PROPOSED VAALKOP SUBSTATION AND POWER LINE ON A SITE NEAR ORKNEY, NORTH WEST PROVINCE

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

Submitted as part of the
Draft Environmental Impact Assessment Report
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Prepared for:
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PROJECT DETAILS

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DEFINITIONS AND TERMINOLOGY

Alternatives: Alternatives are different means of meeting the general purpose and need of a proposed activity. Alternatives may include location or site alternatives, activity alternatives, process or technology alternatives, temporal alternatives or the 'do nothing' alternative.

Cumulative impacts: The impact of an activity that in itself may not be significant, but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

Direct impacts: Impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity (e.g. noise generated by blasting operations on the site of the activity). These impacts are usually associated with the construction, operation, or maintenance of an activity and are generally obvious and quantifiable.

'Do nothing' alternative: The 'do nothing' alternative is the option of not undertaking the proposed activity or any of its alternatives. The 'do nothing' alternative also provides the baseline against which the impacts of other alternatives should be compared.

Endangered species: Taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating. Included here are taxa whose numbers of individuals have been reduced to a critical level or whose habitats have been so drastically reduced that they are deemed to be in immediate danger of extinction.

Endemic: An "endemic" is a species that grows in a particular area (is endemic to that region) and has a restricted distribution. It is only found in a particular place. Whether something is endemic or not depends on the geographical boundaries of the area in question and the area can be defined at different scales.

Environment: the surroundings within which humans exist and that is 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 impact: An action or series of actions that have an effect on the environment.

Environmental impact assessment: Environmental Impact Assessment, as defined in the NEMA EIA Regulations, is a systematic process of identifying, assessing and reporting environmental impacts associated with an activity.

Environmental management: Ensuring that environmental concerns are included in all stages of development, so that development is sustainable and does not exceed the carrying capacity of the environment.

Environmental management programme: An operational plan that organises and co-ordinates mitigation, rehabilitation and monitoring measures in order to guide the implementation of a proposal and its ongoing maintenance after implementation.

Indigenous: All biological organisms that occurred naturally within the study area prior to 1800.

Indirect impacts: Indirect or induced changes that may occur because of the activity (e.g. the reduction of water in a stream that supply water to a reservoir that supply water to the activity). These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place because of the activity.

Interested and affected party: Individuals or groups concerned with or affected by an activity and its consequences. These include the authorities, local communities, investors, work force, consumers, environmental interest groups, and the public.

Photovoltaic effect: Electricity can be generated using photovoltaic panels (semiconductors) which are comprised of individual photovoltaic cells that absorb solar energy to produce electricity. The absorbed solar radiation excites the electrons inside the cells and produces what is referred to as the Photovoltaic Effect.

Rare species: Taxa with small world populations that are not at present Endangered or Vulnerable, but are at risk as some unexpected threat could easily cause a critical decline. These taxa are usually localised within restricted geographical areas or habitats or are thinly scattered over a more extensive range. This category was termed Critically Rare by Hall and Veldhuis (1985) to distinguish it from the more generally used word "rare."

Red data species: Species listed in terms of the International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species, and/or in terms of the South African Red Data list. In terms of the South

African Red Data list, species are classified as being extinct, endangered, vulnerable, rare, indeterminate, insufficiently known or not threatened (see other definitions within this glossary).

Significant impact: An impact that by its magnitude, duration, intensity, or probability of occurrence may have a notable effect on one or more aspects of the environment.

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PURPOSE AND OBJECTIVES OF THE EMP CHAPTER 1

An Environmental Management Programme (EMP) is defined as "an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented or mitigated, and that the positive benefits of the projects are enhanced."[1] The objective of this EMP is to provide consistent information and guidance for implementing the management and monitoring measures established in the permitting process and help achieve environmental policy goals. The purpose of an EMP is to ensure continuous improvement of environmental performance, reducing negative impacts and enhancing positive effects during the construction and operation of the substation and power line. An effective EMP is concerned with both the immediate outcome as well as the long-term impacts of the project.

The EMP provides specific environmental guidance for the construction and operation phases of a project, and is intended to manage and mitigate construction and operation activities so that unnecessary or preventable environmental impacts do not result. These impacts range from those incurred during start up (i.e. site clearing and site establishment), during the construction activities themselves (i.e. erosion, noise, dust, and visual impacts), during site remediation (i.e. soil stabilisation, re-vegetation), during operation and decommissioning (i.e. similar to construction phase activities).

This EMP has been compiled in accordance with Section 33 of the EIA Regulations (GG No 33306 of 18 June 2010) and will be further developed in terms of specific requirements listed in any authorisations issued for the proposed project. The EMP has been developed as a set of environmental specifications (i.e. principles of environmental management), which are appropriately contextualised to provide clear guidance in terms of the on-site implementation of these specifications (i.e. on-site contextualisation is provided through the inclusion of various monitoring and implementation tools).

This EMP has the following objectives:

» Outline mitigation measures and environmental specifications which are required to be implemented for the planning, construction and rehabilitation, operation, and decommissioning phases of the project in order to manage and minimise the extent of potential environmental impacts associated with the substation and power line

[1] Provincial Government Northern Cape, Department of Environmental Affairs and Development Planning: *Guideline for Environmental Management Plans*. 2005

- Ensure that all the phases of the project do not result in undue or reasonably avoidable adverse environmental impacts, and ensure that any potential environmental benefits are enhanced
- Identify entities responsible for the implementation of the measures and outline functions and responsibilities
- Propose mechanisms and frequency for monitoring compliance, and preventing long-term or permanent environmental degradation
- Facilitate appropriate and proactive responses to unforeseen events or changes in project implementation that was not considered in the EIA process

The management and mitigation measures identified within the Environmental Impact Assessment (EIA) process are systematically addressed in this EMP, and ensure the minimisation of adverse environmental impacts to an acceptable level.

Kabi Solar must ensure that the implementation of the project complies with the requirements of all environmental authorisations, permits, and obligations emanating from relevant environmental legislation. This obligation is partly met through the development and the implementation of this EMP and through its integration into the contract documentation. Since this EMP is part of the EIA process it is important that this document be read in conjunction with the final Scoping and EIA Reports. This will contextualise the EMP and enable a thorough understanding of its role and purpose in the integrated environmental management process. Should there be a conflict of interpretation between this EMP and the environmental authorisation, the stipulations in the environmental authorisation shall prevail over that of the EMP, unless otherwise agreed by the authorities in writing. Similarly, any provisions in current legislation overrule any provisions or interpretations within this EMP.

This EMP shall be binding on all the parties involved in the construction and operational phases and shall be enforceable at all levels of contract and operational management within the project.

PROJECT DETAILS *CHAPTER 2*

Kabi Solar (Pty) Ltd (Kabi Solar) is proposing to establish a **substation and power line** which will be used to evacuate power from the proposed Kabi Vaalkop Solar PV Facility (refer to Figure 2.1). This project is referred to as the **Vaalkop Substation and power line**. The Vaalkop Substation and power line will be comprised of the following:

» A new **on-site substation** (100m X 100m) to be shared with all three phases of the proposed Kabi Vaalkop Solar PV Facility.
» A new **overhead** 132 kV **power line** approximately 6 km long (with a servitude of 31 m wide) to connect directly to the Eskom Hermes Substation via the new on site substation. The power line will follow an existing corridor of 5 power lines feeding into Hermes Substation. The corridor of the new power line and the existing power lines becomes wedged between an old slimes dam and the R502 arterial road (refer to Figure 9.1). The new power line is to be used to evacuate the power from the proposed Kabi Vaalkop Solar I and Kabi Vaalkop Solar III PV facilities.

In terms of the findings of the EIA Report, various planning, construction, and operation-related environmental impacts were identified, including:

» Disturbance of the ecological environment (i.e. flora and fauna)
» Impacts on the visual aesthetics and sensitive receptors
» Socio-economic impacts

The specialist studies undertaken in the EIA Phase did not identify any absolute "No-Go" areas for the proposed substation and power line or areas of high sensitivity. However, the following potentially sensitive areas were identified:

» *Areas of natural vegetation* **-** The natural vegetation across most of the site is considered to have moderately high conservation status. Local factors that may lead to parts of the study area being classified as sensitive are the potential presence of some animal species of conservation concern, the known presence of two plant species of conservation concern and the potential presence of three additional plant species of conservation concern.

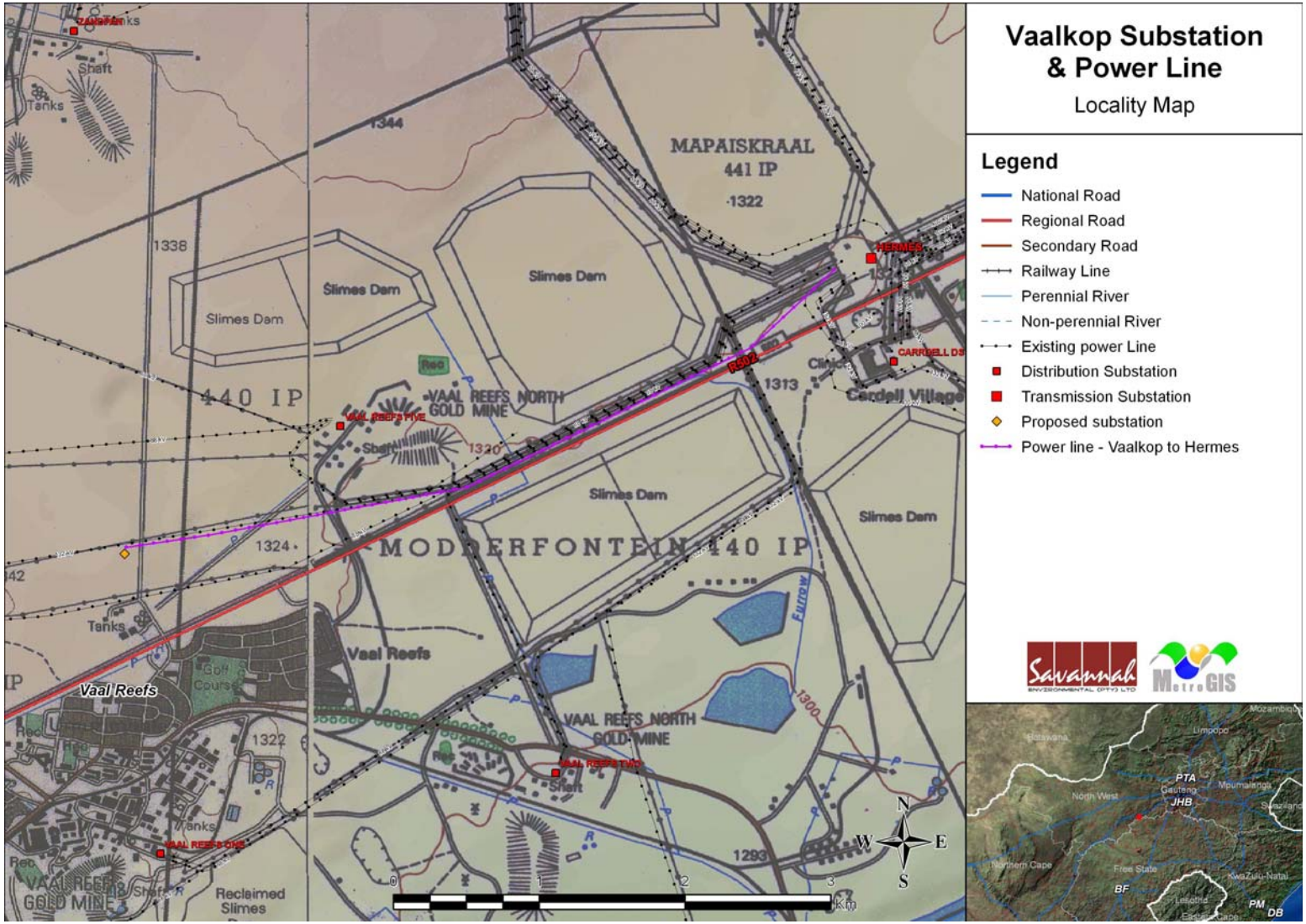

Figure 2.1: Locality map indicating the location of the Vaalkop Substation and power line corridor

2.1 Activities and Components associated with the substation and power line

The main activities/components associated with the proposed substation and power line are detailed below. Construction of the substation and power line is anticipated to take a period of up to 6 months. . The low skilled personnel are likely to be sourced from the nearby towns of Orkney and klerksdorp and are likely to commute from their homes on a daily basis. Therefore any overnight on-site employees would be limited to security and skilled construction staff. Workers not living in the area, including those for skilled positions, will not be housed on site.

