, the dust created as a result of the construction activities, such as vegetation clearance, grading and levelling of the exposed land and the transport of construction materials could be a nuisance during the construction phase.	→ Exhaust emissions from construction vehicles must be minimised by ensuring that all vehicles are properly equipped and serviced. → Vegetation clearance must be limited to approved and demarcated infrastructure development footprints. → If fine building materials, such as sand, are to be transported on the back of trucks, they must be adequately covered. → Excavations and other clearing activities must only be done during the agreed-upon working hours and days. → A speed limit of 40 km per hour must not be exceeded on gravel roads.

6.	**INCREASE IN NOISE LEVELS**	Noise will be created on the site during the construction phase due to the operation of construction equipment, noise generated by construction vehicles both on-site and during travel to and from the site as well as noise generated by the construction workers which are all likely to result in an increase in noise levels and potentially be a nuisance to individuals in proximity to the site.	→ All construction vehicles must be in sound working order and meet the necessary noise level requirements. → All relevant municipal by-laws, with regards to noise control, must apply. → Construction workers must not make use of portable radios, vehicle radios, whistles, and other items which generate excessive noise, while they are on the construction site.
7.	**STORMWATER MANAGEMENT**	Sediment is likely to be created during the construction phase of the Coleskop Infrastructure Development. This could be carried into nearby watercourses during rainfall events due to increased runoff as a result of the increase in impermeable surfaces. In addition, inadequate stormwater management could result in increased soil erosion within the proposed site and surrounds.	→ A Stormwater Management Plan must be compiled and implemented during the construction phase. → Vegetation must be retained, where possible, to avoid soil erosion. → If slopes are cleared during construction, they must be rehabilitated as soon as possible to minimise soil erosion losses. → Development footprints must be demarcated and vegetation clearing and topsoil removal (if required) limited to these areas. → Stockpiled materials must not be stored within 100 m of a watercourse. → Stockpile areas must be suitably bunded to prevent waterborne erosion of exposed soils where there is a likelihood that the soils will be washed into nearby watercourses.
8.	**CONTAMINATION DUE TO THE STORAGE AND HANDLING OF HAZARDOUS SUBSTANCES**	During the construction phase, onsite maintenance of construction vehicles and/or machinery and equipment could result in oil, diesel and other hazardous chemicals contaminating surface and groundwater. Surface and groundwater pollution could arise from the spillage or leaking of diesel, lubricants and cement during the storage and handling of hazardous substances for construction activities.	→ The storage of fuels and hazardous materials must be located away from all identified sensitive water resources. → All hazardous substances, including fuel, oil, and cement, must be stored in a bunded area. → The recommendations of the Stormwater Management Plan must be implemented throughout the construction phase. → Spill kits must be readily available on-site throughout the construction phase. → Drip trays must be placed under all stationary plant. → If a spill occurs on a permeable surface (e.g. soil), a spill kit must be used to reduce the potential spread of the spill immediately. → If a spill occurs on an impermeable surface such as cement or concrete, the surface spill must be contained using oil absorbent materials. → Contaminated remediation materials must be carefully removed from the area of the spill, to prevent the further release of hazardous chemicals to the environment and stored in adequate containers until appropriate disposal at a suitably licenced landfill site.
9.	**LOSS OF RIPARIAN VEGETATION**	During the construction phase, the upgrade of the existing	→ Should the removal of riparian vegetation be required, it should take place under the

		roads could require the removal of riparian vegetation, which is likely to have adverse effects on the associated aquatic ecosystems.	supervision of the ECO and must be demarcated prior to removal. The clearance of riparian vegetation should be restricted to the amount required for the upgrade of the existing roads and the construction of the new road. → Avoid placing the OHL pylons within 20 m from wetlands, rivers, and tributaries. → The removal of the alien invasive vegetation must be prioritised.
10.	**FIRE RISK**	The proposed construction of the Coleskop Infrastructure Development could increase the risk of fires, which could potentially result in the loss of crops, grazing and livestock during the construction phase. In addition, fires could result in injury to employees within the site and the potential damage to or loss of property.	→ Open fires must not be permitted within the proposed site during the construction phase. → Smoking must be restricted to designated smoking areas which have easy access to fire-fighting equipment. → The Contractor, or the appointed fire marshal, must take all responsible steps to prevent the accidental occurrence and the spreading of fires. → The Contractor and/or the appointed fire marshal must ensure that there is always fire-fighting equipment available on-site during the construction phase. → The Contractor and/or the appointed fire marshal must ensure that all site personnel are aware of the risk of fires, the procedure to be followed in the event of a fire and that all site personnel have access to the relevant contact details of the nearest Fire and Emergency Services.
11.	**SOCIO-ECONOMIC BENEFITS**	The construction of the Coleskop Infrastructure will create short-term employment opportunities. These employment opportunities will contribute to the skills development of individuals and a short-term income which will benefit individuals and their families.	→ Where suitable, preference should be given to the employment of individuals residing in the communities which are located close to the site. → A Community Liaison Officer (CLO) should be appointed for the duration of the construction phase. This individual should have knowledge of the local communities and assist with the employment processes. The CLO should be available and accessible to the general public, the developer and all individuals employed by the developer during the construction phase.
12.	**LOSS OF AGRICULTURAL LAND DUE TO DEVELOPMENT**	The vegetation clearing required for the construction of the Coleskop Infrastructure will result in the loss of grazing land, which is currently used for livestock and wildlife grazing.	→ Vegetation clearance must be limited to the demarcated development footprint.
13.	**WASTE MANAGEMENT**	The inadequate management of waste which is produced during the construction phase is likely to result in the pollution of the study area and immediate surrounds.	→ All general waste, which is temporarily stored, on-site, must be done so in windproof/sealable containers before being disposed of at a registered landfill site. → Waste must not be burned on site. → Construction workers must be informed that littering is prohibited within the construction site and surrounding areas. → A Waste Management Plan should be compiled and implemented for the duration of the construction phase.

14.	**VISUAL AND AESTHETIC IMPACTS**	The construction activities associated with the development of the Coleskop Infrastructure are likely to have an adverse impact on the visual and aesthetic quality of the study area and immediate surrounds. However, the construction site will only be visible to a limited number of individuals due to the location of the development.	→ All general waste, which is temporarily stored, on-site must be done so in windproof/sealable containers before being disposed of at a registered landfill site. → Vegetation clearance must be limited to the demarcated development footprint. → Temporary disturbed areas must be rehabilitated as soon as practically possible.
15.	**LOSS OF NATURAL VEGETATION DUE TO THE VEGETATION CLEARING**	Vegetation clearance for the construction of the proposed Coleskop Infrastructure Development will result in the direct loss of indigenous vegetation, including Besemkaree Koppies Shrubland and Eastern Upper Karoo Vegetation.	→ The clearance of vegetation at any given time should be kept to a minimum and vegetation clearance must be strictly limited to the development footprint. → Employees must be prohibited from making fires and harvesting plants. → As far as practically possible, existing access roads should be utilised. → The development footprint/construction area must be demarcated to prevent encroachment of construction activities into surrounding areas. → Ensure that roads on slopes incorporate stormwater diversion. → Where possible, reserve and store natural vegetation for re-vegetation post-construction. → Only indigenous plant species must be used for rehabilitation purposes. → Topsoil must be carefully removed and used to rehabilitate the site.
16.	**LOSS OF PLANT SPECIES OF CONSERVATION CONCERN (SCC)**	The clearance of vegetation for the construction of the proposed Coleskop Infrastructure Development could result in the loss of plant Species of Conservation Concern (SCC).	→ The proposed Coleskop Infrastructure Layout must be surveyed by a qualified botanical specialist in peak flowering season, prior to construction. Where feasible, minor realignment should be considered to preserve the species in situ. Where this is not feasible, all identified SCC must be translocated to the nearest appropriate habitat, preferably a protected portion of the property. → Permits for the removal/translocation of all SCC must be obtained prior to vegetation clearance for the construction phase. → In the unlikely event that a protected tree species must be removed, a permit to do so must be attained from the Department of Agriculture, Forestry and Fisheries (DAFF).
17.	**DISTURBANCE OF FAUNAL SPECIES AND LOSS OF FAUNAL HABITAT**	During the construction phase, vegetation clearance and associated construction activities (including noise and vehicular movement) could result in the disturbance of faunal species and the subsequent movement of species out of the area. Additionally, the loss of	→ A faunal Search and Rescue should be conducted prior to the commencement of construction activities. → Search and clear the area directly prior to vegetation clearance. → Vehicle speed must be limited to 40km/hr to reduce faunal collision mortality. → Construction activities must be restricted to the approved layout plans.

		vegetation coincides with the loss of faunal habitat, reducing feeding, breeding, and rearing locales. Faunal populations could become locally extinct or diminish in size.	→ Permit only limited construction activities before sunrise or after sunset. The ECO must be notified in this instance. → No animal shall be killed or injured as a result of the construction of the Coleskop Infrastructure Development and presence of construction staff. → No hunting, baiting, or trapping shall be allowed within the affected properties or surrounding properties by construction staff.
18.	**WILDLIFE POACHING**	During the construction phase, the increase in individuals accessing the project area for the proposed Coleskop Infrastructure Development could result in an increase in wildlife poaching.	→ All individuals should sign a register prior to accessing the construction site, including construction workers. → Construction workers must not be housed on-site. → No animal shall be killed or injured as a result of the construction of the Coleskop Infrastructure Development and presence of construction staff. → The appointed ECO should inquire and undertake an overview inspection of the site for the evidence of snares during the construction phase. → No hunting, baiting, or trapping shall be allowed within the affected properties or surrounding properties by construction staff.
19.	**DISTURBANCE OF SENSITIVE AREAS [IN TERMS OF ECOLOGICAL SENSITIVITY]**	During the construction phase, the construction of the proposed Coleskop Infrastructure Development, could erode and degrade watercourses and the associated riparian vegetation due to negligent construction practices.	→ The relevant Water Use Authorisation (WUA) must be obtained prior to construction within the 100 m regulatory buffers of all rivers and tributaries as well as within → 500 m of all identified wetlands. → Construction must take place within the smallest possible construction footprint, where construction is required within the regulatory buffers of watercourses. → Construction within the regulatory buffers of watercourses should take place during the dry season, where reasonable and feasible. → Construction within the regulatory buffers of watercourses must be followed by erosion stabilisation and re-vegetation.
20	**ESTABLISHMENT OF ALIEN PLANT SPECIES**	The removal of existing natural vegetation creates 'open' habitats which favours the establishment of undesirable vegetation in areas that are typically very difficult to eradicate which could pose a threat to surrounding ecosystems. Failure to successfully rehabilitate the land to its natural state will exacerbate this impact.	→ An Alien Vegetation Management Plan must be compiled and implemented during the Construction Phase. → A Rehabilitation Management Plan must be compiled and implemented during the Construction Phase. → Any alien vegetation which establishes during the construction phase should be removed from site and disposed of at a registered waste disposal site. Continuous monitoring for seedlings should take place throughout the construction phase.
21.	**FOSSIL HERITAGE RESOURCES**	Disturbance, damage, destruction or sealing-in of fossil remains preserved at or beneath the ground surface within the development area, especially during ground clearance or bedrock	→ Monitoring of all substantial bedrock excavations for fossil remains by the ECO, with reporting of new palaeontological finds (notably fossil vertebrate bones and teeth) to ECPHRA (Eastern Cape) or SAHRA (Northern Cape) for possible specialist mitigation.

		excavations during the construction phase.	
22.	**SENSITIVE HERITAGE RESOURCES**	The Archaeological Specialist identified the following sites of heritage significance within the proposed Coleskop Infrastructure study area: → UMZ006 (LSA scatter, SAHRA Rating 3C), UMZ014 (stone tools, SAHRA Rating 3C), UMZ024 (rock art and stone tools, SAHRA Rating 3B), UITSIG (Uitzicht farm buildings, SAHRA Rating 3A), and WILGEFONTEIN (farm buildings, SAHRA Rating 3B). → The UMZ006 heritage site falls within the proposed 132 kV Overhead Line Corridor Option 2. The site is of low significance. All of the tools are in a secondary context and have little research value. → The UMZ014 heritage site is situated within the proposed access road upgrade. The site is of low significance. → The UMZ024 heritage site falls within the proposed 132 kV Overhead Line Corridor Option 2. The site is of medium significance. → The UITSIG heritage sites fall within the southern section of both of the proposed 132 kV Overhead Line Corridor Options. The farm complex dates to 1853 and is in relatively good condition, besides falling into ruin. The farm can give insight into early farming life in the area. The farm complex is thus of high significance. → The WILGEFONTEIN sites fall within the boundary of proposed 132 kV Overhead Line Corridor Option 1. The buildings will need to be assessed by an	→ Should the routing of the proposed 132 kV Overhead Line Option 2, within the assessed corridor, affect the UMZ006 heritage site, a permit will be required prior to the commencement of the construction phase. → Should the proposed road upgrade affect the UMZ014 heritage site, a permit will be required prior to the commencement of the construction phase. → The UMZ024 heritage site must not be affected by the routing of the proposed 132 kV Overhead Line Option 2. → There must be no damage to the UITSIG buildings. These sites must be monitored during construction and possible excavations. → There must be no damage to the WILGEFONTEIN buildings. These sites must be monitored during construction and possible excavations. → The necessary permits must be obtained from SAHRA prior to the commencement of vegetation clearing. → Any houses and/or walling which is situated within 50 m of the infrastructure development footprints must be demarcated before the commencement of construction-related activities. → No infrastructure may occur within 20 m of walling. → All identified sites, which have been identified in the Archaeological Assessment Report, must be monitored by an archaeologist during the construction phase.

		architect historian for its full significance.	
23.	**IMPACT ON HERITAGE AND PALAEONTOLOGY RESOURCES**	In addition to the specialist mitigation measures above, SAHRA recommends these mitigation measures in accordance with section 3(4) of the NEMA Regulations and section 38(8) of the NHRA in the format provided in section 38(4) of the NHRA to reduce adverse impacts on sensitive heritage and palaeontology resources.	→ 38(4)a – The SAHRA Archaeology, Palaeontology and Meteorites (APM) Unit has no objections to the proposed development. → 38(4)b – The recommendations provided by the heritage specialists and BAR are supported and must be adhered to. Specific conditions are provided for the development as follows. → A Monitoring report by the ECO on all substantial excavations must be submitted to SAHRA upon completion of the construction phase. → An archaeological monitoring report conducted by the appointed qualified archaeologist must be submitted to SAHRA upon completion of the construction phase. → 38(4)c(i) – If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section → 51(1)e of the NHRA and item 5 of the Schedule. → 38(4)c(ii) – If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule. → 38(4)d – See section 51(1) of the NHRA. → 38(4)e – The following conditions apply with regards to the appointment of specialists: → i) If heritage resources are uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA.
24.	**IMPACT ON ESKOM INFRASTRUCTURE**	Eskom has the following requirements for work in or near Eskom servitudes.	→ Eskom's rights and services must be acknowledged and respected at all times. → Eskom shall at all times retain unobstructed access to and egress from its servitudes. → Eskom's consent does not relieve the developer from obtaining the necessary statutory, landowner or municipal approvals.

