



GA Environment

ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR) FOR THE BASIC ASSESSMENT FOR THE PROPOSED INSTALLATION OF A BATTERY ENERGY STORAGE SYSTEM (BESS) AT THE EXISTING ESKOM SUBSTATION IN WITZENBERG, WITZENBERG LOCAL MUNICIPALITY, WESTERN CAPE PROVINCE

February 2020



ENVIRONMENTAL MANAGEMENT PROGRAMME

FOR THE

**THE PROPOSED INSTALLATION OF A BATTERY ENERGY STORAGE SYSTEM (BESS) AT THE EXISTING
ESKOM SUBSTATION IN WITZENBERG, WITZENBERG LOCAL MUNICIPALITY, WESTERN CAPE
PROVINCE**

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ABBREVIATIONS

EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr.....	Environmental Management Programme
EO	Environmental Officer
ESR	Environmental Site Representative
I&AP	Interested and Affected Parties
NEMA.....	National Environmental Management Act, 1998 (Act No. 107 of 1998)
OHS Act	Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)
OHS	Occupational Health and Safety
SHEQ	Safety, Health, Environment & Quality
IEM.....	Integrated Environmental Management

DEFINITIONS

Aspect - Element of an organisation's activities, products or services that can interact with the environment.

Auditing - A systematic, documented, periodic and objective evaluation of how well the Environmental Management Programme (EMPr) is being implemented and is performing with the aim of helping to safeguard the environment by facilitating management control which would include meeting regulatory requirements. Results of the audit help the organisation to improve its environmental policies and management systems, while keeping track of their compliance with the Environmental Authorization.

Clearing of vegetation: Clearing refers to the removal of vegetation through permanent eradication and in turn no likelihood of regrowth. 'Burning of vegetation (e.g. fire- breaks), mowing grass or pruning does not constitute vegetation clearance, unless such burning, mowing or pruning would result in the vegetation being permanently eliminated, removed or eradicated.

Corrective (or remedial) action - Response required in addressing an environmental problem that is in conflict with the requirements of the EMPr. The need for corrective action may be determined through monitoring, audits or management review.

Degradation - The lowering of the quality of the environment through human activities, e.g. river degradation, soil degradation.

Developer - Entity which applies for environmental approval and is ultimately accountable for compliance to conditions stipulated in the EA (Environmental Authorisation) and EMPr.

Environment - The surroundings within which humans exist and that are made up of land, water and atmosphere of the earth, micro-organisms, plant and animal life: or any part or combination of the two and the interrelationships among them, the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

Environmental Management System (EMS) - Environmental Management Systems (EMS) provide guidance on how to manage the environmental impacts of activities, products and services. They detail the organisational structure, responsibilities, practices, procedures, processes and resources for environmental management. The ISO14001 EMS standard has been developed by the International Organisation for Standardisation.

Environmental Policy - A statement of intent and principles in relation to overall environmental performance, providing a framework for the setting of objectives and targets.

Habitat - A habitat is an ecological or environmental area that is inhabited by a particular species of animal, plant, or other type of organism. It is the natural environment in which an organism lives, or the physical environment that surrounds a species population.

Impact - A description of the potential effect or consequence of an aspect of the development on a specified component of the biophysical, social or economic environment within a defined time, space, magnitude and intensity.

Indigenous species - Flora and Fauna species that are naturally found in an area.

Infrastructure - The network of facilities and services that are needed for economic activities, e.g. roads, electricity, water, sewerage, etc.

Integrated Environmental Management- This is a philosophy used in the assessment of and management of the environment, during all actions, plans, activities, etc. that could affect the environment. Its aim is to ensure sustainability.

Mitigation - Measures designed to avoid, reduce or remedy adverse impacts. Actions that limit, stop or reverse the magnitude and/or rate of long-term effect on the environment.

Natural environment - Encompasses all living and non-living things occurring naturally on Earth or some region thereof. It is an environment that encompasses the interaction of all living species. Climate, weather, and natural resources that affect human survival and economic activity.

Policy - A set of aims, guidelines and procedures to help you make decisions and manage an organisation or structure. Policies are based on people or an organisation's values and goals.

Process - Development usually happens through a process - a number of planned steps or stages.

Resources - Parts of our natural environment that we use and protect, e.g. land, forests, water, wildlife, and minerals.

Stormwater Management – Strategies implemented to control the surface flow of stormwater such that erosion, sedimentation and pollution of surface and ground water resources in the immediate and surrounding environments are mitigated. This is specifically important during the construction and Operation phases of a project.

LEGISLATIVE REQUIREMENTS FOR AN EMPr

The table below provides the Requirements for an Environmental Management Programme (EMPr) in terms of the 2014 EIA Regulations (Appendix 4) with reference to the relevant sections of this report or where these requirements are addressed.

Section	Content	Reference in report
An EMPr must comply with section 24N of the Act and include-		
1(a)	Details of (i) the EAP who prepared the EMPr; and (ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	Section 1.7 Appendix G
1(b)	A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 1.1
1(c)	A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Section 1.2 Appendix A
1(d)	A description of the impact management objectives, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including- (i) planning and design; (ii) pre-construction activities; (iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post closure; and (v) where relevant, operation activities;	Section 7
1(e)	A description and identification of impact management outcomes required for the aspects contemplated in paragraph (d);	Section 7
1(f)	A description of proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (d) and (e) will be achieved, and must, where applicable, include actions to – (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) comply with any prescribed environmental management standards or practices; (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;	Section 7
1(g)	The method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 7
1(h)	The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 7
1(i)	An indication of the persons who will be responsible for the implementation of the impact management actions;	Section 7

1(j)	The time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 7
1(k)	The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 7 and 8
1(l)	A program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Section 8
1(m)	An environmental awareness plan describing the manner in which- (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Section 1.13
1(n)	Any specific information that may be required by the competent authority.	None

1. INTRODUCTION AND BACKGROUND

1.1 Introduction and proposed activity

GA Environment (Pty) Ltd are independent Environmental Assessment Practitioners appointed by the Eskom Holdings SOC Ltd to compile an Environmental Management Programme (EMPr) as part of the Basic Assessment for the proposed Installation of a Battery Energy Storage System (BESS) at the existing Witzenberg Substation. The existing substation is located within the jurisdiction of Witzenberg Local Municipality in the Western Cape Province where Eskom are proposing to establish an adequate BESS facility to achieve optimum results for the strengthening of the Witzenberg network based on physical space and local network constraints.

Depending on the preferred technology alternative, the installation of grid-scale battery storage at the existing Witzenberg Substation will require several containers of the preferred battery technology to be installed. Depending on the preferred technology alternative selected, a minimum footprint of 2016 m² (footprint of BESS installation area which consists of 32 containers x 63m² = 2016 m²) will be required. The footprint does not include working areas and storage areas. An additional 864 m² will be utilized for work areas and additional infrastructure such as cable trenches, foundations, air-conditioning units, inverters and general access for operation and maintenance equipment and vehicles in-between containers.