2.1.2. Construction Process for the Substation and Power Line

Power lines are constructed in the following simplified sequence:

Step 1: Survey of the route
Step 2: Selection of best-suited conductor, towers, insulators, foundations
Step 3: Final design of line and placement of towers
Step 4: Issuing of tenders, and award of contract to construction companies
Step 5: Vegetation clearance and construction of access roads (where required)
Step 6: Tower pegging
Step 7: Construction of foundations
Step 8: Assembly and erection of towers on site
Step 9: Stringing of conductors
Step 10: Rehabilitation of disturbed area and protection of erosion sensitive areas
Step 11: Testing and commissioning
Step 12: Continued maintenance

Construction of the power line is required to be undertaken in accordance with the specifications of this Environmental Management Plan (EMP).

The expected lifespan of the proposed substation and power line is between 35 and 40 years, depending on the maintenance undertaken on the power line structures. During the life-span power line, on-going maintenance is performed. Power line inspections are undertaken on an average of 1 – 2 times per year, depending on the area. During this maintenance period, the line is accessed via the access routes established during the construction phase. Maintenance of the power lines is required to be undertaken in accordance with the specifications of this Environmental Management Plan (EMP).

The creation of additional employment opportunities during the operational phase of the substation and power line will be limited, and will be restricted to skilled maintenance personnel.

The management of a power line servitude is dependent on the details and conditions of the agreement between the landowner and Kabi Solar, and are therefore site-specific. These may, therefore, vary from one location to another. However, it is a common occurrence that there is a dual responsibility for the maintenance of the servitude:

» Kabi Solar will be responsible for the tower structures, maintenance of access roads, watercourse crossings, and gates and fences relating to servitude access.
» The landowner will retain responsibility for the maintenance of the land and land use within the servitude (e.g. cropping activities, veld management, etc.).

Exceptions to the above may arise where, for example dual use is made of the access roads and gates or specific land use limitations are set by Kabi Solar within the servitude which directly affects the landowner. Maintenance responsibilities are, ultimately, clearly set out in the servitude agreement. Once agreed upon, these maintenance agreement conditions must be deemed to form part of this EMP and must be adhered to at all times

STRUCTURE OF THIS EMP CHAPTER 3

The first two chapters provide background to the EMP and the proposed project, while the chapters which follow consider the following:

» Key legislation applicable to the development
» Planning and design activities
» Construction activities
» Operation activities
» Decommissioning activities

These chapters set out the procedures necessary for Kabi Solar, as the project developer, to minimise environmental impacts and achieve environmental compliance. For each of the phases of implementation for the substation and power line, an over-arching environmental **goal** is stated. In order to meet this goal, a number of **objectives** are listed. The management programme has been structured in table format in order to show the links between the goals for each phase and their associated objectives, activities/risk sources, mitigation actions, monitoring requirements and performance indicators. A specific EMP table has been established for each environmental objective. The information provided within the EMP table for each objective is illustrated below:

OBJECTIVE: Description of the objective, which is necessary to meet the overall goals; which take into account the findings of the EIA specialist studies

Project Component/s	» List of project components affecting the objective.
Potential Impact	» Description of potential environmental impact if objective is not met.
Activity/Risk Source	» Description of activities which could affect achieving objective.
Mitigation: Target/Objective	» Description of the target and/or desired outcomes of mitigation.

Mitigation: Action/Control	**Responsibility**	**Timeframe**
List specific action(s) required to meet the mitigation target/objective described above	Who is responsible for the measures	Time periods for implementation of measures

Performance Indicator	Description of key indicator(s) that track progress/indicate the effectiveness of the management programme.
Monitoring	Mechanisms for monitoring compliance; the key monitoring actions required to check whether the objectives are being achieved, taking into consideration responsibility, frequency, methods, and reporting.

The objectives and EMP tables are required to be reviewed and possibly modified whenever changes, such as the following, occur:

» Planned activities change (i.e. in terms of the components and/or layout of the substation and power line)
» Modification to or addition to environmental objectives and targets
» Relevant legal or other requirements are changed or introduced
» Significant progress has been made on achieving an objective or target such that it should be re-examined to determine if it is still relevant, should be modified, etc.

3.1. Project Team

This Draft EMP was compiled by:

Name	Company
EMP Compilers	
Bongani Khupe – Environmental Assessment Practitioner (EAP) Karen Jodas – Project Manager	Savannah Environmental
Specialists	
David Hoare – Fauna, flora and ecology	David Hoare Consulting
Johan van der Waals – Soil, agricultural potential and land capacity	Terrasoil Science
Francois Coetzee	University of South Africa: Department of Anthropology & Archaeology
Lourens du Plessis	MetroGIS
Marchelle Terblanche	index
Prof Marion Bamford	University of the Witwatersrand

The Savannah Environmental team have extensive knowledge and experience in EIA and environmental management, having been involved in EIA processes over the past ten years. They have managed and Drafted EMPs for other power generation projects throughout South Africa, including numerous wind and solar energy facilities.

KEY LEGISLATION APPLICABLE TO THE DEVELOPMENT CHAPTER 4

The following legislation and guidelines have informed the scope and content of this EMP Report:

- National Environmental Management Act (Act No 107 of 1998)
- EIA Regulations, published under Chapter 5 of the NEMA (GNR R545, GNR 546 in Government Gazette 33306 of 18 June 2010)
- Guidelines published in terms of the NEMA EIA Regulations, in particular:
  - Companion to the National Environmental Management Act (NEMA) Environmental Impact Assessment (EIA) Regulations of 2010 (Draft Guideline; DEA, 2010)
  - Public Participation in the EIA process (DEA, 2010)

Several other acts, standards, or guidelines have also informed the project process and the scope of issues addressed and assessed in the EIA Report. A review of legislative requirements applicable to the proposed project is provided in the table that follows.

Table 4.1: Relevant legislative and permitting requirements

Legislation	Applicable Requirements	Relevant Authority	Compliance Requirements
National Legislation			
National Environmental Management Act (Act No 107 of 1998)	The EIA Regulations have been promulgated in terms of Chapter 5 of the Act. Listed activities which may not commence without an environmental authorisation are identified within these Regulations. In terms of S24(1) of NEMA, the potential impact on the environment associated with these listed activities must be assessed and reported on to the competent authority charged by NEMA with granting of the relevant environmental authorisation. In terms of GN R543, R544, R545 and R546 of 18 June 2010, a Scoping and EIA Process is required to be undertaken for the proposed project.	Department of Environmental Affairs – competent authority North West Department of Economic Development, Environment, Conservation and Tourism – commenting authority	The listed activities triggered by the proposed substation and power line have been identified and assessed in the EIA process being undertaken (i.e. Scoping and EIA). This EIA Report will be submitted to the competent and commenting authority in support of the application for authorisation.
National Environmental Management Act (Act No 107 of 1998)	In terms of the Duty of Care Provision in S28(1) the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to ensure that any pollution or degradation of the environment associated with this project is avoided, stopped or minimised. In terms of NEMA, it has become the legal duty of a project proponent to consider a	Department of Environmental Affairs	While no permitting or licensing requirements arise directly by virtue of the proposed project, this section has found application during the EIA Phase through the consideration of potential impacts (cumulative, direct, and indirect). It will continue to apply throughout the life cycle of the project.

	project holistically, and to consider the cumulative effect of a variety of impacts.		
Environment Conservation Act (Act No 73 of 1989)	National Noise Control Regulations (GN R154 dated 10 January 1992)	Department of Environmental Affairs Department of Environment and Nature Conservation Local Authorities	Noise impacts are expected to be associated with the construction phase of the project and are not likely to present a significant intrusion to the local community. Therefore is no requirement for a noise permit in terms of the legislation. On-site activities should be limited to 6:00am - 6:00pm, Monday – Saturday (excluding public holidays). Should activities need to be undertaken outside of these times, the surrounding communities will need to be notified and appropriate approval will be obtained from DEA and the Local Municipality.
National Water Act (Act No 36 of 1998)	Water uses under S21 of the Act must be licensed, unless such water use falls into one of the categories listed in S22 of the Act or falls under the general authorisation (and then registration of the water use is required). Consumptive water uses may include the taking of water from a water resource - Sections 21a and b. Non-consumptive water uses may include impeding or diverting of flow in a water course - Section 21c; and altering of bed, banks or	Department of Water Affairs Provincial Department of Water Affairs	Water use will need to be licensed (water use as defined in terms of S21 of the NWA).

	characteristics of a watercourse - Section 21i.		
National Water Act (Act No 36 of 1998)	In terms of S19, the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to prevent and remedy the effects of pollution to water resources from occurring, continuing, or recurring.	Department of Water Affairs Provincial Department of Water Affairs	This section of the Act will apply with respect to the potential impact on drainage lines, primarily during the construction phase (i.e. pollution from construction vehicles).
Minerals and Petroleum Resources Development Act (Act No 28 of 2002)	A mining permit or mining right may be required where a mineral in question is to be mined (e.g. materials from a borrow pit) in accordance with the provisions of the Act. Requirements for Environmental Management Programmes and Environmental Management Plans are set out in S39 of the Act.	Department of Mineral Resources	As no borrow pits are expected to be required for the construction of the substation and power line, no mining permit or right is required to be obtained.
Atmospheric Pollution Prevention Act (Act No 45 of 1965)	In terms of S27, the Minister may declare certain areas dust control areas. Part V of Act regulates pollution generated by vehicle fumes.	Department of Environmental Affairs	The project study area has not been declared a dust control area. Although there is no legal obligation relating to the activities to be undertaken best practice measures should be used to prevent dust generation from the roads and excavations during construction.
National Environmental Management: Air Quality Act (Act No 39 of 2004)	S18, S19, and S20 of the Act allow certain areas to be declared and managed as “priority areas.” Declaration of controlled emitters (Part 3 of Act) and controlled fuels (Part 4 of Act) with relevant emission standards.	Department of Environmental Affairs	No permitting or licensing requirements arise from this legislation. The Act provides that an air quality officer may require any person to submit an atmospheric impact report if there is reasonable suspicion that

			the person has failed to comply with the Act.
National Heritage Resources Act (Act No 25 of 1999)	S38 states that Heritage Impact Assessments (HIAs) are required for certain kinds of development including: » The construction of a road, powerline, pipeline, canal or other similar linear development or barrier exceeding 300 m in length; and » Any development or other activity which will change the character of a site exceeding 5 000 m^2 in extent. Standalone HIAs are not required where an EIA Process is carried out as long as the EIA contains an adequate HIA component that fulfils the provisions of S38. In such cases only those components not addressed by the EIA should be covered by the heritage component.	South African Heritage Resources Agency	A permit may be required should any cultural/heritage sites on site be required to be disturbed or destroyed as a result of the proposed development. A HIA has been undertaken as part of the EIA Process to identify heritage sites.
National Environmental Management: Biodiversity Act (Act No 10 of 2004)	In terms of S57, the Minister of Environmental Affairs has published a list of critically endangered, endangered, vulnerable, and protected species in GNR 151 in Government Gazette 29657 of 23 February 2007 and the regulations associated therewith in GNR 152 in GG29657 of 23 February 2007, which came into effect on 1 June 2007. In terms of GNR 152 of 23 February 2007:	Department of Environmental Affairs	As the applicant will not carry out any restricted activity, as is defined in S1 of the Act, no permit is required to be obtained in this regard. Specialist flora and fauna studies have been undertaken as part of the EIA Phase. As such the potentially occurrence of critically endangered, endangered, vulnerable, and

