ENVIRONMENTAL IMPACT MANAGEMENT SERVICES

ENVIRONMENTAL MANAGEMENT PROGRAMME

FOR
THE PROPOSED SOLAR PHOTOVOLTAIC (PV) POWER GENERATION FACILITY AT THE ESKOM GROOTVLEI POWER STATION, MPUMALANGA PROVINCE

EIMS REF: 0940
DEA REF: 14/12/16/3/3/1/669

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ESKOM GROOTVLEI PV FACILITY, GROOTVLEI, MPUMALANGA PROVINCE

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REVISION AND AMENDMENTS

DATE	No.	DESCRIPTION OF REVISION OR AMENDMENT
2014-01-24	1	Draft EMPR

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I. TERMS AND DEFINITIONS

Applicant	The person or party applying for Environmental Authorisation for a listed activity and who responsible for ensuring the development complies with all relevant legislation whether or not they are the land owner. In this case the applicant is ESKOM GENERATION
Bids	Formal proposals by prospective service providers for different components of the design and construction of the project.
CA	Competent Authority **"competent authority"**, in respect of a listed activity or specified activity, means the organ of state charged by NEMA with evaluating the environmental impact of that activity and, where appropriate, with granting or refusing an environmental authorisation in respect of that activity;
dBA	A unit of sound pressure.
DEA	The National Department of Environmental Affairs.
DWA	The Department of Water Affairs– both national offices and their various regional offices, which are divided across the country on the basis of water catchment areas.
ECO	Environmental Control Officer.
EIA	Environmental Impact Assessment as contemplated under regulation 545 of 2010 of the National Environmental Management Act (107 of 1998).
EIR	Environmental Impact Report .
EO	Environmental Officer (Contractor).
EMI	Environmental Management Inspector ("Green Scorpion") – from DEA and/or Provincial Environmental Departments .
EMPR	Environmental Management Programme
Environment	The Environment is defined in terms of the National Environmental Management Act (Act 107 of 1998) as the surroundings within which humans exist and that are made up of: The land, water and atmosphere of the earth: Micro-organisms, plant and animal life, any part or combination of the first three items and the inter-relationships between them the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.
Environmental Authorisation	Previously referred to as a Record of Decision (RoD). This constitutes the approval or dismissal of project as issued by the relevant Competent Authority.
Fauna	All living biological creatures, usually capable of motion, including insects and predominantly of protein-based consistency.
Fence	A physical barrier in the form of posts and barbed wire or any other concrete construction, ("palisade"- type fencing included), constructed with the purpose of keeping humans and animals within or out of defined boundaries.
Flora	All living plants, grasses, shrubs, trees, etc., usually incapable of easy natural motion and usually capable of photosynthesis.
I&AP	Interested and Affected Parties.
IA	Independent Auditor who is independent from the applicant/client to audit ECO reports and findings.

Induction Training	Training provided to all new employees prior to them being allowed on site.
Key Indicators	Variables that provide a measure (indication) of environmental management performance.
Landowner	The person or parties whose name is reflected on the property title deeds and physically owns the land.
NEMA	National Environmental Management Act (Act 107 of 1998)
NGO	Non Government Organisation.
NHRA	National Heritage Resources Act (Act 25 of 1999).
Non-compliance	Failure to comply with the requirements of the EA, EMPR or any other statutory legal obligation.
NWA	National Water Act (Act 36 of 1998).
PM	Project Manager or Project Management
Potentially hazardous substance	Is a substance, which can have a deleterious effect on the environment. Hazardous Chemical Substances are defined in the Regulations for Hazardous Chemical Substances published in terms of the Occupational Health and Safety Act.
SAHRA	South African Heritage Resource Agency.
Stormwater	Rainfall run-off from the site.
Swale	A depression between slopes that provides for drainage.
Topsoil	The layer of soil covering the earth which provides a suitable environment for the germination of seed; allows the penetration of water; is a source of micro-organisms, plant nutrients and in some cases seed; and is not of a depth of more than 0,5 metres or if applicable such depth as the Minister may prescribe for a specific prospecting or exploration area or mining area.
Vegetation	Any and all forms of plants, see also Flora.
Wastewater	Water containing cement washings, oil, fuel or other contaminants.
Wetland	A low lying area where the land is saturated with water, either permanently or temporarily and as characterised by specific indicator plant species and soil types.
WUL	Water Use License (administered by DWA)

1 INTRODUCTION

This EMPR has been compiled as a guideline for the mitigation and management measures to be implemented to avoid, reduce and minimise potential environmental impacts arising out of the development and operation of the proposed activity. The purpose of the EMPR is to give effect to precautionary measures, which are to be put in place for controlling the activities that take place on site. It has been developed to ensure compliance with national legislative and regulatory requirements. In addition, the EMPR is compiled based on the findings of the relevant Environmental Impact Assessment or Basic Assessment (as applicable) undertaken for the proposed development, as well as anticipated environmental management requirements. It should be borne in mind that the EMPR is a working document that should be updated on a regular basis as and when necessary. By virtue of the fact that the EMPR forms part of the documentation submitted to the CA for decision-making purposes, and will therefore form part of the EA, the provisions contained herein will become legally binding.

An EMPR is 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; and that the positive benefits of the projects are enhanced. EMPRs should also allow for risk minimization, rather than just ensuring legal compliance. The purpose of this EMPR is thus also to allow the user to make minor amendments to ensure continual revision and improvement of risk mitigation through the continual re-assessment of risks associated with the activity. The EMPR as a basic requirement complies with Regulation 543, Section 33 (promulgated under the National Environmental Management Act-Act 107 of 1998-NEMA) and these requirements are systematically addressed in the subsequent sections of this report.

Formal Risk identification forms an integral part of EMPR management and assists with prioritizing and focusing the control of risks. The EMPR thus supports this on-going proactive mitigation and the duty of care to the environment. The EMPR has provided suitable measures to ensure the continual mitigation of impacts associated with this activity. The NEMA Section 24E states that every environmental authorisation must as a minimum ensure that adequate provision is made for the on-going management and monitoring of the impacts of the activity on the environment throughout the life cycle of the activity. The project factsheet is provided below and includes the pertinent details on the project.

Table 1: Project Fact Sheet

Applicant	Eskom SOC Holdings Limited
Environmental Authorisation reference number	DEA REF: 14/12/16/3/3/1/669
Authorising Competent Authority	Department of Environmental Affairs
Environmental Assessment Practitioner (EAP):	Environmental Impact Management Services (Pty) Ltd.
Contact person:	Nicus Durieux
Postal address:	P.O.Box 2083, Pinegowrie,
Postal code:	2123
Telephone:	011 789 7170
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List of Activities applied for and authorised during the EIA under the National Environmental Management Act, 1998		
Legal Notice	**Activity No**	**Description of each activity:**
GN R. 544	1	The proposed project will involve the construction of a Solar Photovoltaic (PV) facility, whereby solar panels will be erected with support structures, with a generation capacity of less than 20MW
GN R. 544	24	The proposed project will occupy a total footprint of just under 17 ha. Approximately 10ha of the site is located on disturbed secondary grassland (not deemed sensitive), while the remaining 7ha is occupied by the historically existing ADF.
GN R. 544	11	A 6.6kW power line will be constructed to connect the PV facility of to the Grootvlei power station. The line will cross a wetland on the power station property. It was confirmed with DWA that a water use licence (WUL) will be required. Eskom will apply for the necessary water uses.
GN R. 544	18	The 6.6kW power line pylon construction will occur inside a wetland, the combined soil excavation required for the foundation of the pylons will exceed 5 cubic metres, triggering this listed activity.
GN R. 544	28	It was confirmed with DWA that the proposed activity will trigger a Water Use licence (WUL). Eskom will apply for the necessary water uses.

2 OBJECTIVES

The primary objectives of the EMPR are as follows:

- To promote sustainability and describe an action programme to mitigate as far as possible negative impacts;
- This EMPR will be a practical document that sets out both the goals and actions required in mitigation. Though the term “Mitigation” can be broad in definition, it means in this context to “allay, moderate, palliate, or intensify.” Mitigation of a negative impact means that its effect is reduced. Mitigation of a positive impact means that its effect is increased or optimised; and
- To indicate responsibilities for the implementation of these action items within the programme.

This EMPR shall be deemed to have contractual standing on the basis that its contents are a detailed expansion of the EA and consequent requirement/s of the EA. Where relevant the Applicant is responsible for delegating responsibility for compliance to designated parties (internal or external). Such delegation must be legally binding to the extent relevant.

The objectives and targets in this EMPR are further guided by the NEMA, (1998 as amended) itself and by its Regulations 543, 544, 545 & 546. Thus the underlying principles of sustainable development are the ultimate objectives and target of this report. The EMPR has included measures to ensure the development activity complies with the following principals as instilled in the NEMA, amongst others:

(i) That the disturbance of ecosystems and loss of biological diversity are minimised and remedied;
(ii) That pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied.
(iv) That waste is avoided, minimised and reused or recycled where possible and otherwise disposed of in a responsible manner;
(vii) that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and
(viii) that negative impacts on the environment and on people's environmental rights be anticipated and prevented and remedied.

2.1 LEGAL MANDATE OF ENVIRONMENTAL MANAGEMENT

This section has attempted to identify relevant laws and regulations that are applicable to the proposed project. The purpose of this is to provide the applicant with an overarching understanding of how the different sections of legislations define and integrate the different spheres of the environment. Understanding these will ensure long term and continued alignment with their principals. The applicant should ensure that legislation applicable to the development is kept up to date.

Table 2: Authorisation, permits and licences potentially relevant to the proposed project.