			→ Any cost incurred by Eskom as a result of non-compliance to any relevant environmental legislation will be charged to the developer. → If Eskom has to incur any expenditure in order to comply with statutory clearances or other regulations as a result of the developer's activities or because of the presence of his equipment or installation within the servitude restriction area, the developer shall pay such costs to Eskom on demand. → The use of explosives of any type within 500 metres of Eskom's services shall only occur with Eskom's previous written permission. If such permission is granted the developer must give at least fourteen working days prior notice of the commencement of blasting. This allows time for arrangements to be made for supervision and/or precautionary instructions to be issued in terms of the blasting process. It is advisable to make applications separately in this regard. → Changes in ground level may not infringe statutory ground to conductor clearances or statutory visibility clearances. After any changes in ground level, the surface shall be rehabilitated and stabilised so as to prevent erosion. The measures taken shall be to Eskom's satisfaction. → Eskom shall not be liable for the death of or injury to any person or for the loss of or damage to any property whether as a result of the encroachment or of the use of the servitude area by the developer, his/her agent, contractors, employees, successors in title, and assignees. The developer indemnifies Eskom against loss, claims or damages including claims pertaining to consequential damages by third parties and whether as a result of damage to or interruption of or interference with Eskom's services or apparatus or otherwise. Eskom will not be held responsible for damage to the developer's equipment. → No mechanical equipment, including mechanical excavators or high lifting machinery, shall be used in the vicinity of Eskom's apparatus and/or services, without prior written permission having been granted by Eskom. If such permission is granted the developer must give at least seven working days' notice prior to the commencement of work. This allows time for arrangements to be made for supervision and/or precautionary instructions to be issued by the relevant Eskom Manager Note: Where and electrical outage is required, at least fourteen work days are required to arrange it. → Eskom's rights and duties in the servitude shall be accepted as having prior right at all times and shall not be obstructed or interfered with.

			→ Under no circumstances shall rubble, earth or other material be dumped within the servitude restriction area. The developer shall maintain the area concerned to Eskom's satisfaction. The developer shall be liable to Eskom for the cost of any remedial action which has to be carried out by Eskom. → The clearances between Eskom's live electrical equipment and the proposed construction work shall be observed as stipulated by Regulation 15 of the Electrical Machinery Regulations of the Occupational Health and Safety Act, 1993 (Act 85 of 1993). → Equipment shall be regarded electrically live and therefore dangerous at all times. → In spite of the restrictions stipulated by Regulation 15 of the Electrical Machinery Regulations of the Occupational Health and Safety Act, 1993 (Act 85 of 1993), as an additional safety precaution, Eskom will not approve the erection of houses, or structures occupied or frequented by human beings, under the power lines or within the servitude restriction area. → Eskom may stipulate any additional requirements to highlight any possible exposure to Customers or Public to coming into contact or be exposed to any dangers of Eskom plant. → It is required of the developer to familiarise himself with all safety hazards related to Electrical plant. → Any third-party servitudes encroaching on Eskom servitudes shall be registered against Eskom's title deed at the developer's own cost. If such a servitude is brought into being, its existence should be endorsed on the Eskom servitude deed concerned, while the third party's servitude deed must also include the rights of the affected Eskom servitude.
25.	**IMPACT ON BIODIVERSITY**	DFFE: Biodiversity and Conservation recommends these impact management actions to reduce the impact on biodiversity.	→ Rescue operation of all listed species suitable for translocation within the development footprint that cannot be avoided must be conducted. Affected individuals must be translocated to a similar habitat outside the development footprint and marked for monitoring purposes. → All species listed in terms of TOPs and Red Data list must not be disturbed or removed without a permit from relevant authorities. → All disturbed, exposed earth and cleared areas must be rehabilitated with indigenous vegetation and topsoil from local area. → Concurrent rehabilitation and alien vegetation control program within all sensitive areas must be implemented.

			→ Alien invasive plant species in and around wetland areas must be removed in terms of Conservation of Agricultural Resources Act (CARA) and National Environmental Management Biodiversity Act (NEMBA) and follow up actions for at least five years need to take place. → The proposed development must comply with all the requirements as outlines in the EIA guideline for renewable energy projects and the Best Practice Guideline for Birds and Wind Energy for assessing and monitoring the impact of wind energy facilities on birds in Southern Africa.
OPERATIONAL PHASE			
IMPACT		**IMPACT DESCRIPTION**	**MITIGATION**
26.	**STORMWATER MANAGEMENT AND SOIL EROSION**	The creation of impermeable surfaces during the operation of the Coleskop Infrastructure Development could contribute to increased runoff during rainfall events. The increased runoff and inadequate stormwater management could lead to increased soil erosion within the proposed site and surrounds.	→ The Stormwater Management Plan, compiled and implemented during the construction phase, must include operational phase management measures for implementation throughout the operational phase. → The site must be monitored regularly for signs of erosion by the ECO. Remedial action must be taken at the first signs of erosion.
27.	**FIRE RISK**	The operation of the Coleskop Infrastructure could increase the fire risk in the area.	→ The maintenance personnel, or the appointed fire marshal, must take all responsible steps to prevent the accidental occurrence and the spreading of fires. → The maintenance personnel and/or the appointed fire marshal must ensure that there is always fire-fighting equipment available on-site during the operational phase. → The maintenance personnel must be aware of the risk of fires, the procedure to be followed in the event of a fire and they must have access to the relevant contact details of the nearest Fire and Emergency Services.
28.	**SOCIO-ECONOMIC BENEFITS**	The operation of the Coleskop Infrastructure Development will create long-term employment opportunities. These will primarily be employment opportunities involving general maintenance and servicing of the infrastructure. These employment opportunities will contribute to the skills development of individuals and a long-term income which will benefit individuals and their families.	→ Where suitable, preference should be given to the employment of individuals residing in the communities which are located close to the site.
29.	**WASTE MANAGEMENT**	The inadequate management of waste, which is produced during the operational phase, including litter, is likely to result in the	→ Maintenance staff must be informed that littering is prohibited within the construction site and surrounding areas.

		pollution of the study area and immediate surrounds.	
30.	**VISUAL AND AESTHETIC IMPACTS**	The operation of the Coleskop Infrastructure Development could have an adverse impact on the visual and aesthetic quality of the study area and immediate surrounds. However, the Coleskop Infrastructure Development will only be visible to a limited number of individuals due to the location of the development.	→ All general waste, including litter, must be stored in windproof/sealable containers before being disposed of at a registered landfill site. → The rehabilitation of disturbed areas must be monitored to ensure successful rehabilitation and the resultant decrease in the visual impact. → The Coleskop Infrastructure must be maintained frequently to reduce the risk of degradation of the infrastructure.
31.	**SUPPORT FOR THE FUNCTIONING OF RENEWABLE ENERGY INFRASTRUCTURE**	The operation of the Coleskop Infrastructure components will contribute to the construction and operation of the Coleskop Wind Energy Facility.	→ The Coleskop Infrastructure must be maintained frequently to reduce the risk of degradation and to ensure that the infrastructure adequately contributes to the construction and functioning of the Coleskop Wind Energy Facility.
32.	**ESTABLISHMENT OF ALIEN PLANT SPECIES**	During the operational phase, failure to remove and manage alien vegetation during construction could result in the permanent establishment of alien vegetation in the study area. Failure to successfully rehabilitate the land to its natural state will exacerbate this impact and could lead to the permanent degradation of ecosystems as well as allow invasion by alien plant species.	→ The Alien Vegetation Management Plan must be compiled and implemented to prevent the establishment and the spread of undesirable alien plant species during the Operational Phase. → Monitoring of the establishment of alien seedlings should continue throughout the Operational Phase. Any alien seedlings should be removed and disposed of at a registered landfill. → A Rehabilitation Management Plan must be compiled and implemented during the Operational Phase.
33.	**IMPACTS OF NOISE AND LIGHTING ON FAUNAL POPULATIONS**	During the operational phase, noise and lighting associated with the proposed Coleskop Infrastructure Development (including maintenance activities) could cause a disturbance to surrounding faunal populations within the project area.	→ Regular maintenance and checks of the infrastructure must be undertaken to ensure that infrastructure is within regulated/standard noise limits. → Where possible, external lighting should be avoided, and site access should be minimised.
34.	**RISK OF COLLISION AND ELECTROCUTION OF AVIFAUNA**	Avifauna could be injured or killed due to collision and/or electrocution on the overhead line during the operational phase of the Coleskop Infrastructure Development.	→ To mitigate for a collision of the relevant species, the earth wires on the spans identified as high risk must be fitted with the best available (at the time of construction) Eskom approved anti-bird collision line marking device. This should preferably be a dynamic device, i.e. one that moves as it is believed that these are more effective in reducing collisions, especially for bustards, which are one of the key species (Ludwig's Bustard) in this area. It is important that these devices are installed as soon as the conductors are strung, not only once the line is commissioned, as the conductors, and earth wires pose a collision risk as soon as they are strung. The devices should be installed alternating light and a dark colour to provide contrast against dark and light backgrounds, respectively. This will make the

			overhead cables more visible to birds flying in the area. Eskom Distribution has a guideline for this work, and this should be followed. Note that 100% of the length of each span needs to be marked (i.e. right up to each tower/pylon) and not the middle 60% as some guidelines recommend. This is based on a finding by Shaw (2013) that collisions still occur close to the towers or pylons. → The overhead line must be built on an Eskom approved bird-friendly pole structure which provides ample clearance between phases and phase-earth to allow large birds to perch on them in safety. → The preferred option for the 132 kV Overhead Line to the MTS Substation is proposed 132 kV Overhead Line Option 2 as the corridor does not pass through the no-go area around the Verreaux's Eagle nests.
35.	**IMPACT ON HERITAGE AND PALAEONTOLOGY RESOURCES**	SAHRA recommends these mitigation measures in accordance with section 3(4) of the NEMA Regulations and section 38(8) of the NHRA in the format provided in section 38(4) of the NHRA to reduce adverse impacts on sensitive heritage and palaeontology resources.	→ An archaeological monitoring report conducted by the appointed qualified archaeologist must be submitted to SAHRA upon completion of the construction phase. → 38(4)e – The following conditions apply with regards to the appointment of specialists: i) If heritage resources are uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA.
36.	**IMPACT ON ESKOM INFRASTRUCTURE**	Eskom has the following requirements for work in or near Eskom servitudes.	→ Eskom's rights and services must be acknowledged and respected at all times. → Eskom shall at all times retain unobstructed access to and egress from its servitudes. → Any cost incurred by Eskom as a result of non-compliance to any relevant environmental legislation will be charged to the developer. → If Eskom has to incur any expenditure in order to comply with statutory clearances or other regulations as a result of the developer's activities or because of the presence of his equipment or installation within the servitude restriction area, the developer shall pay such costs to Eskom on demand. → Changes in ground level may not infringe statutory ground to conductor clearances or statutory visibility clearances. After any changes in ground level, the surface shall be rehabilitated and stabilised so as to prevent erosion. The measures taken shall be to Eskom's satisfaction.

			→ Eskom shall not be liable for the death of or injury to any person or for the loss of or damage to any property whether as a result of the encroachment or of the use of the servitude area by the developer, his/her agent, contractors, employees, successors in title, and assignees. The developer indemnifies Eskom against loss, claims or damages including claims pertaining to consequential damages by third parties and whether as a result of damage to or interruption of or interference with Eskom's services or apparatus or otherwise. Eskom will not be held responsible for damage to the developer's equipment. → No mechanical equipment, including mechanical excavators or high lifting machinery, shall be used in the vicinity of Eskom's apparatus and/or services, without prior written permission having been granted by Eskom. If such permission is granted the developer must give at least seven working days' notice prior to the commencement of work. This allows time for arrangements to be made for supervision and/or precautionary instructions to be issued by the relevant Eskom Manager Note: Where and electrical outage is required, at least fourteen work days are required to arrange it. → Eskom's rights and duties in the servitude shall be accepted as having prior right at all times and shall not be obstructed or interfered with. → Under no circumstances shall rubble, earth or other material be dumped within the servitude restriction area. The developer shall maintain the area concerned to Eskom's satisfaction. The developer shall be liable to Eskom for the cost of any remedial action which has to be carried out by Eskom. → Equipment shall be regarded electrically live and therefore dangerous at all times. → Eskom may stipulate any additional requirements to highlight any possible exposure to Customers or Public to coming into contact or be exposed to any dangers of Eskom plant. → It is required of the developer to familiarise himself with all safety hazards related to Electrical plant. → Any third-party servitudes encroaching on Eskom servitudes shall be registered against Eskom's title deed at the developer's own cost. If such a servitude is brought into being, its existence should be endorsed on the Eskom servitude deed concerned, while the third party's servitude deed must also include the rights of the affected Eskom servitude.
37.	**IMPACT ON BIODIVERSITY**	DFFE: Biodiversity and Conservation recommends these impact management	→ All disturbed, exposed earth and cleared areas must be rehabilitated with indigenous vegetation and topsoil from local area.

		actions to reduce the impact on biodiversity.	→ Concurrent rehabilitation and alien vegetation control program within all sensitive areas must be implemented. → Alien invasive plant species in and around wetland areas must be removed in terms of Conservation of Agricultural Resources Act (CARA) and National Environmental Management Biodiversity Act (NEMBA) and follow up actions for at least five years need to take place. → The proposed development must comply with all the requirements as outlines in the EIA guideline for renewable energy projects and the Best Practice Guideline for Birds and Wind Energy for assessing and monitoring the impact of wind energy facilities on birds in Southern Africa.

DECOMMISSIONING PHASE

The proposed Coleskop Infrastructure Development is unlikely to be decommissioned in the foreseeable future because it is required to supplement the development of the Coleskop WEF (20-25 year lifespan), however, should components of the development be decommissioned in the short-term, such as the batching plants, the following mitigation measures and rehabilitation measures will apply.

	IMPACT	IMPACT DESCRIPTION	MITIGATION
38.	**INCREASE IN AIR EMISSIONS**	During the decommissioning phase, dust is likely to be created as a result of decommissioning activities, such as grading and levelling of the exposed land and the use of heavy machinery, which could be a nuisance during the decommissioning phase.	→ Exhaust emissions from heavy vehicles must be minimised by ensuring that all vehicles are properly equipped and serviced. → Decommissioning activities must only be done during the agreed-upon working hours and days. → A speed limit of 40 km per hour must not be exceeded on gravel roads.
39.	**INCREASE IN NOISE LEVELS**	Noise will be created on the site during the decommissioning phase due to the operation of machinery, noise generated by heavy vehicles both on-site and during travel to and from the site as well as noise generated by the workers which are all likely to result in an increase in noise levels and potentially be a nuisance to individuals in proximity to the site.	→ All vehicles must be in sound working order and meet the necessary noise level requirements. → All relevant municipal by-laws, with regards to noise control, must apply. → Workers must not make use of portable radios, vehicle radios, whistles, and other items which generate excessive noise, while they are on the site.
40.	**SITE CONTAMINATION DUE TO THE STORAGE AND HANDLING OF HAZARDOUS SUBSTANCES**	During the decommissioning phase, onsite maintenance of vehicles and/or machinery, and equipment could result in oil, diesel and other hazardous chemicals contaminating surface and groundwater. Surface and groundwater pollution could arise from the spillage or leaking of fuel and oil during the decommissioning activities.	→ The storage of fuels and hazardous materials must be located away from all identified sensitive water resources. → All hazardous substances, including fuel and oil, must be stored in a bunded area. → Spill kits must be readily available on-site throughout the decommissioning phase. → Drip trays must be placed under all stationary plant. → If a spill occurs on a permeable surface (e.g. soil), a spill kit must be used to reduce the potential spread of the spill immediately.