	Regulations relating to listed threatened and protected species, the relevant specialists must be employed during the EIA Phase of the project to incorporate the legal provisions as well as the regulations associated with listed threatened and protected species (GNR 152) into specialist reports in order to identify permitting requirements at an early stage of the EIA Phase.		protected species and the potential for them to be affected has been considered.
Conservation of Agricultural Resources Act (Act No 43 of 1983)	Regulation 15 of GNR1048 provides for the declaration of weeds and invader plants, and these are set out in Table 3 of GNR1048. Weeds are described as Category 1 plants, while invader plants are described as Category 2 and Category 3 plants. These regulations provide that Category 1, 2 and 3 plants must not occur on land and that such plants must be controlled by the methods set out in Regulation 15E.	Department of Agriculture Forestry and Fisheries	While no permitting or licensing requirements arise from this legislation, this Act will find application throughout the life cycle of the project. In this regard, soil erosion prevention and soil conservation strategies must be developed and implemented. In addition, a weed control and management plan must be implemented.
National Veld and Forest Fire Act (Act 101 of 1998)	In terms of S12 the applicant must ensure that the firebreak is wide and long enough to have a reasonable chance of preventing the fire from spreading, not causing erosion, and is reasonably free of inflammable material. In terms of S17, the applicant must have such equipment, protective clothing, and trained personnel for extinguishing fires.	Department of Agriculture, Forestry and Fisheries (DAFF)	While no permitting or licensing requirements arise from this legislation, this act will find application during the construction and operational phase of the project.
Hazardous Substances Act (Act No 15 of 1973)	This Act regulates the control of substances that may cause injury, or ill health, or death	Department of Health	It is necessary to identify and list all the Group I, II, III, and IV hazardous

	due to their toxic, corrosive, irritant, strongly sensitising or inflammable nature or the generation of pressure thereby in certain instances and for the control of certain electronic products. To provide for the rating of such substances or products in relation to the degree of danger; to provide for the prohibition and control of the importation, manufacture, sale, use, operation, modification, disposal or dumping of such substances and products. Group I and II: Any substance or mixture of a substance that might by reason of its toxic, corrosive etc, nature or because it generates pressure through decomposition, heat or other means, cause extreme risk of injury etc., can be declared as Group I or Group II substance Group IV: any electronic product; and Group V: any radioactive material. The use, conveyance, or storage of any hazardous substance (such as distillate fuel) is prohibited without an appropriate license being in force.		substances that may be on the site and in what operational context they are used, stored or handled. If applicable, a license is required to be obtained from the Department of Health.
Development Facilitation Act (Act No 67 of 1995)	Provides for the overall framework and administrative structures for planning throughout the Republic. S(2 - 4) provide general principles for land development and conflict resolution.	Local Municipality District Municipality	The applicant must submit a land development application in the prescribed manner and form as provided for in the Act. A land development applicant who wishes to establish a land development area must comply with procedures set out

			in the Act.
Subdivision of Agricultural Land Act (Act No 70 of 1970)	Details land subdivision requirements and procedures. Applies for subdivision of all agricultural land in the province	Local Municipality District Municipality	Subdivision will have to be in place prior to any subdivision approval in terms of S24 and S17 of the Act.
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)	The Minister may by notice in the *Gazette* publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment. The Minister may amend the list by – » Adding other waste management activities to the list. » Removing waste management activities from the list. » Making other changes to the particulars on the list. In terms of the Regulations published in terms of this Act (GN 718), A Basic Assessment or Environmental Impact Assessment is required to be undertaken for identified listed activities. Any person who stores waste must at least take steps, unless otherwise provided by this Act, to ensure that: » The containers in which any waste is stored, are intact and not corroded or in » any other way rendered unlit for the safe storage of waste.	National Department of Water and Environmental Affairs Provincial Department of Environmental Affairs (general waste)	As no waste disposal site is to be associated with the proposed project, no permit is required in this regard. Waste handling, storage and disposal during construction and operation is required to be undertaken in accordance with the requirements of the Act, as detailed in the EMP (refer to Appendix J). The volumes of waste to be generated and stored on the site during construction and operation of the substation and power line will not require a waste license (provided these remain below the prescribed thresholds).

	» Adequate measures are taken to prevent accidental spillage or leaking. » The waste cannot be blown away. » Nuisances such as odour, visual impacts and breeding of vectors do not arise; and » Pollution of the environment and harm to health are prevented.		
Promotion of Access to Information Act (Act No 2 of 2000)	All requests for access to information held by state or private body are provided for in the Act under S11.	Department of Environmental Affairs	No permitting or licensing requirements.
Promotion of Administrative Justice Act (Act No 3 of 2000)	In terms of S3 the government is required to act lawfully and take procedurally fair, reasonable, and rational decisions. Interested and affected parties have right to be heard.	Department of Environmental Affairs	No permitting or licensing requirements.

MANAGEMENT PROGRAMME: PLANNING AND DESIGN CHAPTER 5

Overall Goal: undertake the planning and design phase in a way that:

» Ensures that the design of the substation and power line responds to the identified environmental constraints and opportunities.
» Ensures that adequate regard has been taken of any landowner and community concerns and that these are appropriately addressed through design and planning (where appropriate).
» Ensures that the best environmental options are selected for the linear components (i.e. any access roads and the power line).
» Enables the substation and power line construction activities to be undertaken without significant disruption to other land uses and activities in the area.

In order to meet this goal, the following objectives have been identified, together with necessary actions and monitoring requirements.

5.1 Objectives

OBJECTIVE 5.1.1: Ensure the substation design responds to identified environmental constraints and opportunities

The specialist studies undertaken in the EIA Phase did not identify any absolute "No-Go" areas for the proposed substation and power line or areas of high sensitivity. However, the following potentially sensitive areas were identified:

» *Areas of natural vegetation* **-** The natural vegetation across most of the site is considered to have moderately high conservation status. Local factors that may lead to parts of the study area being classified as sensitive are the potential presence of some animal species of conservation concern, the known presence of two plant species of conservation concern and the potential presence of three additional plant species of conservation concern.

In order to minimise impacts associated with the construction and operation of the substation and power line, the following surveys and associated activities are required to be undertaken during the final design phase:

» Geotechnical survey – this will investigate flood potential, foundation conditions, potential for excavations, and the availability of natural construction materials.

This study will serve to inform the type of foundations required to be constructed (i.e. for the substation), and the extent of earthworks and compaction required in the establishment of the internal access roads.

» A stormwater management plan – this will detail how stormwater runoff (i.e. over engineered hard surfaces for the substation) can be managed to reduce velocities and volumes of water that could lead to erosion and potential sink holes. Stormwater drains should be correctly located and designed with appropriate erosion-control features to ensure local stormwater run-off over the flood embankments and natural riverbanks do not cause erosion and subsequent bank slumping.

Project Component/s	» Substation » Access roads. » Powerline.
Potential Impact	» Impact on identified sensitive areas.
Activities/Risk Sources	» Positioning of all the facilities components (i.e. including area infrastructure, the powerline and access roads).
Mitigation: Target/Objective	» The design of the substation and power line responds to the identified environmental constraints and opportunities. » Site sensitivities are taken into consideration and avoided as far as possible, thereby mitigating potential impacts.

	Mitigation: Action/Control	Responsibility	Timeframe
a	Undertake a geotechnical pre-construction survey.	Geotechnical specialist	Design
b	Obtain any additional environmental permits required (e.g. water use license, permit to move heritage resources)	Kabi Solar	Project planning
c	Consider and incorporate design level mitigation measures recommended by the specialists as detailed within the EIA Report and relevant appendices.	Engineering design consultant, solar component supplier, and Kabi Solar	Design review
d	External access point and internal access road to be carefully planned to maximise road user safety.	Kabi Solar	Design
e	Compile a comprehensive stormwater management plan for hard surfaces as part of the final design of the project. This must include appropriate means for the handling of stormwater within the site, e.g. separate clean and dirty water streams around the plant, install stilling basins to capture large volumes of run-off, trapping sediments, and reduce flow velocities (i.e. water used when washing the mirrors).	Kabi Solar	Design

Performance Indicator	» The design meets the objectives and does not degrade the environment. » Design and layouts respond to the mitigation measures and recommendations in the EIA Report.
Monitoring	» Review of the design by the Project Manager and the Environmental Control Officer (ECO) prior to the commencement of construction.

OBJECTIVE 5.1.2: Ensure the selection of the best environmental option for the alignment of the power line, and associated access roads

» ***Road*** – the study site is accessible via an existing access point off the R502 from Orkney. It is not envisaged that any new access roads will be required to be constructed in order to access the site.

Where new routes are required (i.e. from the existing access road, mitigation measures are required to be implemented to ensure impacts are minimised. The most sensitive landscape features for planning purposes in the study area will be the presence of drainage lines.

Project Component/s	» Access roads. » Power line
Potential Impact	» Route that degrades the environment unnecessarily, particularly with respect to visual aesthetics, loss of indigenous flora, and erosion.
Activities/Risk Sources	» Alignment of powerline within corridor. » Alignment of access roads.
Mitigation: Target/Objective	» To ensure selection of best environmental option for alignment for the linear infrastructure. » Environmental sensitivities are taken into consideration and avoided as far as possible, thereby mitigating potential impacts.

	Mitigation: Action/Control	**Responsibility**	**Timeframe**
a	Select an alignment that curtails environmental impacts and enhances environmental benefits.	Kabi Solar	Prior to submission of the final construction layout plan
b	Consider design level mitigation measures recommended by the specialists as detailed within	Kabi Solar	Design

	the EIA report and relevant appendices.		
c	Plan new access roads according to contour lines to minimise cutting and filling operations.	Kabi Solar	Design
d	Use bird-friendly powerline tower and conductor designs.	Kabi Solar	Design
e	Install bird diverters/flappers on powerline sections across active agricultural land and drainage lines	Kabi Solar	Design
f	Plan the access road, the power lines and ancillary infrastructure in such a way and in such a location that clearing of vegetation is minimised. Make use of already disturbed sites rather than pristine areas	Kabi Solar	Design
	Undertake negotiations with affected landowners not within the solar energy facility (associated with this substation and power line) development footprint and agree on landowner-specific conditions for construction and maintenance		

Performance Indicator	» Powerline and road alignments meet environmental objectives. » Selected linear alignments that minimise any negative environmental impacts and maximise any benefits.
Monitoring	» Ensure that the design implemented meets the objectives and mitigation measures in the EIA Report through review of the design by the Project Manager, and the ECO prior to the commencement of construction.

OBJECTIVE 5.1.3: Minimise visual impacts

Project Component/s	» Night lighting on substation and for security.
Potential Impact	» Visual impacts on those receptors in close proximity to the substation and power line.
Activities/Risk Sources	» Visual impact of the above mentioned by observers on or near the site as well as within the region.
Mitigation: Target/Objective	» Optimal planning of infrastructure to minimise visual impact.

	Mitigation: Action/Control	Responsibility	Timeframe
a	Consult a lighting engineer in the design and planning of lighting to ensure the correct specification and placement of lighting and light fixtures for the substation. The following is recommended: » Limiting mounting heights of lighting fixtures, or alternatively using foot-lights or bollard level lights; » Making use of minimum lumen or wattage in fixtures; » Making use of down-lighters, or shielded fixtures; » Making use of Low Pressure Sodium lighting or other types of low impact lighting. » Making use of motion detectors on security lighting. This will allow the site to remain in relative darkness, until lighting is required for security or maintenance purposes.	Project proponent, or design consultant	Planning.
b	Retain and maintain natural vegetation in all areas outside of the development footprint.	Project proponent, or design consultant	Planning
c	Plan the substation, access roads and ancillary buildings in such a way and in such a location that clearing of vegetation is minimised	Project proponent, or design consultant	Planning

Performance Indicator	» Lighting impact is minimal and no complaints received from settlements or homesteads.
Monitoring	» Not applicable.

OBJECTIVE 5.1.4: Minimise stormwater runoff and subsequent alteration of the local hydrological regime

Project Component/s	» Stormwater management components » Any hard engineered surfaces (i.e. access roads, and substation foundations).
Potential Impact	» Poor stormwater management and alteration of the hydrological regime. » Risk of river system erosion and downstream sedimentation.
Activities/Risk Sources	» Construction of the substation and power line (i.e. placement of hard engineered surfaces). » Construction of water abstraction infrastructure.
Mitigation: Target/Objective	» Appropriate management of stormwater to minimise impacts on the environment.

	Mitigation: Action/Control	Responsibility	Timeframe
a	Reduce the potential increase in surface flow velocities and the resultant impact on the localised drainage system through increased sedimentation.	Kabi Solar	Planning and design
b	Suitable handling of stormwater within the site (i.e. clean and dirty water streams around the plant and install stilling basins to capture large volumes of run-off, trapping sediments and reduce flow velocities).	Kabi Solar	Construction and operation

Performance Indicator	» Sound water quality and quantity management
Monitoring	» Surface water quality monitoring plan.

MANAGEMENT PROGRAMME: CONSTRUCTION CHAPTER 6

Overall Goal: Undertake the construction phase in a way that:

» Ensures that construction activities are properly managed in respect of environmental aspects and impacts.
» Enables construction activities to be undertaken without significant disruption to other land uses and activities in the area, in particular concerning noise impacts, farming practices, traffic and road use, and effects on local residents.
» Minimises the impact on the indigenous natural vegetation and habitats of ecological value (i.e. drainage lines).
» Minimises impacts on fauna using the site.
» Minimises the impact on heritage resources
» Establishes an environmental baseline during construction activities on the site, where possible.

6.1 Institutional Arrangements: Roles and Responsibilities for the Construction Phase

As the proponent, Kabi Solar must ensure that the implementation of the substation and power line complies with the requirements of all environmental authorisations and permits, and obligations emanating from other relevant environmental legislation. This obligation is partly met through the development of the EMP, and the implementation of the EMP through its integration into the contract documentation. Kabi Solar will retain various key roles and responsibilities during the construction of the substation and power line.

OBJECTIVE 6.1.1: Establish clear reporting, communication, and responsibilities in relation to overall implementation of environmental management plant

Formal responsibilities are necessary to ensure that key procedures are executed. Specific responsibilities of the Project Manager; Site Manager; Safety, Health and Environment Representative; Environmental Control Officer (ECO) and Contractor for the construction phase of this project are as detailed below.