Activity	Act	Regulation / GN#	Status
Construction of the PV facility and associated infrastructure	National Environmental Management Act, 1998 as amended 2004	GNR 544 Item 1(i & ii)	Addressed in the BAR and EMPr
		GNR 544 Item 24(i):	
		GNR 544 item 11(xi):	
	National Water Act, 1998	Relevant WULA	Confirmation was obtained from DWA that a WUL will be required, Eskom will subsequently apply for the necessary water uses.
Construction of a 6.6kV power line to connect the PV facility to Grootvlei power station	National Water Act, 1998	Relevant WULA	Confirmation was obtained from DWA that a WUL will be required, Eskom will subsequently apply for the necessary water uses.
	National Environmental Management Act, 1998 as amended 2004	GNR 544 item 11(xi):	Addressed in the BAR and EMPr
		GNR 544 18	
		GNR 544 28	

2.2 DEVELOPMENT ACTIVITIES - PV FACILITY

The project will involve the construction of a PV facility, whereby solar panels will be erected with support structures, with a total generation capacity of up to 20MW, occupying a total footprint of ~17 ha (~7ha of the old ADF platform and ~10Ha of land west of the ADF). The Basic Assessment process was initiated by Eskom during the initial planning and design phase to ensure that the PV development complies with best practice environmental requirements and applicable environmental legislative requirements. A decision was made by Eskom on recommendation by the EAP and the relevant specialists, to utilise Alternative site #1, since it had the least sensitive constraints.

The main construction components associated with the PV facility will include the following:

- Rainwater catchment system on the Solar PV facility portion on the ADF (~7ha)
- PV Cell - A basic photovoltaic device, which generates electricity when exposed to solar radiation. All photovoltaic cells produce DC electricity.
- PV Module or Panel - The smallest complete assembly of interconnected photovoltaic cells. In the case of crystalline silicon cells, the cells are connected and compressed between a transparent layer and a backing material. The modules are typically mounted in a lightweight aluminium frame. Panels will be spaced ~4m apart. (~Panel dimensions 1640mm / 992mm / 50mm, total area 1.63m^2), the final panel type chosen may be slightly smaller.
- Photovoltaic Array - An interconnected system of PV modules that function as a single electricity-producing unit. The modules are attached to a steel/aluminium mounting structure that is either pilled to the ground or has concrete slabs supporting it. The PV array will occupy around 16 ha.
- String of modules – Number of PV panels connected in series. In this case, several strings will connect to a single inverter.
- Connection to combiner boxes - The electricity generated from the solar panels will be transferred via combiner boxes to the inverters. These combiner boxes combine the several cables that come from each string of modules into a unique pair of DC cables that is then connected to the inverter.
- Wiring to Central Inverters/Transformers - Array enclosures are wired to central inverters, where DC is converted to AC. The central inverters function to convert DC electricity to AC electricity at grid frequency. The voltage is then stepped-up via transformers to be then distributed via the power station grid.
- Connection to the Grid - A substation is required to combine all the AC cables coming from the several transformers making use of switching station. The substation (around 100m2 in size) will be constructed to ESKOM specification. The 6.6kV lines are typically 10-13m high. A 6.6kV power line will be constructed according to Eskom specification that will transmit the power generated from the PV plant to the Grootvlei power station grid. It is only the powerlines and their associated construction that impact on wetlands. It is important to note that the final design will be determined by the approved bidder. For the purposes of assessing environmental impacts a generic description would be suitable to determine order of magnitude of the relevant impacts.

Impacts associated with the construction of the PV facility and addressed in the EMPr include the following:

- **Pre-construction phase**
- **Planning and design**
- **Construction phase**
    - Noise and Dust
    - Cement mixing during construction
    - Power line route layout Alternative 1(S1) or (S2): Impact on Wetlands
    - PV facility Design
    - Loss of Wetland Vegetation
    - Habitat loss through site clearance
    - Impacts on threatened fauna
    - Establishment and spread of declared weeds and alien invader plants.

    - Topsoil removal and stockpiling
    - Heritage resources
- **Operational Phase**
    - Improved economic development (positive impact)
    - Sense of place impact from PV facility
    - Loss of arable land
    - Water use during operation
    - Impact on future land use
    - Sense of place impact from ADF end use change
    - Impact of PV facility on the surface and ground water resources during operation
    - Impact of fugitive emission on storm water quality
    - Storm water control and treatment
- **Decommissioning Phase**
    - Impact on groundwater
    - Impact on future land use
    - Improved economic development (positive impact)

3 ROLES AND RESPONSIBILITIES

In order to ensure that the EMPR and its mitigation measures are implemented, roles and responsibilities need to be clearly defined and documented prior to commencement. The Table below serves as a guide on which party is normally responsible for certain tasks. It is the applicant's responsibility to ensure that the project specific roles and responsibilities are defined and assigned prior to commencement.

Table 3: Typical roles and responsibilities

Role	Abbreviation	Description	Reporting
Independent Auditor (IA)		The IA is appointed by the Applicant and is responsible for auditing ECO audit reports/findings at predetermined intervals. The IA is responsible for compliance auditing of ECO responsibilities as contained in this EMPR. **The IA must be a suitably qualified environmental scientist and be independent from the Applicant and the contractor.**	Applicant/ Competent Authority
Environmental Control Officer	ECO	The ECO is appointed by the Applicant and is responsible for communicating environmental issues associated with the site to the Contractor/EO and the Applicant. **In this instance the ECO could be the station's Environmental Manager or other suitable qualified Eskom employee.** The ECO is responsible for compliance monitoring, and auditing function as well as the explanation of environmental issues contained in this EMPR to anyone working on the site. The	Applicant/ Competent Authority

		ECO must be a suitably qualified environmental scientist.	
Environmental Officer	EO	The EO is typically appointed by the responsible contractor. The EO is a suitably qualified individual who will preferably be a senior member of staff that will be responsible to oversee day to day compliance with the EMPR by the contractor's staff and sub-contractors and their staff. The EO will also be responsible for correct implementation of the EMPR requirements.	ECO/ Contractor/ Applicant
Applicant	App	The applicant is the person who is legally responsible for the project and implementation and compliance with the provisions of the EMPR and EA.	Competent Authority
Contractor	Con	The contractor is usually a third party appointed by the applicant to undertake the actual construction of the project. The principal contractor, any other contractors and sub-contractors will be required to comply with the provisions contained herein, and accordingly, the EMPR and its provisions must form part of any contractual arrangements between the applicant and contractors. The contractor must comply with EMPR during construction. Must ensure that all his employees and sub-contractors appointed by him are familiar with the EMPR. The legal accountability for correct implementation of the relevant requirements of the EA and EMPR must be contractually bound to the appointed contractor.	Applicant / ECO

Specific roles are designated in the specific environmental management and mitigation requirements in this EMPR. The applicant together with the ECO and the EO shall identify and comply with all relevant national, provincial and local legislation, including associated regulations and bylaws and shall establish and maintain procedures to keep track of, document and ensure compliance with environmental legislative changes.

All project activities must adhere to and comply with all South African legislation and regulations and this requirement must also be included in the Contractors' conditions. Should there be changes in legislation and/or regulations then action will be taken to incorporate such changes and to pass these requirements on to the Contractors. Specific legislation that must be complied with is represented in

Table 4.

Table 4: General Legislation

Title of legislation, policy or guideline:		Broad description
National Water Act (Act 36 of 1998)		Certain water uses other than schedule 1, may require a licence from Department of Water Affairs – a water use licence process is being undertaken in parallel to the BA process, in order to identify water uses and authorise where necessary.
National Environmental Management Act (Act No. 107 of 1998)	Regulation 543 - 546	Certain activities and developments required approval from Department of Environmental Affairs- amongst others
	Air Quality Act (Act 39 of 2004)	
	Waste Act	
	Biodiversity Act	
South African National Heritage Resources Act (SAHRA)		Certain activities and developments that are greater than the listed threshold require approval from South African National Heritage Resources Authority. In additional any archaeological sites affected by the development will required an approval permit from SAHRA.
Animal Protection Act, (Act 71 of 1962)		This Act deals with the humane treatment of animals and their basic rights, applicable during the construction phase.
Atmospheric Pollution Prevention Act, (Act 45 of 1965)		Repealed by the NEM:AQA
Conservation of Agricultural Resources Act, (Act 43 of 1983)		Certain activities and developments impact on agricultural resources are required approval from Department of Forestry.
Hazardous Substances Act (Act 15 of 1973)		Deals with the proper handling and disposal of Hazardous substances and required licences.
Municipal Structures Act, (Act 117 o 1998)		Deals with the management and operation of municipal structures.
Municipal Systems Act, (Act 32 of 2000)		Deals with the management and operation of municipal systems.
National Veld and Forest Fire Act, (Act 101 of 1998)		Deals with the prevention of Fires through mandatory firebreaks and other prevention measures.