			→ If a spill occurs on an impermeable surface such as cement or concrete, the surface spill must be contained using oil absorbent materials. → Contaminated remediation materials must be carefully removed from the area of the spill, to prevent the further release of hazardous chemicals to the environment and stored in adequate containers until appropriate disposal at a suitably licenced landfill site.
41.	**FIRE RISK**	The decommissioning of the Coleskop Infrastructure Development could increase the risk of fires, which could potentially result in the loss of crops, grazing and livestock. In addition, fires could result in injury to employees within the site and the potential damage to or loss of property.	→ Open fires must not be permitted within the proposed site during the decommissioning phase. → Smoking must be restricted to designated smoking areas which have easy access to fire-fighting equipment. → The Contractor, or the appointed fire marshal, must take all responsible steps to prevent the accidental occurrence and the spreading of fires. → The Contractor and/or the appointed fire marshal must ensure that there is always fire-fighting equipment available on-site during the decommissioning phase. → The Contractor and/or the appointed fire marshal must ensure that all site personnel are aware of the risk of fires, the procedure to be followed in the event of a fire and that all site personnel have access to the relevant contact details of the nearest Fire and Emergency Services.
42.	**SOCIO-ECONOMIC BENEFITS**	The decommissioning of the Coleskop Infrastructure will create short-term employment opportunities. These employment opportunities will contribute to the skills development of individuals and a short-term income which will benefit individuals and their families.	→ Where suitable, preference should be given to the employment of individuals residing in the communities which are located close to the site.
43.	**WASTE MANAGEMENT**	The inadequate management of waste which is produced during the decommissioning phase is likely to result in the pollution of the study area and immediate surrounds.	→ All general waste, which is temporarily stored, on-site must be done so in windproof/sealable containers before being disposed of at a registered landfill site. → Waste must not be burned on site. → Workers must be informed that littering is prohibited within the site and surrounding areas. → The Waste Management Plan should be should include relevant decommissioning waste management measures and it should be implemented for the duration of the decommissioning phase.
44.	**VISUAL AND AESTHETIC IMPACTS**	The activities associated with the decommissioning of the Coleskop Infrastructure are likely to have an adverse impact on the visual and aesthetic quality of the study area and immediate surrounds. However, the construction site will only be	→ All general waste, which is temporarily stored, on-site must be done so in windproof/sealable containers before being disposed of at a registered landfill site. → Rehabilitation of the decommissioned footprints must take place as soon as practically possible.

		visible to a limited number of individuals due to the location of the development.	
45.	**INADEQUATE REHABILITATION**	The inadequate rehabilitation of the development footprint could result in unsuccessful site re-vegetation and resultant long-term ecological degradation.	→ A portion of the operational phase earnings should be set aside for costs associated with the landscaping and re-vegetation of the development footprint. → All temporary disturbed areas that do not form part of development, must be rehabilitated using only indigenous vegetation. → All impacted areas must be restored as per the EMPr requirements. → A Rehabilitation Plan should be compiled and implemented during the decommissioning phase.
46.	**DISTURBANCE OF FAUNAL SPECIES**	Decommissioning activities (including noise and vehicular movement) could result in the disturbance of faunal species and the subsequent movement of species out of the area. Additionally, inadequate rehabilitation could reduce the likelihood of re-creating faunal habitat. Faunal populations could become locally extinct or diminish in size.	→ Search and clear the area directly prior to decommissioning. → Vehicle speed must be limited to 40 km per hour to reduce faunal collision mortality. → Limit decommissioning activities to before sunrise or after sunset. → No animal shall be killed or injured as a result of the decommissioning of the Coleskop Infrastructure Development and presence of staff. → No hunting, baiting, or trapping shall be allowed within the affected properties or surrounding properties by construction staff.
47.	**WILDLIFE POACHING**	During the decommissioning phase, the increase in individuals accessing the project area for the proposed Coleskop Infrastructure Development could result in an increase in wildlife poaching.	→ All individuals should sign a register prior to accessing the site. → Workers must not be housed onsite. → No animal shall be killed or injured as a result of the decommissioning of the Coleskop Infrastructure Development and presence of workers. → An ECO should be appointed for the duration of the decommissioning phase. → The ECO should investigate the site for evidence of snares during the decommissioning phase. → No hunting, baiting, or trapping shall be allowed within the affected properties or surrounding properties by workers.
48.	**IMPACT ON HERITAGE AND PALAEONTOLOGY RESOURCES**	SAHRA recommends these mitigation measures in accordance with section 3(4) of the NEMA Regulations and section 38(8) of the NHRA in the format provided in section 38(4) of the NHRA to reduce adverse impacts on sensitive heritage and palaeontology resources.	→ 38(4)a – The SAHRA Archaeology, Palaeontology and Meteorites (APM) Unit has no objections to the proposed development. → 38(4)b – The recommendations provided by the heritage specialists and BAR are supported and must be adhered to. Specific conditions are provided for the development as follows. → A Monitoring report by the ECO on all substantial excavations must be submitted to SAHRA upon completion of the construction phase. → An archaeological monitoring report conducted by the appointed qualified archaeologist must be submitted to SAHRA upon completion of the construction phase.

			→ 38(4)c(i) – If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section → 51(1)e of the NHRA and item 5 of the Schedule. → 38(4)c(ii) – If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule. → 38(4)d – See section 51(1) of the NHRA. → 38(4)e – The following conditions apply with regards to the appointment of specialists: → i) If heritage resources are uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA.
49.	**IMPACT ON ESKOM INFRASTRUCTURE**	Eskom has the following requirements for work in or near Eskom servitudes.	→ Eskom's rights and services must be acknowledged and respected at all times. → Eskom shall at all times retain unobstructed access to and egress from its servitudes. → Eskom's consent does not relieve the developer from obtaining the necessary statutory, landowner or municipal approvals. → Any cost incurred by Eskom as a result of non-compliance to any relevant environmental legislation will be charged to the developer. → If Eskom has to incur any expenditure in order to comply with statutory clearances or other regulations as a result of the developer's activities or because of the presence of his equipment or installation within the servitude restriction area, the developer shall pay such costs to Eskom on demand. → The use of explosives of any type within 500 metres of Eskom's services shall only occur with Eskom's previous written permission. If such permission is granted the developer must give at least fourteen working days prior notice of the commencement of blasting. This allows time for arrangements to be made for supervision and/or precautionary instructions to be issued in terms

			of the blasting process. It is advisable to make application separately in this regard. → Changes in ground level may not infringe statutory ground to conductor clearances or statutory visibility clearances. After any changes in ground level, the surface shall be rehabilitated and stabilised so as to prevent erosion. The measures taken shall be to Eskom's satisfaction. → Eskom shall not be liable for the death of or injury to any person or for the loss of or damage to any property whether as a result of the encroachment or of the use of the servitude area by the developer, his/her agent, contractors, employees, successors in title, and assignees. The developer indemnifies Eskom against loss, claims or damages including claims pertaining to consequential damages by third parties and whether as a result of damage to or interruption of or interference with Eskom's services or apparatus or otherwise. Eskom will not be held responsible for damage to the developer's equipment. → No mechanical equipment, including mechanical excavators or high lifting machinery, shall be used in the vicinity of Eskom's apparatus and/or services, without prior written permission having been granted by Eskom. If such permission is granted the developer must give at least seven working days' notice prior to the commencement of work. This allows time for arrangements to be made for supervision and/or precautionary instructions to be issued by the relevant Eskom Manager Note: Where and electrical outage is required, at least fourteen work days are required to arrange it. → Eskom's rights and duties in the servitude shall be accepted as having prior right at all times and shall not be obstructed or interfered with. → Under no circumstances shall rubble, earth or other material be dumped within the servitude restriction area. The developer shall maintain the area concerned to Eskom's satisfaction. The developer shall be liable to Eskom for the cost of any remedial action which has to be carried out by Eskom. → The clearances between Eskom's live electrical equipment and the proposed construction work shall be observed as stipulated by Regulation 15 of the Electrical Machinery Regulations of the Occupational Health and Safety Act, 1993 (Act 85 of 1993). → Equipment shall be regarded electrically live and therefore dangerous at all times. → In spite of the restrictions stipulated by Regulation 15 of the Electrical Machinery Regulations of the Occupational Health and Safety Act, 1993 (Act 85 of 1993), as an additional

			safety precaution, Eskom will not approve the erection of houses, or structures occupied or frequented by human beings, under the power lines or within the servitude restriction area. → Eskom may stipulate any additional requirements to highlight any possible exposure to Customers or Public to coming into contact or be exposed to any dangers of Eskom plant. → It is required of the developer to familiarise himself with all safety hazards related to Electrical plant. → Any third-party servitudes encroaching on Eskom servitudes shall be registered against Eskom's title deed at the developer's own cost. If such a servitude is brought into being, its existence should be endorsed on the Eskom servitude deed concerned, while the third party's servitude deed must also include the rights of the affected Eskom servitude.
50.	**IMPACT ON BIODIVERSITY**	DFFE: Biodiversity and Conservation recommends these impact management actions to reduce the impact on biodiversity.	→ All disturbed, exposed earth and cleared areas must be rehabilitated with indigenous vegetation and topsoil from local area. → Concurrent rehabilitation and alien vegetation control program within all sensitive areas must be implemented. → Alien invasive plant species in and around wetland areas must be removed in terms of Conservation of Agricultural Resources Act (CARA) and National Environmental Management Biodiversity Act (NEMBA) and follow up actions for at least five years need to take place. → The proposed development must comply with all the requirements as outlines in the EIA guideline for renewable energy projects and the Best Practice Guideline for Birds and Wind Energy for assessing and monitoring the impact of wind energy facilities on birds in Southern Africa.

Cumulative impacts are defined as those "that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impact identification process is conducted." To assess the cumulative impacts that the proposed Coleskop Infrastructure Development will have on the terrestrial ecology of the site, it is necessary to assess this at a broader level by looking at other developments in the area. The cumulative impacts associated with the project will include the loss of vegetation communities at a regional scale which will be exacerbated, the spread of invasive alien plant species which could be exacerbated, and habitat fragmentation and disruption of ecosystem function and process could be exacerbated. The cumulative impact associated with the construction and operation of the proposed Coleskop Infrastructure Development, is likely to be of low significance due to the relatively small development footprint. However, to limit the impact, it is important that the recommended management plans (Appendix E) are implemented, and that vegetation clearance is strictly limited to the development footprint of the Coleskop Infrastructure Development. Rehabilitation, to restore ecological function, is also a key element of mitigating cumulative impacts, and it is therefore important to implement and monitor rehabilitation.

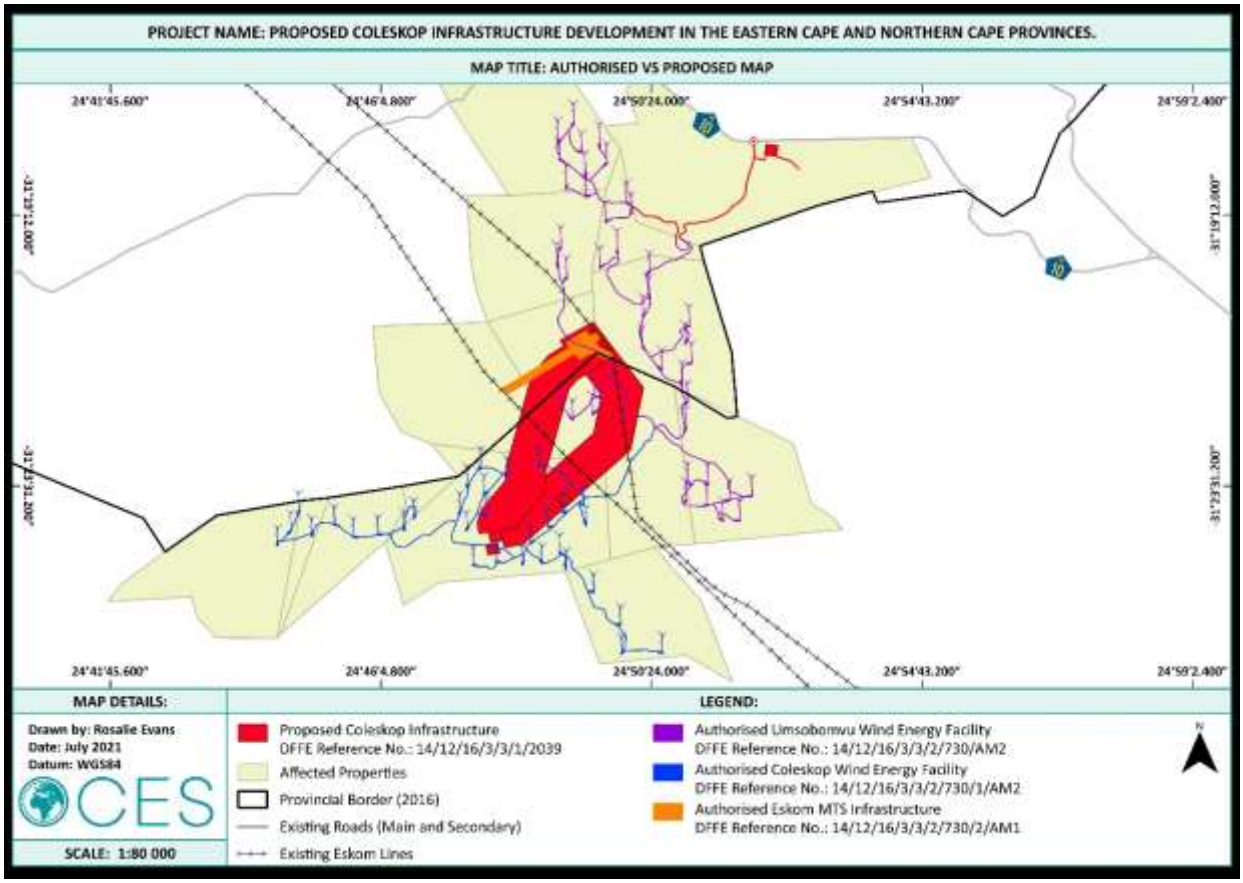

Figure 5.1: Authorised VS Proposed (Coleskop Infrastructure only) WEF Infrastructure Map.

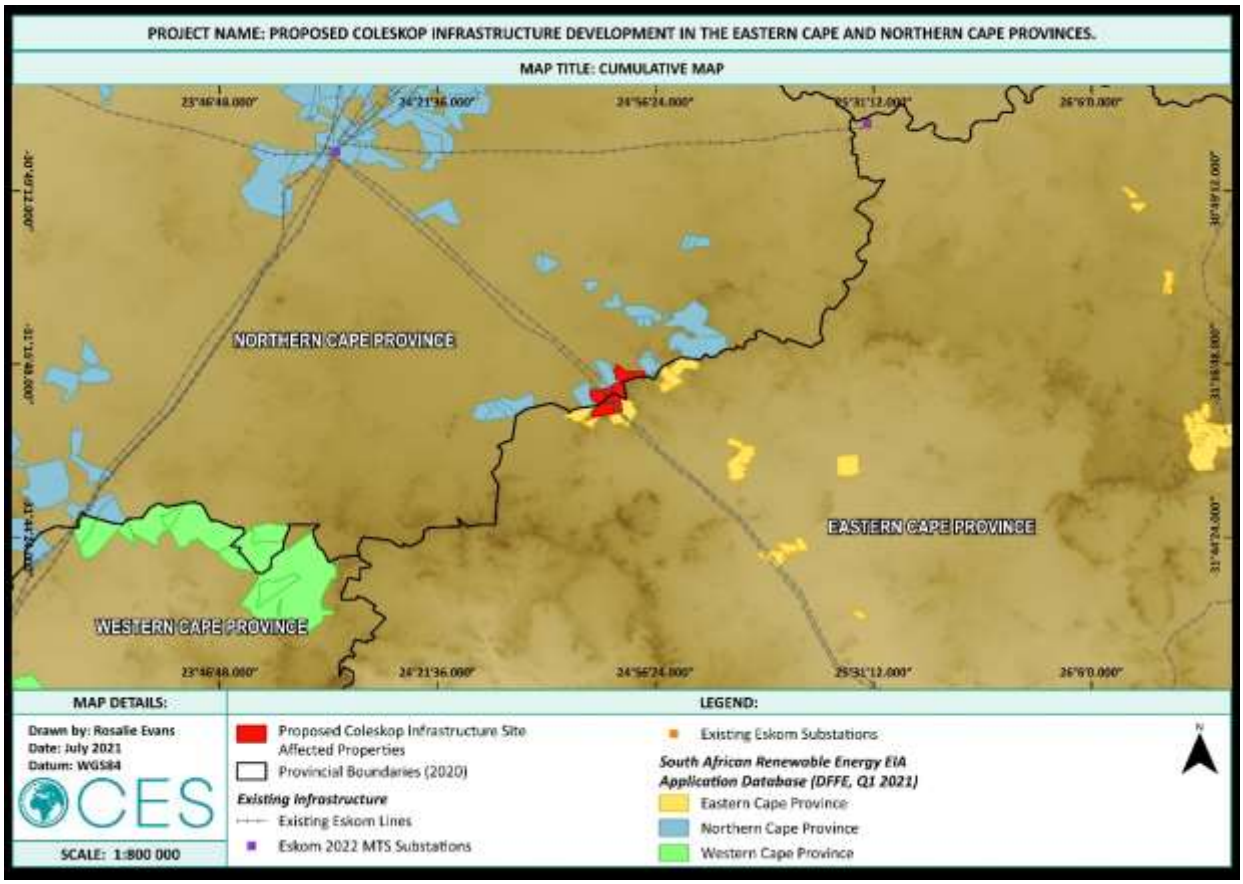

Figure 5.2: Cumulative Renewable Energy Development Map.