1.2 Site Location and Status Quo

The site is located within the existing Witzenberg Substation located on Portion 3 Farm Doorn Plaat 316 with 21-digit Surveyor General Code of C01900000000031600003. The site is located approximately 6km North of Prince Alfred's Hamlet and 16km North of Ceres with site centre coordinates 33°13'43.19"S; 19°19'4.45"E. It is accessible from the Witzenberg Valley Road and is approximately 1km South West of the R303 that connects Prince Alfred's Hamlet and Ceres. Refer to **Figure 1** for the Locality Map of the site.

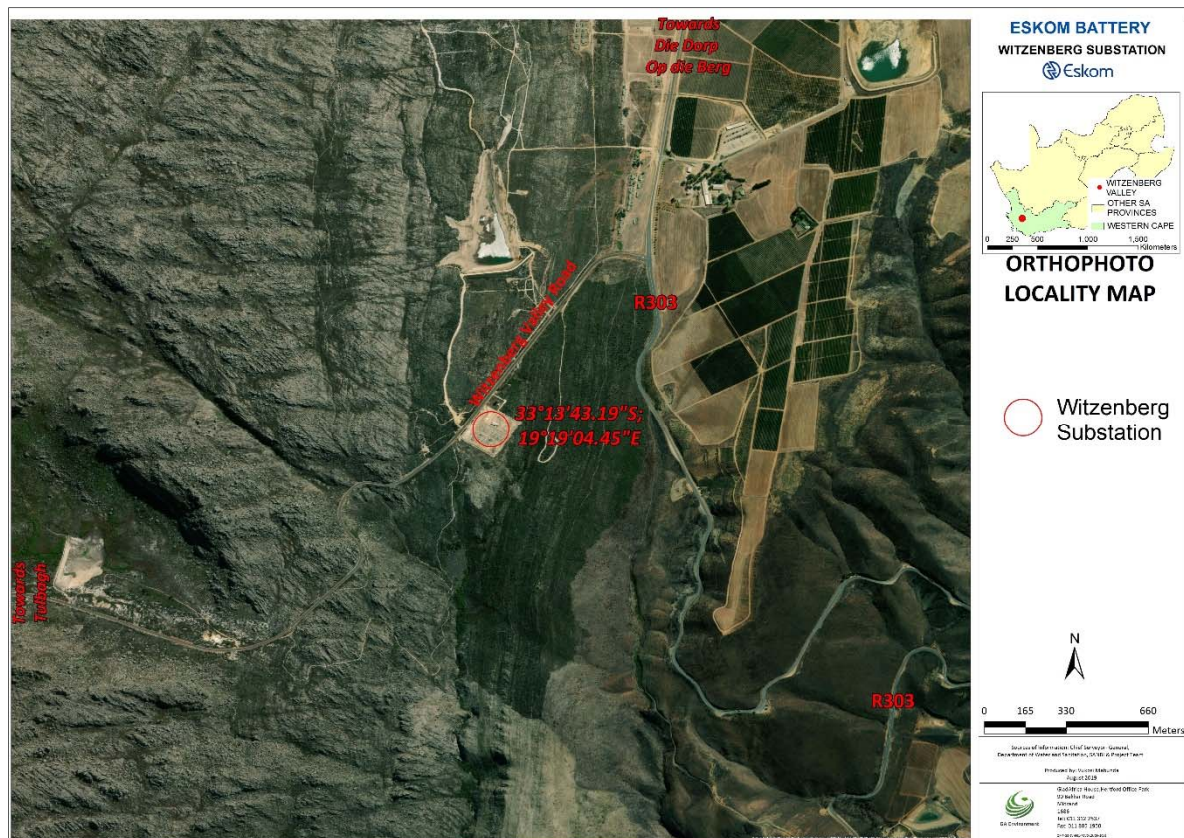


Figure 1: Locality Map of the Witzenberg Substation

The entire existing substation site footprint will be the construction area, (including lay-down areas and storage areas) and all available land space up to the extent of the property boundary will be utilised to accommodate the BESS containers and associated infrastructure. The footprint of each BESS technology alternative includes the associated infrastructure. All of the BESS alternatives are stackable, which can reduce the required footprint, however this is limited within the substation's yards, where sufficient safety height clearance from high voltage electrical infrastructure is required.

The footprint for each battery container has been estimated at 63m² per MWh of BESS based on manufacturer capabilities. An additional 864 m² will be utilized for work areas and additional infrastructure such as cable trenches, foundations, air-conditioning units, inverters and general access for operation and maintenance equipment and vehicles in-between containers. The site is proposed in an area with little grass cover (**Figure 1**).



Figure 2: View towards the East of the site



Figure 3: View towards the South East of the site

The existing Witzenberg substation is located in an area classed as a Protected Area due to its location within the Winterhoek Mountain catchment Area. The Groot Winterhoek Wilderness is known for its rugged, wild landscape, with exceptional rock formations carved by the elements. The greater Groot Winterhoek conservation area is particularly important for protecting mountain fynbos and wildlife. The greater Groot Winterhoek conservation area is particularly important for protecting mountain

fynbos and wildlife. It is also one of Cape Town's sources of fresh, clean water, and is a World Heritage Site.

1.3 Purpose of the EMPr

The National Environmental Management Act 107 of 1998 (NEMA) requires that an Environmental Management Programme (EMPr) be submitted where an environmental impact assessment has been identified as the environmental instrument to be utilised as the basis for a decision on an application for environmental authorisation (EA). The purpose of this EMPr is to provide management measures that must be implemented by Developers (in this case the Eskom), Engineers and Contractors alike to ensure that the potential impacts of the proposed activities are identified and measures put in place to ensure that they are minimised if negative and enhanced if positive.

IEM is a key instrument of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended [NEMA, 2013]. NEMA promotes the use of IEM for activities that may have a significant effect on the environment. IEM prescribes a methodology for ensuring that environmental management principles are fully integrated into all the stages of the development process. NEMA advocates the use of several environmental management tools that are appropriate for the various levels of decision-making. One such tool is an EMPr. This EMPr has been compiled in accordance with the Integrated Environmental Management (IEM) philosophy which aims to achieve a desirable balance between conservation and development (DEAT, 1992).

1.4 Objectives of the EMPr

- To ensure compliance with applicable legislation and/or guidelines;
- To ensure that the roles and responsibilities of the various parties involved in the implementation of the EMPr are clearly outlined;
- To reduce adverse environmental impacts as a result of the project activities; and
- To ensure continuous improvement in terms of the environmental performance of the project.