Occupational Health and Safety Act, (Act 85 of 1993)	Deals with the health and safety of all workers and includes employer obligation toward the safety of workers.
Environment Conservation Act, 1989 (Act 73 of 1989 Regulation #3, 1998	(Noise) The applicant must ensure that he complies with the provision in the EMPR and the ECCA

4 NON COMPLIANCE AND PENALTIES

Within the provisions of the relevant environmental legislation, there are a number of penalties for non-compliance or offences. Below a few extracts are presented for information purposes, however these must not be read in isolation and the reader is reminded that there are other Acts that may be applicable to the relevant project:

- NEMA Section 24F(2): It is an offence for any person to fail to comply with or to contravene the conditions applicable to any environmental authorization granted for that listed activity. 49(B) A person convicted for an offence under subsection 2 is liable to a fine not exceeding **10 million rand** or to imprisonment not exceeding **10 years** or to both such a fine and imprisonment.
- NEMA Section 34(6): Whenever any manager, agent or employee does or omits to do an act which it had been his or her task to do, or to refrain from doing on behalf of the employer and which would be an offence under any provision listed in Schedule 3 (relates to all environmental related acts) for the employer to do or omit to do, he or she shall be liable to be convicted and sentenced in respect thereof **as if he or she were the employer**
- NWA Section 151 (1): "No person may fail to comply with any condition attached to a permitted water use (Water Use License)".
- NWA Section 151 (2): "Any person who contravenes any provision of subsection 1 is guilty of an offence and liable, on the first conviction, to a fine or imprisonment for a period not exceeding 5 years or to both a fine and such imprisonment (10 years for second conviction)."
- In addition, if anyone is convicted of an offence under the act which has resulted in harm, loss or damage to any other person, the court may award damages to be paid by the accused or convicted.
- NWA Section 154: Makes provision that it's not only the applicant that may be liable but also an employee or agent acting on their behalf.
- In terms of the MPRDA, Section 98, any person is guilty of an offence if he or she fails to comply with the requirements of the issued mining permit (borrow pits).
- MPRDA Section 99 (1a): any person convicted of an offence in terms of the MPRDA is liable to a fine not exceeding R100,000 or to imprisonment to a period not exceeding 2 years or to both such fine and imprisonment.
- The project manager has the ability to impose fines and stop order for non-compliances, based on discussions and evidence of the ECO

5 COMMUNICATION AND ENVIRONMENTAL AWARENESS

This section deals with the establishment of processes for internal and external communications on environmental management issues. Interested and Affected Parties (I&APs) should be allowed access to the EMPR document during construction and implementation. They have the right to comment on specific aspects of the EMPR that relate to impacts that extend outside of the site boundary during construction and operation (e.g. noise regulations, dust regulations, working hour's stipulated). These discussions should be done in conjunction with the contractor and/or applicant in a reasonable and informal manner, without unreasonably disrupting construction and/or operation activities.

Training and environmental awareness is an integral part of a complete EMPR. The overall aim of the training will be to ensure that all site staff are informed of their relevant requirements and obligations pertaining to the EMPR and EA. All training must be formally recorded and attendance registers retained.

5.1 PUBLIC COMMUNICATION AND LIAISON WITH STAKEHOLDERS AND INTERESTED & AFFECTED PARTIES

Public participation was undertaken as part of the EA process and links to the community have been established by the EAP. These links must be maintained by the applicant and contractor and utilised to the mutual benefit of all parties. The EO shall be responsible for addressing any relevant environmental problems or queries that are raised by the community and therefore must maintain close contact with the representatives of the immediate community. This EMPR will be made available, on request, for the public to peruse.

The contractor and EO shall ensure that a complaints register is maintained on site, (The register can be integrated into the power stations existing register), which shall contain *inter alia* the following:

- Name and contact details of complainant;
- Nature of complaint;
- Date and time of complaint;
- All complaints must be responded to, in writing, and a record of such response maintained; and
- All complaints and consequent corrective measures must be reported to the ECO.

5.2 TOOLS FOR INFORMING EMPLOYEES (INDUCTION / TOOLBOX)

The applicant and contractor must ensure that all relevant employees are trained and capable of carrying out their duties in an environmentally responsible and compliant manner, and are capable of complying with the relevant environmental requirements. To obtain buy-in from staff, individual employees need to be involved in:

- Identifying the relevant risks,
- Understanding the nature of risks,
- Devising risk controls, and
- Given incentive to implement the controls in terms of legal obligations.

The applicant shall ensure that adequate environmental training takes place. All employees shall have been given an induction presentation on environmental awareness. Where possible, the presentation needs to be conducted in the language of the employees. The environmental training should, as a minimum, include the following:

- General background and definition to the environment;
- The importance of compliance with all environmental policies;
- The environmental impacts, actual or potential, of their work activities;
- Compliance with mitigation measures proposed for sensitive grassland areas;
- The environmental benefits of improved personal performance;
- Their roles and responsibilities in achieving compliance with the environmental policy and procedures and with the requirement of the applicant's environmental management systems, including emergency preparedness and response requirements;
- The potential consequences (legal and/or other) of departure from specified operating procedures;
- The mitigation measures required to be implemented when carrying out their work activities.
- All operational risks must be identified and processes established to mitigate such risk, proactively. Thus the applicant needs to inform the employees of any environmental risks that may result from their work, and how these risk must be dealt with in order to avoid pollution and/or degradation of the environment.

In the case of permanent staff required during the operational phase of the project, the applicant / contractor shall provide evidence that such induction courses have been presented. In the case of new staff (including contract labour) the contractor / applicant shall keep a record of adequate environmental induction training.

5.3 AWARENESS AND DUTY OF CARE RESPONSIBILITIES

As eluded to above, training and awareness should be fostered in all staff working to ensure that they can perform their duties. Failure to comply with the provisions in the EMPR and NEMA would be a contravention of the Act. The relevant sections of NEMA are provided below, to outline the duty of care and responsibility that the applicant and all employees have to towards the environment. The National Environmental Management Act (Act 107 of 1998) (NEMA) Section 28: makes provision for Duty of care and remediation of environmental damage. The binding principals are described below:

1. Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.
2. Without limiting the generality of the duty in subsection (1), the persons on whom subsection (1) imposes an obligation to take reasonable measures, include an owner of land or premises, a person in control of land or premises or a person who has a right to use the land or premises on which or in which-
    a) any activity or process is or was performed or undertaken; or
    b) any other situation exists, which causes, has caused or is likely to cause significant pollution or degradation of the environment.
3. The measures required in terms of subsection (1) may include measures to-
    a) investigate, assess and evaluate the impact on the environment;

b) inform and educate employees about the environmental risks of their work and the manner in which their tasks must be performed in order to avoid causing significant pollution or degradation of the environment;
c) cease, modify or control any act, activity or process causing the pollution or degradation;
d) contain or prevent the movement of pollutants or the cause of degradation;
e) eliminate any source of the pollution or degradation; or
f) remedy the effects of the pollution or degradation.

14. No person may-
    a. unlawfully and intentionally or negligently commit any act or omission which causes significant or is likely to cause significant pollution or degradation of the environment;
    b. unlawfully and intentionally or negligently commit any act or omission which detrimentally affects or is likely to affect the environment in such manner; or
    c. refuse to comply with a directive issued under this section.
15. Any person who contravenes or fails to comply with subsection (14) is guilty of an offence and liable on conviction to a fine not exceeding R1million or to imprisonment for a period not exceeding 1 year or to both such a fine and such imprisonment.

5.4 FAILURE TO COMPLY WITH THE ENVIRONMENTAL CONSIDERATIONS

Should any non-compliance during construction or operation with the EMPR take place, the ECO must communicate this with the party/ies responsible for the non-compliance as well as the contractor and the Applicant. If the non-compliance continues after written request by the ECO to rectify the situation, the ECO must inform the CA in writing.

Failure to show adequate consideration to the environmental aspects of the EMPR, as well as the conditions of approval, could result in the suspension of all work by the CA, thereto until such time that the CA determines that offending actions or procedures are corrected. All costs will be borne by the contractor or applicant. Additional other penalties/ fines should be considered by the applicant to ensure contractors abide by the environmental consideration prior to the start of the project and these need to be enforced.

6 MONITORING, REPORTING & RECORD KEEPING

All employees and the applicant shall at all times have access to the EMPR in their respective locations. The EMPR will form part of the contract and will therefore be a legally binding document. In the event of discrepancy with regard to environmental matters or environmental specifications this document shall take precedence- unless there is conflict with environmental legislation. The Applicant or his delegated representative is responsible for ensuring compliance with the EMPR. It is suggested that periodic EMPR compliance reports (audits) are compiled by the ECO and submitted to the applicant for his review and correction of non-compliance issues. It is the responsibility of the ECO to report any non-compliance, which is not correctly rectified.

Table 5: Monitoring and Reporting responsibilities

Responsible party	When	Tasks
IA	Continuously throughout project construction and operation	Must use the ECO audit report findings to continually ensure that environmental protection measures are working effectively on site through independent audits. The applicant must use the independent audit report findings to continually ensure that environmental protection measures are working effectively on site through a system of self-checking. The EMPR should be viewed as a dynamic document aimed at continual environmental performance improvement.
Applicant	Continuously throughout project construction and operation	Must use the ECO audit report findings to continually ensure that environmental protection measures are working effectively on site through a system of self-checking. This can be integrated into the stations existing ISO14001 system, however the findings of the audit reports must be captured as a standalone document for auditing and EA record keeping purposes. The system should comprise of inspections of the following items, checked against to the provided indicator for successful mitigation: 1. Status of the aspect 2. Environmental protection measures • Receptors of the effects of the aspect - inspections may be undertaken where deemed necessary State the nature and frequency of inspections. You may wish to refer to a checklist; and • State the amount of time allocated to rectify deficiencies in environmental protection measures after they are identified. The applicant must use the audit report findings to continually ensure that environmental protection measures are working effectively on site through a system of self-checking. The EMPR should be viewed as a dynamic document aimed at continual environmental performance improvement.

ECO	Periodically throughout project construction and operation. Frequency is determined by the monitoring plan (Table 7)	The appointed ECO, EO as well as the applicant are responsible for ensuring compliance with the EMPR. The following monitoring and auditing is specifically required: • Monthly Compliance Audits: These audits must be undertaken by the ECO and must aim to monitor and report on compliance with the requirements of the EA and EMPR;
EO	Frequency is determined by the monitoring plan (Table 7)	• Weekly Compliance Reports: These reports must be prepared by the designated EO and must aim to monitor and report of on compliance with the EA and EMPR as well as general environmental performance; and • Daily Environmental Checklists: These checklists/ diary should be prepared by the designated EO specific to the applicable activity being undertaken and should aim to provide a daily check and record of site environmental compliance.
All	Frequency is determined by the monitoring plan (Table 7)	All monitoring and auditing must be accompanied by applicable records and evidence (e.g. delivery slips, photographic records, etc). All reports must be retained and made available for inspection by the ECO, the Applicant and /or the Relevant Competent Authorities.
		An environmental conformance register must be prepared and maintained throughout construction and operation in order to monitor environmental concerns, incidents, and non-conformances. This register should be utilised to measure overall environmental performance.