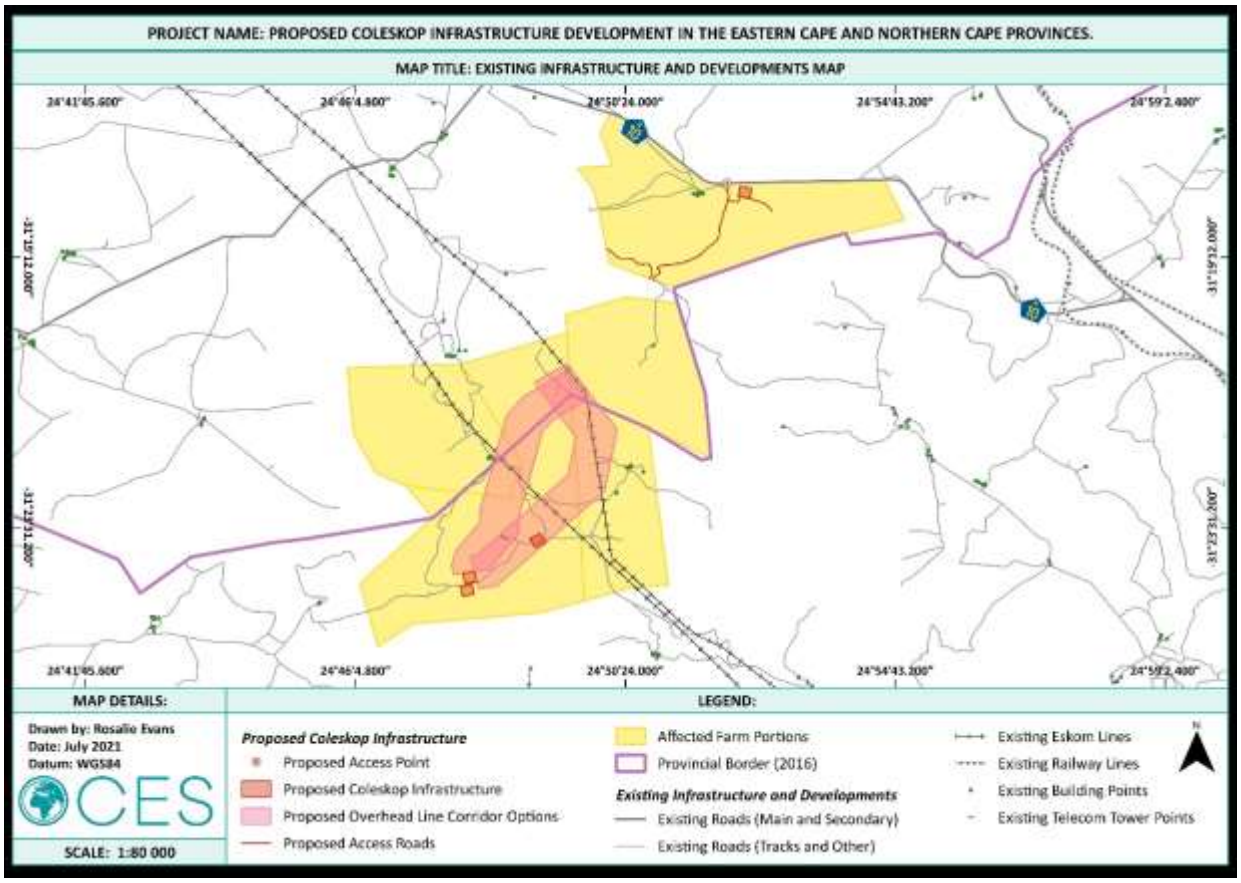

Figure 5.3: Existing Infrastructure and Developments Map within the Coleskop Infrastructure Development Site and Surrounds.

6 ADMINISTRATION AND REGULATION OF ENVIRONMENTAL OBLIGATIONS

6.1 MANAGEMENT STRUCTURE

In line with this EMPr, the Contractor must prepare a document clearly outlining and demonstrating the environmental responsibilities, accountability, and liability of the Contractor's employees. The Contractor must assign responsibilities for the following:

- Reporting structures;
- Actions to be taken to ensure compliance;
- Overall design, development, and implementation of the EMPr;
- Documenting the environmental policy and strategy;
- Implementing the EMPr in all stages/phases of the project; and
- All the aspects which require action under the other core elements and sub-elements of the EMPr.

All official communication and reporting lines, including instructions, directives, and information, need to be channelled according to the organisation structure.

6.2 ROLES AND RESPONSIBILITIES

6.2.1 The Applicant (Developer)

Coleskop Wind Power (Pty) Ltd (hereafter referred to as the "Applicant" or "Developer") is a Special Purpose Vehicle (SPV) established by EDF Renewables (Pty) Ltd. for the sole purpose of developing, owning, and operating the proposed Coleskop Infrastructure Development and the associated Coleskop WEF. The Applicant is the responsible entity for monitoring the implementation of the EMPr and compliance with the EA. However, if the company appoints a Contractor to implement the project, and hence implement the proposed mitigation measures documented in this EMPr on their behalf, then the successful contractor's responsibilities are outlined as per the section that follows. The Applicant will also be responsible for stipulating and enforcing fines and penalties to the Contractor for contravention of any non-compliances against the EMPr, the EA and other approved plans.

6.2.2 The Contractor

The successful Contractor will:

- Be responsible for the finalisation of the EMPr in terms of methodologies which are required to be implemented to achieve the environmental specifications contained herein and the relevant requirements contained in the EA;
- Be responsible for the overall implementation of the EMPr in accordance with the requirements of the developer and the EA;
- Ensure that all third parties, who carry out all or part of the Contractor's obligations under the contract, comply with the requirements of this EMPr;
- Be responsible for obtaining any outstanding permits and licenses which are required for the construction of the Coleskop Infrastructure Development; and
- Ensure that the appointment(s) of the ECO and the Environmental Site Officer (ESO) are subject to the approval of the Coleskop Wind Power (Pty) Ltd.

6.2.3 The Resident Engineer

The Resident Engineer (RE) should be appointed by the Applicant and will be required to oversee the construction programme and construction activities performed by the Contractor. The RE is expected to liaise

with the Contractor and ECO on environmental matters, as well as any pertinent engineering matters where these may have environmental consequences. The RE will oversee the general compliance of the Contractor with the EMPr and other pertinent site specifications. The RE should also be familiar with the EMPr specifications and further monitor the Contractor's compliance with the environmental specifications on a daily basis, through a Site Diary, and enforce compliance.

6.2.4 The Environmental Site Officer (ESO)

The Contractor should appoint a nominated representative of the Contractor as the ESO for the contract. The ESO must be site-based and should be the responsible person for implementing the environmental provisions of the construction contract. The approved ESO must be onsite at all times.

The ESO's duties will include, *inter alia*, the following:

- Ensuring that all the environmental authorisations and permits, required in terms of the applicable legislation, have been obtained prior to construction commencing;
- Reviewing and approving construction Method Statements (MS) with input from the ECO and RE, where necessary, in order to ensure that the environmental specifications contained within the construction contract are adhered to;
- Assisting the Contractor in finding environmentally responsible solutions to problems;
- Keeping accurate and detailed records of all activities on-site;
- Keeping a register of complaints onsite and recording community comments and issues, and the actions taken in response to these complaints;
- Ensuring that the required actions are undertaken to mitigate the impacts resulting from non-compliance;
- Reporting all incidences of non-compliance to the ECO and Contractor; and
- The ESO must submit regular written reports to the ECO, not less frequently than once a month, during the construction phase of the Coleskop Infrastructure Development.

The ESO must have:

- The ability to manage public communication and complaints;
- The ability to think holistically about the structure, functioning and performance of environmental systems;
- The ESO must be fully conversant with the BAR, EMPr, relevant environmental legislation and any other relevant documents relating to the Coleskop Infrastructure Development; and
- The ESO must have received professional training, including training in the skills necessary to be able to amicably and diplomatically deal with the public as outlined in the first bullet point above.

The ECO should be in the position to determine whether or not the ESO has adequately demonstrated his/her capabilities to carry out the tasks at hand and in a professional manner. The ECO will therefore have the authority to instruct the Contractor to replace the ESO if, in the ECO's opinion, the appointed officer is not fulfilling his/her duties in terms of the requirements of the construction contract. Such instruction must be in writing and must clearly set out the reasons why a replacement is required and within what timeframe. The ECO must visit the development site and, in addition to the responsibilities listed in section 6.2.5 below, review the performance of the ESO and submit performance reviews to Coleskop Wind Power (Pty) Ltd.

6.2.5 Environmental Control Officer (ECO)

For the purpose of implementing the conditions contained herein, Coleskop Wind Power (Pty) Ltd must appoint an ECO for the contract. The ECO must be the responsible person for ensuring that the provisions of the EMPr, as well as the EA, are complied with during the construction phase. The ECO will be responsible

for issuing instructions to the Contractor, where environmental considerations call for action to be taken. The ECO must submit regular written reports, at least once a month, to the Applicant and, when required and/or requested, to the competent authority (DFFE). The ECO will be responsible for the monitoring, reviewing, and verifying of compliance with the EMPr and conditions of the EA by the Contractor.

The ECO's duties in this regard will include, *inter alia*, the following:

- Confirming that all the permits and EA(s) required in terms of the applicable legislation have been obtained prior to construction commencing;
- Monitoring and verifying that the EMPr, Generic EMPrs, the EA and the Contract are adhered to at all times and acting if specifications are not followed;
- Monitoring and verifying that environmental impacts are kept to a minimum;
- Reviewing and approving construction Method Statements with input from the ESO and RE, where necessary, in order to ensure that the environmental specifications contained within this EMPr and the EA are adhered to;
- Inspecting the site and surrounding areas on a regular basis to monitor compliance with the EMPr, EA and Contract;
- Monitoring the undertaking by the Contractor of environmental awareness training for all new personnel on-site;
- Ensuring that activities onsite comply with all relevant environmental legislation;
- Undertaking a continual internal review of the EMPr and submitting any changes to the Applicant and authority for review and approval, as applicable;
- Checking the register of complaints kept onsite and maintained by the ESO and ensuring that the correct actions are/were taken in response to these complaints;
- Checking that the required actions are/were undertaken to mitigate the impacts resulting from non-compliance;
- Reporting all incidences of non-compliance to Coleskop Wind Power (Pty) Ltd;
- The ECO must also submit compliance audit reports to DFFE, in accordance with the requirements of the EA. Such reports must be reviewed by Coleskop Wind Power (Pty) Ltd prior to submission;
- Keeping a photographic record of progress onsite from an environmental perspective. This can be conducted in conjunction with the ESO, because the ESO will be the person that will be onsite at all times and can therefore take photographic records weekly. The ECO should ensure that the ESO understands the task at hand;
- Recommending additional environmental protection measures, where necessary; and
- Providing feedback on any environmental issues during the site meetings.

The ECO must have:

- A good working knowledge of all relevant environmental policies, legislation, guidelines, and standards;
- The ability to conduct inspections and audits and to produce thorough, readable, and informative reports;
- The ability to manage public communication and complaints;
- The ability to think holistically about the structure, functioning and performance of environmental systems; and
- Proven competence in the application of the following integrated environmental management tools:
    - Environmental Impact Assessment;
    - Environmental Management Plans/Programmes;
    - Environmental auditing;
    - Mitigation and optimisation of impacts;
    - Monitoring and evaluation of impacts; and
    - Environmental management systems.

The ECO must be fully conversant with the EIA Process, the Coleskop Infrastructure Development BAR and

associated reports, the EA (when issued), this EMPr, the relevant Generic EMPrs and all relevant environmental legislation for the project. The Applicant will have the authority to replace the ECO if, in their opinion, the appointed officer is not fulfilling his/her duties in terms of the requirements of the EMPr or this specification. Such instruction will be in writing and must be clearly set out with reasons why a replacement is required and within what timeframe.

6.3 COMPLIANCE MONITORING AND CORRECTIVE ACTION

Non-compliance with the conditions of the EMPr must be viewed as a breach of appointment Contract for which the construction contractors will be held liable. The latter is deemed NOT to have complied with the EMPr if:

- There is evidence of contravention of the EMPr, its environmental specifications or the Method Statements developed by the Contractor within the boundaries of the construction site or areas of contractor responsibility;
- Construction-related activities take place outside the defined boundaries of the site;
- Environmental damage ensues due to negligence;
- The Contractor fails to comply with corrective or other instructions issued by the ECO within a specific time; or
- The Contractor fails to respond adequately to complaints from the public or authorities.

The Applicant and the construction contractors are liable for any construction rehabilitation costs associated with their non-compliance with this EMPr. This rehabilitation will be undertaken to the satisfaction of the ECO. The construction contractors will have the right to appeal any punitive action undertaken by the ECO or the Applicant.

6.4 REPORTING AND REVIEW

The EMPr reporting and documentation requirements must be based on best practice principles, e.g. ISO 14001, which must take the following requirements into account:

- Documents associated with the EMPr must be reviewed regularly and updated by all environmental management parties;
- Audits of the environmental performance of the construction phase of the project will be undertaken on a monthly basis by accredited auditors in fulfilment of likely conditions of EA in this regard;
- The findings of external, internal, and informal environmental reviews will be recorded and items requiring action will be identified from the recommendations made; and
- The construction contractors will be contractually obliged to fulfil any reasonable recommendations, and implementation of these actions will be assessed in the above audit.

Meetings, where required, should take place onsite. Internal auditing and reporting should be subject to external review by the ECO during the monthly compliance audits.

6.5 MONITORING

Construction activities have the potential to impact on a range of biophysical habitats as well as neighbouring communities. The monitoring programme which requires development by the Applicant, ECO and Contractor should, *inter alia,* allow for analysis of:

1. Air emissions (such as dust);
2. Hydrocarbon pollution;
3. Success of local labour employment;

4. Success of local procurement policies;
5. Ambient and workplace noise;
6. Health and safety incidents;
7. Success of traffic management measures; and
8. Contamination and soil erosion.

6.6 EMERGENCY PREPAREDNESS

The Contractor must develop environmental emergency response procedures to ensure that there are appropriate responses to unexpected or accidental actions or incidents that will cause environmental impacts during the construction phase. Such activities include, *inter alia*:

- Accidental discharges to water and land;
- Accidental exposure of employees to hazardous substances;
- Accidental fires;
- Accidental spillage of hazardous substances; and/or
- Specific environmental and ecosystem effects from accidental releases or incidents.