1.5 Review and Monitoring of the EMPr

In order to ensure that the EMPr is being correctly implemented and remains relevant to site activities, the following must be undertaken:

1.5.1 Environmental Auditing

Internal Audits as well as External Audits (where required by the Competent Authority) of the EMPr must be undertaken at the periods and according to procedures outlined below unless DEFF includes other conditions:

- *Internal Audits* - these must be undertaken at periods and according to procedures prescribed by the Developer/Project Manager (if applicable). Records associated with this auditing must be kept. The Contractor shall undertake their own Internal Audits and must communicate their procedure to the ECO. All Internal Audits must also be aligned to the Eskom audit process in terms of internal environmental policy requirements. Where required, the DEFF will also be provided with copies of all audit reports.
- *External Audits* – if required by the DEFF, these must be undertaken by a suitably qualified and experienced Environmental Control Officer (ECO). Similar to the Internal Audits, these must entail the checking of Environmental Compliance based on the EMPr and the Environmental Authorisations as well as any other requirements including environmental best practice. All External Audits must also be aligned to the Eskom audit process in terms of internal environmental policy requirements. In order to undertake the external audits, the ECO must adopt the following methods and approaches as a minimum:
 - Review of background information to acquaint the ECO with various aspects of the project;
 - Document review;
 - Observations during site walkabout. Photographs must be undertaken during the walkabout;
 - Interviews and Questioning (open-ended questions will be asked); and
 - Completion of checklists to report and discuss the findings of each of the areas within the construction site.

Audit reports will be compiled and submitted to the relevant parties within the project. These must include the Eskom as the Project Developer, the Project Manager and the Contractor.

1.5.2 Corrective Actions

The Contractor must compile an Environmental Action Plan to ensure that the non-compliances are addressed and ensure that the issues are addressed within a certain target date set by the ECO. The Contractor must ensure that corrective actions arising as a result of non-compliances are undertaken and recorded accordingly. These records must be kept for review by the ECO and/or any other party with authority to undertake this exercise.

1.5.3 *EMPr Review*

The EMPr must be reviewed by and with the Project Team, should the need arise. The discussion of this item must preferably be led by the ECO. The frequency of the review of the EMPr must be decided between the ECO and Eskom. All records of this review must be kept by the ECO on behalf of the Project Manager and Eskom.

1.5.4 *Plan for informing site/project team of changes*

Any amendments to the EMPr must be communicated to the Project Team by the ECO. Proof of the communication must be kept.

1.6 Amendment of the EMPr (where required)

The NEMA EIA Regulations, December 2014, as amended regulate the procedures and criteria for the submission and consideration of the EMPr including its content. It must be noted that the EMPr is a living document that can be amended should the need for this arise. The amendment must however be undertaken according to the EIA Regulations that will be relevant at the time of the required amendment. It must be noted that the NEMA EIA Regulations 2014 (Sections 34-37) (which were applicable during the compilation of this EMPr) introduce a defined process with regard the amendment of the EMPr. The first amendment applies to the amendment of the EMPr as a result of audit findings whereas the second amendment pertains to an amendment of a specific impact management action of an EMPr. The third amendment gives opportunity to the holder of the EA to amend the EMPr, and also requires the involvement of the Competent Authority (CA) and the undertaking of Public Participation (PP). It is important that the Developer and the Contractor follow these defined processes during the implementation phase as deviating from this process is regarded as a non-conformance.

In terms of the NEMA EIA Regulations 34, Government Notice No 982, of Government Gazette No 40772, Developers must ensure compliance with the conditions of the EMPr by undertaking an Environmental Audit in a structured and systematic manner. This audit must provide for recommendations regarding the need to amend the EMPr, and where applicable the Closure Plan. It is a requirement of the Environmental Compliance Audit process that risks to the environment are identified and these possible risks should be taken into account during the planning and construction phase of the development. These risks are presented in this Environmental Management Programme (EMPr). The implementation of this EMPr, through the appointed Contractor, remains the responsibility of the Developer, i.e. Eskom.

1.7 Details of Environmental Assessment Practitioner

This Environmental Management Programme was compiled by:

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This EMPr was prepared by **Nyaladzi Nleya and Nkhensani Khandlhela**. Nyaladzi is an Environmental Assessment Practitioner (EAP) employed by GA Environment. He holds a B.Sc. (Hons) in Applied Environmental Science degree with 10 years of working experience in the Environmental Management Field. Nyaladzi specialises in, among various environmental management tools, Integrated Environmental Management (IEM), Environmental Impact Assessments (EIAs), Basic Assessments (BAs). Nyaladzi has working knowledge of Spatial Analyses and Mapping with the use of ArcGIS. He has been involved in various footprint and linear projects, mixed-use developments as well as Conservation Planning and Biodiversity Management.

Ms. Nkhensani Khandlhela is currently the Environment and Sustainability Manager at GA Environment (Pty) Ltd, where she reports to the Executive. Her role entails technical oversight and management of the Environment and Sustainability Division within the GA Environment. Nkhensani holds a Master of Science Degree (in Geography) from the University of KwaZulu Natal (2003). She is an Environmental Scientist with 23 years of experience.

1.8 Details of the Proponent

The Project Proponent details are indicated below:

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Contact person: Donald Matjuda
Designation: Environmental Practitioner
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Brackenfell, Cape Town, 7560
Telephone Number: 021 980 3364
e-mail- MatjudD@eskom.co.za

1.9 Emergency Contacts and Response

Should the need arise, site activities may need to be stopped or directed. For this reason, contact persons and their 24-hour details for emergencies must be provided by the Developer and/or the Project Manager. These details, which must be updated should the need arise, must be kept by all parties undertaking work on the site. To date, the parties who can be contacted for emergencies are as follows:

1.10 Scope of the Environmental Management Programme (EMPr)

1.10.1 Pre-Construction

Activities that will form part of this phase are those that must be undertaken prior to the commencement of the construction and operational phases of the project.

1.11 Reporting on EMPr Compliance

In order to ensure sufficient levels of compliance with the EMPr, regular Environmental Monitoring has to be undertaken and the results of the monitoring be reported on regular basis. In order to control the reporting on the EMPr Compliance, it is imperative that the following be borne in mind:

- Typical Report Description;
- Document control procedures;
- System for documenting environmental training; and
- Frequency of reports.