Project Manager will:

» Ensure all specifications and legal constraints specifically with regards to the environment are highlighted to the Contractor(s) so that they are aware of these

- Ensure that Kabi Solar and its Contractor(s) are made aware of all stipulations within the EMP
- Ensure that the EMP is correctly implemented throughout the project by means of site inspections and meetings. This will be documented as part of the site meeting minutes
- Be fully conversant with the EIA for the project, the EMP, the conditions of the Environmental Authorisation (once issued), and all relevant environmental legislation

Site Manager (Kabi Solar's on-site Representative) will:

- Be fully knowledgeable with the contents of the EIA and risk management
- Be fully knowledgeable with the contents and conditions of the Environmental Authorisation (once issued)
- Be fully knowledgeable with the contents of the EMP
- Be fully knowledgeable with the contents of all relevant environmental legislation, and ensure compliance with these
- Have overall responsibility of the EMP and its implementation
- Conduct audits to ensure compliance to the EMP
- Ensure there is communication with the Project Manager, the ECO, and relevant discipline engineers on matters concerning the environment.
- Ensure that no actions are taken which will harm or may indirectly cause harm to the environment, and take steps to prevent pollution on the site
- Confine activities to the demarcated construction site

Environmental Control Officer (ECO) will be responsible for monitoring, reviewing, and verifying compliance by the Contractor with the environmental specification and accordingly will:

- Be fully knowledgeable with the contents with the EIA.
- Be fully knowledgeable with the contents with the conditions of the Environmental Authorisation (once issued).
- Be fully knowledgeable with the contents with the EMP.
- Be fully knowledgeable with the contents with all relevant environmental legislation, and ensure compliance with them.
- Ensure that the contents of this document are communicated to the Contractor site staff and that the Site Manager and Contractor are constantly made aware of the contents through discussion.
- Ensure that the compliance of the EMP is monitored through regular and comprehensive inspection of the site and surrounding areas.
- Ensure that if the EMP conditions or specifications are not followed then appropriate measures are undertaken to address this.
- Monitoring and verification must be implemented to ensure that environmental impacts are kept to a minimum, as far as possible.

- Ensure that the Site Manager has input into the review and acceptance of construction methods and method statements.
- Ensure that activities on site comply with all relevant environmental legislation.
- Ensure that a removal is ordered of any person(s) and/or equipment responsible for any contravention of the specifications of the EMP.
- Ensure that the compilation of progress reports for submission to the Project Manager, with input from the Site Manager, takes place on a regular basis, including a final post-construction audit.
- Ensure that there is communication with the Site Manager regarding the monitoring of the site.
- Ensure that any non-compliance or remedial measures that need to be applied are reported

Contractors and Service Providers: It is important that contractors are aware of the responsibilities in terms of the relevant environmental legislation and the contents of this EMP. The contractor is responsible for informing employees and sub-contractors of their environmental obligations in terms of the environmental specifications, and for ensuring that employees are adequately experienced and properly trained in order to execute the works in a manner that will minimise environmental impacts. The contractor's obligations in this regard include the following:

- Employees must have a basic understanding of the key environmental features of the construction site and the surrounding environment.
- A copy of the EMP must be easily accessible to all on-site staff members.
- Employees must be familiar with the requirements of this EMP and the environmental specifications as they apply to the construction of the proposed substation and power line.
- Prior to commencing any site works, all employees and sub-contractors must have attended an environmental awareness training/induction which must provide staff with an appreciation of the project's environmental requirements, and how they are to be implemented.
- Staff will be informed of environmental issues as deemed necessary by the ECO.

All contractors (including sub-contractors and staff) and service providers are ultimately responsible for:

- Ensuring adherence to the environmental management specifications
- Ensuring that Method Statements are submitted to the Site Manager (and ECO) for approval before any work is undertaken
- Any lack of adherence to the above will be considered as non-compliance to the specifications of the EMP
- Ensuring that any instructions issued by the Site Manager on the advice of the ECO are adhered to

- Ensuring that a report is tabled at each site meeting, which will document all incidents that have occurred during the period before the site meeting
- Ensuring that a register is kept in the site office, which lists all transgressions issued by the ECO
- Ensuring that a register of all public complaints is maintained
- Ensuring that all employees, including those of sub-contractors receive training/induction before the commencement of construction in order that they can constructively contribute towards the successful implementation of the EMP (i.e. ensure their staff are appropriately trained as to the environmental obligations)

6.2 Objectives

In order to meet the overall goal for construction, the following objectives, actions, and monitoring requirements have been identified.

OBJECTIVE 6.2.1: Minimise impacts related to inappropriate site establishment

The contractor must take all reasonable measures to ensure the safety of the public in the surrounding area. Where the public could be exposed to danger by any of the works or site activities, the contractor must, as appropriate, provide suitable flagmen, barriers and/or warning signs in English, Afrikaans and any other relevant local languages, all to the approval of the Site Manager.

All unattended open excavations shall be adequately demarcated and/or fenced (fencing shall consist of a minimum of three strands of wire wrapped with danger tape). Adequate protective measures must be implemented to prevent unauthorised access to the working area and the internal access/haul routes.

Project Component/s	» Substation » Linear infrastructure (i.e. powerline, access road).
Potential Impact	» Hazards to landowners and public. » Damage to indigenous natural vegetation, due largely to ignorance of where such areas are located. » Loss of threatened animal species
Activities/Risk Sources	» Open excavations (foundations and cable trenches). » Movement of construction vehicles in the area and on-site.
Mitigation: Target/Objective	» To secure the site against unauthorised entry. » To protect members of the public/landowners/residents. » No loss of or damage to sensitive vegetation in areas outside the immediate development footprint.

Mitigation: Action/Control		Responsibility	Timeframe
a	Secure site, working areas and excavations in an appropriate manner, as agreed with the ECO.	Contractor	Site establishment, and duration of construction
b	Where necessary control access, fence, and secure area.	Contractor	Site establishment, and duration of construction
c	Fence and secure contractor's equipment camp.	Contractor	Site establishment
d	Establish appropriately bunded areas for storage of hazardous materials.	Contractor	Site establishment
e	All development footprints for the roads and powerline should be clearly demarcated.	Contractor	Site establishment, and duration of construction
f	Establish the necessary ablution facilities with chemical toilets and provide adequate sanitation facilities and ablutions for construction workers (1 toilet per every 15 workers) at appropriate locations on site.	Contractor	Site establishment, and duration of construction
g	Ablution or sanitation facilities should not be located within 100 m from a 1:100 year flood line including water courses, wetlands.	Contractor	Site establishment, and duration of construction
h	Supply adequate waste collection bins at site where construction is being undertaken. Separate bins should be provided for general and hazardous waste. As far as possible, provision should be made for separation of waste for recycling.	Contractor	Site establishment, and duration of construction

Performance Indicator	» Site is secure and there is no unauthorised entry. » No members of the public/ landowners injured. » Appropriate and adequate waste management and sanitation facilities provided at construction site.
Monitoring	» An incident reporting system will be used to record non-conformances to the EMP. » ECO to monitor all construction areas on a continuous basis until all construction is completed. Non-conformances will be immediately reported to the site manager.

OBJECTIVE 6.2.2: Appropriate management of the construction site and construction workers

No construction workers will be accommodated on site. Construction workers are to be accommodated in the town of Orkney and surrounding areas. Construction equipment will need to be stored at appropriate locations on site.

In order to minimise impacts on the surrounding environment, contractors must be required to adopt a certain Code of Conduct and commit to restricting construction activities to areas within the development footprint. Contractors and their sub-contractors must be familiar with the conditions of the Environmental Authorisation (once issued), the EIA Report, and this EMP, as well as the requirements of all relevant environmental legislation.

Project Component/s	» Area and linear infrastructure.
Potential Impact	» Damage to indigenous natural vegetation and sensitive areas. » Damage to and/or loss of topsoil (i.e. pollution, compaction etc). » Impacts on the surrounding environment due to inadequate sanitation and waste removal facilities. » Pollution/contamination of the environment.
Activities/Risk Sources	» Vegetation clearing and levelling of equipment storage area/s. » Access to and from the equipment storage area/s. » Ablution facilities. » Accommodation facilities. » Contractors not aware of the requirements of the EMP, leading to unnecessary impacts on the surrounding environment.
Mitigation: Target/Objective	» Limit equipment storage within demarcated designated areas. » Ensure adequate sanitation facilities and waste management practices. » Ensure appropriate management of actions by on-site personnel in order to minimise impacts to the surrounding environment.

	Mitigation: Action/Control	Responsibility	Timeframe
a	The siting of the construction equipment camp/s will take cognisance of any sensitive areas identified by the EIA studies. The location of this construction equipment camp/s shall be approved by the project ECO.	Contractor	Pre-construction
b	As far as possible, minimise vegetation clearing and levelling for equipment storage areas.	Contractor	Site establishment, and during construction

Mitigation: Action/Control		Responsibility	Timeframe
c	Rehabilitate all disturbed areas at the construction equipment camp as soon as construction is complete within an area.	Contractor	Duration of Contract
d	Ensure ablution facilities are maintained.	Contractor	Site establishment, and duration of construction
e	Ensure waste removal facilities are maintained and emptied as and when required.	Contractor	Site establishment, and duration of construction
f	The terms of this EMP and the Environmental Authorisation (once issued) must be included in all tender documentation and Contractors contracts	Kabi Solar	Tender process
g	Ensure that all personnel have the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and on-going minimisation of environmental harm. This can be achieved through the provision of appropriate environmental awareness training to all personnel. Records of all training undertaken must be kept.	Contractor	Duration of construction
h	Contractors must use chemical toilets/ablution facilities situated at designated areas of the site; no ablution activities will be permitted outside the designated areas. These facilities must be regularly serviced by appropriate contractors. A minimum of one toilet shall be provided per 15 persons at each working area such as the Contractor's camp	Contractor and sub-contractor/s	Duration of contract
i	Cooking/meals must take place in a designated area. No firewood or kindling may be gathered from the site or surrounds.	Contractor and sub-contractor/s	Duration of contract
j	All litter must be deposited in a clearly marked, closed, animal-proof disposal bin in the construction area. Particular attention needs to be paid to food waste.	Contractor and sub-contractor/s	Duration of contract
k	No one other than the ECO or personnel authorised by the ECO may disturb flora or fauna outside of the demarcated construction area/s.	Contractor and sub-contractor/s	Duration of contract
l	Fire fighting equipment and training provided before the construction phase commences.	Contractor and sub-contractor/s	Duration of contract
m	Contractors appointed by Kabi Solar must ensure that all workers are informed at the outset of the	Contractor and sub-	Construction

Mitigation: Action / Control		Responsibility	Timeframe
	construction phase of the conditions contained on the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms.	contractor/s	
n	Provide opportunities for workers to go home over weekends where required and practically possible.	Contractor and sub-contractor/s	Construction
o	On completion of the construction phase, all construction workers must leave the site within one week of their contract ending.	Contractor and sub-contractor/s	Construction

Performance Indicator	» The construction camps have avoided sensitive areas, as approved by the ECO. » Ablution and Waste removal facilities are in a good working order and do not pollute the environment due to mismanagement. » All areas are rehabilitated promptly after construction in an area is complete. » Excess vegetation clearing and levelling is not reported by the ECO. » No complaints regarding contractor behaviour or habits. » Appropriate training of all staff is undertaken prior to them commencing work on the construction site. » Code of Conduct Drafted before commencement of construction phase.
Monitoring	» Regular audits of the construction camps and areas of construction on site by the ECO. » Proof of disposal of sewage at an appropriate waste water treatment works. » An incident reporting system should be used to record non-conformances to the EMP. » Observation and supervision of Contractor practices throughout construction phase by the ECO. » Complaints will be investigated and, if appropriate, acted upon. » An incident reporting system will be used to record non-conformances to the EMP.

OBJECTIVE 6.2.3: Maximise local employment and business opportunities associated with the construction phase

Although limited, employment opportunities could be created during the construction phase, specifically for semi-skilled and unskilled workers. The unemployment rate in the study area is quite high and there are therefore various individuals in the area in search of employment. Employment of locals and the

involvement of local SMMEs would enhance the social benefits associated with the project, even if the opportunities are only temporary. The procurement of local goods could furthermore result in positive economic spin-offs.

Project Component/s	» Construction activities associated with the establishment of the substation and power line, including the associated infrastructure.
Potential Impact	» The opportunities and benefits associated with the creation of local employment and business.
Activities/Risk Sources	» Contractors who make use of their own labour for unskilled tasks, thereby reducing the employment and business opportunities for locals. » The inflow of various specialists from outside the study area and even abroad. » Sourcing of individuals with skills similar to the local labour pool outside the municipal area.
Mitigation: Target/Objective	» Employment of a maximum number of low-skilled to semi-skilled workers for the project from the local area where possible.