The Contractor and Subcontractors must comply with the emergency preparedness incident reporting requirements that must be developed and in place prior to the commencement of the construction phase.

6.7 ENVIRONMENTAL INCIDENT MANAGEMENT

The construction contractors must adhere to the hazard and incident reporting protocols to be developed by the Contractor. A report must be completed for all incidents, and appropriate action taken where necessary to minimise any potential impacts. DFFE must be informed of any environmental incidents, in accordance with legislative requirements, should this be necessitated by a major environmental incident.

6.8 MANAGEMENT REVIEW

A formal management review should be conducted in which the internal audit reports, written by the ESO, and based on frequent inspections and interactions with the ECO and review of the periodic reports, including audit reports by the independent external auditor - will be reviewed. The purpose of the review is to critically examine the effectiveness of the EMPr and its implementation and to decide on potential modifications to the EMPr as and when necessary. The process of management review will be to keep to the principle of continual improvement.

Management review should take place when the liaison committee, consisting of representatives from the Contractor, construction Subcontractors (as appropriate), ECO and other parties or I&APs deem them necessary or on a quarterly basis. The purpose of these quarterly meetings will be to review the progress of the Contractor in implementing and complying with their obligations in terms of this EMPr for the duration of the project. Where necessary, management review will take place more frequently than the required quarterly meetings.

7 REPORTING

7.1 METHOD STATEMENTS

Method Statements must be completed by the Contractor, an individual that is competent with the tasks to be undertaken, for each activity which requires a Method Statement as specified in the EMPr or as requested by the ECO. Each Method Statement must be submitted to the ECO and the Applicant for approval. For the purposes of the environmental specification, a Method Statement is defined as:

"A *written submission by the Contractor to the ECO setting out the plant, materials, labour and method the Contractor proposes to carry out an activity, in such detail that the ECO is enabled to assess whether the Contractor's proposal is in accordance with the EMPr and/or will produce results in accordance with EMPr."*

The Method Statement must include details of the:

- Construction procedures;
- Materials and equipment to be used;
- Transportation of the equipment to- and from site;
- How the equipment and/or material will be moved while on-site;
- How and where material will be stored;
- The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- Timing and location of activities;
- Compliance and non-compliance with the specifications; and
- Any other information deemed necessary by the Engineer.

Method Statements can be for once-off tasks or a series of tasks which are often repeated. The risks are identified during the various work stages when a Method Statement is prepared. Steps taken to reduce the potential risk associated with these stages can then be determined. The sequential steps and actions to be followed by the persons carrying out the works are written down. This sequence of steps should include all environmental and safety aspects relevant to the task being executed.

As a minimum, the Contractor should produce the following Method Statements:

- Site Dust Management;
- Solid Waste Management;
- Hazardous Material Management;
- Hydrocarbon Management;
- Site Clearing and Topsoil Management;
- Fire Management;
- Noise Management;
- Concrete Mixing;
- Pollution Control;
- Site Access and Traffic Management; and
- Incident and Emergency Response Management.

The Method Statements should be submitted to the ECO and the Applicant not less than twenty (20) days prior to the intended date of commencement of the activity, or as directed by the ECO. The Contractor must not commence with an activity until all required Method Statements have been approved by the ECO and the Applicant. The ECO should provide comment on the methodology and procedures proposed by the Contractor, but the ECO will not be responsible for the Contractor's chosen measures of impact mitigation

and emergency/disaster management systems. Approval of the Method Statements should not be withheld unreasonably.

All control measures detailed in the Method Statement must be the subject of "toolbox" talks prior to the initiation of works. By introducing or reaffirming these measures during the "toolbox" talk, everyone involved should have a clear understanding of the work to be carried out, as well as the safe work method sequences and equipment required.

AN EXAMPLE OF A METHOD STATEMENT LAYOUT IS PROVIDED IN APPENDIX C.

7.2 GOOD HOUSEKEEPING

The Contractor must undertake “good housekeeping” practices during the Construction Phase. This will help avoid disputes on responsibility and allow for the smooth running of the contract as a whole. Good housekeeping extends beyond the wise practice of construction methods to include the care for and preservation of the environment within which the construction is situated.

7.3 RECORD KEEPING

The ECO must continuously monitor the Contractor’s adherence to the approved impact prevention procedures and the ECO must issue the Contractor with a notice of non-compliance whenever transgressions are observed. The ECO should document the nature and magnitude of the non-compliance in a designated register, the actions taken to discontinue the non-compliance, the actions taken to mitigate its effects and the results of the actions. The non-compliance should be documented and reported to the Applicant in the monthly reports. These reports must be made available to the DFFE when requested.

7.4 DOCUMENT CONTROL

The Contractor is responsible for establishing a procedure for electronic document control. The document control procedure should comply with the following requirements:

- Documents must be identifiable by organisation, division, function, activity, and contact person;
- Every document should identify the personnel and their position(s), who drafted and compiled the document(s), who reviewed and recommended approval, and who finally approved the document for distribution; and
- All documents should be dated, provided with a revision number and reference number, filed systematically, and retained for a five (5) year period.

The Contractor must ensure that documents are periodically reviewed and revised, where necessary, and that current versions are available at all locations where operations, essential to the functioning of the EMPr, are performed. All documents must be made available to the ECO and other independent external auditors.

8 ENVIRONMENTAL AWARENESS

8.1 ENVIRONMENTAL TRAINING

The Contractors must ensure that their employees and any third party, who carries out all or part of the Contractors' obligations, is adequately trained with regard to the implementation of the EMPr and the general environmental legal requirements and obligations.

Environment and health awareness training programmes should be targeted at three (3) distinct levels of employment, i.e. the executive, middle management, and labour. Environmental awareness training programmes should contain the following information:

- The names, positions, and responsibilities of personnel to be trained;
- The framework for appropriate training plans;
- The summarised content of each training course; and
- A schedule for the presentation of the training courses.

The ECO must ensure that records of all training interventions are kept in accordance with the record-keeping and documentation control requirements as set out in this EMPr. The training records must verify each of the targeted personnel's training experience. The Applicant must ensure that adequate environmental training takes place. All employees must be given an induction presentation on environmental awareness and the content of the EMPr. The presentation should be conducted in the language of the employees to ensure it is understood. The environmental training must, as a minimum, include the following:

- The importance of conformance with all environmental policies;
- 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 and with the requirement of the Agency's environmental management systems, including 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 and faunal species of special concern and protected species, and the procedures to be followed should these be encountered during the construction of construction camps;
- The importance of not littering;
- The importance of using supplied ablution 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; and the
- Details regarding archaeological and/or historical sites which may be unearthed during construction and the procedures to be followed should these be encountered.

RECOMMENDED ENVIRONMENTAL EDUCATION MATERIAL IS PROVIDED IN APPENDIX A.

8.2 MONITORING OF ENVIRONMENTAL TRAINING

The Contractor must monitor the performance of construction workers to ensure that the points relayed during their induction have been properly understood and are being followed. If necessary, the ECO and/or a translator should be called to the site to further explain aspects of environmental or social behaviour that are unclear. Toolbox talks are recommended.

9 CLOSURE PLANNING

The Contractor must clear and clean the site and ensure that all equipment and residual materials, not forming part of the permanent works, are removed from site before issuing the completion certificate or as otherwise agreed.

9.1 POST-CONSTRUCTION AUDIT

A post-construction audit must be carried out and submitted to DFFE at the expense of the Applicant. Objectives should be to audit compliances with the key components of the EMPr, to identify main areas requiring attention and recommend priority actions. The post-construction audit must be submitted to DFFE within three (3) months of completion of the development and prior to the operational phase. Results of the audits should inform changes required to the specifications of the EMPr or additional specifications to deal with any environmental issues which arise on-site and have not been dealt with in the current document.

9.2 GENERAL REVIEW OF THE EMPR

The EMPr must be reviewed by the ECO on an ongoing basis. Based on observations during site inspections and issues raised at site meetings, the ECO should determine whether any procedures require modification to improve the efficiency and applicability of the EMPr on site. Any such changes or updates must be registered in the ECO's record, as well as being included as an annexure to this document. Annexures of this nature must be distributed to all relevant parties.

10 CONCLUSIONS

10.1 IMPACT MANAGEMENT OUTCOMES

The successful implementation of the impact management actions, stipulated in Chapter 5 of this EMPr, for each phase of the Coleskop Infrastructure Development will result in the avoidance, management and/or mitigation of the identified impacts and risks associated with the development. In addition, the implementation of the recommended management plans, in Appendix E of this EMPr, should further contribute to the avoidance, reduction and/or management of potential impacts resulting from the various stages of the Coleskop Infrastructure Development. The general impact management outcomes of this EMPr are to:

- To reduce the adverse impacts and enhance the benefits of the development.
- Preserve faunal and floral species and their associated habitats within identified sensitive areas and outside of the development footprint.
- To reduce the adverse impacts on avifaunal species due to the construction of the overhead line.
- Preserve Species of Conservation Concern (SCC) within the development footprint.
- Maintain soil and vegetation cover, through the implementation of erosion control, stormwater management, and alien vegetation management measures.
- Undertake activities in a manner which does not place workers or the public at risk in terms of health and safety.
- Prevent, and where not possible, control fires to protect public health, the environment and any properties in the vicinity of the development.
- Reduce the potential for pollution, in terms of air pollution, land pollution, water pollution, and noise pollution.
- Preserve cultural heritage and palaeontological resources of significance.
- Rehabilitate disturbed areas to their natural state or a near-natural state.
- Manage and maintain the operational development to reduce adverse impacts associated with the operation of the development and to ensure sustainable development.

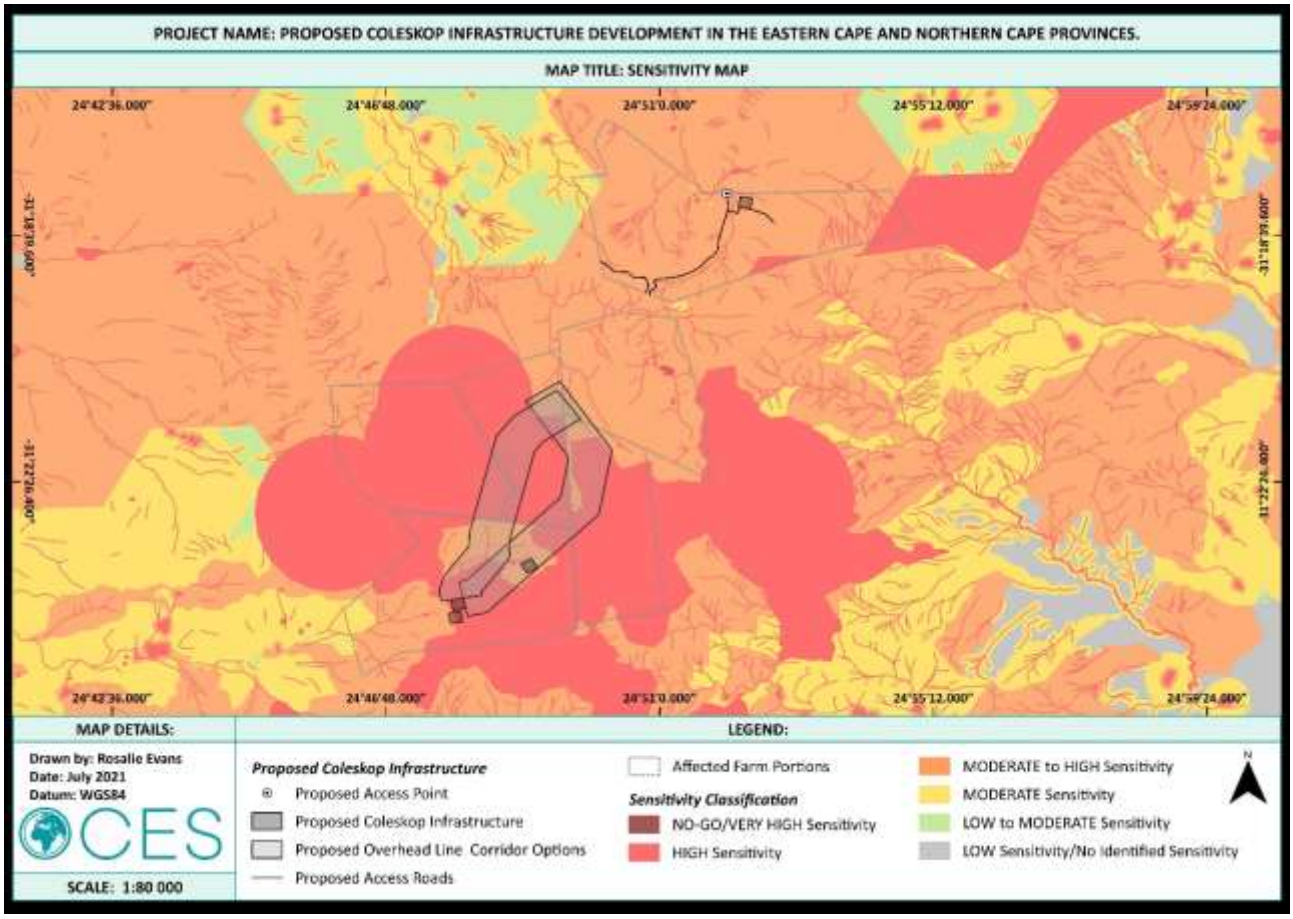

Figure 10.1: Sensitivity Map of the Proposed Coleskop Infrastructure Development site.

10.2 CONCLUDING STATEMENTS

All foreseeable actions and the relevant mitigations and/or management actions must be contained in this document. The EMPr should be seen as a day-to-day management document. The EMPr sets out the environmental and social standards, which would be required to minimise the negative impacts and maximise the positive benefits of the Coleskop Infrastructure Development. The EMPr could therefore change daily, and, if managed correctly, lead to successful phases of development.

All attempts should be made to have this EMPr available, as well as the Generic EMPrs, as part of any tender documentation, so that the Contractors are made aware of the potential cost and timing implications needed to fulfil the implementation of the EMPr, thus adequately costing for these.