Each of these are briefly discussed:

1.11.1 Typical Report Description

A typical report used to indicate the level of environmental compliance on the project must adhere to Appendix 7 of NEMA EIA Regulations, 2014, as amended, which must include the following

(a) details of the—

- (i) independent person who prepared the environmental audit report; and
- (ii) expertise of the independent person that compiled the environmental audit report;

(b) a declaration that the independent auditor is independent in a form as may be specified by the competent authority;

(c) an indication of the scope of, and the purpose for which, the environmental audit report was prepared;

(d) a description of the methodology adopted in preparing the environmental audit report;

- (e) an indication of the ability of the EMPr, and where applicable, to—
- (i) sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an ongoing basis;
 - (ii) sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the closure of the facility; and
 - (iii) ensure compliance with the provisions of environmental authorisation, EMPr, and where applicable, the closure plan;
- (f) a description of any assumptions made, and any uncertainties or gaps in knowledge;
- (g) a description of any consultation process that was undertaken during the course of carrying out the environmental audit report;
- (h) a summary and copies of any comments that were received during any consultation process; and
- (i) any other information requested by the competent authority.

In addition to the above, the Environmental Audit Report must include the following

- Project Background Information;
- Terms of Reference of various project team members;
- Scope of audit and the audit period;
- Objectives of the Environmental Audit;
- Methods used for undertaking of Compliance Audits;
- Roles and Responsibilities of different parties involved in ensuring the compliance of the EMPr;
- Summary of main findings;
- Checklist used for checking compliance;
- Photographs of observations of audit; and
- Any other documents deemed important to support the audit findings.

1.11.2 Document control procedures

To ensure the Environmental Auditing Reports are of good quality, these must undergo an internal review prior to submission to relevant parties. An indication of the Document history indicating as a minimum the revision number and date as well as the names and signatures of the compiler, reviewer and approver must be provided.

1.11.3 System for documenting environmental training

The Developer, Project Manager, Contractors and subcontractors must develop a system for documenting environmental monitoring, training and reporting. This system must as a minimum include the following:

- Plans on relevant parties to train and the frequency of training to ensure that all parties; working on the site/providing services are aware of the necessity to adhere to the EMPr;
- An indication of items to be discussed in typical training sessions; and
- Typical documents/material to be used for training and proof of the undertaking of training.

1.11.4 Frequency of audit reports

The reports compiled to record the findings of the audit must be provided at frequencies required by the Department of Environment, Forestry and Fisheries (DEFF), where stated, or by ESKOM. Copies of the Audit Reports must be provided to DEFF where required.

1.12 Relevant Legislation

This EMPr has been compiled as per the requirements of Appendix 4 of the NEMA EIA Regulations 2014, as amended and in terms of Section 24N of the National Environmental Management Act (Act No. 107 of 1998).

It is understood that any development during its various phases is a dynamic activity within a dynamic environment. The common list of legislative references contained herein is by no means exhaustive but is applicable to the general principles of this document.

- Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996)
- National Environmental Management Act, 1998 (Act No. 107 of 1998)
- National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
- National Heritage Resources Act, 1999 (Act No. 25 of 1999)
- National Water Act, 1998 (Act No. 36 of 1998);

In addition to the above, the Western Cape Provincial legislation relevant to the proposed development must also be adhered to.

1.12.1 General Guidelines

The following measures provide guideline solutions to frequently anticipated issues on most development activities.

- The prevention of any site degradation due to non-compliance, administrative or financial problems, and inactivity during the construction phase, illegal activities, delays caused by archaeological finds etc. are ultimately the responsibility of the applicant / developer as per Section 28 of NEMA, 1998 (as amended) which discusses 'Duty of Care and remediation of environmental change. This must be observed in the storage of general and hazardous waste.
- The study area must be clearly defined and surveyed according to the proposed activities. All workforce members and other construction personnel are not to go beyond the defined footprint.
- The Contractors must adhere to agreed and approved access points and no-go areas.
- Damage to private or public property such as fences, gates and other infrastructure may occur at any time. All damages are to be repaired as soon as practically possible.
- Adjacent landowners must be informed of the starting date of decommissioning activities, as well as the phases in which the construction shall take place.
- The Contractor must adhere to all conditions of contract including this EMPr.
- Proper planning of the construction activities process must be undertaken to allow for disruptions due to rain and wet conditions.
- All private and public manmade structures near the project site must be protected against damage at all times and any damage must be rectified immediately.
- Proper site management and regular monitoring of site works should take place.
- Proper documentation and record keeping of all complaints and actions taken must be kept at the site office.
- Regular site inspections and good control over the site activities should be undertaken.
- A positive attitude towards Environmental Management by all site personnel must be motivated through regular and effective awareness and training sessions.
- An ESR, on behalf of the Contractor, should be appointed to implement this EMPr.
- Environmental Audits should be carried out at least once a month or at periods required by the DEFF and/or Eskom.
- Social issues in terms of safety for human life, on employees should be encouraged. All construction areas and activities should be cordoned off and no casual access be gained, where deep trenches or open electrical infrastructure are to be exposed.

1.13 Tasks and Responsibilities

In order to ensure the sound development and effective implementation of the EMPr, it is necessary to identify and define the responsibilities and authority of the various persons and organisations that will be involved in the project. The following key roles must be provided for during the implementation of the EMPr:

- Authorities;
- Developer/ Proponent;
- Consulting Engineers (CE);
- Engineer's Representative (ER);
- Environmental Officers (EO);
- Environmental Site Representative (ESR);
- Environmental Control Officer (ECO);
- Project Manager (PM);
- Contractors (C); and
- Environmental Assessment Practitioner (EAP).

These roles and line of communication has been incorporated below:

1.13.1 Environmental Awareness Training

The ECO and the ESR are responsible for ensuring that **all** site employees are given an environmental awareness induction prior to the commencement of site activities. The initial training must be undertaken by the ECO. Environmental awareness mainly aims to:

- Promote general environmental awareness as well as awareness specific to the project;
- Inform personnel about the availability and importance of adherence to the EMPr, Environmental Authorization as well as any other permits or licenses issued for the project;

The environmental awareness training programme must include:

- Induction of all personnel in a language and method most suitable;
- Signing of an attendance register and declaration of ensuring environmental protection

Topics that must be included in the induction;

- What is the environment and why must it be protected?
- What are the environmental sensitivities of the area in which activities are being undertaken?
- How construction activities can adversely impact of the environment;

- What are the mitigation measures for adverse impacts?
- What is the social responsibility of all site employees during construction?
- How should environmental incidents be recorded?

All new employees must be inducted by the ESR prior to commencing with work on site. Proof of the induction must be kept.

Refresher environmental awareness training must be conducted by the ESR as and when the need arises. An example of this is when there is repeated non-compliances. The ESR must ensure daily toolbox talks include alerting the workforce to particular environmental concerns associated with the tasks for that day or the area / habitat in which they are working, etc. Awareness posters and pamphlets must be provided to create environmental awareness throughout the site.