Non-compliances will be recorded in a register with details of date, location, NC or Incident EMPR aspect, corrective action taken, adequacy of corrective action, date rectified, photographic record etc (refer to Table 6 below).

Table 6: Recording keeping: Non-conformance Register template

NON-CONFORMANCE REGISTER	
DETAILS OF NON-CONFORMANCE / INCIDENT	**CORRECTIVE ACTION**
Reference Number	Suggested Corrective Action
NC / Incident	Actual Corrective Action Taken
Date of Occurrence	Suggested Due Date
Environmental Aspect type:	Corrective Action Status (Pending / Complete / Overdue)

Time	Actual Date Corrected
Responsible Contractor	Date Closed
Location Reference number	Transgression Status (Open / Closed)
GPS Coordinate (Lat/Long)	Response Time of Corrective Action (On Time / Late)
Description of NC/Incident	
Photographic Reference	
EMPR Reference	
Cause of the NC/Incident	

7 MANAGEMENT AND MITIGATION

Table 7: General EMPR provisions for the PV plant and Ash disposal facility

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
1		**Pre-construction**					
1.1	SS	Planning and design	Output spec design in line with EMPr and BAR	• A preliminary project design based on the EMPr and BAR mitigation measures must be in place before construction work commences. The most important mitigation measures are linked to: (1) infrastructure for storm water management from the proposed PV facility; (2) Minimising impacts on wetlands during power line construction. This design must be approved by the appointed ECO. • Any additional storm water management mitigations from the DWA from/as part of the WUL process and WUL consultation will be incorporated. Eskom must ensure that the receiving environment is not contaminated by storm water, if it is deemed polluted. • Fire must be prohibited from the site • Alien and indigenous vegetation must be kept under control, to prevent fires and reduce shading of PV panels.	Before construction commences	Design Complies with EMPR mitigation measures.	Applicant/ECO /Engineer EMPR Checklist
1.2	SS	PV facility design	PV facility Storm water design	• A conceptual Rain water Catchment system design has been completed by ARUP and estimates that approximately 45% of the rainfall on the ADF will be captured. • Storm water may not contaminate the environment. Any additional management measures required from the DWA during the Water Use Licence process must be viewed	Before construction commences	Proof of detailed technical design monitoring plan.	Applicant/ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
				as an extension to this EMPr.			
1.3	SS	PV facility design	Visual Impact	• If feasible the contractor should consider the use of non-reflective solar arrays • If feasible, vegetation screens (a combination of indigenous trees and shrubs such as *Rhus pyroides* and *Buddleja salviifolia*) should be planted a sufficient distance away from the PV project boundary to screen sensitive viewing areas, such as the Grootvlei Village, from views of the proposed development. • It is recommended that grasses that are found in the surrounding area must be used for the vegetation screen. • Light pollution should be kept to a minimum wherever possible as light at night travels great distances. If security lighting is used at the solar park it should only be used where absolutely necessary and carefully directed. • The negative impact of night lighting, glare and spotlight effects, can be mitigated using the following methods as an example: o Install light fixtures that provide precisely directed illumination to reduce light "spillage" beyond the immediate surrounds of the development; o Avoid high pole top security lighting along the periphery of the site and if possible only use lights that are activated on movement at illegal entry to the site; o In preference, utilize closed circuit TV security systems with infrared	Before construction commences	Proof of detailed technical design.	Applicant/ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
				capability, which will minimize the need for security lighting.			
1.4	SS	PV facility design	Rain water catchment system design	• The rain water catchment system must be designed based on the BAR conceptual layout. • Suitable measures must be taken to reduce soil erosion on the in areas not covered by the rain water catchment system footprint, such as embankments and berms. • Any additional storm water management mitigations from the DWA from/as part of the WUL process and WUL consultation will be incorporated. Eskom must ensure that the receiving environment is not contaminated by storm water, if it is deemed polluted. • A security fence must restrict access to prevent unauthorised entry to the PV facility.	Before construction commences	Proof of detailed technical design.	Applicant/ECO /Engineer EMPR Checklist
1.5	G	Construction site	Establishment of construction camps	• The contractor's camp, offices and storage facilities (if required) shall be located within the Grootvlei power station property, as approved by Eskom and the ECO. • No person shall be allowed to stay on non-Eskom owned land, unless it is cleared with the relevant land owner. In such an event all relevant requirements for the contractor's camp will apply where applciable.	Signoff during planning and design	Visual observation that all facilities are contained in construction camp.	Applicant/ECO EMPR Checklist
2		**Construction**					
2.1	SS	Site clearance for PV facility	Habitat loss through site clearance	• The area to be cleared must be fenced or demarcated to avoid unnecessary direct impacts to the vegetation beyond the limits of	Weekly	Visual observation that no habitat is cleared	Applicant/ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
				the construction area. • Any area that is disturbed beyond the footprint of the site must be rehabilitated after construction. • Should any Red Data Fauna species be encountered during construction(Refer to Addendum D in the Ecological Specialist report), in situ conservation is unlikely to be successful and it is recommended that a specialist be consulted for possible relocation. • Training and awareness must include the on-site identification of possible red data list species, as identified in the ecological specialist report. • Any bird nests encountered inside the grassland and wetland areas should be relocated by a suitably qualified individual. • Use indigenous vegetation to rehabilitate disturbed areas. Stripped topsoil must be used to rehabilitate disturbed areas, as far as practically possible. • Wetland boundaries must be excluded from the development- no structure should be permanently positioned within the wetland without obtaining a permit from DWA . • During the construction phase any alien species growing within and adjacent to the construction camp as a result of construction activities must be removed. On-going management must take place. • Unnecessary vehicle and machinery movement in and around the wetland should be kept to an absolute minimum. • As little as possible of the natural vegetation should be removed for the purpose of construction.		unnecessarily and that no clearing has occurred outside the approved construction area footprint.	

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
				• Topsoil that has been removed should be used for rehabilitation of disturbed areas. This should be done as soon as possible to ensure that seeds and other vegetative propagules within the soil are able to grow within rehabilitated areas and provide a bank of species indigenous to the site.			
2.2	G	Site clearance	Top soil stockpiles	• Disturbance of indigenous natural vegetation must be kept to a minimum. • Disturbed areas should be rehabilitated as quickly as possible. • Soil stockpiles should not be translocated from areas with alien plants into the site and within the site alien plants on stockpiles must be controlled so as to avoid the development of a soil seed bank of alien plants within the stock-piled soil. • Any alien plants must be immediately controlled to avoid establishment of a soil seed bank that would take decades to remove.	Weekly	Visual observation that no habitat is cleared unnecessarily,	Applicant/ECO EMPR Checklist
2.3	G	Site clearance	Loss of natural vegetation	• Trees/shrubs and natural vegetation, or any other natural features inside and outside the work area, which will not be cleared for construction purposes, shall not be defaced, painted for benchmarks or otherwise damaged, even for survey purposes. The latter can only be done if agreed to by the ECO. • Any natural feature defaced by the contractor shall be reinstated to the satisfaction of the ECO.	Weekly	Visual observation that no natural vegetation was cleared unnecessarily, and no features defaced. Permit obtained for affected protected trees.	Applicant/ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
2.4	SS	Site clearance for power line construction	Loss of wetland vegetation	• Areas where vegetation is disturbed must be landscaped and re-vegetated by indigenous surrounding species. • Any alien species growing in these areas must to be removed; • If the natural vegetation does not recover as determined by the ECO, seeding with an appropriate seed mix (consult local vegetation experts) should be implemented • All material stockpiles, temporary construction access routes must ploughed and re-vegetated upon completion of construction activities on site. • Service roads should be maintained, Construction of new roads should be avoided at all times where possible to limit any additional impacts Soil and site clearing may not occur in the wetlands affected by the proposed powerline route (as identified in the wetland delineation). • A 30m buffer must be maintained as a safe guard from the outside border of any wetland during construction. These areas will be designated as no-go areas. Refer to Appendix A for the wetland delineation map • Any fencing (wire /palisades) required during construction may not be placed inside any wetlands. If fencing is require it must be placed outside a 30m buffer from the edge of the wetland. Refer to Appendix A for the wetland delineation map.			
2.5	G	Site clearance	Archaeological sites	• If during construction any archaeological finds are made, the operations must be stopped and a qualified archaeological specialist. • This should immediately be reported to an	When archaeological finds are made	Visual observation that no archaeological sites have been unearthed or	Applicant/ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
				archaeologist and the South African Heritage Resources Authority (SAHRA), so that an investigation and evaluation of the finds can be made. Work may only resume once the authorisation has been obtained from SAHRA and the ECO is confident that the archaeological sites will no longer be impacted upon, through relocation of the finds.		damaged. If any are found the mitigation measures in the HIA report must be implemented	
2.6	G	Site clearance	Removal of alien vegetation	• Only limited clearing will take place on the site, limited to the PV foundation footprint, the remainder of the vegetation must therefore be maintained in a natural state. • Follow up clearing may be necessary if the species re-establish following the initial clearing. Other alien species (non-listed) occurring on site may not be used in the landscaping and should be removed from site where possible.	Weekly	Visual observation that alien vegetation has been controlled and removed.	Applicant/ECO EMPR Checklist
2.7	G	Site clearance	Re-vegetation and rehabilitation	• Once construction is complete, rehabilitation of all un-built areas (e.g. the planting of indigenous vegetation) must be undertaken in order to restore the original aesthetic and ecological value of the area. Preference should be given to the use of indigenous vegetation for the rehabilitation of disturbed areas. • Infilling of all excavation work, ensuring that subsoil is filled in first, to ensure that topsoil is present on the surface in order to ensure a suitable plant growth medium. Substrate that is not suitable for plant growth should not be used for infilling of excavations unless used at a suitable depth (e.g. deeper than 2 m or below top soil level).	On completion of construction	Visual observation that rehabilitation measures have been complied with.	Applicant/ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
				• Removal of all construction rubble from the site, including substances that cannot be used for infilling of excavations. • Steep and unstable slopes must have stabilising measures put in place to prevent collapse of the slopes or soil erosion. • The exposed ground should be seeded and mulched with an appropriate stabilising grass mixture. A good endemic stabilising grass seed mix should be used. • The site should be watered following seeding and mulching, and continued on a regular basis, the frequency depending on the amount rainfall received. Should germination not occur within one month of planting, the site should be reseeded and mulched.			
2.8	SS	Construction site	Noise generated during construction	• The closest noise receptors are landowners and Grootvlei village. The following must be implemented during construction, unless determined by the ECO: • Noise should be minimised by using hand labour where feasible. • Noise generating activities must be limited to between 08h00 and 17h00. • Noise-generating work on weekends and public holidays should be limited from 09h00 until 13h00			
2.9	G	Construction Site	Refuse and waste	• Refuse refers to all solid waste, including construction debris (cement bags, wrapping material, timber, cans, wire, nails, etc), waste and surplus food, food packaging, organic waste etc.	Weekly	Visual observation that all waste is disposed of as per EMPRR requirements	Applicant/ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
				• The contractor shall be responsible for the establishment of a refuse control and removal system that prevents the spread of refuse within and beyond the construction site. • The contractor shall ensure that all refuse is disposed of by him and his sub-contractors' employees in refuse bins which he shall supply and arrange to be emptied as they become full. These bins must be adequate in number and accessibility. • If possible, waste shall be separated into reusable, recyclable and non-recyclable waste, and shall be further separated as follows, and in line with station's waste management procedures: • Hazardous waste, consisting of substances that may be harmful to the receiving environment, and therefore require precautionary measures when handled. Examples include (but not limited to) oil, paint, diesel. • General waste, consisting of non-hazardous substances and substances that cannot be recycled. Examples include (but not limited to) construction rubble, excess construction materials that cannot be reused. • Recyclable waste shall preferably be deposited in separate bins. Recyclable material includes paper, tins and glass. The contractor is advised that "Collect-a-Can" collect tins, including paint tins, chemical tins, etc. for recycling. • Refuse bins shall be watertight, wind-proof and scavenger proof and shall be appropriately placed throughout the site and			