APPENDIX A

EXAMPLE OF AN ENVIRONMENTAL EDUCATION COURSE OUTLINE

www.webweaver.nu/clipart/environmental.shtml

Reasons why should we look after the environment

- We have a right to a clean environment
- A clean environment is essential to healthy living
- All our basic needs come from the environment
- A contract has been signed – development vs the environment
- Penalties / fines could be issued

How to look after the environment

- Report issues
- Teamwork
- Follow the set rules and guidelines (EA, EMPr, Method statements etc.)
- Conserve, reuse and recycle

Tips and Guidelines

- Workers and equipment should not be allowed outside demarcated areas
- No swimming or polluting of water bodies allowed
- No damage / disturbance to vegetation or water bodies without consent / permits
- No disturbance allowed in no-go areas
- No hunting of animals
- Report all fires
- No burning or burying of waste
- No smoking near hazardous materials
- Training on fire fighting equipment
- Hazardous materials to be stored in designated and bunded areas
- Spill kits and drip trays a must
- Report all spills
- Control dust and Noise
- Maintain construction vehicles
- Availability and maintenance of sanitation facilities

Tips and Guidelines

- Only eat is designated areas
- Do not litter
- Vehicles to remain on approved tracks and adhere to speed limit
- Ensure emergency phone numbers are available
- Ensure PPE is worn
- Report fires, leaks and injuries
- Ask if unsure

APPENDIX B

COPY OF ENVIRONMENTAL AUTHORISATION(S) [ONCE RECEIVED]

APPENDIX C

EXAMPLE OF A METHOD STATEMENT

METHOD STATEMENT

CONTRACT: …… **DATE**: ……

PROPOSED ACTIVITY (give title of Method Statement and reference number from the EMPr):

WHAT WORK IS TO BE UNDERTAKEN (give a brief description of the works):

WHERE ARE THE WORKS TO BE UNDERTAKEN (where possible, provide an annotated plan and a full description of the extent of the works):

START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Start Date:	End Date:

HOW ARE THE WORKS TO BE UNDERTAKEN (provide as much detail as possible, including annotated sketches and plans where possible):

*** Note: Please attach additional pages should you require more space.**

DECLARATIONS

1) ENVIRONMENTAL CONTROL OFFICER (ECO)

The work described in this Method Statement, if carried out according to the methodology described, is satisfactorily mitigated to prevent avoidable environmental harm:

_____ _____
(Signature) (Print name)

Date: _____

2) PERSON UNDERTAKING THE WORKS

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to other signatories and that the ECO will audit my compliance with the contents of this Method Statement

_____ _____
(Signature) (Print name)

Date: _____

APPENDIX D

<table>
<tr><th colspan="3">APPENDIX 1 - CHANCE FOSSIL FINDS PROCEDURE: Ancillary infrastructure for the Umsobomvu 1 WEF near Middelburg</th></tr>
<tr><td>Province & region:</td><td colspan="2">NORTHERN CAPE: Pixley Ka Seme District Municipality
EASTERN CAPE: Chris Hani District Municipality</td></tr>
<tr><td>Responsible Heritage Resources Agency</td><td colspan="2">N. Cape: SAHRA (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Phone: +27 (0)21 462 4502. Fax: +27 (0)21 462 4509. Web: www.sahra.org.za).
E. Cape: ECPHRA (Contact details: Mr Sello Mokhanya, 74 Alexander Road, King Williams Town 5600; Email: smokhanya@ecphra.org.za)</td></tr>
<tr><td>Rock unit(s)</td><td colspan="2">Adelaide Subgroup and Katberg Formation (Tarkastad Subgroup) of Beaufort Group. Late Caenozoic superficial deposits (e.g. colluvium, alluvium, soils, surface gravels, pedocretes).</td></tr>
<tr><td>Potential fossils</td><td colspan="2">Vertebrate skeletal remains and burrows, trace fossils, plant fossil (e.g. petrified wood, plant compressions) within the Beaufort Group. Mammalian and other vertebrate bones, teeth and horncores, freshwater molluscs, calcretised trace fossils (e.g. termitaria), subfossil plant material within superficial sediments.</td></tr>
<tr><td rowspan="5">ECO protocol</td><td colspan="2">1. Once alerted to fossil occurrence(s): alert site foreman, stop work in area immediately (N.B. safety first!), safeguard site with security tape / fence / sand bags if necessary.</td></tr>
<tr><td colspan="2">2. Record key data while fossil remains are still in situ:
Accurate geographic location – describe and mark on site map / 1: 50 000 map / satellite image / aerial photo
Context – describe position of fossils within stratigraphy (rock layering), depth below surface
Photograph fossil(s) in situ with scale, from different angles, including images showing context (e.g. rock layering)</td></tr>
<tr><td>3. If feasible to leave fossils in situ:
Alert Heritage Resources Agency and project palaeontologist (if any) who will advise on any necessary mitigation
Ensure fossil site remains safeguarded until clearance is given by the Heritage Resources Agency for work to resume</td><td>3. If not feasible to leave fossils in situ (emergency procedure only):
Carefully remove fossils, as far as possible still enclosed within the original sedimentary matrix (e.g. entire block of fossiliferous rock)
Photograph fossils against a plain, level background, with scale
Carefully wrap fossils in several layers of newspaper / tissue paper / plastic bags
Safeguard fossils together with locality and collection data (including collector and date) in a box in a safe place for examination by a palaeontologist
Alert Heritage Resources Agency and project palaeontologist (if any) who will advise on any necessary mitigation</td></tr>
<tr><td colspan="2">4. If required by Heritage Resources Agency, ensure that a suitably-qualified specialist palaeontologist is appointed as soon as possible by the developer.</td></tr>
<tr><td colspan="2">5. Implement any further mitigation measures proposed by the palaeontologist and Heritage Resources Agency</td></tr>
<tr><td>Specialist palaeontologist</td><td colspan="2">Record, describe and judiciously sample fossil remains together with relevant contextual data (stratigraphy / sedimentology / taphonomy). Ensure that fossils are curated in an approved repository (e.g. museum / university / Council for Geoscience collection) together with full collection data. Submit Palaeontological Mitigation report to Heritage Resources Agency. Adhere to best international practice for palaeontological fieldwork and Heritage Resources Agency minimum standards.</td></tr>
</table>

APPENDIX E

1. SITE CLEARING PLAN

VEGETATION CLEARING

- Before clearing of vegetation, the Contractor should ensure that all litter and non-organic material is removed from the area to be cleared.
- Vegetation clearing must take place in a phased manner in order to retain vegetation cover for as long as possible in order to reduce the size of areas where dust can be generated by wind.
- All seed-bearing invasive alien vegetation must be removed from site.
- Removed vegetation must not be dumped onto adjacent intact vegetation and topsoil must be removed separately.
- All indigenous plant material removed from cleared areas should be stockpiled for mulching or temporarily stockpiled in a demarcated area, which meets the satisfaction of the ESO or the ECO, before disposal at an approved landfill site.
- The use of herbicides is prohibited, unless approved by the ESO or the ECO.
- The Contractor should submit a site clearing Method Statement to the ESO and the ECO for approval. This Method Statement should include the details of the phasing of the clearing and how this will be done, where and how cleared material will be stored and/or disposed of, etc.

TOPSOIL CLEARING

- Topsoil (a layer of approximately 100 - 150 mm) should be removed from areas to be disturbed during construction and safely stockpiled for landscaping purposes.
- All plant material (grasses, herbs and larger bushclump species) removed from the site are to be mixed into the topsoil.
- Topsoil stockpiles should be convex and should not exceed a height of 1.5 m.
- Stockpiles must be located in areas agreed to by the ESO or the ECO.
- Topsoil stockpiles must not be subject to compaction greater than 1 500 kg/m^2 and should not be pushed by a bulldozer for more than 50 m.
- Topsoil stockpiles must be monitored regularly to identify any alien plants, which must be removed when they germinate to prevent contamination of the seed bank.
- Appropriate measures, as agreed to by the ESO or the ECO, should be taken to protect topsoil stockpiles from erosion by wind or water by providing suitable stormwater and cut off drains, containment using hessian or similar material and/or by establishing suitable temporary vegetation.
- Stockpiles should not be covered with materials such as plastic which could cause it to compost or which could kill the seed bank.
- The Contractor must be held responsible for the replacement, at their own cost, for any unnecessary loss of topsoil due to their failure to work according to the requirements of this EMPr and the approved Method Statement.

2. RE-VEGETATION AND HABITAT REHABILITATION MANAGEMENT PLAN

SITE VEGETATION

Re-vegetating and rehabilitating the site, once constructed, through a comprehensive landscaping effort will benefit the faunal species which find refuge on the site. Linked to this, is the creation, preservation, and maintenance of tracts of natural and ornamental vegetation in all stages of ecological succession, interconnected by corridors or green belts for escape, foraging, breeding and exploratory movements. In terms of the scope of the construction activities, landscaping and rehabilitation will be minimal; many instances will require clean-up activities together with planting ground-stabilising vegetation.

Rehabilitation and landscaping efforts should focus on rehabilitating the following areas:

- Road verges after road construction is completed.
- Stormwater soaks away features and landscaped areas.
- The transformed portions of the site which have not been developed must be rehabilitated by planting indigenous plant species occurring in the area.
- Areas where pockets of alien invasive species have been removed.
- Areas not disturbed by the construction activities, but from previous land use, or those where invasive species have been removed, must be identified by a suitably qualified botanist as suitable sites for relocating plant SCC.

The ECO must approve a list of indigenous plants to be used during rehabilitation prior to the commencement of rehabilitation activities.

According to the South Africa, Lesotho and Swaziland Vegetation Map (South African National Biodiversity Institute, 2018), the proposed infrastructure is situated in an area classified as containing Besemkaree Koppies Shrubland and Eastern Upper Karoo.

Besemkaree Koppies Shrubland occurs in the Northern Cape, Free State and Eastern Cape Provinces along the slopes of koppies, butts and tafelbergs (Mucina and Rutherford, 2006). This vegetation type consists of two (2) layers; the lower layer is dominated by dwarf small-leaved shrubs, and in years with high rainfall, grasses. The upper layer is dominated by tall shrubs such as *Rhus erosa, Rhus burchelli, Rhus cilliata, Euclea crispa, Diospyros austro-africana* and *Olea europaea subsp. africana*. This vegetation type is classified as **Least Threatened** as it is largely excluded from agricultural practices. The conservation target is 28%, with 5% being conserved in the various reserves such as the Gariep Dam, Rolfontein, Tussen Die Riviere, Caledon and Kalkfontein Dam Nature Reserve.

The site investigations confirmed that this vegetation within the site is associated with high lying rocky outcrops, mountain summits, mountain slopes and in areas near drainage lines. The condition of this vegetation varied and ranged from being fairly intact in inaccessible areas, such as on steep slopes and on rocky outcrops, to showing signs of erosion in heavily impacted areas. Portions of this vegetation type have also been impacted to the extent that there is minimal vegetation cover and, in some cases, were devoid of vegetation altogether, most likely as a result of overgrazing. This vegetation type was characterised by a mosaic of shrubs, dwarf trees and a grass layer. The dominant shrubs onsite included *Elytropappus rhinocerotis, Euryops annea* and *Chrysocoma ciliata*. Dwarf trees such as *Rhus erosa, Euclea crispa* and *Euclea undulata* were present, and grass species such as *Eragrostis chloromelas, Themeda triandra* and *Aristida sp.* were interspersed throughout the proposed site.

Eastern Upper Karoo occurs in the Northern Cape, Eastern Cape and Western Cape and is associated with a flat to gently sloping topography (Mucina and Rutherford, 2006). It is dominated by dwarf microphyllus shrubs and grasses belonging to the *Aristida* and *Eragrostis* genera. This vegetation type

is classified as **Least Threatened** with a conservation target of 21%. A portion of this vegetation type has been conserved in Mountain Zebra and Karoo National Parks as well as in Oviston, Commando Drift, Rolfontein and Gariep Dam Nature Reserves. This vegetation type occurs in the low lying, flat areas of the affected properties.

PLANT SPECIES OF CONSERVATION CONCERN

The species list, containing plant species which are likely to occur within the proposed site, was assessed against the IUCN Red Data List, the South African Red Data List, the NEMBA (Act No. 10 of 2004) list of protected species, DAFF's list of protected tree species as well as the PNCO (1974) list of species and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) species lists.

Five (5) Plant Species of Conservation Concern (SCC) were found to occur within the proposed site and surroundings. However, it is likely that more plant SCC will be identified during the construction phase. Four (4) of these five (5) identified Plant SCC will require permits for the destruction and/or removal of the individuals. The Plant SCC include:

- ***Aloe broomii*** (Appendix II on CITES; Schedule 4 on the PNCO) which is widespread throughout in the central interior of South Africa and ranges from the Western Cape to the Northern Cape, Eastern Cape and Free State. This species has a stable population and is described as being common and not threatened on the South African Red Data List (von Staden, 2011). This species will require a permit for its destruction/removal.

- ***Euphorbia mauritanica*** (Appendix II on CITES) which is widespread occurring in the Eastern Cape, Free State, Kwa-Zulu Natal, Northern Cape and the Western Cape. This species ranges from Namibia to the Cape Peninsula and Eastward towards Kwa-Zulu Natal. This species is considered to have a stable population and is not in danger of extinction (von Staden, 2014). A permit to trade internationally, but no permit required for destruction/transplanting.

- ***Gomphocarpus fruticosus*** (Schedule 4 on the PNCO list) is widespread throughout South Africa, with a distribution that extends up into Angola, Zambia and Mozambique. It is associated with dry sandy soils in disturbed areas, often along riverbanks. The population of this species is considered to be stable and is listed with a status of Least Concern on the South African Red Data List (Goyder and Nicholas, 2001). A permit to destroy or transplant this species will be required.

- ***Harveya pumila*** (Schedule 4 on the PNCO list) has a wide distribution in South African and occurs in the Eastern Cape, Free State, Gauteng, Kwa-Zulu Natal and Mpumulanga. It is listed as Least Concern on the South African Red Data List (Victor, 2006). A permit to destroy or transplant this species will be required.

- ***Moraea huttonii*** (Schedule 4 on the PNCO list) has a wide distribution in South African and occurs in the Eastern Cape, Free State, Kwa-Zulu Natal and Mpumulanga. It is listed as Least Concern on the South African Red Data List (Cholo and Foyden, 2006). A permit to destroy or transplant this species will be required.

A suitably qualified Botanist must identify Plant SCC within the development footprints which require relocation prior to construction. Once Plant SCC have been identified within the construction areas, permits must be obtained for the destruction and/or for the removal for transplanting of the individuals. The removed Plant SCC must either be transplanted in areas adjacent with a similar habitat, in which construction activities will not take place, or be stored in a nursery until used for rehabilitating the disturbed areas within the site. The recommended out-planting procedure must be followed to ensure the success of the transplanted Plant SCC, as per Table 1 below.

Table 1: Recommended Out-Planting Procedure.

TASKS	METHOD
PLOT PREPARATION	The plots should be prepared as follows: • Prior to rehabilitation of the site, all remnants of foreign debris must be removed from the site. • All plots should first be covered with 1 m deep subsoil and then with topsoil (minimum depth of 10 cm). Soils should be manually spread evenly over the surface. Topsoil must be spread to the original depth (10 cm), and deeper where sufficient topsoil remains.

TASKS	METHOD
	• As topsoil will contain all cleared vegetation, no additional treatment will be required. However, to avoid erosion and increase nitrogen content, it might be necessary to sow a cover crop of commercially available Rye Grass (*Lolium perenne*). Although not indigenous, it is recommended as it has been used successfully elsewhere, is annual so dies off, is able to bind soil, and increases nutrients and soil mycorrhiza in the sand. This all improves the success of indigenous seeding and planting. Seed at the rate of 50 kg per hectare.
PLANT PREPARATION	Plants must undergo a period of 'hardening-off' during which they have been exposed to full, direct sunlight and been under a reduced watering regime. The individual plants destined for each plot should be grouped into plot-specific, marked baskets, before they leave the nursery. Each plant should be labelled with an aluminium label, giving species code, and a specific numeral identifying the plot. Before the out-planting commences, the equipment necessary for the proper handling and placing of all required materials should be on hand, in good condition and to acceptable approved standards. • Planting should preferably be done during the rainy season. • Unless otherwise specified by the ESO or the ECO, excavate square holes of 800 mm x 800 mm x 800 mm on average for trees and 500 mm x 500 mm x 500 mm on average for shrubs. • Backfill planting holes with topsoil. As much of the soil from container plants as possible must be retained around the roots of the plant during planting. • The soil must cover all the roots and be well firmed down to a level equal to that of the surrounding *in situ* material • After planting, each plant must be well watered, adding more soil upon settlement if necessary. • Stake all trees and tall aloes using three (3) weather-resistant wooden or steel stakes anchored firmly into the ground. Two (2) of the three (3) stakes should be located on the windward side of the plant. Galvanised wire binding, 3 mm thick, covered with a 20 mm diameter plastic hosepipe must be tied tightly to the stakes, half to two thirds the height of the tree above the ground and looped around the trunk of the tree. • Place stakes at least 500 mm apart and away from the stem and roots of the tree, so as not to damage the tree or its roots. • Thoroughly water plants as required until the plants are able to survive independently (i.e. depending on the rainfall). • A raised circular 200 mm high subsoil berm, placed 500 mm (shrubs) to 750 mm (trees) from the plant's stem, must be provided for the watering. Do not simply leave the excavated plant hole partially backfilled for this purpose – the berm must be raised above the natural soil level. • Water aloes and bulbs once directly after transplanting to settle the soil • Remove stakes and wire binds over time as required, as plants become established. • Herbs, shrubs, and trees should be planted at a density of at least 1 plant per 6,25 m^2 or 1600 plants per hectare.
MAINTENANCE	• Water all transplanted plants, as specified. • Watering must commence and continue immediately after transplanting. Apply the following watering regime: Early morning and evenings for the first week; Then once a day for the next week; then twice a week until there is evidence of new shoots, whereafter watering is stopped. • Check all plants for pests and diseases on a regular basis and treat the plants using approved methods and products as per manufacturers specifications. • Control weeds by means of extraction, cutting or other approved methods. • For planted areas that have failed to establish, replace plants with the same species as originally specified. The same species must be used unless otherwise specified by the ESO and/or the ECO.