1.13.2 Contractor Environmental Method Statements

Method Statements are written submissions to the Engineer by the Contractor, in collaboration with ECO and the ESR. The Method Statements set out the plant, materials, labour and method that the Contractor proposes using to carry out an activity, identified by the Engineer. The Method Statements contain the appropriate detail such that the Contractor's proposal is in accordance with the requirements of the EMPr. The Contractor must sign each Method Statement along with the ECO and Engineer to formalise the approved Method Statement. An example of a template that can be used to record all applicable Method Statements by the Contractor is attached as Appendix 2.

All Method Statements, including those which may be required as ad-hoc or emergency construction method statements, must be submitted to the Engineer for approval prior to the commencement of any activity. Any changes to the method of works must be reflected by amendments to the original approved Method Statement. Any changes in this regard must be approved by the EO and Engineer on the understanding that such changes are environmentally acceptable and in line with the requirements of this EMPr.

The following minimum Method Statements for the proposed activities must be compiled and submitted to the EO, ECO and the Engineer for approval before construction commences:

- Removal of indigenous vegetation;
- Removal of alien vegetation;
- Dust Control;

- Concrete mixing and management;
- Management of Fire;
- Handling and storage of oils and chemicals;
- Management of accidental spills;
- Management of contaminated materials;
- Solid waste management;
- Management and storage of reusable materials; and
- Site refuelling of construction vehicles and plant on site.

1.14 Site Documentation

The following is a list of some examples of documentation that should be held on site and made available to the ECO and/or any other relevant parties on request:

- This EMPr;
- The Project's Environmental Authorisation;
- Site daily diary
- Site instruction book
- A Complaints register;
- Copies of Environmental Audit Reports;
- Proof of Environmental training undertaken by the Contractor and the ECO;
- Schedules for environmental audits;
- Non-compliance and corrective action reports; and
- Method statements signed by the Contractor, the ECO and Engineer

A Method Statement Template is attached in **Appendix 2**.

1.14.1 Pro forma documentation

Prior to the commencement of activities, some key documents that are binding to the EMPr and project contract must be completed. One of these is the 'Declaration of understanding by the Developer/ Engineer/ Contractor' attached as **Appendix 1**.

The signing of this document is crucial as it binds the contractor to the contents of the EMPr

2. ENVIRONMENTAL MANAGEMENT PROGRAMME IMPLEMENTATION

The point of departure for this EMPr is to ensure a pro-active rather than re-active approach to environmental performance by addressing potential problems before they occur. This will limit

corrective measures needed during the construction activities. The purpose of this EMPr is therefore to provide management measures that must be implemented by the Developer, Engineers and Contractors alike to ensure that the potential impacts of the proposed activities and their associated impacts are minimised. It must also be ensured that the EMPr is maintained and upheld as a dynamic document i.e. a living document, in order for the project team to add or improve on issues that might be considered left out or not relevant to the project. The EMPr should be used for all phases of the project.

The tables outlined in this report form the core mitigation measures appropriate to the pre-construction and the monitoring phase. The tables present the objectives to be achieved and the management actions that need to be implemented in order to mitigate the negative impacts and enhance the benefits of the project. Associated responsibilities, criteria / targets and timeframes are clearly specified.

2.1 Pre-construction phase/ Pre- rehabilitation

The 'pre-construction/ pre-rehabilitation' section of this EMPr, refers to the period of time leading up to and prior to the commencement of the decommissioning activities, and is included to ensure proactive environmental management measures with the goal of identifying avoidable environmental damage at the onset and sustain optimal environmental performance throughout the construction phase. Most impacts will occur during the construction of activities phase and must be mitigated through the contingency plans identified in the pre-construction phase.

The bulk of environmental impacts will have an immediate effect on the site. If the site is monitored on a continual basis during the undertaking of all activities, it is possible to identify when these impacts as they occur. These impacts will then be mitigated through the measures outlined in this section, together with a commitment to sound environmental management from the project team.

3. APPLICABLE LEGISLATION

The management and mitigation of the environmental impacts during construction is governed by environmental legislation. It is of utmost importance that this project is constructed in compliance with all relevant environmental legislation whether; National, Provincial and/or Local. This EMPr has thus been compiled as per the requirements of *Appendix 6* of the NEMA EIA Regulations 2014, as amended and in terms of Section 24N of the NEMA.

It is understood that any development during its various phases is a dynamic activity within a dynamic environment. The common list of legislative references contained herein is by no means exhaustive but is applicable to the general principles of this document:

- Constitution of the Republic of South Africa (Act No. 108 of 1996);
- National Environmental Management Act (Act No. 107 of 1998);
- National Environmental Management: Biodiversity Act (Act 10 of 2004);
- National Heritage Resources Act (Act No. 25 of 1999);
- National Environmental Management: Waste Act (Act No. 59 of 2008);
- Occupational Health and Safety Act (Act No. 85 of 1993);
- Municipal Structures Act (Act No. 117 of 1998); and

In addition to the above, other provincial and municipal legislation by relevant to the proposed development must also be adhered to.

4. ROLES AND RESPONSIBILITIES

In order to ensure the sound development and effective implementation of the EMPr, it is necessary to identify and define the responsibilities and authority of the various personnel and organisations that will be involved in the project. The following key roles must be provided for during the implementation of the EMPr:

- Authorities;
- Developer/ Proponent;
- Consulting Engineers (CE);
- Engineer's Representative (ER);
- Environmental Officers (EO);
- Environmental Site Representative (ESR);
- Environmental Control Officer (ECO);
- Project Manager (PM);
- Contractors (C); and
- Environmental Assessment Practitioner (EAP).

The functions and responsibilities of these role players are outlined in **Table 1**.

Table 1: Functions and Responsibilities of the Project Team

FUNCTION	RESPONSIBILITY
<p>DEVELOPER/PROPONENT <i>Eskom Holdings SOC Ltd</i></p>	<p>Eskom will be the project proponent for all components of the work related to the project. Eskom is therefore accountable for ensuring compliance with the EMPr and all legal requirements related to the project. The proponent is also responsible for the appointment and management of the rest of the project team.</p>