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
				shall also be conspicuous (e.g. painted bright yellow). Refuse must also be protected from rain, which may cause pollutants to leach out. Particular caution is to be exercised with regards to handling of hazardous waste, to ensure that it does not spill or leak from the waste collection containers. • The contractor or the appointed waste removal company shall truck refuse collected out of the construction site. Refuse which cannot be reused or recycled must be disposed of at a suitably registered disposal facility, which is also approved of by the ECO and the local authority. Refuse may not be burned or buried on, or near the adjacent properties (nor on any other properties that are not specifically registered for such activity). • The contractor shall provide labourers to clean up the contractors camp and construction site on a daily basis. These areas shall then be inspected by the contractor to ensure compliance with this requirement. A litter patrol around the construction area is to take place twice a week to ensure that all litter is cleared up. • The contractor shall be responsible for cleaning the contractors camp and construction site of all structures, equipment, residual litter and building materials at the end of the construction period and where necessary and appropriate. No construction materials are to be left on site following completion of construction. Topsoil is to be restored in all areas where it has been removed, and should be sourced if there is insufficient topsoil stored on site.			

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
2.10	G	Construction Site	Ablution and toilet facilities	• Adequate sanitary arrangements must be made for contractor and subcontractor staff. • As a guide a minimum of one chemical toilet shall be provided per 15 persons. Toilets provided must be easily accessible. • All toilets will be located within the contractor's camp. Should toilets be needed elsewhere, their location must first be approved by the ECO. • The ECO and EO are responsible for ensuring that any toilets placed are suitably situated and comply with requirements stated below. • The toilets shall be of a neat construction and shall be provided with doors and locks and shall be secured to prevent them from falling over. Toilets shall be placed outside areas susceptible to potential flooding, and nuisance pollution on neighbours. • Sanitary arrangements shall be to the satisfaction of the ECO • The contractor shall ensure that all toilets are cleaned and emptied before the builders' or other public holidays. The contractor shall ensure that the waste is stored and disposed off-site to the satisfaction of the ECO. • The contractor shall ensure that no spillage occurs when chemical toilets are cleaned and emptied. Any accidental spillage must be reported to the ECO and the client, and cleaned up immediately. The contractor shall ensure that the toilets are protected from vandals.	Weekly	Visual observation that enough toilets are provided and maintained as per EMPR requirements.	Applicant/ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
				• If the contractor (or reputable toilet-servicing company) fails to provide and/or maintain all site sanitation facilities in a clean and hygienic condition, the ECO (or public) may request the contractor to suspend work until the requirements have been met. • Construction Site Washing areas must be situated away from watercourses and ponds, and the use of biodegradable soaps is recommended			
2.11	G	Construction Site	Eating areas	• The contractor shall, in conjunction with the ECO, designate restricted eating areas for use during normal working hours. The contractor shall provide adequate refuse bins that must be cleaned when full. The feeding, or leaving of food, for stray or other animals in the area is strictly prohibited	Weekly	Visual observation that designated areas exist and are utilised for that purpose.	Applicant/ECO EMPR Checklist
2.12	G	Construction Site	Fuel and chemical management	• The contractor shall ensure that fuels and chemicals (e.g. drums of fuel, grease, oil, brake fluid, hydraulic fluid) are stored and handled so as to prevent spillage and that appropriate steps are made to prevent the pollution in the event of a spill. • Oil and chemicals shall be confined to specific and secured areas within the contractor's camp, and in such a way that does not pose any danger of pollution even during times of high rainfall. These materials must be stored in a bunded area with adequate containment (at least 110% the volume of the fuel) for potential spills or leaks. • The contractor will be responsible for ensuring that any party delivering potentially dangerous chemicals and oil to site is aware	Weekly	Visual observation that no spills exist and all spills have been removed as per EMPR requirements. Visual observation that spill kits are present and staff are trained to use them. Visual observation that all chemicals are stored in bunded area.	Applicant/ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
				of the appropriate storage and drop-off locations and procedures. • Transfer of hazardous chemicals and other potentially hazardous substances must be carried out so as to minimise the potential leakage and prevent spillage onto the soil. Drip trays must be put in relevant locations (inlets, outlets, points of leakage, etc) during transfer so as to prevent such spillage or leakage. • Hazardous waste, including oils and other chemicals (e.g. paints, solvents) shall be stored in an enclosed area and shall be clearly marked. A specialist waste contractor, at a licensed hazardous waste disposal site shall dispose of such waste off-site, in line with station's waste management procedures. • In addition, the contractor must ensure that workers do not smoke or take part in any activity that may results in sparks in the vicinity of fuels and other flammable substances to prevent ignition.			
2.13	G	Construction Site	Oil and fuel pollution associated with equipment use	• The contractor shall stand any equipment that may leak, and does not have to be transported regularly, on watertight drips trays to catch any pollutants. The drip trays shall be of a size that the equipment can be placed inside it. • Drip trays shall be cleaned regularly and shall not be allowed to overflow. Substances, which cannot be reused, must be disposed of according to the relevant waste disposal procedure. The ECO shall inform and advise the contractor as to the best waste disposal procedure.	Weekly, or when full	Visual observation that drips pans are present and utilised.	Applicant/ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
2.14	G	Construction Site	Emergency spill procedure	• The contractor shall keep the necessary materials and equipment on site to deal with spillage of the materials present should they occur. • The contractor shall set up a procedure for dealing with spills, which will include notifying the ECO and the relevant authorities immediately following the spillage event, prior to commencing with procedures. • These procedures must be developed with consultation and approval by the appointed ECO. • The clean-up of spills caused as a result of the construction activities, and any damage to the environment, shall be for the contractor's own account. A record must be kept of all spills and the corrective action taken.	Weekly	Visual observation that spill kits are present and that staff are trained to use them and that a spill procedure exists, including emergency contact details. Visual observation that spills have been recorded.	Applicant/ECO EMPR Checklist
2.15	G	Construction Site	Traffic management	• Site vehicles are only permitted within the demarcated construction camp as required to complete their specific task. • All construction vehicles should be in a good working order to reduce possible noise pollution. Compliance with the relevant Noise Regulations must be complied with at all times. In addition, vehicles should be in good working condition to prevent disruption of traffic in adjacent road networks and internal roads. • On-site vehicles must be limited to approved access routes and areas (including turning circles and parking) on the site so as to minimise excessive environmental disturbance to the soil and vegetation on site.	Weekly	Visual observation that construction vehicles stay within demarcated areas and routes.	Applicant/ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
				• Servicing and maintenance of vehicles on-site shall be avoided as far as possible. Construction will be limited to normal working hours, in order to limit disturbance from vehicles and construction activity. • Construction vehicles must be limited to approved access routes and areas (including turning circles and parking) on the site so as to minimise disruption of traffic. • The contractor must ensure that all construction vehicles using public roads are in a roadworthy condition that their loads are secured and that they adhere to the speed limits and that all local, provincial and national regulations are adhered to. • Speed humps may be constructed were possible to avoid speeding. Experienced drivers should be hired to drive construction vehicles in order to prevent disruption of traffic on adjacent road network and internal roads.			
2.16	G	Construction Site	Stockpiling and Material storage	• The contractor shall temporarily stockpile excavated materials (e.g. soils and rocks) and construction materials in such a way that the spread of materials is minimised. • The stockpiles may only be placed within the demarcated stockpile area, which must fall within the demarcated construction area. • The contractor must, where possible, avoid vegetated areas that will not be cleared. Stockpiles of construction materials must be clearly separated from topsoil stockpiles in order to limit any contamination of the topsoil. • Stormwater runoff from the stockpile sites and	Weekly	Visual observation that stockpiles are within demarcated areas.	Applicant/ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
				surrounding areas should be directed into the stormwater system. Stockpiles are to be stabilised if signs of erosion are visible. • Erosion control measures must be placed around the stockpiles, such as silt fences.			
2.17	G	Construction Site	Temporary fencing and controlled access	• Access control must be in-line with the stations access control procedure. • Construction should be concentrated in the dry season i.e. April to October if possible, in order to minimise potential impacts as a result of rainfall and the resultant erosion potential.	Weekly	Visual observation that fences are maintained and comply with EMPR provisions.	Applicant/ECO EMPR Checklist
2.18	G	Construction Site	Noise	• The Applicant and contractor shall obtain a copy of the relevant noise regulations and ensure that he abides by these regulations at all times. • Based on the preceding paragraph the contractor shall, therefore, take into consideration that the building site is mainly located within a rural area and that noise could be a major disturbance/nuisance for the surrounding communities, especially if any work would be conducted after official working hours. Noise levels must comply with relevant regulations. • During building operations all reasonable precautions shall be taken to minimise noise generated on site, especially when working in areas, or on activities, that may impact on neighbouring land owners and users. • Every effort shall be made to limit exceedingly	Weekly	Visual observation that working hours are not exceeded without surrounding community approval	Applicant/ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