In order to rehabilitate transformed and invaded areas, the following landscaping techniques should be employed:

- Clearing of vegetation should take place in accordance with the construction programme, instead of exposing large tracts of land simultaneously.
- Clearing of invaded areas should be undertaken as per the Alien Vegetation Management Plan.
- No re-useable topsoil should be removed from the site.
- Grass sods should be removed from areas to be cleared and stored for later use during rehabilitation.
- Sods used in re-vegetation should be obtained directly from the veld, but not from the identified sensitive areas. Veld sods should contain at least a 50 mm topsoil layer, and the roots must be minimally disturbed. They should either be obtained from the near vicinity of the site from an area selected by the ESO or the ECO, or from areas of the proposed development site that are earmarked for development. The soil should be compatible with that removed from the area to be re-vegetated and must not have been compacted by heavy machinery.
- Indigenous seeds may be harvested for purposes of re-vegetation in areas that are free of alien invasive vegetation, either at the site prior to clearance or from suitable neighbouring sites.
- The stockpiled vegetation from the clearing operations should be reduced to mulch.
- Indigenous plant material must be kept separate from alien material. The indigenous vegetative material should either be reduced by mechanical means (chipper) or by hand-axing to sticks no longer than 100 mm. The chipped material should be mixed with the topsoil at a ratio not exceeding 1:1.
- Mulch is to be harvested from areas that are to be denuded of vegetation during construction activities, provided that they are free of seed-bearing alien invasive plants.
- No harvesting of vegetation may be done outside the area to be disturbed by construction activities.
- Mulches should be collected in such a manner as to restrict the loss of seed.
- Brush-cut mulch should be stored for as short a period as possible, and seed released from stockpiles should be collected for use in the rehabilitation process.
- Re-vegetated areas should be monitored every three (3) months for the first twelve (12) months and every six (6) months thereafter.
- Re-vegetated areas showing inadequate surface coverage (less than 30% within 9 months after re-vegetation) should either be re-vegetated from scratch, or addition infill planting might be required. The ECO should advise.
- The Contractor must be responsible for maintaining the desired level of moisture necessary to maintain vigorous and healthy growth in re-vegetated areas. The quantity of water applied at one time should be sufficient to penetrate the soil to a minimum depth of 800 mm, where appropriate, and at a rate that will prevent saturation of the soil.
- Water used for the irrigation of re-vegetated areas should be free of chlorine and other pollutants which could have a detrimental effect on the plants.
- All seeded, planted, or sodded grass areas and all shrubs or trees planted are to be irrigated at regular intervals.
- Where herbicides are used to clear vegetation, species-specific chemicals should be applied to individual plants only. General spraying should be strictly prohibited.

3. ALIEN VEGETATION MANAGEMENT PLAN

Henderson (2001) provides the invasive status classification, as outlined in the Conservation of Agricultural Resources Act (CARA) (Act No. 43 of 1983a). These plants can be classified as Category 1, 2 or 3 species, and as a *'Declared Weed'* or *'Declared Invader'* according to their level of invasiveness in South Africa. The description of the above-mentioned classifications are:

- **Category 1 Plants**
  - Are prohibited and must be controlled.
- **Category 2 Plants**
  - (Commercially used plants) may be grown in demarcated areas providing that there is a permit and that steps are taken to prevent their spread.
- **Category 3 Plants**
  - (Ornamentally used plants) may no longer be planted; existing plants may remain, as long as all reasonable steps are taken to prevent the spreading thereof, except within the floodline of watercourses and wetlands.
- **Declared Weed (category 1)**
  - Prohibited on any land or water surface in South Africa.
  - Must be controlled or eradicated where possible (except in biological control reserves).
- **Declared Invader (category 2)**
  - Allowed only in demarcated areas under controlled conditions.
  - Import of propagative material and trading allowed only by permit holders.
  - Outside demarcated areas must be controlled or eradicated where possible (except in biological reserves).
  - Prohibited within 30 m of the 1:50 year floodline of watercourses or wetlands unless authorisation is obtained.
- **Declared Invader (category 3)**
  - No further plantings allowed (except with special permission).
  - No trade of propagative material.
  - Existing plants may remain but must be prevented from spreading.
  - Prohibited within 30 m or the 1:50 year floodline of watercourses or wetlands, or as directed by the executive officer.

It is essential that alien invasive species be removed from the infrastructure development site. Following the Working for Water guidelines for effective alien vegetation removal (DWAF, 2009), an alien removal programme should consist of the following three (3) phases:

I. Initial control: Clearing and eradication of alien invasive stands so as to drastically reduce the existing population.
II. Follow-up control: Control of re-growth (including seedlings, root suckers and coppice growth); which should be conducted annually for the first five (5) years.
III. Maintenance control: Sustain alien plant numbers with ongoing annual monitoring for the life of the project, and if necessary, implement additional control methods to avoid re-establishment of alien invasive stands.

ALIEN PLANT SPECIES IDENTIFIED WITHIN THE INFRASTRUCTURE DEVELOPMENT SITE AND SURROUNDS

- ***Opuntia stricta*** (Category 1b: PROHIBITED/Exempted if in Possession or Under control).
  A person in control of a Category 1 b Listed Invasive Species must control the listed invasive species in compliance with sections 75(1), (2) and (3) of the Act. A person contemplated in sub-regulation (2) must allow an authorised official from the Department to enter onto the land to monitor, assist with or implement the control of the listed invasive species, or

compliance with the Invasive Species Management Programme contemplated in section 75(4) of the Act. - www.environment.co.za.

- ***Populus spp.*** (Category 2: PERMIT REQUIRED) Category 2 Listed Invasive Species are those species listed by notice in terms of section 70(1)(a) of the Act as species which require a permit to carry out a restricted activity within an area specified in the Notice or an area specified in the permit, as the case may be. A landowner on whose land a Category 2 Listed Invasive Species occurs or person in possession of a permit, must ensure that the specimens of the species do not spread outside of the land or the area specified in the Notice or permit. Unless otherwise specified in the Notice, any species listed as a Category 2 Listed Invasive Species that occur outside the specified area contemplated in sub-regulation (1), must, for purposes of these regulations, be considered to be a Category 1 b Listed Invasive Species and must be managed according to Regulation 3. Notwithstanding the specific exemptions relating to existing plantations in respect of Listed Invasive Plant Species published in Government Gazette No. 37886, Notice 599 of 1 August 2014 (as amended), any person or organ of state must ensure that the specimens of such Listed Invasive Plant Species do not spread outside of the land over which they have control. - www.environment.co.za.

Additional alien vegetation species could be present within the site. The ECO, advised by a suitably qualified Botanical Specialist, should assist in the identification of alien vegetation species and advise on suitable methods of removal and disposal.

WEED REMOVAL (INITIAL CONTROL PROGRAMME FOR ALL ALIEN VEGETATION ENCOUNTERED)

There are a number of possible methods which can be used to control alien invasive species; these include mechanical, chemical, biological, and mycoherbicide control. In addition, integrated control methods consist of the use of a combination of these methods to control alien vegetation. This section

outlines possible techniques used in mechanical and chemical control methods only, as biological and mycoherbicide control is not recommended for this site and therefore not discussed further.

Mechanical Control Methods

The Agricultural Research Council (ARC)(2014) describes mechanical control as damaging or removing the plant by physical action. Various methods could be used, including uprooting/hand pulling, slashing, mowing, felling, ringbarking or bark stripping (ARC, 2014). This method of alien vegetation removal is best suited to small areas or sparse infestations. The following mechanical methods for removal are recommended:

- Hand pulling: Grip the seedlings or saplings low down and pull out by hand (using gloves). Make use of a hoe for plants that cannot be pulled out with ease.
- Ring barking: Bark is removed to from the bottom of the stem to a height of 0.75 – 1.0 m to below ground level. Bush knives or hatchets can be used for debarking.
- Frill or Ring-bark: Using an axe or bush knife, angled cuts are made downward into the cambium layer through the bark in a ring; herbicide is applied into the cuts.
- Cut stump treatment: Stems should be cut as low as practical, as stipulated on the herbicide label. Chemical herbicides are applied in diesel or water as recommended. Applications in diesel should be to the whole stump and exposed roots and in water to the cut area as recommended on the label.

Chemical Control Methods

Chemical control methods involve the use of registered herbicides to kill the target weed (ARC, 2014). Chemical control methods for alien plant removal include using a number of approved environmentally safe herbicides, which are applied to the leaves, stems or stumps of alien invader species.

- Foliar Spray:
  - Seedlings – Touchdown
  - Young trees – Garlon
- Cut Stumps (larger trees) and then apply:
  - Chopper;
  - Confront (2%); or
  - Timbrel 3A*.
- Frill (trees) and then apply:
  - Chopper; or
  - Timbrel 3A*.
- Stem Injection:
  - MSMA;
  - Mamba; or
  - Touchdown.

The *Working for Water Programme: Guide to Control Method and Herbicide Selection for Alien Vegetation* must be followed.

4. STORMWATER MANAGEMENT PLAN

This Stormwater Management Plan must be implemented during the construction and operation phases of the project. During the implementation of the Stormwater Management Plan, the Contractor must also ensure compliance with applicable regulations and prevent off-site migration of contaminated stormwater and the increase soil erosion. This Stormwater Management Plan serves as a high-level guideline for designers and Contractors to follow measures that allow surface and subsurface movement of water along drainage lines so as not to impede natural surface and subsurface flows. Drainage measures must promote the dissipation of stormwater run-off.
Diligence in stormwater management is essential and a full-time task, even during dry periods, as the lack of it could lead to the degradation of the site over time, rendering it susceptible to serious damage in the event of unexpected flooding, and subsequent potential damage to equipment on site due to gradual erosion after normal rainfall events, or by unexpected damage due to extreme flood events.

The site must conform to all engineering designs and measures to manage and control water run-off and erosion during or after rainstorms. This will include the following items:

- Run-off control and drains;
- Slope attenuation;
- Silt fences;
- Stormwater channels and catch pits;
- Shade or catch nets; and
- Soil bindings.

The civil design should describe and illustrate the proposed stormwater control measures as stipulated by the Civil Engineer, in compliance with this Stormwater Management Plan:

- Control measures to be implemented before and during the construction period, including the final stormwater control measures (post-construction). All roads and platforms should be designed and built according to SANS 1200 applicable sections to ensure all stormwater measures are properly implemented.
- The location, area/extent (m^2/ha) and specifications of all temporary and permanent water management structures or stabilisation methods.
- Stone pitching or concrete-lined drains be placed adjacent to roads where required to transfer the water to existing watercourses.
- At the point where stormwater is discharged, energy dissipaters must be constructed to slow the flow of run-off water.
- Mitre drains should be cut in the site roads at appropriate places to ensure water run-off and control.
- All cut-and-fill banks should be covered with stone pitching or crusher stone to ensure bank stabilisation and the elimination of potential erosion.

The aim is to ensure that the stormwater run-off is guided off the construction area, and such that it does not create erosion problems that may require aftercare.

In addition, the following surface water control measures should be implemented:

- Surface water flow must be guided to ensure there is no flow directly to an erosion area.
- Prevent the concentration or flow of surface water or stormwater down cut-and-fill slopes or along pipeline routes or roads and ensure measures to prevent erosion are in place prior to construction.

- Stormwater and any run-off generated by hard surfaces should be discharged into retention swales or areas with rock riprap. These areas must be grassed with indigenous vegetation. These energy dissipation structures must be placed in a manner that flows are managed prior to being discharged back into the natural watercourses, thus not only preventing erosion, but also supporting the maintenance of natural base flows within these systems, i.e. hydrological regime (water quantity and quality) is maintained.
- Mitigate against siltation and sedimentation using the above-mentioned structures and ensure that the structures do not cause erosion.
- Ensure that all stormwater control features have soft engineered areas that attenuate flows, allowing for water to percolate into the local aquifers.
- Minimise and restrict site clearing to areas required for construction purposes only and restrict disturbance to adjacent undisturbed natural vegetation.
- Large tracts of bare soil will either cause dust pollution or quickly erode and then cause sedimentation in the lower portions of the catchment.
- Minimise the diversion of flows into different catchments.
- If implementing dust control measures, prevent over-wetting, saturation and run-off that may cause erosion and sedimentation.
- Watercourse (stream) crossings must not trap any run-off, thereby creating inundated areas, but allow for free-flowing watercourses.

5. EROSION MANAGEMENT PLAN

This Erosion Management Plan must be implemented prior to construction as well as during the construction and operation phases of the project, along with the Stormwater Management Plan. The Erosion Management Plan must ensure compliance with applicable regulations and prevent off-site migration of contaminated stormwater or increase in soil erosion. This Plan will serve as a high-level guideline for designers and Contractors to follow measures that allow surface and subsurface movement of water along drainage lines that will not impede natural surface and subsurface flows. Drainage measures must promote the dissipation of stormwater run-off.

Diligence in stormwater management and erosion management is essential and a full-time task, even during dry periods, as the lack of management could lead to the degradation of the site over time, placing the site and surrounds at risk to serious damage in the event of unexpected flooding, and subsequent potential damage to equipment on site due to gradual erosion after normal rainfall events, or by unexpected damage due to extreme flood events.

The site must conform to all engineering designs and measures to manage and control water run-off and erosion during or after rainstorms. This will include the following items:

- Run-off control and drains;
- Slope attenuation;
- Silt fences;
- Stormwater channels and catch pits;
- Shade or catch nets; and
- Soil bindings.

The civil design should describe and illustrate the proposed erosion control measures as stipulated by the Civil Engineer, in compliance with this Erosion Management Plan:

- Erosion control measures to be implemented before and during the construction period, including the final erosion control measures (post-construction). All roads and platforms should be designed and built according to SANS 1200 applicable sections to ensure all stormwater measures are properly implemented.
- The location, area/extent (m^2/ha) and specifications of all temporary and permanent water management structures or stabilisation methods.
- Stone pitching or concrete-lined drains be placed adjacent to roads where required to transfer the water to existing watercourses.
- At the point where stormwater is discharged, energy dissipaters must be constructed to slow the flow of run-off water.
- Mitre drains should be cut in the site roads at appropriate places to ensure water run-off and control.
- All cut-and-fill banks should be covered with stone pitching or crusher stone to ensure bank stabilisation and the elimination of potential erosion.

The aim is to ensure that the stormwater run-off is guided off the construction area, and such that it does not create erosion problems within the site and the surrounds.

In addition, the following surface water control measures should be implemented to reduce the risk of erosion:

- Surface water flow must be guided to ensure there is no flow directly into an area which could increase erosion.