FUNCTION	RESPONSIBILITY
<p>PRINCIPAL CONTRACTOR</p> <p><i>To be appointed by Eskom</i></p>	<p>The Principal Contractor is responsible for the implementation and compliance with the requirements of the EMPr and conditions of the EA's (where applicable), contract and relevant environmental legislation. The Contractor must ensure that all sub-contractors have a copy of and are fully aware of the content and requirements of this EMPr, through inductions and training.</p> <p>The Contractor is also required, where specified, to provide Method Statements setting out how the management actions contained in this EMPr of the EA will be implemented.</p>
<p>CONSULTING ENGINEER</p> <p><i>To be appointed by Eskom</i></p>	<p>The Consulting Engineer (CE) is contracted by the developer to design and specify the project engineering aspects. Generally, the engineer runs the works contract and oversee the overall implementation of the project as well as the compliance of the EMPr and incorporate any environmental consideration recommended in this EMPr into the design. The CE may also fulfil the role of PM on the proponent's behalf (see PM).</p>
<p>PROJECT MANAGER</p> <p><i>Internal or appointed</i></p>	<p>The Project Manager (PM) has overall responsibility for managing the project, Contractors, and Consultants and for ensuring that the environmental management requirements are met. All decisions regarding environmental procedures must be approved by the PM. The PM has the authority to stop any construction activity in contravention of the EMPr in accordance with an agreed warning procedure.</p>
<p>ENVIRONMENTAL CONTROL OFFICER</p> <p><i>To be appointed by Eskom</i></p>	<p>The Environmental Control Officer (ECO) is an independent person responsible for monitoring and implementation of the EMPr and environmental licences/authorisation (where applicable). This will be through frequent environmental audits, however the frequency at which the ECO will be required to conduct audits will depend on the conditions of the Environmental Authorisation (where applicable) or the nature of the development/ sensitivity of the environment.</p> <p><u>Other responsibilities of the ECO may include the following, depending on the nature of the appointment:</u></p> <ul style="list-style-type: none"> • Authority to stop any works until the matter is resolved if, in his/her opinion, there is or may be a serious threat to or impact on the environment; caused directly by the Contractor's actions or activities during the construction phase. • Submit environmental audit reports to the relevant project team and Competent Authority to keep abreast of compliance on site. Report any environmental incidents/ accidents on site and follow appropriate corrective actions.

FUNCTION	RESPONSIBILITY
	<ul style="list-style-type: none"> • Liaise with the relevant authorities and the project team, as and when required. The ECO must communicate and inform the developer and CE of any changes to environmental conditions as required by relevant authoritative bodies. • Ensure that the registration and updating of all relevant EMPr documentation is carried out. Review all environmental related method statements. • Undertake to conduct an induction and an environmental awareness training for the key staff on site. • Advise the Contractor on preventative measures as well as corrective action measures to eliminate the cause of the non-conformance incidents.
<p>ENVIRONMENTAL SITE REPRESENTATIVE</p> <p><i>To be appointed by Principal Contractor</i></p>	<p>The Environmental Site Representative (ESR) is employed by the Contractor as his / her environmental representative to monitor, review and verify compliance with the EMPr and other Environmental Authorisations on a day-to-day basis on site.</p> <p>The site representative needs to work closely with the ECO to manage the environmental impacts on site. They will also be responsible for maintaining all records in relation to the EMPr requirements on site.</p> <p><i>NOTE: It is possible that the Health and Safety representative on site can also fulfil this role</i></p>
<p>ENVIRONMENTAL OFFICER</p> <p><i>Developer's Environmental Representative</i></p>	<p>The Environmental Officer (EO) is employed by the Developer, i.e. Eskom, to fulfil the following responsibilities, <i>inter alia</i>:</p> <ul style="list-style-type: none"> • Aiding the Contractor to comply with all the project environmental requirements, objectives and targets; • Facilitating environmental activities and environmental awareness training of all personnel on site, and • Implementing the internal or Developer's Environmental Management Systems (EMS). <p>This individual also works closely with the ESR and ECO.</p>
<p>Competent Authority</p> <p><i>Department of Environment and Forestry (DEFF)</i></p>	<p>The Competent Authority (CA) will be responsible for approving the EMPr and issuing of the Environmental Authorisation (if applicable). Once the project has been approved, the competent authorities will be accountable for ensuring that the Developer complies with the conditions of the Environmental Authorisation and requirements stipulated in this EMPr and other environmental legislations. This will be achieved by reviewing audit reports submitted by the Environmental Control Officer. and conducting regular site visits should the need for this arise.</p> <p><i>Other authorities may also be involved in the reviewing and approval process of this EMPr.</i></p>

FUNCTION	RESPONSIBILITY
<p>ENVIRONMENTAL ASSESSMENT PRACTITIONER</p> <p><i>GA Environment (Appointed by Eskom)</i></p>	<p>The definition of an Environmental Assessment Practitioner (EAP) in section 1 of NEMA is <i>“the individual responsible for the planning, management and coordination of environmental impact assessments, strategic environmental assessments, environmental management plans or any other appropriate environmental instruments introduced through regulations”</i>.</p> <p>The Environmental Assessment Practitioner is generally responsible for undertaking environmental processes necessary to authorise the project activities proposed. The Developer can also appoint the Environmental Assessment Practitioner to act an Environmental Control Officer during the implementation or construction phase of the project.</p>

5. OPERATIONAL CONTROLS

The operations that are associated with the identified environmental aspects must be consistent with the objectives and conditions of the EMPr. The typical operational controls that must be put in place for a construction site are as follows:

5.1 Emergency preparedness

In the event of emergency, the following elements must present and easily accessible on site for the management of such emergency:

5.1.1 Emergency contact details

The Contractor must ensure that the numbers of the following persons are displayed at a prominent place on site at all times: Emergency numbers for the local police, fire department and the local municipality must be placed in a prominent, clearly visible area on site.

- The local Police Stations; South African Police Service, 023 313 3133
- The nearest Ambulance/hospital; 023 316 8194
- Resident Engineer, project Manager and Representative of the Contractor; and
- Representative of the Developer.

These details, which must be updated should the need arise.

5.1.2 Spill kits and first aid

The Contractor must ensure that spill kits, first-aid and associated equipment are present onsite and easily accessible for the potential occurrence of hazardous and/or material spills. The staff should be trained in the use thereof.

5.2 Environmental training and awareness

Prior to commencement of site establishment and construction activities, all the teams involved in work on the project are to be briefed on their obligations towards environmental controls and

methodologies in terms of this EMPr. The importance of the environmental awareness training is to also ensure all workers understand the risks involved as well as how to adequately implement mitigation measures. The education/awareness programme should be aimed at all levels of management and construction workers within the Contractor's team. All new employees arriving on site shall undergo environmental awareness programme.

It is recommended that the environmental awareness training be undertaken by the ESR and the programme must include:

- Induction of all personnel in a language and method most suitable; and
- Signing of an attendance register and declaration of ensuring environmental protection. Proof of the induction must be kept.

Indicative topics that may be included/ covered in the environmental induction:

- What is the environment and why must it be protected?
- What are the environmental sensitivities of the area in which activities are being undertaken?
- How construction activities can adversely impact of the environment;
- What are the mitigation measures for adverse impacts?
- What is the social responsibility of all site employees during construction?
- How should environmental incidents be recorded?

Awareness posters and pamphlets must also be provided to create environmental awareness throughout the site.

Refresher environmental awareness training must be conducted and when the need arises.