				noisy activities. Construction vehicles shall be in such a condition that they do not create a noise nuisance.			
2.19	G	Construction Site	Surface runoff and Storm water management	• The contractor shall ensure that rainwater does not run into areas containing cement, oil, diesel etc. as this could result in a pollution threat. Storage areas for hazardous substances should be placed on high-lying ground, and surrounded by containment control measures. • No wastewater may run freely into any of the surrounding roads or neighbouring properties. • Berms shall be constructed where necessary to direct all runoff into the stormwater system during construction. Erosion control measures should be placed in areas where runoff concentrates, in order to detain the sediment load and slow down the runoff. • These measures can include silt fences, brushwood and rows of sawdust-filled onion bags. Runoff containing high sediment loads is not to be released into natural or municipal drainage systems or nearby watercourses. • Runoff from the site itself must be free of oil and waste and litter before joining the stormwater system. This will be ensured by securing any hazardous substances, in order that it does not enter runoff, and by cleaning up any refuse and construction material from the site. • The contractor must ensure that pollution of ground and surface water does not occur as a result of site activities. Pollution could result from the release, accidental or otherwise, of	Weekly	Visual observation that stormwater is contained and managed, i.e.no rill or gulley formation.	Applicant/ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
				contaminated construction water, chemicals, oils, fuels, sewage, runoff from stockpiles, solid waste, litter, etc. • All mechanical equipment used in construction activity is required to be clean, free from leaks of oil, petrol, diesel, hydraulic fluid and contaminating compounds. • Preference should be given to pipelines constructed of suitable materials such as wheolite, which reduces the risk of cracking from soil movements.			
2.20	G	Construction Site	Ground water pollution	• The contractor must ensure that pollution of groundwater does not occur as a result of site activities. • Pollution, of chemicals, oils, fuels, sewage, waste water containing organic waste, detergents, solid waste and litter etc must be contained and removed by a suitably licenced contractor. • In the event of pollution caused as a result of construction activities, the contractor, according to section 20 of the National Water Act (Act No. 36 of 1998) shall be responsible for all costs incurred by organisations called to assist in pollution control and/or to clean up polluted areas. • The public shall not call upon any organisation to assist with clean-up activities before the matter has been discussed with the contractor.	Weekly	Visual observation or chemical analysis where required.	Applicant/ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
2.21	G	Construction Site	Erosion control	• To reduce the loss of material by erosion, the contractor shall ensure that disturbance on site is kept to a minimum. • The contractor shall be responsible for rehabilitating all eroded areas in such a way that the erosion potential is minimised after construction has been completed. • Any erosion that occurs during a heavy rainfall event must be cleaned up at the expense of the contractor. Construction should be concentrated during the dry season if possible (April – September). • The contractor shall, furthermore, take appropriate measures to limit runoff into the neighbouring streets by adhering to the environmental management plan.	Weekly	Visual observation that erosion control measures are effective.	Applicant/ECO EMPR Checklist
2.22	G	Construction Site	Dust control	• Dust suppression should be carried out during hot windy days, or when the dust clouds extend past the development property. Comply with Dust Regulations under NEM:AQA (Act 39 of 2004). • The contractor should take into consideration that dust could be a major disturbance, especially during the dry winter periods to people residing around the site. • The contractor shall take appropriate and reasonable measures to minimise the generation of dust as a result of the works, operations and activities. The contractor shall comply with the National Dust Control Regulations, Promulgated under the National Environmental Management: Air Quality Act (Act 39 of 2004).	Weekly	Visual observation that dust does not move past the site boundary and that dust suppression is done effectively.	Applicant/ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
				• Particular attention shall be given to preventing dust generation during excavation and stockpiling activities. • The contractor is responsible for educating the employees to report any excessively dusty conditions to the contractor or responsible representative and those corrective and preventative measures are to be implemented. • Such measures shall include (but not be limited to) regular and effective treatment of working areas using water sprays and dust retardant and scheduling of dust-generating activities (e.g. the clearing of parking areas should be postponed until the construction programme requires the clearing of that specific area). • The contractor must ensure that no transported materials escape from the construction vehicles by providing adequate covering for all load beds.			
2.23	SS	Construction site	Noise and Dust Health Impact from the ADF as a result of the PV facility construction	• Dust and erosion mitigation should be implemented to reduce the risk of ash material being exposed to the atmosphere and becoming mobile. • The contractor may not unnecessarily disturb the ash layer during construction and foundation work that would potentially create new water infiltration pathways. • Management measures should be implemented to ensure that borrowing animals to do disturb the ADF topsoil layer.	Daily	Proof of operational procedure to contain fly ash dust, management measures implemented to remove fly ash dust via vacuum cleaner or other suitable measure.	Applicant/ ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
2.24	G	Construction Site	Concrete/Cement batching	• Ready mix concrete must be utilised where feasible. • If a concrete batching area needs to be established, relevant permits must be obtained. • All waste must be removed by the contractor before the Contractor leaves the site. • Disturbing the ash capping should be avoided where ever possible. Where the contractor is required to remove ash it must be taken to a suitably licenced waste disposal facility, in line with station waste management procedures. Relevant provisions of the NEM:WA must be considered and complied with in relation to the wastes in site . • Cement and liquid concrete are hazardous to the natural environment on account of the very high pH of the material, and the chemicals contained therein. As a result the contractor shall ensure that: o Concrete shall only be mixed on mortar boards, and not directly on the ground, o The visible remains of concrete, either solid, or from washings, shall be physically removed immediately and disposed of as waste, (Washing of visible signs into the ground is not acceptable). o All aggregate shall also be removed.	Weekly	Visual observation that batching areas comply with EMPR provisions.	Applicant/ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
2.25	G	Construction Site	Hazardous material handling during construction	• The contractor shall manage waste in line with the power station's waste management • The contractor shall ensure that all relevant personnel on site are properly trained concerning the proper use, handling and disposal of hazardous substances. • The contractor shall report environmental incidents to the ECO immediately. Any spill incidents must be cleaned up according to the emergency procedure immediately following occurrence. • The contractor shall supply the ECO with a list of all hazardous materials that would be present on site during the construction period. These materials should not exceed WML thresholds. In the event that they do there may be a requirement for further permitting / authorisations. The same applies to any sub-contractor that should provide the contractor with this information.	Weekly	Visual observation that EMPR provisions are complied with.	Applicant/ECO EMPR Checklist
2.26	G	Construction Site	Discharge of construction effluent	• The contractor shall ensure that polluted runoff (excluding silt pollution and cement washings) such as runoff from the construction camp where equipment is cleaned and/or serviced, is not discharged overland. Such runoff may be directed into the local sewer main or suitable alternative agreed upon with the local authority. • Silt-laden water may be disposed overland and allow this water to filter into the ground provided that this action does not cause pollution. • Water from washing large concrete-mixing trucks/equipment (mixers and the like) shall	Weekly	Visual observation that EMPR provisions are complied with.	Applicant/ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
				not be discharged overland. Such water shall be collected in a conservatory tank, removed from the site and disposed of in the correct manner. • It is suggested that such water be reused for washing other concrete equipment to minimise the amount required to be removed off-site. Trucks delivering concrete shall be washed at a dedicated and approved area for such activity.			
2.27	G	Emergency procedures	Uncontrolled pollution of natural environment	• The contractor shall ensure that all emergency procedures are in place prior to commencing work. Emergency procedures shall include, but not be limited to, fire, spills, contamination of the ground, accidents to employees, use of hazardous substances and materials, etc. • The contractor shall ensure that lists of all emergency telephone numbers / contact persons are kept up to date and that all numbers and names are posted at relevant locations throughout the duration of the construction period.	Monthly	Visual observation that written emergency procedures are in place and staff are aware of their implementation and location.	Applicant/ECO EMPR Checklist
2.28	G	Emergency procedures	Fire	• No open fires shall be permitted on site. • The contractor shall ensure that there is basic fire fighting equipment available on site at all times. The contractor shall appoint a member of his staff to be responsible for the installation and inspection of this equipment. • The Applicant, contractor and ECO are to ensure that he/she has the contact details of the nearest fire station in case of an emergency.	Monthly	Visual observation that written emergency procedures are in place and staff are aware of their implementation and location.	Applicant/ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool

2.29	G	Emergency procedures	Safety	• The contractor shall ensure that:
				  ○ Compliance with the Occupational Health and Safety Act (Act No. 85 of 1993),
				  ○ That reasonable measures are taken to ensure the safety of all site staff,
				  ○ That all construction vehicles using public roads are in a roadworthy condition, that they adhere to the speed limits and that their loads are secured and that all local, provincial and national regulations are adhered to,
				  ○ That all accidents and incidents are recorded and reported to the ECO.
				• The EO and ECO is to ensure that he/she has the contact details of the nearest emergency rooms (hospitals) to the site, of both private and public hospitals.
					Monthly	Visual observation that written emergency procedures are in place and staff is aware of their implementation and location.	Applicant/ECO EMPR Checklist

2.30	SS	PV foundation construction: Option 1 - rammed piles	Impact on ground water	• The rammed piles should be sealed with a form of grout or silicon that is water proof around the section where it enters the surface, this should be durable and UV resistant and should be done for all piles. • The material used for the piles should be inert and non-reactive with water. • Compaction of the area around the piled surface should be done to ensure that no weathering will take place during rain events over time. • Proper care should be taken with construction	End of construction	Visual observation that condition has been complied with. Contractor method statements prior to commencing with construction.	Applicant/ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
				activities on the ash disposal facility. No unnecessary excavation may be undertaken that will disturb the consolidated ashcrete layer. • The storm water management measures included in the conceptual design of the PV facility must be implemented.			
2.31	SS	PV foundation construction: Option 2 - Pre-drilled holes with backfilling or concrete	Impact on ground water	• It needs to be ensured that water proof material is used as mentioned above. • Caution must be applied as the areas not covered by concrete or compacted material will cave away or erode during storm events. • It must be ensured that erosion would not occur around the cast blocks. This will also prevent ponding and infiltration but run off will increase significantly. • Proper care should be taken with construction activities on the ash disposal facilities. No unnecessary excavation may be undertaken that will disturb the consolidated ashcrete layer. • The storm water management measures included in the conceptual design of the PV facility must be implemented.	End of construction	Visual observation that condition has been complied with. Contractor method statements prior to commencing with construction.	Applicant/ECO EMPR Checklist
2.32	SS	PV foundation construction: Option 3 - Ballast	Impact on ground water	• No material penetrates the surface and therefore groundwater should not be breeched and hence the requirement for inert material is no longer necessary. • Proper care should be taken with construction activities on the ash disposal facilities. No unnecessary excavation may be undertaken that will disturb the consolidated ashcrete	End of construction	Visual observation that condition has been complied with. Contractor method statements prior to commencing with construction.	Applicant/ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
				layer. • The storm water management measures included in the conceptual design of the PV facility must be implemented.			
2.33	SS	Power Line construction / Alignment D & F	Impact on Wetlands	• Soil disturbance during construction must be minimised by keeping within demarcated areas • Existing access roads must be used where ever possible to avoid unnecessary soil disturbance (especially in wetlands). • The spanning of the power line must be done in such a manner that no linear soil disturbance is created, thus the construction equipment must stay within existing infrastructure (roads and existing powerline servitudes) to reach pylon positions where possible • The area to be cleared must be fenced or demarcated to avoid unnecessary direct impacts to the vegetation beyond the limits of construction. • Any area that is disturbed beyond the foot print must be rehabilitated after construction. • Use indigenous vegetation to rehabilitate disturbed areas. Stripped topsoil must be used to rehabilitate disturbed areas. • Topsoil that has been removed should be used for rehabilitation of disturbed areas. This should be done as soon as possible to ensure that seeds and other vegetative propagates within the soil are able to grow within rehabilitated areas and provide a bank of species indigenous to the site.	Weekly	Visual observation that condition has been complied with. Contractor method statements prior to commencing with construction.	Applicant/ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
3	**Operational Phase**						
3.1	SS	Impact of PV facility on the storm water during operation	Storm water management	• Any additional storm water management mitigations from the DWA from/as part of the WUL process and WUL consultation will be incorporated. Eskom must ensure that the receiving environment is not contaminated by storm water, if it is deemed polluted	Monthly for the first year, then annually thereafter.	Visual observation that EMPR provision are complied with.	Applicant/ECO EMPR Checklist
3.2	SS	Impact of the portion of PV facility on the ADF (approximately 7HA) on the groundwater during operation	Impact on future ground water quality	• Any additional storm water management mitigations from the DWA from/as part of the WUL process and WUL consultation will be incorporated. Eskom must ensure that the receiving environment is not contaminated by storm water, if it is deemed polluted	Monthly for the first year, then annually thereafter.	Visual observation that EMPR provision are complied with.	Applicant/ECO EMPR Checklist
3.3	G	Impact of solid waste generated by staff	Pollution created by general solid waste for the staff lodging (domestic waste). This impact is not considered significant.	• Solid waste must be managed in line with the power stations's waste management policy.	Weekly	Proof of solid waste removal to a certified solid waste dump.	Applicant/ ECO EMPR Checklist
3.4	SS	Management of the ADF surface affected by the PV facility	Future land use potential	• The Power station must ensure proper care will be taken with maintenance activities on the ash disposal facility. No unnecessary excavation may be undertaken that will disturb the consolidated ashcrete layer.	Annually	Visual observation that conditions are complied with. Annual monitoring report	Applicant/ ECO EMPR Checklist
3.5	G	Access control	Impact on road safety and noise along routes	• Adequate warning signage should be place on the site perimeter, • The site should be fenced and have restricted access, • Local communities should be informed of the potential safety impact of accessing the site	Weekly	No soil erosion present, road surface not damaged, delivery made during office hours	Applicant/ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
				• Sufficient on-site manoeuvring area should be provided to enable all vehicles to enter and exit the site in the forward direction. • Deliveries should be scheduled during office hours			
4	**Rehabilitation and Decommissioning**						
4.1	G	Site management	Landscaping	• Topsoil that is disturbed or removed during construction and excavation must be replaced, using topsoil stockpiled prior to excavation activities, or with topsoil sourced from elsewhere. • Care must be taken not to mix the topsoil with the subsoil during shaping operations. • It is recommended that indigenous plants be used in the landscaping of the site. Plants that are proclaimed as problem plants or noxious weeds are to be excluded from the landscaping plan and these should be removed immediately, should they occur on site.	Weekly	Visual observation that area has been rehabilitated	Applicant/ECO EMPR Checklist
4.2	G	Site management	Rehabilitation	• After construction, any area cleared or disturbed (as a result of the activity) within and outside the boundaries of the construction site shall be rehabilitated. • All construction equipment and excess aggregate, gravel, stone, concrete, bricks, temporary fencing and the like shall be removed from the site upon completion of the work. • No discard materials of whatsoever nature shall be buried on the site, or on any vacant	Weekly	Visual observation that area has been rehabilitated	Applicant/ECO EMPR Checklist

ID	Site specific (SS) or generic (G) condition	Activity / Aspect	Impact	Mitigation	Monitoring Frequency	Indicator / Target	Responsible party for / monitoring tool
				or open land in the area. It may only be disposed of at the appropriate registered waste disposal site.			
4.3	G	Site management	End of life decommissioning and closure	• Prior to closure and rehab an EAP must be appointed to prepare a closure and rehabilitation management plan which will be based on the acceptable legislated standards at the applicable time.	Weekly	Visual observation that area has been rehabilitated	Applicant/ECO EMPR Checklist

8 EMERGENCY RESPONSE PLAN

The applicant and/or contractor together with the ECO must identify potential emergencies and develop procedures for preventing and responding to them. There are several options for dealing with high priority impacts and risks, as the paradigm has two components, probability and consequence. The design of control measures rest on the understanding the cause and effect. Best practise is to intervene with the ultimate factors were feasible, rather than treat the outcomes. Emergency response therefore has the option of reducing probability, or reducing the consequence, reducing the probability is the preferred option. Below are some common emergency preparedness approaches:

- Threat consequence if and when the risk eventuates, when the risk becomes an issue
- Combine reducing the probability and treating the consequence
- Offset environmental losses by investing in other assets
- Not manage some of the risks because there are too many
- Make provision to manage residual impacts or issues that arise because of shortcomings in risk identification and rating, avoidance and mitigation or because a rare event has occurred.

Residual impact, are those impacts that despite reducing the probability and consequence, it might still occur. In these cases parties will have to be compensated, pollution cleaned up and damage to the environment remediated. The contractor must ensure that all emergency procedures are in place prior to commencing work. Emergency procedures must include, but are not limited to, fire, spills, contamination of the ground, accidents to employees, use of hazardous substances and materials, etc.

The contractor must ensure that lists of all emergency telephone numbers/contact persons (including fire control) are kept up to date and that all numbers and names are posted at relevant locations throughout the duration of the construction period.

8.1 FIRE

Sparks generated during welding, cutting of metal or gas cutting can result in fires. Every possible precaution shall therefore be taken when working with this equipment near potential sources of combustion. The contractor must take all reasonable measures to ensure that fires are not started as a result of construction activities on site. No smoking is allowed near containers with flammable contents or at areas that are highly flammable. Smoking is only permitted at areas designated for smoking. No open fires are permitted on site and no burning of waste is to be allowed on site. The contractor shall ensure that there is basic fire fighting equipment available on site at all times. Such precautions include having an approved fire extinguisher immediately available at the site of any such activities. The contractor is to ensure that he/she has the contact details of the nearest fire station in case of an emergency. Appropriate and correctly serviced equipment must be available for all activities that are likely to generate fire.

8.2 HEALTH AND SAFETY

The Contractor shall make allowance for the supply, erection, maintenance and removal of the information boards. Information boards shall also provide the name of the contractor, relevant contact person and contact number. This will ensure that the public access to request information and/or to lodge any complaints. The boards will essentially be to advise the public of the construction activities to be undertaken, or being undertaken and to advise of the prohibition of entering demarcated “no-go” areas.