	Mitigation: Action/Control	**Responsibility**	**Timeframe**
a	Attempt to ensure that low-skilled workers are sourced from the local area.	Kabi Solar, Local Municipality, and contractor	Duration of construction
b	A broad-based approach should be followed to identify and involve relevant organisations which could assist the main contractor and developer in identifying people whose skills may correspond with the required job specifications.	Kabi Solar, Local Municipality, and contractor	Pre-construction
c	An equitable process should be promoted whereby locals and previously disadvantaged individuals (including women) are considered for employment opportunities.	Kabi Solar, and Local Municipality	Duration of construction
d	Create conditions that are conducive for the involvement of entrepreneurs, small businesses, and SMMEs during the construction process.	Kabi Solar, Local Municipality, and contractor	Pre-construction
e	Tender documentation should contain guidelines for the involvement of labour, entrepreneurs, businesses, and SMMEs from the local sector.	Kabi Solar, and Contractor	Pre-construction
f	A local labour desk should be set-up (if not already established) in the beneficiary communities to co-ordinate the process of involving local labour.	Kabi Solar, and Contractor	Pre-construction
g	Skills training and capacity building should be embarked upon from the onset of the construction	Kabi Solar, and Contractor	Pre-construction

Mitigation: Action/Control		Responsibility	Timeframe
	phase and even prior to the construction phase if possible.		and construction
h	Communication efforts concerning job creation opportunities should refrain from creating unrealistic expectations.	Kabi Solar	Pre-construction and construction

Performance Indicator	» Job opportunities, especially of low to semi-skilled positions, are primarily awarded to members of local communities as appropriate. » Locals and previously disadvantaged individuals (including women) are considered during the hiring process. » SMMEs are awarded contracts, where possible, during the construction phase. » Labour, entrepreneurs, businesses, and SMMEs from the local sector are awarded jobs, where possible, based on requirements in the tender documentation. » The involvement of local labour is promoted. » Reports are not made from members of the local communities regarding unrealistic employment opportunities or that only outsiders were employed.
Monitoring	» Developer and or appointed ECO must monitor indicators listed above to ensure that they have been met for the construction phase.

OBJECTIVE 6.2.5: Minimise impacts related to traffic management and transportation of equipment and materials to site

This would include heavy and light vehicles transporting goods and building materials. At this stage it is not clear how many vehicles would make use of this road on a daily basis but it is expected that it would increase the traffic volume on the R502 from Orkney.

Project Component/s	» Delivery of any component required within the construction phase.
Potential Impact	» Impact of heavy construction vehicles on road surfaces, and possible increased risk in accidents involving people and animals. » Traffic congestion, particularly on narrow roads or on road passes where overtaking is not permitted » Deterioration of road pavement conditions (both surfaced and

	gravel road) due to abnormal loads.
Activities / Risk Sources	» Construction vehicle movement. » Speeding on local roads. » Degradation of local road conditions. » Site preparation and earthworks. » Foundations or plant equipment installation. » Transportation of ready-mix cement from off-site batching plant to the site. » Mobile construction equipment movement on-site. » Powerline and substation construction activities.
Mitigation: Target / Objective	» Minimise impact of traffic associated with the construction of the substation and power line on local traffic volume, existing infrastructure, property owners, animals, and road users. » To minimise potential for negative interaction between pedestrians or sensitive users and traffic associated with the substation and power line construction » To ensure all vehicles are roadworthy and all materials/equipment are transported appropriately and within any imposed permit/licence conditions

Mitigation: Action / Control		**Responsibility**	**Timeframe**
a	The contractor's plans, procedures and schedules, as well as the anticipated intrusion impacts should be clarified with affected parties prior to the commencement of construction activities on site.	Kabi Solar and ECO	Pre-construction
b	Gravel roads should be sprayed with water to limit dust creation if economically feasible and reasonable from an environmental perspective (water scarce area), or an appropriate dust suppressant should be used.	Kabi Solar and ECO	Construction
c	Access roads and entrances to the site should be carefully planned to limit any intrusion on the neighbouring property owners and road users.	Kabi Solar and ECO	Planning and design
d	Construction vehicles and those transporting materials and goods should be inspected by the contractor or a sub-contractor to ensure that these are in good working order and not overloaded.	Contractor	Construction
e	Strict vehicle safety standards should be implemented and monitored.	Kabi Solar and ECO	Construction
f	All relevant permits for abnormal loads must be applied for from the relevant authority.	Contractor (or appointed transportation contractor)	Pre-construction
g	A designated access to the proposed site must be created to ensure safe entry and exit.	Contractor	Pre-construction
h	No deviation from approved transportation	Contractor	Duration of

Mitigation: Action/Control		Responsibility	Timeframe
	routes must be allowed, unless roads are closed for whatever reason outside the control of the contractor.		contract
i	Appropriate road management strategies must be implemented on external and internal roads with all employees and contractors required to abide by standard road and safety procedures.	Contractor (or appointed transportation contractor)	Pre-construction
j	Any traffic delays because of construction traffic must be co-ordinated with the appropriate authorities.	Contractor	Duration of contract
k	The movement of all vehicles within the site must be on designated roadways.	Contractor	Duration of contract
l	Signage must be established at appropriate points warning of turning traffic and the construction site (all signage to be in accordance with prescribed standards).	Contractor	Duration of contract
m	Appropriate maintenance of all vehicles of the contractor must be ensured.	Contractor	Duration of contract
n	All vehicles of the contractor travelling on public roads must adhere to the specified speed limits and all drivers must be in possession of an appropriate valid driver's license.	Contractor	Duration of contract
o	Keep hard road surfaces as narrow as possible.	Contractor	Duration of contract

Performance Indicator	» Vehicles keeping to the speed limits. » Vehicles are in good working order and safety standards are implemented. » Local residents and road users are aware of vehicle movements and schedules. » No construction traffic related accidents are experienced. » Local road conditions and road surfaces are up to standard. » Complaints of residents are not received (e.g. concerning the speeding of heavy vehicles).
Monitoring	» Developer and or appointed ECO must monitor indicators listed above to ensure that they have been implemented.

OBJECTIVE 6.2.6: Minimise the potential impact on health, safety and security

An inflow of workers could, as a worst case scenario and irrespective of the size of the workforce, pose some security risks. Criminals could also use the opportunity due to "outsiders" being in the area to undertake their criminal activities. The

actual safety of construction workers is also of concern. Further health and safety issues associated with the actual construction site include unauthorised entry to the site and construction areas, the usage of large equipment on site, the risks associated with the storage of equipment and material on site, as well as the increased risk of accidents due to the increased movement of construction vehicles on the local roads.

Other concerns relate to littering, unwanted behaviour of construction workers, transmission of Sexually Transmitted Diseases (STDs), environmental pollution, an increase risk in fires and so forth. Although such perceptions cannot be substantiated or be changed it should be sensitively dealt with. It is thus clear that even though the construction phase when these impacts could occur is only of a short duration, the effects of the impacts could remain in the medium term.

Project Component/s	» Inflow of workers could result in increased safety and security risks.
Potential Impact	» Outside workers are involved in criminal activities and/or fires occur.
Activities/Risk Sources	» Safety of individuals and animals are at risk. » Theft of livestock. » Theft of construction material. » On-site accidents. » Spread of sexually transmitted diseases. » Littering and environmental pollution.
Mitigation: Target/Objective	» Employment of local labour should be maximised and strict security measures should be implemented at the construction site.

	Mitigation: Action/Control	**Responsibility**	**Timeframe**
a	Employing local community members could minimise the potential for criminal activity or perceived perception of an increase in criminal activity due to the presence of an outside workforce.	Contractor	Pre-construction
b	Screening of applicants could lessen perceived negative perceptions about the outside workforce.	Contractor	Pre-construction
c	Construction workers should be easily identifiable by wearing uniforms and even identity tags.	Contractor	Construction
d	Local community members and property owners should be informed of the presence of the outside workforce, the construction schedule, and movement of workers.	Developer	Construction
e	Care should be taken to avoid conflict between the local communities and the “outside” workforce	Kabi Solar and Contractor	Pre-construction and construction
f	Property owners, their workers, as well as local	Kabi Solar and	All phases of

	communities should be motivated to be involved in crime prevention and by reporting crimes.	Local communities	project
g	The construction site should be fenced and access to the area controlled.	Kabi Solar and Contractor	All phases of project
h	Security personnel should be aware of the possibility of animal theft and poaching and should be able to identify possible criminal elements and/or criminal activities in this regard.	Kabi Solar and Contractor	Construction
i	Ensure that open fires on the site for cooking or heating are not allowed except in designated areas.	Kabi Solar and Contractor	Construction
j	Procedures and measures to prevent, and in worst cases, attend to fires should be developed in consultation with the surrounding property owners and the Local Municipality	Kabi Solar, Local Municipality, and local communities	Pre-construction and when required
k	Contact details of emergency services should be prominently displayed on site.	Kabi Solar and Contractor	Construction
l	Appropriate fire-fighting equipment must be present on site and members of the workforce should be appropriately trained in using this equipment in the fighting of veld fires	Kabi Solar and Contractor	Construction

Performance Indicator	» No criminal activities and theft of livestock are reported. » No fires or on-site accidents occur.
Monitoring	» Kabi Solar and appointed ECO must monitor indicators listed above to ensure that they have been implemented.

OBJECTIVE 6.2.7: Management of dust and air emissions

During the construction phase, limited gaseous or particulate emissions are anticipated from exhaust emissions from construction vehicles and equipment on-site, as well as vehicle entrained dust from the movement of vehicles on the main and internal access roads.

Project Component/s	» Construction activities associated with the area and linear infrastructure.
Potential Impact	» Dust and particulates from vehicle movement to and on-site, foundation excavation, road construction activities, road maintenance activities, temporary stockpiles, and vegetation clearing affecting the surrounding residents and visibility. » Release of minor amounts of air pollutants (for example NO_2, CO

	and SO_2) from vehicles and construction equipment
Activities / Risk Sources	» Clearing of vegetation and topsoil. » Excavation, grading, scraping, levelling, digging, drilling. » Transport of materials, equipment, and components on internal access roads. » Re-entrainment of deposited dust by vehicle movements. » Wind erosion from topsoil and spoil stockpiles and unsealed roads and surfaces. » Fuel burning vehicle and construction engines.
Mitigation: Target / Objective	» To ensure emissions from all vehicles and construction engines are minimised, where possible, for the duration of the construction phase » To minimise nuisance to the community from dust emissions and to comply with workplace health and safety requirements for the duration of the construction phase

Mitigation: Action / Control		**Responsibility**	**Timeframe**
a	Roads must be maintained to a manner that will ensure that nuisance to the community from dust emissions from road or vehicle sources is not visibly excessive. Ensure that any damage to roads because of construction activities is repaired before completion of the construction phase.	Contractor	Site establishment and construction
b	Appropriate dust suppressant must be applied on all exposed areas and stockpiles as required to minimise/control airborne dust.	Contractor	Duration of contract
c	Haul vehicles moving outside the construction site carrying material that can be wind-blown must be covered with tarpaulins if required by the wind conditions.	Contractor	Duration of contract
d	Speed of construction vehicles must be restricted, as defined by the ECO.	Contractor	Duration of contract
e	Dust-generating activities or earthworks may need to be rescheduled or the frequency of application of dust control/suppressant increased during periods of high winds if visible dust is blowing toward nearby residences outside the site.	Contractor	Duration of contract
f	Strictly control vibration pollution from compaction plant or excavation plant.	Contractor	Duration of contract
g	Disturbed areas must be re-vegetated as soon as practicable once construction in an area is completed.	Contractor	Completion of construction
h	Vehicles and equipment must be maintained in a road-worthy condition at all times.	Contractor	Duration of contract

Performance Indicator	» No complaints from affected residents or community regarding dust or vehicle emissions. » Dust suppression measures implemented for all heavy vehicles that require such measures during the construction phase commences. » Drivers made aware of the potential safety issues and enforcement of strict speed limits when they are employed. » All heavy vehicles equipped with speed monitors before they are used in the construction phase in accordance with South African vehicle legislation. » Road worthy certificates in place for all heavy vehicles at outset of construction phase and up-dated on a monthly basis.
Monitoring	Monitoring must be undertaken to ensure emissions are not exceeding the prescribed levels via the following methods: » Immediate reporting by personnel of any potential or actual issues with nuisance dust or emissions to the Site Manager. » A complaints register must be maintained, in which any complaints from residents/the community will be logged, and thereafter complaints will be investigated and, where appropriate, acted upon. » An incident reporting system must be used to record non-conformances to the EMP.

OBJECTIVE 6.2.8: Minimisation of development footprint and disturbance to topsoil

In order to minimise impacts on flora, fauna, and ecological processes, the development footprint should be limited.

Project Component/s	» Powerline. » Substation » Access roads.
Potential Impact	» Impacts on natural vegetation. » Impacts on soil. » Loss of topsoil.
Activity/Risk Source	» Site preparation and earthworks. » Excavation of foundations. » Construction of site access road. » Site preparation (e.g. compaction). » Foundations or plant equipment installation. » Powerline construction activities. » Stockpiling of topsoil, subsoil and spoil material.

Mitigation: Target/Objective	» To retain natural vegetation, where possible. » To minimise footprints of disturbance of vegetation/habitats on-site » Remove and store all topsoil on areas that are to be excavated; and use this topsoil in subsequent rehabilitation of disturbed areas. » Minimise spoil material.