5.2.1 *Toolbox talks*

The Environmental Site Representative must also ensure daily toolbox talks include alerting the workforce to particular environmental concerns associated with the tasks for that day or the area / habitat in which they are working, etc.

It is also recommended that the toolbox talks are conducted in an interactive way as to ensure the employees understand the content and purpose of the EMPr requirements. The Contractor shall keep records of the environmental subjects discussed in the toolbox talk sessions. Signed registers documenting all employees' attendance must also be kept on record.

5.3 Communication procedures

- Site instructions: The site instruction journal entries will be used for the recording of instructions as they relate to implementation of the EMPr, and/or any work orders given by the Engineer.
- Site Meetings: A clear channel of communication and coordination between the Developer and the Contractor is very crucial in any construction project. One way of ensuring this is through regular site meetings. The purpose of the meetings will be to discuss general progress of construction. Some of the environmental aspects to be discussed in the meeting shall include:
 - *Efforts to lower the environmental, social and health risks involved;*

- *Discuss and resolve non-conformance to environmental legislation / policies or the EMPr; and*
- *Report on environmental performance of the construction works.*

5.4 Fire Prevention Maintenance

Fire prevention and management must be undertaken in accordance with the standardised manual for fire prevention on Eskom substations. The operation team of the substation during construction and operation, must conduct fire prevention/protection inspections of the substation monthly. Any maintenance and or corrective actions needed must be reported to Eskom Facilities Management and corrected.

Periodic inspections of the substation for electrical hazards, missing/damaged fire safety equipment, obstruction or damage to fire safety equipment, non-functioning and smoke detectors. Any maintenance and or corrective action required will be reported to Facilities Management to take the necessary corrective action.

Fire Protection Systems

The substation equipped with automatic fire detection and alarm systems must be continually monitored by a third-party monitoring station. The substation must be fitted with the following fire detecting equipment

- Fire Alarm Systems
- Building Fire Suppressions Systems / Sprinkler Systems
- Standpipe systems
- Fire extinguishers
- Multi-purpose dry chemical (Class ABC fires)
- Water (Class A fires)
- Carbon dioxide (Class B and C fires)
- Class D (Metals)

Housekeeping

The substation controls accumulations of flammable and combustible waste materials so that they do not contribute to a fire emergency. The following are housekeeping procedures used to control such accumulations:

- Keep exits and passageways free of obstructions at all times.
- Keep access to fire protection equipment (pull stations and fire extinguishers) free and clear.
- Store flammable and combustible liquids in approved storage containers and cabinets.
- Do not “Daisy Chain” extension cords, i.e. plug one cord into another to extend the cord or create additional plug-ins for appliances.

Training

All employees will review, upon initial assignment, those parts of the fire prevention plan that they must know to protect themselves in the event of a fire emergency. Records are kept of all training activities, documenting the type of training, persons trained, and date of training. The written plan is kept and made available for employee review.

Equipment Maintenance

Facilities Management and/or a licensed contractor properly maintain equipment and systems installed on heat producing equipment to prevent accidental ignition of combustible materials. Heat producing equipment such as burners, heat exchangers, boilers, ovens, stoves, fryers, etc., are properly maintained and kept clean of flammable residues. In addition, flammables are not stored close to these pieces of equipment.

5.5 Other general guidelines

The following measures provide guideline solutions to frequently anticipated issues on most development activities.

- The prevention of any site degradation due to non-compliance, administrative or financial problems, and inactivity during the construction phase, illegal activities, delays caused by archaeological finds etc. are ultimately the responsibility of the applicant / developer as per Section 28 of NEMA, 1998 (as amended) which discusses 'Duty of Care and remediation of environmental change'.
- The study area must be clearly defined and surveyed according to the proposed activities. All workforce members and other construction personnel are not to go beyond the defined footprint.
- The Contractors must adhere to agreed and approved access points and no-go areas.
- Damage to private or public property such as fences, gates and other infrastructure may occur at any time. All damages are to be repaired as soon as practically possible.
- Landowners of the site and adjacent properties must be informed of the starting and completion dates of the construction activities.
- The Contractor must adhere to all conditions of contract including this EMPr.
- All private and public manmade structures near the project site must be protected against damage at all times and any damage must be rectified immediately.
- Proper documentation and record keeping of all complaints and actions taken must be kept at the site office.
- Regular site inspections and good control over the site activities should be undertaken.
- A positive attitude towards environmental management by all site personnel must be motivated through regular and effective awareness and training sessions.
- Social issues in terms of safety for human life, on employees should be encouraged. All construction areas and activities should be cordoned off and no casual access be gained, where deep trenches or open electrical infrastructure are to be exposed.

6. PROJECT PHASES AND ASSOCIATED ACTIVITIES

6.1 Pre-construction phase

The 'pre-construction phase' refers to the period leading up to and prior to the commencement of the construction activities and is included to ensure pro-active environmental management measures with the goal of identifying avoidable environmental damage at the onset and sustain optimal environmental performance throughout the construction phase. Most impacts will occur during the construction of activities phase and must be mitigated through the contingency plans identified in the pre-construction phase.

6.2 Construction phase

The 'construction' section refers to all construction activities associated with the construction of the installation of BESS Infrastructure. This phase will include the installation of containers footprint (approximately 56m²) and access road, as well as the construction of the following infrastructure:

- Battery Containers; and
- A working area as well as vehicle turning area and the access road.

6.3 Rehabilitation and demobilisation phase

A proper rehabilitation procedure must be followed, immediately after construction activities and prior to demobilisation. The objective of rehabilitating the site would be to re-instate the affected areas to a similar or better condition to the current environment. This phase will include the rehabilitation of areas disturbed by construction works and removal and disposal of all construction equipment and rubble.

7. ENVIRONMENTAL CONTROLS AND MANAGEMENT PROGRAMME IMPLEMENTATION

The point of departure for this EMPr is to ensure a pro-active rather than re-active approach to environmental performance by addressing potential problems before they occur. This will limit corrective measures needed during the construction activities.

This section describes the potential environmental impacts which may result from the identified aspects, the objectives of mitigating these impacts as well as the targets used to measure the level of environmental compliance.

The tables for the construction activities consists of key requirements of EMPr as defined in the NEMA EIA Regulations 2014. The tables below present the objectives to be achieved and the management actions that need to be implemented in order to mitigate the negative impacts and enhance the benefits of the project. Associated responsibilities, criteria / targets and timeframes are specified. The tables for the construction activities consists of seven parts which are included as key requirements of EMPr as defined in the NEMA EIA Regulations 2014. These sections are described below as follows:

- **Phase of development** – This section will identify either pre-construction (planning) or actual construction activities during the Operation phase.
- **Impact / issue** - This section will identify the issue being addressed, e.g. Materials, site demarcation, heritage, etc.
- **Mitigation measure/ Impact Management Actions** - This column will include all the necessary mitigation measures for each impact / issue’.
- **Management outcome** - This column will indicate what the management outcome to be achieved for each mitigation measure.
- **Measurable outcome targets** - This column will indicate what evidence is to be used as an indication to whether or not the ‘Management objectives’ have been implemented and hence achieved.
- **Frequency of action** - Provides time guidelines for the ‘Responsible party’ by which he / she is to action or manage the required mitigation.
- **Responsible party** – Provides the details of the responsible team member which should account on the activities highlighted in column 1 to 4.