The Contractor must ensure that compliance with the Occupational Health and Safety Act (Act No. 85 of 1993) is strictly adhered to. All reasonable measures must be taken to ensure the safety of all site staff and the surrounding community is not compromised. Security personnel and skeleton staff shall be supplied (by the contractor) with adequate protective clothing, ablution facilities, water and refuse facilities (with regular collection). No weapons may be brought onto the property by any person. Where fencing is temporarily affected, temporary security must be provided at all times until the fence is reinstated.

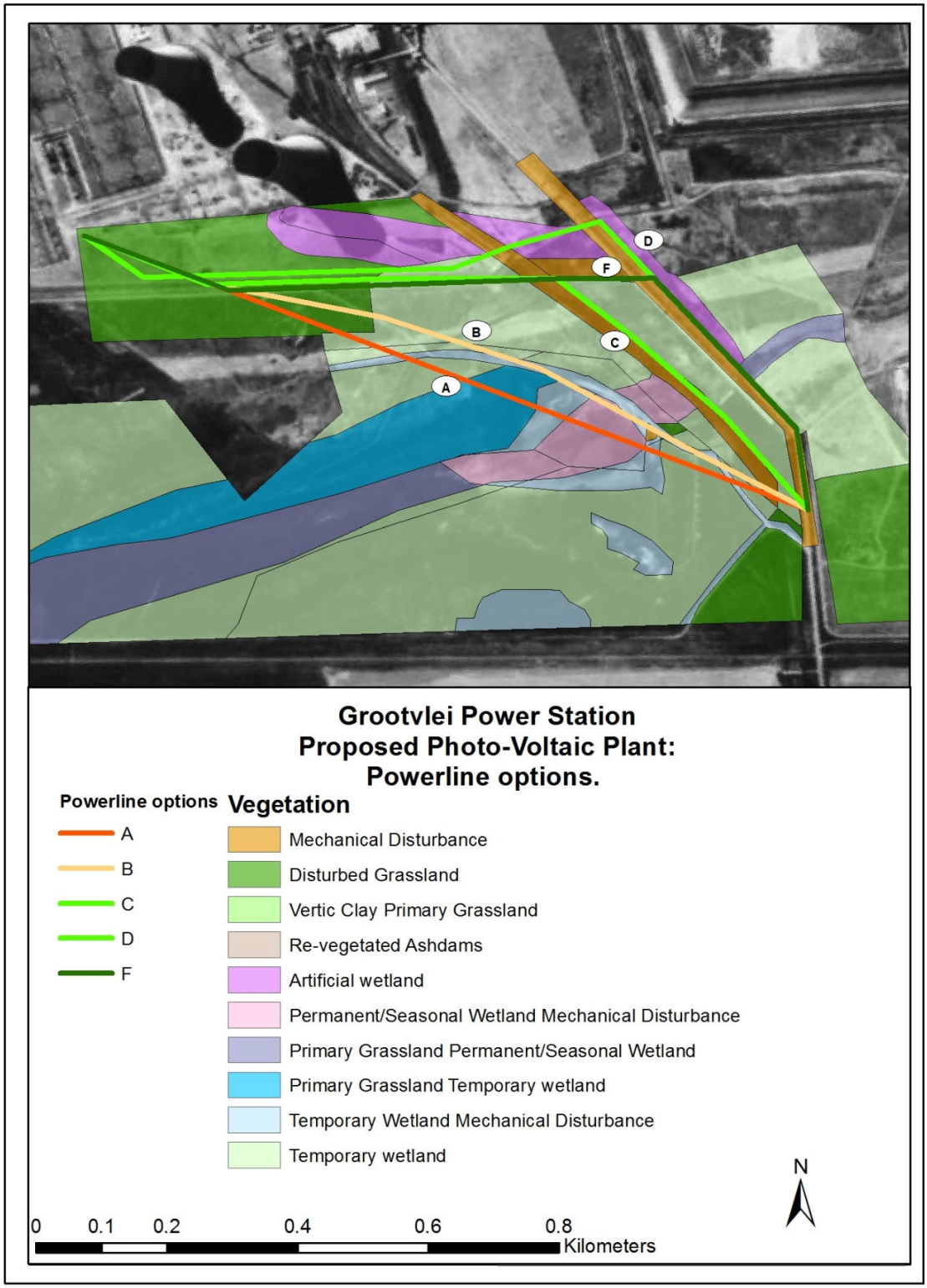
The contractor must ensure that all construction vehicles using public roads are in a roadworthy condition, that drivers adhere to the speed limits and that their loads are secured and that all local, provincial and national regulations are adhered to. The contractor shall make provision for flagmen to regulate traffic and construction vehicles when necessary.

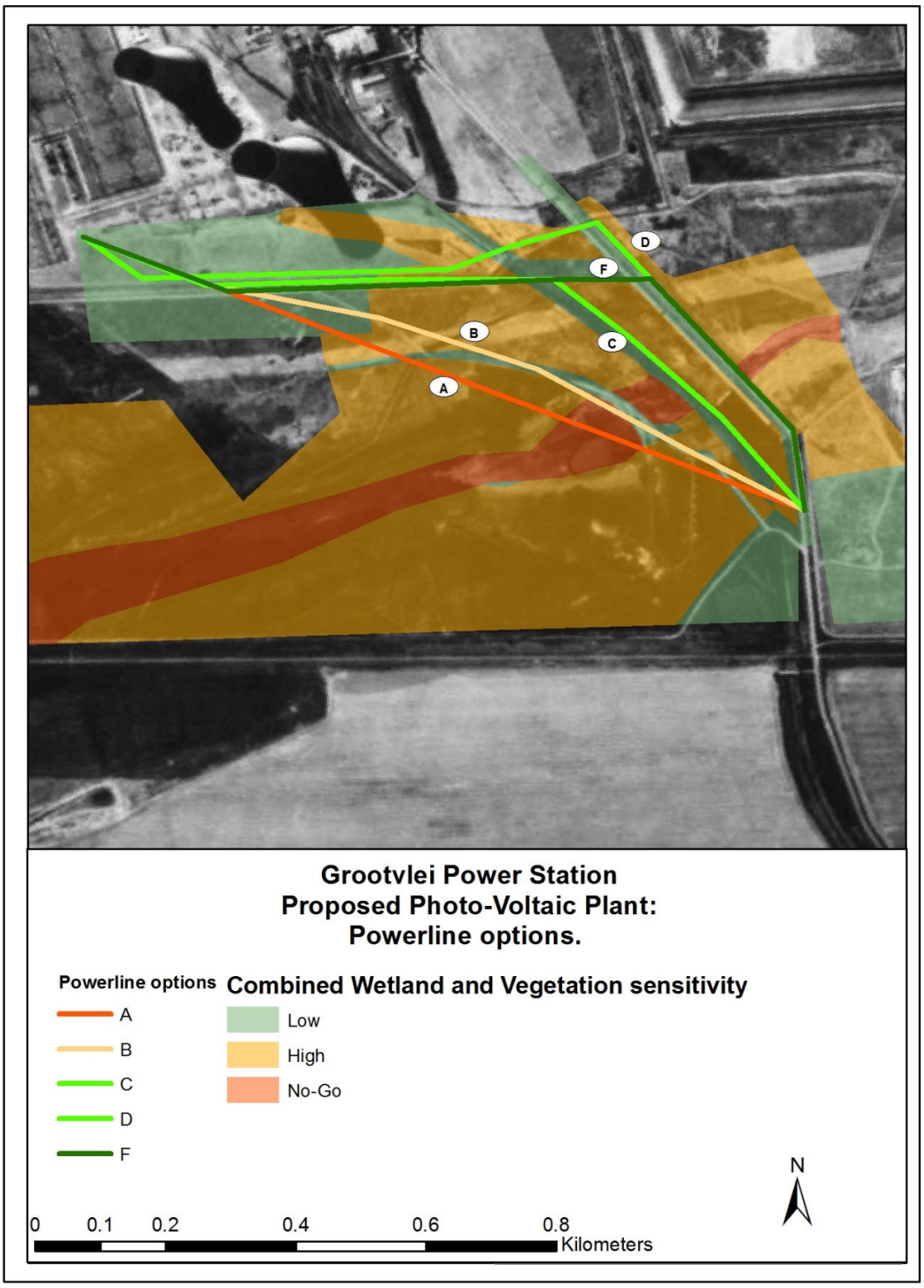
The Applicant and contractor must ensure that all accidents and incidents are recorded and reported to the ECO. the Applicant/ contractor must have easy access to all relevant emergency numbers for example, spill response teams, fire authorities, medical emergency, etc (refer to Table 8 for an example) of the nearest emergency rooms (hospitals) to the site, of both private and public hospitals. The Contractor must take all reasonable measures to ensure the health and safety of his employees, visitors and the public.

Table 8: Emergency Contact details (To be completed by the applicant)

Name	Telephone / Mobile	Contact name
Applicant		
Contractor		
HSE officer		
EO		
ECO		
Emergency Fire		
Emergency Medical		
Emergency Spill		

APPENDIX A: WETLAND DELINEATION MAP


D
F
B
C
A
Grootvlei Power Station
Proposed Photo-Voltaic Plant:
Powerline options.
Powerline options
A
B
C
D
F
Vegetation
Mechanical Disturbance
Disturbed Grassland
Vertic Clay Primary Grassland
Re-vegetated Ashdams
Artificial wetland
Permanent/Seasonal Wetland Mechanical Disturbance
Primary Grassland Permanent/Seasonal Wetland
Primary Grassland Temporary wetland
Temporary Wetland Mechanical Disturbance
Temporary wetland
N
0 0.1 0.2 0.4 0.6 0.8
Kilometers


D
F
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Grootvlei Power Station
Proposed Photo-Voltaic Plant:
Powerline options.
Powerline options
A
B
C
D
F
Combined Wetland and Vegetation sensitivity
Low
High
No-Go
N
0
0.1
0.2
0.4
0.6
0.8
Kilometers