	Mitigation: Action/Control	Responsibility	Timeframe
a	Areas to be cleared must be clearly marked on-site to eliminate the potential for unnecessary clearing.	Contractor in consultation with Specialist	Pre-construction
b	The extent of clearing and disturbance to the native vegetation must be kept to a minimum so that impact on flora and fauna is restricted.	Contractor	Site establishment & duration of contract
c	Construction activities must be restricted to demarcated areas so that impact on flora and fauna is restricted.	Contractor	Site establishment & duration of contract
d	All fill material must be sourced from a commercial off-site suitable/permitted source, quarry or borrow pit. Where possible, material from foundation excavations must be used as fill on-site.	Contractor	Duration of contract
e	Excavated topsoil must be stockpiled in designated areas separate from base material and covered until replaced during rehabilitation. As far as possible, topsoil must not be stored for longer than 3 months.	Contractor	Site establishment & duration of contract
f	Topsoil must not be stripped or stockpiled when it is raining or when the soil is wet as compaction will occur.	Contractor	Site establishment Maintenance: for duration of contract
g	The maximum topsoil stockpile height must not exceed 2m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.	Contractor	Duration of contract

Performance Indicator	» Zero disturbance outside of designated work areas. » Minimise clearing of existing vegetation. » Topsoil appropriately stored.
Monitoring	» Observation of vegetation clearing and soil management activities by ECO throughout construction phase. » Supervision of all clearing and earthworks.

	» An incident reporting system will be used to record non-conformances to the EMP.

OBJECTIVE 6.2.9: Minimise the impacts on and loss of indigenous vegetation

Project Component/s	» Any infrastructure or activity that will result in disturbance to natural areas.
Potential Impact	» Loss of indigenous natural vegetation due to construction activities, or poor behaviour on the part of the construction team.
Activity/Risk Source	» Vegetation clearing. » Construction of access roads. » Placement of powerline towers. » Chemical contamination of the soil by vehicles and machinery. » Operation of construction camps. » Storage of materials required for construction.
Mitigation: Target/Objective	» Retain natural vegetation in the highly sensitive areas of the site. » Minimise footprints of disturbance of vegetation/habitats on-site. » Minimise loss of indigenous vegetation. » Minimise loss of species of conservation concern.

Mitigation: Action/Control		Responsibility	Timeframe
a	Areas to be cleared must be clearly marked in the field to eliminate unnecessary clearing.	Contractor	Construction
b	Limit unnecessary impacts on surrounding natural vegetation, e.g. driving around in the veld, use access roads only.	Contractor	Construction
c	A site rehabilitation programme must be implemented	Contractor in consultation with Specialist	Duration of contract

Performance Indicator	» Zero disturbance outside of designated work areas. » Minimised clearing of existing/natural vegetation. » Limited impacts on areas of identified and demarcated sensitive habitats/vegetation.
Monitoring	» Observation of vegetation clearing activities by ECO throughout construction phase. » Monitoring of vegetation clearing activities in terms of permit conditions. » Supervision of all clearing and earthworks. » An incident reporting system will be used to record non-conformances to the EMP.

OBJECTIVE 6.2.10: Minimise the establishment and spread of alien invasive plants

Potential weeds with a distribution centred on arid regions of the country include *Salsola kali*, *Atriplex lindleyi*, *Opuntia ficus-indica, Opuntia imbricata, Prosopis glandulosa, Prosopis velutina, Atriplex numularia,* and *Nicotiana glauca*. The shrub, *Prosopis glandulosa*, is potentially the most problematic. This species invades riverbeds, riverbanks and drainage lines in semi-arid and arid regions and has been recorded on and near to the site. There is therefore the potential for alien plants to spread or invade following disturbance on site.

Project Component/s	» Any infrastructure or activity that will result in disturbance to natural areas.
Potential Impact	» Invasion of natural vegetation surrounding the site by declared weeds or invasive alien species.
Activities/Risk Sources	» Construction, environmental management.
Mitigation: Target/Objective	» There is a target of no alien plants within project control area during the construction and operation phases.

	Mitigation: Action/Control	Responsibility	Timeframe
a	Avoid creating conditions in which alien plants may become established: » Keep disturbance of indigenous vegetation to a minimum. » Rehabilitate disturbed areas as quickly as possible. » Do not import soil from areas with alien plants.	Contractor	Construction and operation
b	Establish an ongoing monitoring programme to detect and quantify any alien species that may become established and identify the problem species (as per Conservation of Agricultural Resources Act and Biodiversity Act).	Contractor	Construction and operation
c	Immediately control any alien plants that become established using registered control methods.	Contractor	Construction and operation

Performance Indicator	» For each alien species: number of plants and aerial cover of plants within project area and immediate surroundings.
Monitoring	» Ongoing monitoring of area by ECO during construction. » Ongoing monitoring of area by environmental manager during operation.

	» Annual audit of project area and immediate surroundings by qualified botanist. » If any alien invasive species are detected then the distribution of these should be mapped (GPS co-ordinates of plants or concentrations of plants), number of individuals (whole site or per unit area), age and/or size classes of plants and aerial cover of plants. » The results should be interpreted in terms of the risk posed to sensitive habitats within and surrounding the project area. » The environmental manager should be responsible for driving this process. » Reporting frequency depends on legal compliance framework.

OBJECTIVE 6.2.11: Minimise the impacts on fauna

Project Component/s	» Any infrastructure or activity that will result in disturbance to natural areas.
Potential Impact	» Vegetation clearance and associated impacts on faunal habitats. » Traffic to and from site.
Activity/Risk Source	» Site preparation and earthworks. » Construction-related traffic. » Foundations or plant equipment installation. » Mobile construction equipment. » Powerline construction activities.
Mitigation: Target/Objective	» To minimise footprints of habitat destruction » To minimise disturbance to (and death of) resident and visitor faunal and avifaunal species

	Mitigation: Action/Control	Responsibility	Timeframe
a	Areas to be cleared must be clearly marked in the field to eliminate unnecessary clearing/disturbance.	Contractor in consultation with Specialist	Pre-construction
b	The extent of clearing and disturbance to the native vegetation must be kept to a minimum so that impact on fauna and their habitats is restricted.	Contractor	Site establishment & duration of contract
c	Educate personnel as to the protected status of species that could occur on site and the requirement that no individuals of these species may be killed.	Contractor in consultation with Specialist	Site establishment & duration of contract
d	Animals that cannot flee from the affected areas by themselves (e.g. tortoises, amphibians, small	Specialist	Pre-construction

Mitigation: Action/Control		Responsibility	Timeframe
	mammals) must be removed from the affected areas before the start of site clearing/construction and relocated to safe areas.		
e	A site rehabilitation programme should be implemented.	Contractor in consultation with Specialist	Duration of contract

Performance Indicator	» Zero disturbance outside of designated work areas » Minimised clearing of existing/natural vegetation and habitats for fauna » Limited impacts on faunal species (i.e. noted/recorded fatalities)
Monitoring	» Observation of vegetation clearing activities by ECO throughout construction phase » Supervision of all clearing and earthworks » Recording faunal fatalities to monitor success of relocation efforts » An incident reporting system will be used to record non-conformances to the EMP.

OBJECTIVE 6.2.12: Minimise soil degradation and erosion

Project Component/s	» Area infrastructure » Powerline. » Access roads.
Potential Impact	» Soil and rock degradation. » Soil erosion. » Increased deposition of soil into drainage systems. » Increased run-off over the site.
Activities/Risk Sources	» Removal of vegetation, excavation, stockpiling, compaction, and pollution of soil. » Rainfall - water erosion of disturbed areas. » Wind erosion of disturbed areas. » Concentrated discharge of water from construction activity.
Mitigation: Target/Objective	» Minimise extent of disturbance areas. » Minimise soil degradation (mixing, wetting, compaction, etc). » Minimise soil erosion. » Minimise deposition of soil into drainage lines. » Minimise instability of embankments/excavations.

Mitigation: Action/Control		Responsibility	Timeframe
a	Identify disturbance areas and restrict construction activity to these areas.	Contractor	Before and during

Mitigation: Action/Control		Responsibility	Timeframe
			construction
b	Rehabilitate disturbance areas as soon as practicable when construction in an area is complete.	Contractor	During and after construction
c	Access roads to be carefully planned and constructed to minimise the impacted area and prevent unnecessary excavation, placement, and compaction of soil.	Engineer/ECO/ Contractor	Design and construction
d	Where access roads cross natural drainage lines, culverts must be designed to allow free flow and regular maintenance must be carried out.	Engineer/ECO/ Contractor	Design, before and during construction
e	Dust control on construction site: wetting of denuded areas.	Contractor	Construction
f	Minimise removal of vegetation which adds stability to soil.	ECO/Contractor	Construction
g	Soil conservation: Stockpile topsoil for re-use in rehabilitation phase, protect stockpile from erosion	Contractor	Before and during construction
h	Erosion control measures: Run-off attenuation on slopes (sand bags, logs), silt fences, storm water catch-pits, shade nets, or temporary mulching over denuded area as required.	Contractor/ECO	Erection: Before construction Maintenance: Duration of contract
i	Control depth of excavations and stability of cut faces/sidewalls.	Engineer/ECO/ Contractor	Before construction and Maintenance Duration of contract

Performance Indicator	» No activity outside demarcated disturbance areas. » Acceptable level of activity within disturbance areas, as determined by the ECO. » Acceptable level of soil erosion around site, as determined by the ECO. » Acceptable level of increased siltation in drainage lines, as determined by the ECO. » Acceptable state of excavations, as determined by the ECO. » No activity in restricted areas.
Monitoring	» Monthly inspections of the site by the ECO. » Monthly inspections of sediment control devices. » Monthly inspections of surroundings, including drainage lines. » Immediate reporting of ineffective sediment control systems. » An incident reporting system will record non-conformances.

OBJECTIVE 6.2.13: Protection of heritage resources

No site of heritage significance where noted on site. However, the main cause of impacts to potential archaeological sites is physical disturbance of the material itself and its context. The heritage and scientific potential of an archaeological site is highly dependent on its geological and spatial context. This means that even though, for example a deep excavation may expose archaeological artefacts, the artefacts are relatively meaningless once removed from the area in which they were found. Large-scale excavations for foundations will damage archaeological sites, as will road construction activities.

Archaeological or other heritage materials occurring in the path of any surface or sub-surface disturbances associated with any aspect of the development are highly likely to be subject to destruction, damage, excavation, alteration, or removal. The objective should be to limit such impacts to the primary activities associated with the development and hence to limit secondary impacts during the medium and longer term working life of the substation and power line.

Project Component/s	» Substation » Powerline. » Access roads.
Potential Impact	» Heritage objects or artefacts found on site are inappropriately managed or destroyed.
Activity/Risk Source	» Site preparation and earthworks. » Foundations or plant equipment installation. » Mobile construction equipment movement on site. » Power line construction activities.
Mitigation: Target/Objective	» To ensure that any heritage objects found on site are treated appropriately and in accordance with the relevant legislation

	Mitigation: Action/control	Responsibility	Timeframe
a	Familiarise all staff and contractors with procedures for dealing with heritage objects/sites.	ECO/specialist	Pre-construction
b	Project employees and any contract staff will maintain, at all times, a high level of awareness of the possibility of discovering heritage sites.	Kabi Solar / Contractor	Duration of contract
c	If a heritage object is found, work in that area will be stopped immediately, and appropriate specialists brought in to assess to site, notify the administering authority of the item/site, and undertake due/required processes.	Kabi Solar/ Contractor in consultation with Specialist	Duration of contract

Performance Indicator	» Zero disturbance outside of designated work areas » All heritage items located are dealt with as per the legislative guidelines
Monitoring	» Observation of excavation activities by ECO throughout construction phase » Supervision of all clearing and earthworks » Due care taken during earthworks and disturbance of land by all staff and any heritage objects found reported. » Appropriate permits obtained from SAHRA prior to the disturbance or destruction of heritage sites » An incident reporting system will be used to record non-conformances to the EMP.

OBJECTIVE 6.2.14: Minimisation of visual impacts associated with construction

During the construction phase heavy vehicles, components, equipment and construction crews will frequent the area and may cause, at the very least, a visual nuisance to landowners and residents in the area as well as road users. The placement of lay-down areas and temporary construction camps should be carefully considered in order to not negatively influence the future perception of the substation and power line. Secondary visual impacts associated with the construction phase, such as the sight of construction vehicles, dust and construction litter must be managed to reduce visual impacts. The use of dust-suppression techniques on the access roads (where required), timely removal of rubble and litter, and the erection of temporary screening will assist in doing this.

The primary visual impact of the substation and power line is not possible to mitigate. The functional design of the structures cannot be changed in order to reduce visual impacts. Secondary impacts anticipated as a result of the proposed substation and power line (i.e. visual character, sense of place and tourism potential) are not possible to mitigate.

Project Component/s	» Construction site.
Potential Impact	» Visual impact of general construction activities and the potential scarring of the landscape due to vegetation clearing.
Activity/Risk Source	» The viewing of the above mentioned by observers on or near the site.
Mitigation: Target/Objective	» Minimal visual intrusion by construction activities and construction accommodation and intact vegetation cover outside of immediate works areas.