- Prevent the concentration or flow of surface water or stormwater down cut-and-fill slopes or along pipeline routes or roads and ensure measures to prevent erosion are in place prior to construction.
- Stormwater and any run-off generated by hard surfaces should be discharged into retention swales or areas with rock riprap. These areas must be grassed with indigenous vegetation. These energy dissipation structures must be placed in a manner that flows are managed prior to being discharged back into the natural watercourses, thus not only preventing erosion, but also supporting the maintenance of natural base flows within these systems, i.e. hydrological regime (water quantity and quality) is maintained.
- Mitigate against siltation and sedimentation using the above-mentioned structures and ensure that the structures do not cause erosion.
- Ensure that all stormwater control features have soft engineered areas that attenuate flows, allowing for water to percolate into the local aquifers.
- Minimise and restrict site clearing to areas required for construction purposes only and restrict disturbance to adjacent undisturbed natural vegetation.
- Large tracts of bare soil are likely to cause dust pollution and increase erosion.
- If implementing dust control measures, prevent over-wetting, saturation and run-off that may cause erosion and sedimentation.
- Watercourse (stream) crossings must not trap any run-off, thereby creating inundated areas, but allow for free-flowing watercourses.

6. EMERGENCY RESPONSE PLAN

This Emergency Response Plan should be implemented by the Contractor with guidance from the Health, Safety and Environment (HSE) Representative(s) during the Construction, Operational and Decommissioning Phases of the infrastructure development to reduce the likelihood of emergency incidents and to ensure that there will be appropriate responses to unexpected or accidental adverse incidents.

EMERGENCY INCIDENCE AVOIDANCE

- Induction Training, which includes a suitable Environmental Education Course and the location of emergency evacuation assembly points, must be given to all employees involved in the Construction, Operational and Decommissioning Phases.
- All impact management actions specified in the EMPr(s) and the Environmental Authorisation must be implemented throughout the phases of development.
- If faunal species are encountered within the site subsequent to the faunal search and rescue procedure, which must be undertaken directly prior to vegetation clearance, these species must only be handled and relocated by a suitably experienced individual.
- A suitably experienced snake wrangler, with the ability to accurately identify snakes, must be present on-site during construction and decommissioning activities.
- A list of snakes which are likely to occur within the site must form part of the Environmental Education Course. In addition, it is recommended that the African Snakebite Institute app is downloaded by the ECO and the HSE Representative.
- Spill kits must be readily available on-site. These spill kits should include absorbent pads, bags, etc. and each refuelling vehicle must have a spill kit.
- A general first aid kit should be kept on-site and managed by a suitably experienced individual, who has received suitable first aid training.
- All vehicles and plants operated on-site must be serviced regularly.
- Tyre puncture repair kits should be kept on-site and used by a suitably experienced individual.
- Firefighting equipment must be readily available on-site. This should include rubber beaters and at least one (1) fire extinguisher of a suitable size. The fire extinguisher(s) must be serviced as per the manufacturer's recommendations.
- Fire breaks should be established and maintained where necessary.
- Smoking must only occur in designated areas, as approved by the appointed ECO.
- Open fires must not be permitted unless approval is received from the appointed ECO and the HSE Representative.
- Emergency contact details should be clearly displayed on-site. These should include, but not be limited to, contact details for the nearest:
    - Fire Services/Fire Protection Agency (FPA);
    - South African Police Services;
    - Ambulance; and
    - National Crisis Line.
- Fuels, oils and other hazardous materials must be kept in a bunded area under lock and key.
- A suitable number of drip trays must be readily available on-site, and the use of these drip trays must be monitored by the appointed ECO.
- All hazardous chemicals that will be used on-site must have Material Safety Data Sheets (MSDS).
- All hazardous substances must be stored in suitable containers as defined in the Method Statement.
- Hazardous materials must only be handled by trained personnel. The handling of hazardous materials must only be in accordance with the MSDS.

- Employees handling hazardous substances and materials must be aware of the potential impacts and follow appropriate safety measures. Appropriate personal protective equipment must be made available.
- Containers must be clearly marked to indicate contents, quantities, and safety requirements.
- Due to the Covid-19 pandemic, masks should be worn by all employees and social distancing should be practiced at all times.
- Vehicle speed limits must be indicated on-site and limited to 40 km/hr on gravel roads.
- Employees must not be housed on-site.
- Any incidence of social unrest must be reported to the South African Police Services.
- Any incidence of theft must be reported to the South African Police Services.
- Any incidence of poaching must be reported to the South African Police Services.
- Weather forecasts should be observed, at least on a weekly basis, to plan for any potentially risky weather events.
- Additional safety measures must be implemented during periods of heavy rainfall, high wind speeds, snowfall, etc. During such periods, the recommended speed limit of 40 km/hr should be reduced to 30 km/hr.

EMERGENCY RESPONSES

Hazardous Substance Spills

In the event that an accidental spill of fuel, oil or other hazardous substances occurs, these actions must be taken immediately to isolate, control and manage the spill:

- Appropriate actions, in accordance with the approved (prior to construction) Method Statement(s), must be taken to isolate and contain the spill.
- The spill must be contained using spill kits; by applying suitable absorbent material to the spill and removing the contaminated soil (ground spills), or by using booms (watercourse spills).
- All spills must be treated with a matter of urgency.
- Used spill kit material and contaminated soil must be temporarily stored in a designated area on-site prior to disposal at a registered hazardous waste disposal site by a suitable service provider.
- The ECO and the HSE Representative must be informed of the incident as soon as possible, and an incident report must be completed which includes photographs of the spill, the measures taken to contain the spill and remediate the location of the spill as well as the success of the measures taken.

Fires

In the event of a fire, these actions must be taken immediately to control and extinguish the fire:

- Contact the Fire Services as soon as possible.
- Make use of the rubber beaters and fire extinguisher, the minimum firefighting equipment which should be available on-site, to control the fire until the Fire Services arrive.
- Should any employees have minor burns resulting from the fire, these burns should be treated with a burn dressing from the available first aid kit followed by an appointment with a suitably qualified healthcare professional.
- Should any employees have major burns resulting from the fire, an ambulance must be called immediately, and the burns must be treated by a suitably qualified healthcare professional.
- The ECO and the HSE Representative must be informed of the incident as soon as possible, and an incident report must be completed which includes photographs, the measures taken to contain the fire and remediate the affected area.

Emergency Evacuation

An Emergency Evacuation Method Statement must be compiled for approval from the appointed ECO

and the HSE Representative prior to the commencement of the construction phase. Should emergency evacuation of the site be required, the following should be done as a matter of urgency:

- All employees must gather at the predetermined emergency evacuation assembly points and await the Contractor's instructions as per the approved Emergency Evacuation Method Statement.
- The ECO and the HSE Representative must compile an incident report must be completed which includes the identification of the snake, the location where the incident occurred, the location in which the snake was relocated to and the measures are taken to ensure the safety of the snake bite victim.

Severe Weather Conditions

A Method Statement must be compiled for approval from the appointed ECO and the HSE Representative prior to the commencement of the construction phase for the protocols relating to severe weather conditions. Should severe weather conditions be forecast, which could increase the risk of employees travelling to site or undertaking the necessary activities on-site, temporary site closure should be considered, and all necessary site closure measures must be put in place.

Snake Bites

In the event of a snake bite, these actions must be taken immediately:

- An ambulance must be contacted immediately.
- All efforts must be taken to obtain a description of the snake or a photograph in order to correctly identify the snake for treatment purposes.
- The snake must be captured by a suitably qualified snake wrangler and safely relocated away from the site.
- The ECO and the HSE Representative must be informed of the incident as soon as possible, and an incident report must be completed which includes the identification of the snake, the location where the incident occurred, the location in which the snake was relocated to and the measures are taken to ensure the safety of the snake bite victim.

Injury, Illness or Death Onsite

Should an employee obtain a minor injury or illness on-site, a suitably trained individual should provide treatment from the first aid kit, followed by an appointment with a suitably qualified healthcare professional (if deemed necessary) and allowed to rest until fully recovered (if necessary).

Should an employee obtain a major injury or show signs of severe illness on-site, an ambulance must be contacted immediately so that the employee can be treated by a doctor.

Should an employee die on-site, an ambulance as well as the South African Police Services must be contacted immediately. Those present at the time of the death should engage with the South African Police Services and they should receive the necessary counselling and support.

The ECO and the HSE Representative must be informed of all injuries, illnesses and/or deaths which occur on-site. An incident report must be completed for every incident as well as the steps taken to ensure the safety of the employees.

COMPLIANCE

The ECO and HSE Representative must monitor and keep records of all emergency incidents on-site. These incidents must be included in the Audits Reports during the relevant phases of the development and the Contractor and Developer must be made aware of all incidents. In addition, the landowners must be notified of all incidents which occur within their properties.

7. FIRE MANAGEMENT PLAN

It is imperative that the necessary precautions be implemented to minimise this risk of fire within the site and surrounds. The following measures must be implemented to reduce the risk of fires during the construction and operational phases.

CONSTRUCTION PHASE MANAGEMENT MEASURES

- The Contractor must ensure that all personnel are aware of the fire risk and the need to extinguish cigarettes before disposal, in appropriate waste disposal containers.
- The risk of fire is highest during the drier months and during high wind velocities. To avoid and manage fire risk the following steps should be implemented:
  - Firefighting equipment must be kept on-site and ensure that all personnel are educated on how to use it as well as the procedures to be followed in the event of a fire.
  - Identify the relevant authorities and structures responsible for fighting fires in the area and liaise with them regarding procedures should a fire commence.
  - Ensure that all the necessary emergency contact details are posted at conspicuous and relevant locations.
- Should a Contractor be found responsible for the outbreak of a fire, they must be liable for any associated costs.
- Open fires must not be allowed on site for the purpose of cooking or warmth. Bona fide braai fires (such braai fires must be limited to the traditional "month end" braais and not individual daily cooking fires) may be lit within the construction camp or site.
- The Contractor must take all reasonable steps to prevent the accidental occurrence or spread of fire. The Contractor must appoint a fire officer who should be responsible for ensuring immediate and appropriate action in the event of a fire.
- The Contractor must ensure that all site personnel are aware of the procedure to be followed in the event of a fire. The appointed fire officer must notify the Fire and Emergency Services in the event of a fire and must not delay doing so until such time as the fire is beyond control.
- The Contractor must ensure that there is basic firefighting equipment on-site at all times. This equipment should, at a minimum, include fire extinguishers and beaters. The Contractor must pay the costs incurred by organisations called to put out fires started by himself/herself, his/her staff, or any sub-contractor. The Contractor must also pay the costs incurred to reinstate burnt areas as deemed necessary by the RE.
- Any work that requires the use of fire may only take place at that designated area and as approved by the RE. Firefighting equipment must be available in these areas.
- The Contractor should ensure that the telephone number of the local Fire and Emergency Service is displayed at the site offices.
- The Contractor is to ascertain the fire requirements and must submit a fire contingency Method Statement to the ESO and ECO for approval.

OPERATIONAL PHASE MANAGEMENT MEASURES

Any requirements of the local Fire Protection Association must be adhered to in consultation with the relevant landowners, as per the requirements of the National Veld and Forest Fire legislation, which may include:

- Formation of a Fire Protection Association (FPA).
- Duty to prepare and maintain firebreaks.
- Requirements for firebreaks.
- Readiness for firefighting.
- Actions to fight fires.
- In areas other than designated development footprints, a network of firebreaks must be

maintained and overlap with any firebreaks managed by the landowners to ensure that fires are not able to spread over the development.
    - All road reserves will serve as firebreak; and
    - All firebreaks must be maintained as required by the local Fire Chief.
- Firebreaks are to be positioned and prepared in such a way as to cause the least disturbance to soil and biodiversity. Firebreaks should be free from combustible material, e.g. pruned material and leaf litter.
- Ensure that firefighting equipment is maintained and in good working order before the start of each fire season.
- Smoking outside of designated safe areas must not be permitted.
- Flicking of cigarette butts into adjacent vegetation must not be permitted.
- Suitable signage must be provided on-site, including entrance warning of fire risk and warnings not to flick cigarette butts into vegetated areas.

8. WASTE MANAGEMENT PLAN

The Contractor's intended methods for waste management and waste minimisation must be implemented at the onset of the contract and approved by the ECO. Where required, Method Statements must be compiled and submitted to the ECO for approval. All personnel must be instructed to dispose of all waste in the proper manner.

No waste from construction or otherwise may be disposed of on-site. All waste generated on-site must be removed from the site and disposed of at a licensed waste disposal site. In this regard, adequate litter drums or other suitable containers must be located on-site to ensure that waste generated on-site is disposed of in a suitable and timeous manner. Where possible, some of the construction waste should be recycled and used in construction.

SOLID AND LIQUID WASTE

During the construction phase, solid waste must be stored in a designated area, which has been approved by the ECO, within the site is covered, tip-proof drums for collection and disposal. All refuse containers must be free of any holes and in good condition. A refuse control system should be established for the collection and removal of refuse to the satisfaction of the ESO or the ECO. As far as possible, general waste (including paper, glass, plastics, aluminium, etc.) should be sorted for recycling. Disposal of solid waste should be at a licensed landfill site, or at a site approved by the DFFE in the event that an existing operating landfill site is not within a reasonable distance from the site. Waste must not be burned.

Any water contaminated by cement must not be allowed to flow freely into the environment. Instead, it must be contained, and solids allowed to settle out. Thereafter, the solid material should be disposed of at a landfill site with other solid waste.

LITTER

During the construction phase, littering by construction workers must be prohibited on-site. The facilities should be maintained in a neat and tidy condition, and the site is to be kept free of litter throughout the construction phase. Fines should be implemented for persons found littering. All reasonable measures should be taken to reduce the potential for litter and negligent behaviour with regards to the disposal of all refuse. At all places of work, the Contractor must provide litter collection facilities for later safe disposal at a licensed landfill site or at a DFFE approved waste disposal site.

During the operation phase, the area of the development should be cleared of litter on a regular basis. Once collected, this litter must be disposed of at a licensed landfill site or at a DFFE approved waste disposal site.

HAZARDOUS WASTE

During the construction phase, hazardous waste such as bitumen, oils, oily rags, paint tins, etc., must be disposed of at a DFFE approved hazardous waste landfill site. Special care should be taken to avoid the spillage of hazardous waste and from this waste entering the ground or contaminating water. In the event of the above occurring, the affected areas must be promptly reinstated to the satisfaction of the ECO. As far as possible, maintenance of machinery and vehicles on-site should be avoided. Used oil, lubricants and cleaning materials from the maintenance of vehicles and machinery should be collected in a holding tank and returned to the supplier. Water and oil should be separated in an oil trap. Oils collected in this manner, should be retained in a safe holding tank and removed from site by a specialist oil recycling company for disposal at an approved waste disposal sites for toxic/hazardous materials. Oil collected by a mobile servicing unit should be stored in the service unit's sludge tank

and discharged into the safe holding tank for collection by the specialist oil recycling company. The Contractor must ensure that an emergency preparedness plan is in place for implementation in the case of a spill or substances which can be harmful to an individual or the receiving environment. All used filter materials should be stored in a secure bin for disposal off-site. Hazardous waste must not be stored or stockpiled in any area other than at a site approved by the ECO. Any contaminated soil should be removed and replaced. Soils contaminated by oils and lubricants should be collected and disposed of at a facility designated by the local authority to accept contaminated materials. Washing of vehicles on the construction site should not be permitted as this is likely to result in the release of hydrocarbon-contaminated wash water into the environment.

During the operational phase, hazardous materials on-site (if any) must be disposed of in a DFFE approved hazardous waste landfill site. The Contractor should ensure that an emergency preparedness plan is in place for implementation in the case of a spill or substances which can be harmful to an individual or the receiving environment.