Mitigation: Action/Control		Responsibility	Timeframe
a	Reduce the construction period through careful planning and productive implementation of resources.	Kabi Solar or contractor	Planning
b	Plan the placement of lay-down areas and temporary construction accommodation in order to minimise vegetation clearing.	Kabi Solar or contractor	Planning
c	Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads.	Kabi Solar or Contractor	Construction
d	Ensure that rubble, litter, and disused construction materials are managed and removed regularly.	Kabi Solar or Contractor	Construction
e	Ensure that all infrastructure and the site and general surrounds are maintained in a neat a manner.	Kabi Solar or Contractor	Construction
f	Reduce and control construction dust using approved dust suppression techniques.	Contractor	Construction
g	As far as possible, restrict construction activities to daylight hours in order to negate or reduce the visual impacts associated with lighting.	Contractor	Construction
h	Rehabilitate all disturbed areas, construction areas, roads, and servitudes to acceptable visual standards.	Contractor	Construction

Performance Indicator	» Vegetation cover on and near the site is intact with no evidence of degradation or erosion. » Construction site is kept in a neat and tidy state.
Monitoring	» Monitoring of vegetation clearing during construction. » Monitoring of rehabilitated areas post construction.

OBJECTIVE 6.2.15: Appropriate handling and management of waste

The main wastes expected will include general construction waste, hazardous waste (i.e. fuel), and liquid waste (including grey water and sewage).

In order to manage the wastes effectively, guidelines for the assessment, classification, and management of wastes, along with industry principles for minimising construction wastes must be implemented

Project Component/s	» Substation » Powerline. » Access roads.
Potential Impact	» Inefficient use of resources resulting in excessive waste generation » Litter or contamination of the site or water through poor waste management practices
Activity/Risk Source	» Packaging » Other construction wastes » Hydrocarbon use and storage » Spoil material from excavation, earthworks and site preparation
Mitigation: Target/Objective	» To comply with waste management legislation » To minimise production of waste » To ensure appropriate waste storage and disposal » To avoid environmental harm from waste disposal. » A waste manifests should be developed for the ablutions showing proof of disposal of sewage at appropriate water treatment works.

	Mitigation: Action/Control	Responsibility	Timeframe
a	Construction method and materials should be carefully considered in view of waste reduction, re-use, and recycling opportunities.	Contractor	Duration of contract
b	Construction contractors must provide specific detailed waste management plans to deal with all waste streams.	Contractor	Duration of contract
c	Specific areas must be designated on-site for the temporary management of various waste streams, i.e. general refuse, construction waste (wood and metal scrap), and contaminated waste as required. Location of such areas must seek to minimise the potential for impact on the surrounding environment, including prevention of contaminated runoff, seepage, and vermin control.	Contractor	Duration of contract
d	Where practically possible, construction and general wastes on-site must be reused or recycled. Bins and skips must be available on-site for collection, separation, and storage of waste streams (such as wood, metals, general refuse etc.).	Contractor	Duration of contract
e	Disposal of waste must be in accordance with relevant legislative requirements, including the use of licensed contractors.	Contractor	Duration of contract
f	Uncontaminated waste will be removed at least weekly for disposal; other wastes will be removed for recycling/ disposal at an appropriate frequency.	Contractor	Duration of contract
g	Disposal of waste will be in accordance with relevant legislative requirements, including the use of licensed	Contractor	Duration of contract

Mitigation: Action/Control		Responsibility	Timeframe
	contractors.		
h	Hydrocarbon waste must be contained and stored in sealed containers within an appropriately bunded area.	Contractor	Duration of contract
i	Waste must be kept to a minimum and must be transported by approved waste transporters to sites designated for their disposal.	Contractor	Duration of contract
j	Documentation (waste manifest) must be maintained detailing the quantity, nature, and fate of any regulated waste. Waste disposal records must be available for review at any time.	Contractor	Duration of contract
k	Regularly serviced chemical toilets facilities will be used to ensure appropriate control of sewage.	Contractor	Duration of contract
l	Upon the completion of construction, the area must be cleared of potentially polluting materials.	Contractor	Completion of construction
m	Dispose of all solid waste collected at an appropriately registered waste disposal site. Waste disposal shall be in accordance with all relevant legislation and under no circumstances may waste be burnt on site.	Contractor	Duration of construction
n	Where a registered waste site is not available close to the construction site, provide a method statement with regard to waste management.	Contractor	Duration of construction

Performance Indicator	» No complaints received regarding waste on site or indiscriminate dumping. » Internal site audits ensuring that waste segregation, recycling and reuse is occurring appropriately. » Provision of all appropriate waste manifests for all waste streams.
Monitoring	» Observation and supervision of waste management practices throughout construction phase. » Waste collection will be monitored on a regular basis. » Waste documentation completed. » A complaints register will be maintained, in which any complaints from the community will be logged. Complaints will be investigated and, if appropriate, acted upon. » An incident reporting system will be used to record non-conformances to the EMP.

OBJECTIVE 6.2.16: Appropriate handling and storage of chemicals, hazardous substances

The construction phase will involve the storage and handling of a variety of chemicals including adhesives, abrasives, oils and lubricants, paints and solvents.

Project Component/s	» Storage and handling of chemicals, hazardous substances.
Potential Impact	» Release of contaminated water from contact with spilled chemicals » Generation of contaminated wastes from used chemical containers
Activity/Risk Source	» Vehicles associated with site preparation and earthworks. » Construction activities of area and linear infrastructure. » Hydrocarbon use and storage.
Mitigation: Target/Objective	» To ensure that the storage and handling of chemicals and hydrocarbons on-site does not cause pollution to the environment or harm to persons. » To ensure that the storage and maintenance of machinery on-site does not cause pollution of the environment or harm to persons.

	Mitigation: Action/Control	Responsibility	Timeframe
a	Spill kits must be made available on-site for the clean-up of spills and leaks of contaminants.	Contractor	Duration of contract
b	Corrective action must be undertaken immediately if a complaint is made, or potential/actual leak or spill of polluting substance identified. This includes stopping the contaminant from further escaping, cleaning up the affected environment as much as practically possible and implementing preventive measures.	Contractor	Duration of contract
c	In the event of a major spill or leak of contaminants, the relevant administering authority must be immediately notified as per the notification of emergencies/incidents.	Contractor	Duration of contract
d	Spilled cement must be cleaned up as soon as possible and disposed of at a suitably licensed waste disposal site.	Contractor	Duration of contract
e	Any contaminated/polluted soil removed from the site must be disposed of at a licensed hazardous waste disposal facility.	Contractor	Duration of contract
f	Routine servicing and maintenance of vehicles must not to take place on-site (except for emergencies). If repairs of vehicles must take place, an appropriate drip tray must be used to contain any fuel or oils.	Contractor	Duration of contract

Mitigation: Action/Control		Responsibility	Timeframe
g	All stored fuels to be maintained within a bund and on a sealed surface.	Contractor	Duration of contract
h	Fuel storage areas must be inspected regularly to ensure bund stability, integrity, and function.	Contractor	Duration of contract
i	Construction machinery must be stored in an appropriately sealed area.	Contractor	Duration of contract
j	Oily water from bunds at the substations must be removed from site by licensed contractors.	Contractor	Duration of contract
k	The storage of flammable and combustible liquids such as oils will be in designated areas which are appropriately bunded, and stored in compliance with Material Safety Data Sheets (MSDS) files.	Contractor	Duration of contract
l	Any storage and disposal permits/approvals which may be required must be obtained, and the conditions attached to such permits and approvals will be compiled with.	Contractor	Duration of contract
m	Transport of all hazardous substances must be in accordance with the relevant legislation and regulations	Contractor	Duration of contract
n	The sediment control and water quality structures used on-site must be monitored and maintained in an operational state at all times.	Contractor	Duration of contract
o	Upon the completion of construction, the area must be cleared of potentially polluting materials.	Contractor	Completion of construction

Performance Indicator	» No chemical spills outside of designated storage areas. » No unattended water or soil contamination by spills. » No complaints received regarding waste on site or indiscriminate dumping.
Monitoring	» Observation and supervision of chemical storage and handling practices and vehicle maintenance throughout construction phase. » A complaints register must be maintained, in which any complaints from the community will be logged. » An incident reporting system will be used to record non-conformances to the EMP.

6.3 Detailing Method Statements

OBJECTIVE 6.3.1: Ensure all construction activities are undertaken with the appropriate level of environmental awareness to minimise environmental risk

The environmental specifications are required to be underpinned by a series of Method Statements, within which the Contractors and Service Providers are required to outline how any identified environmental risks will practically be mitigated and managed for the duration of the contract, and how specifications within this EMP will be met. That is, the Contractor will be required to describe how specified requirements will be achieved through the submission of written Method Statements to the Site Manager and ECO.

A Method Statement is defined as "a written submission by the Contractor in response to the environmental specification or a request by the Site Manager, setting out the plant, materials, labour and method the Contractor proposes using to conduct an activity, in such detail that the Site Manager is able to assess whether the Contractor's proposal is in accordance with the Specifications and/or will produce results in accordance with the Specifications". The Method Statement must cover applicable details with regard to:

- Construction procedures
- Materials and equipment to be used
- Getting the equipment to and from site
- How the equipment/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/non-compliance with the Specifications, and
- Any other information deemed necessary by the Site Manager.

The Contractor may not commence the activity covered by the Method Statement until it has been approved, except in the case of emergency activities and then only with the consent of the Site Manager. Approval of the Method Statement will not absolve the Contractor from their obligations or responsibilities in terms of their contract.

6.4 Awareness and Competence: Construction Phase of the substation and power line

OBJECTIVE 6.4.1: To ensure all construction personnel have the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and on-going minimisation of environmental harm

To achieve effective environmental management, it is important that Contractors are aware of the responsibilities in terms of the relevant environmental legislation and the contents of this EMP. The Contractor is responsible for informing employees and sub-contractors of their environmental obligations in terms of the environmental specifications, and for ensuring that employees are adequately experienced and properly trained in order to execute the works in a manner that will minimise environmental impacts. The Contractors obligations in this regard include the following:

- Employees must have a basic understanding of the key environmental features of the construction site and the surrounding environment.
- Ensuring that a copy of the EMP is readily available on-site, and that all site staff are aware of the location and have access to the document.
- Employees will be familiar with the requirements of the EMP and the environmental specifications as they apply to the construction of the facility.
- Ensuring that, prior to commencing any site works, all employees and sub-contractors have attended some form of Environmental Awareness Training (i.e. as part of induction)
- The training should be sufficient to provide the site staff with an appreciation of the project's environmental requirements, and how they are to be implemented.
- Awareness of any other environmental matters, which are deemed necessary by the ECO.
- Ensuring that employee information posters, outlining the environmental “do’s” and “don’ts” (as per the environmental awareness training course) are erected at prominent locations throughout the site.
- Ensure that construction workers have received basic training in environmental management, including the storage and handling of hazardous substances, minimisation of disturbance to sensitive areas, management of waste, and prevention of water pollution.
- Records must be kept of those that have completed the relevant training.
- Training should be done either in a written or verbal format but must be appropriate for the receiving audience.
- Refresher sessions must be held to ensure the contractor staff are aware of their environmental obligations as practically possible.

6.5 Monitoring Programme: Construction Phase of the substation and power line

OBJECTIVE 6.5.1: To monitor the performance of the control strategies employed against environmental objectives and standards.

A monitoring programme must be in place not only to ensure conformance with the EMP, but also to monitor any environmental issues and impacts which have not been accounted for in the EMP that are, or could result in significant environmental impacts for which corrective action is required. The period and frequency of monitoring will be stipulated by the Environmental Authorisation (once issued). Where this is not clearly dictated, Kabi Solar will determine and stipulate the period and frequency of monitoring required in consultation with relevant stakeholders and authorities. The Project Manager will ensure that the monitoring is conducted and reported.

The aim of the monitoring and auditing process would be to routinely monitor the implementation of the specified environmental specifications, in order to:

» Monitor and audit compliance with the prescriptive and procedural terms of the environmental specifications
» Ensure adequate and appropriate interventions to address non-compliance
» Ensure adequate and appropriate interventions to address environmental degradation
» Provide a mechanism for the lodging and resolution of public complaints
» Ensure appropriate and adequate record keeping related to environmental compliance
» Determine the effectiveness of the environmental specifications and recommend the requisite changes and updates based on audit outcomes, in order to enhance the efficacy of environmental management on site
» Aid communication and feedback to authorities and stakeholders

The ECO will ensure compliance with the EMP, will conduct monitoring activities, and will report any non-compliance or where corrective action is necessary to the Site Manager and/or any other monitoring body stipulated by the regulating authorities. The ECO must have the appropriate experience and qualifications to undertake the necessary tasks.

MANAGEMENT PROGRAMME: REHABILITATION CHAPTER 7

Overall Goal: Undertake the rehabilitation measures in a way that:

» Ensures rehabilitation of disturbed areas following the execution of the works, such that residual environmental impacts are remediated or curtailed

7.1. Objectives

In order to meet this goal, the following objective, actions and monitoring requirements are relevant:

OBJECTIVE 7.1.1: Ensure appropriate rehabilitation of disturbed areas such that residual environmental impacts are remediated or curtailed

Areas requiring rehabilitation will include all areas disturbed during the construction phase and that are not required for regular operation and maintenance operations. Rehabilitation should be undertaken in an area as soon as possible after the completion of construction activities within that area.

Project Component/s	» Area and linear infrastructure.
Potential Impact	» Environmental integrity of site undermined resulting in reduced visual aesthetics, erosion and increased runoff, and the requirement for on-going management intervention.
Activity/Risk Source	» Temporary construction areas. » Temporary access roads/tracks. » Powerline servitude » Other disturbed areas/footprints.
Mitigation: Target/Objective	» Ensure and encourage site rehabilitation of disturbed areas. » Ensure that the site is appropriately rehabilitated following the execution of the works, such that residual environmental impacts (including erosion) are remediated or curtailed.

	Mitigation: Action/Control	Responsibility	Timeframe
a	All temporary facilities, equipment, and waste materials must be removed from site.	Contractor	Following execution of the works
b	All temporary fencing and danger tape must be removed once the construction phase has been completed.	Contractor	Following completion of construction

Mitigation: Action/Control		Responsibility	Timeframe
			activities in an area
c	The area that previously housed the construction camp/laydown area is to be checked for spills of substances such as oil, paint, etc. and these should be cleaned up.	Contractor	Following completion of construction activities in an area
d	All hardened surfaces within the construction camp area should be ripped, all imported materials removed, and the area shall be top soiled and re-vegetated.	Contractor	Following completion of construction activities in an area
e	Temporary roads must be closed and access across these blocked	Contractor	Following completion of construction activities in an area
f	Necessary drainage works and anti-erosion measures must be installed, where required, to minimise loss of topsoil and control erosion.	Contractor	Following completion of construction activities in an area
g	A rehabilitation plan should be drawn up that specifies the rehabilitation process and should be approved by the ECO.	Contractor, Kabi Solar and ECO	Pre-construction
h	Disturbed areas must be rehabilitated/re-vegetated with appropriate natural vegetation and/or local seed mix. Re-use of native/indigenous plant species removed from disturbance areas in the rehabilitation phase to be determined by a botanist as applicable.	Contractor in consultation with rehabilitation specialist	Following completion of construction activities in an area
i	Re-vegetated areas may have to be protected from wind erosion and maintained until an acceptable plant cover has been achieved.	Kabi Solar in consultation with rehabilitation specialist	Post-rehabilitation
j	Erosion control measures should be used in sensitive areas such as steep slopes and drainage lines.	Kabi Solar in consultation with rehabilitation specialist	Post-rehabilitation
k	On-going alien plant monitoring and removal must be undertaken on all areas of natural vegetation on an annual basis.	Kabi Solar in consultation with rehabilitation	Post-rehabilitation

Mitigation: Action/Control		Responsibility	Timeframe
		specialist	

Performance Indicator	» All portions of site, including construction equipment camp and working areas, cleared of equipment and temporary facilities. » Topsoil replaced on all areas and stabilised where practicable or required after construction and temporally utilised areas. » Disturbed areas rehabilitated and acceptable plant cover achieved on rehabilitated sites. » Completed site free of erosion and alien invasive plants.
Monitoring	» On-going inspection of rehabilitated areas in order to determine effectiveness of rehabilitation measures implemented during the operational lifespan of the substation and power line. » On-going alien plant monitoring and removal should be undertaken on an annual basis.

MANAGEMENT PROGRAMME: OPERATION CHAPTER 8

Overall Goal: To ensure that the operation of the substation and power line does not have unforeseen impacts on the environment and to ensure that all impacts are monitored and the necessary corrective action taken in all cases. In order to address this goal, it is necessary to operate the substation and power line facility in a way that:

» Ensures that operation activities are properly managed in respect of environmental aspects and impacts
» Enables the substation and power line operation activities to be undertaken without significant disruption to other land uses in the area.
» Minimises impacts on fauna using the site

An environmental manager must be appointed during operation whose duty it will be to ensure the implementation of the operational EMP.

8.1. Objectives

In order to meet this goal, the following objectives have been identified, together with necessary actions and monitoring requirements.

OBJECTIVE 8.1.1: Protection of indigenous natural vegetation, fauna and maintenance of rehabilitation

Indirect impacts on vegetation and terrestrial fauna during operation could result from maintenance activities and the movement of people and vehicles on site. In order to ensure the long-term environmental integrity of the site following construction, maintenance of the areas rehabilitated post-construction must be undertaken until these areas have successfully re-established.

Project component/s	» Areas requiring regular maintenance. » Route of the security team. » Areas disturbed during the construction phase and subsequently rehabilitation at its completion
Potential Impact	» Disturbance to or loss of vegetation and/or habitat. » Environmental integrity of site undermined resulting in reduced visual aesthetics, erosion, compromised land capability and the requirement for on-going management intervention.
Activity/Risk	» Movement of employee vehicles within and around site.

Source	
Mitigation: Target/Objective	» Maintain minimised footprints of disturbance of vegetation/habitats on-site. » Ensure and encourage plant regrowth in non-operational areas of post-construction rehabilitation.

	Mitigation: Action/Control	**Responsibility**	**Timeframe**
a	Vehicle movements must be restricted to designated roadways.	Kabi Solar	Operation
b	Existing roads must be maintained to ensure limited erosion and impact on areas adjacent to roadways.	Kabi Solar	Operation
c	An on-going alien plant monitoring and eradication programme must be implemented, where necessary.	Kabi Solar	Operation

Performance Indicator	» No further disturbance to vegetation or terrestrial faunal habitats. » Continued improvement of rehabilitation efforts.
Monitoring	» Observation of vegetation on-site by the Manager and environmental manager. » Regular inspections to monitor plant regrowth/performance of rehabilitation efforts and weed infestation compared to natural/undisturbed areas.

OBJECTIVE 8.1.2: Protection of avifauna from collision and electrocution

During the operation of the substation and power line, the threat of collision with the powerline is the biggest potential threat to avifauna, particularly sensitive, collision prone species that may occur in the study area. This is of particular concern where the powerline crosses active agricultural land and the drainage line. The threat of electrocution while perching on the powerline and associated infrastructure serves as a threat to certain sensitive species.

Project Component/s	» Powerline.
Potential Impact	» Collision and electrocution events with the overhead powerline.
Activities/Risk Sources	» Operation of the powerline without mitigation measures. .
Mitigation: Target/Objective	» Maintain a low number of collision, electrocution, and drowning events.

Mitigation: Action/Control		Responsibility	Timeframe
a	Install bird flappers were necessary	Kabi Solar	Construction
b	Ensure bird-friendly tower designs are implemented to minimize the risk of electrocutions	Kabi Solar	Construction

Performance Indicator	» Zero collision, drowning, or electrocution events
Monitoring	» Observation of electrocution or collision events with the powerline » Monitor powerline servitude and reservoirs for mortalities.

OBJECTIVE 8.1.3: Minimise soil degradation and erosion

The soil on site may be impacted in terms of:

» Soil degradation including erosion (by wind and water) and subsequent deposition elsewhere is of a concern across the entire site which is underlain by fine grained soil which can be mobilised when disturbed, even on relatively low slope gradients (accelerated erosion).
» Uncontrolled run-off relating to construction activity (excessive wetting, uncontrolled discharge, etc.) will also lead to accelerated erosion and possible sedimentation of drainage systems.
» Degradation of the natural soil profile due to pollution.

Project Component/s	» Substation » Powerline » Access roads.
Potential Impact	» Soil degradation. » Soil erosion. » Increased deposition of soil into drainage systems. » Increased run-off over the site.
Activities/Risk Sources	» Poor rehabilitation of cleared areas. » Rainfall - water erosion of disturbed areas. » Wind erosion of disturbed areas. » Concentrated discharge of water from construction activity.
Mitigation: Target/Objective	» Ensure rehabilitation of disturbed areas is maintained. » Minimise soil degradation (i.e. wetting). » Minimise soil erosion and deposition of soil into drainage lines. » Ensure continued stability of embankments/excavations.

Mitigation: Action/Control		Responsibility	Timeframe
a	Rehabilitate disturbance areas should the previous	Kabi Solar	Operation

Mitigation: Action/Control		Responsibility	Timeframe
	attempt be unsuccessful. .		
b	Maintain erosion control measures implemented during the construction phase	Kabi Solar	Operation

Performance Indicator	» Acceptable level of soil erosion around site, as determined by the site manager. » Acceptable level of increased siltation in drainage lines, as determined by the site manager.
Monitoring	» Inspections of site on a bi-annual basis. » Water management plan

OBJECTIVE 8.1.4: Appropriate handling and management of hazardous substances and waste

The operation of the substation will involve the storage of chemicals and hazardous substances, as well as the generation of limited waste products. The main wastes expected to be generated by the operation activities includes general solid waste, hazardous waste and liquid waste.

Project Component/s	» Substation. » Operation and maintenance staff.
Potential Impact	» Inefficient use of resources resulting in excessive waste generation. » Litter or contamination of the site or water through poor waste management practices. » Contamination of water or soil because of poor materials management.
Activity/Risk Source	» Transformers and switchgear – substation.
Mitigation: Target/Objective	» Comply with waste management legislation. » Minimise production of waste. » Ensure appropriate waste disposal. » Avoid environmental harm from waste disposal. » Ensure appropriate storage of chemicals and hazardous substances.

Mitigation: Action/Control		Responsibility	Timeframe
a	Hazardous substances (such as used/new transformer oils, etc) must be stored in sealed containers within a clearly demarcated designated	Kabi Solar	Operation

Mitigation: Action/Control		Responsibility	Timeframe
	area.		
b	Storage areas for hazardous substances must be appropriately sealed and bunded.	Kabi Solar	Operation
c	All structures and/or components replaced during maintenance activities must be appropriately disposed of at an appropriately licensed waste disposal site or sold to a recycling merchant for recycling.	Kabi Solar	Operation
d	Care must be taken to ensure that spillage of oils and other hazardous substances are limited during maintenance. Handling of these materials should take place within an appropriately sealed and bunded area. Should any accidental spillage take place, it must be cleaned up according to specified standards regarding bioremediation.	Kabi Solar	Operation and maintenance
e	Spill kits must be made available on-site for the clean-up of spills and leaks of contaminants.	Kabi Solar	Operation and maintenance
f	Disposal of waste must be in accordance with relevant legislative requirements, including the use of licensed contractors.	Kabi Solar / waste management contractor	Operation
g	Waste handling, collection, and disposal operations must be managed and controlled by a waste management contractor.	Kabi Solar / waste management contractor	Operation
h	Used oils and chemicals: » Appropriate disposal must be arranged with a licensed facility in consultation with the administering authority » Waste must be stored and handled according to the relevant legislation and regulations	Kabi Solar	Operation
i	General waste must be recycled where possible or disposed of at an appropriately licensed landfill.	Kabi Solar	Operation
j	Hazardous waste (including hydrocarbons) and general waste must be stored and disposed of separately.	Kabi Solar	Operation
k	Disposal of waste must be in accordance with relevant legislative requirements, including the use of licensed contractors.	Kabi Solar	Operation

Performance Indicator	» No complaints received regarding waste on site or indiscriminate dumping. » Internal site audits identifying that waste segregation recycling and reuse is occurring appropriately. » Provision of all appropriate waste manifests.

	» No contamination of soil or water.
Monitoring	» Waste collection must be monitored on a regular basis. » Waste documentation must be completed and available for inspection » An incidents/complaints register must be maintained, in which any complaints from the community must be logged. » Complaints must be investigated and, if appropriate, acted upon. » All appropriate waste disposal certificates accompany the monthly reports.

MANAGEMENT PROGRAMME: DECOMMISSIONING CHAPTER 9

The substation and power line will be decommissioned once it has reached the end of its economic life. It is most likely that decommissioning activities of the infrastructure would comprise the disassembly and replacement of infrastructure with more appropriate technology/infrastructure available at that time.

The relevant mitigation measures contained under the construction section should be applied during decommissioning and therefore is not repeated in this section.

9.1. Site Preparation

Site preparation activities will include confirming the integrity of the access to the site to accommodate required equipment, preparation of the site (e.g. lay down areas, construction platform) and the mobilisation of construction equipment.

9.2 Disassemble and Replace Infrastructure

Disassembled components will be reused, recycled, or disposed of in accordance with regulatory requirements.

FINALISATION OF THE EMP CHAPTER 10

The EMP is a dynamic document, which must be updated to include any additional specifications as and when required. It is considered critical that this Draft EMP be updated to include site-specific information and specifications following the final walk-through survey by specialists of the powerline and development site. This will ensure that the construction and operation activities are planned and implemented considering sensitive environmental features.