This section provides activities that are anticipated in the development of BESS infrastructure. Holders of EAs are responsible to ensure the implementation of these controls for all projects as a minimum requirement for mitigating the impact of particular construction related activities. The method statements prepared and agreed to by the holder of the EA must be appended to the template as Appendix 1. The holder of the EA will remain responsible for its implementation.

Phase of development	PRE-CONSTRUCTION			
Impact / issue	GENERAL PLANNING (A)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
<p>A1 PROJECT CONTRACT AND PROGRAMME</p> <p>i. All adjacent landowners and must be informed of the commencement of construction activities at least 30 days before the commencement.</p> <p>ii. Construction work must be planned to take place during the summer months to mitigate potential impacts on the watercourses situated immediately to the west and east of the site.</p> <p>iii. A copy of the Environmental Authorisation and this EMPr and other Management Plans as well as developer environmental obligations</p>	<ul style="list-style-type: none"> Contingencies for minimising negative impacts anticipated to occur during the closure Ensure environmental awareness and formalise environmental responsibilities and implementation 	<ul style="list-style-type: none"> Contract records Signed declaration of understanding of the contents of the EMPr pro forms by contractor 	<p>Ongoing</p>	<ul style="list-style-type: none"> Developer Contractor ECO

Phase of development	PRE-CONSTRUCTION			
Impact / issue	GENERAL PLANNING (A)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
<p>shall be kept on site during the construction phase</p> <p>iv. The following documents must be prepared must also be kept on site</p> <ul style="list-style-type: none"> • Site daily diary / instruction book / incident reports; • Copies of Environmental Audit Reports; • A Complaints register; • Proof of Environmental training undertaken by the ECO • Proof of Environmental training undertaken by the Contractor • Schedules for environmental audits; • Non-compliance and corrective action reports compiled by the Contractor; and 				

Phase of development	PRE-CONSTRUCTION			
Impact / issue	GENERAL PLANNING (A)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
<ul style="list-style-type: none"> Method statements signed by the Contractor and approved by the Eco and the Engineer 				
<p>A2 APPOINTMENTS AND DUTIES OF PROJECT TEAM</p> <p>i. Before construction activities commence, all role players mentioned in 1.13.1 of this EMPr must have a clear indication of their roles in the implementation of this EMPr. Proof of this must be provided via an Environmental Awareness training.</p> <p>ii. An ECO must be appointed to monitor the site, provide input into Method Statements, site working areas, location of various facilities such as toilets, etc. and to provide</p>	<ul style="list-style-type: none"> Contingencies for minimising negative impacts anticipated to occur during the construction phase. <p>The</p>	<ul style="list-style-type: none"> Contract records Signed declaration pro forms Appointment of role-players 	<p>Once-off</p>	<ul style="list-style-type: none"> Contractor ECO

Phase of development	PRE-CONSTRUCTION			
Impact / issue	GENERAL PLANNING (A)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
<p>environmental advisory services on site</p> <p>iii. Subcontractor(s) contracts with the principle contractor must contain a clause to the effect that the disposal of all construction-generated waste to an officially approved dumping site is the responsibility of the subcontractor in question and that the subcontractors are bound to the management activities stipulated in this EMPr.</p> <p>iv. Transparency of the process and ensuring that the relevant stakeholders are in agreement.</p>				

Phase of development	PRE-CONSTRUCTION			
Impact / issue	GENERAL PLANNING (A)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
<p>A3 METHOD STATEMENTS</p> <p>i. As required in 1.13.3, certain Method Statements must be provided by the contractor. All activities which require method statements must only commence once the method statements have been approved by the engineer and or ECO.</p> <p>ii. Where applicable, the contractor shall provide job-specific training on an ad-hoc basis when workers are engaged in activities which require method statements.</p>	<p>Contingencies for minimising negative impacts anticipated to occur during the construction phase.</p>	<ul style="list-style-type: none"> Approved method statements and relevant pro forma documents Regular review of the Method statements in line with current activity Training records 	<p>As and when required</p>	<ul style="list-style-type: none"> Contractor ECO
<p>A4 SITE DEMARCATION AND LAYOUT</p> <p>i. The surveys for the overall project area and construction footprint as approved by the relevant parties must be</p>	<ul style="list-style-type: none"> Contingencies for minimising negative impacts anticipated to occur during the construction phase Adherence to the EMPr and legislative requirements 	<ul style="list-style-type: none"> Demarcated areas 	<p>As and when required</p>	<ul style="list-style-type: none"> Contractor ECO

Phase of development	PRE-CONSTRUCTION			
Impact / issue	GENERAL PLANNING (A)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
<p>completed and clearly demarcated and fenced before the Contractor sets up camp or begin construction.</p> <p>ii. Prior to the commencement of project activities, the site layout must be agreed upon by Eskom, the ECO and the Engineer. The locations of key infrastructure such as toilets, eating and smoking areas, bins, stockpile areas, etc.</p> <p>iii. The site activities and sequencing of the construction activities should be regulated by relevant legislation and best practice</p>				
<p>A5 PERMITS AND PERMISSIONS</p> <p>i. The Contractor shall ensure that copies of the</p>	<p>Adherence to Authorisations and Permits conditions.</p>	<ul style="list-style-type: none"> • Compliance with Authorisations and Permits conditions 	<p>Prior to Construction</p>	<ul style="list-style-type: none"> • Developer • Contractor

Phase of development	PRE-CONSTRUCTION			
Impact / issue	GENERAL PLANNING (A)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
environmental authorisation and permits are kept on site.				
<p>A6 EXISTING SERVICES AND INFRASTRUCTURE</p> <p>i. The Contractor shall ensure that measures to protect existing services (e.g. access roads, and associated infrastructure such as fences) are not damaged</p> <p>ii. Where infrastructure is damaged, the relevant service provider must be notified within 24 hours</p> <p>iii. The Contractor shall be responsible for the repair and reinstatement of any existing infrastructure that is damaged or services which are interrupted.</p>	<ul style="list-style-type: none"> Avoiding impact on surrounding services such as access roads All services identified particularly Eskom must be notified prior to construction All reusable and/or recyclable materials must be removed prior to the commencement of construction 	<ul style="list-style-type: none"> Infrastructural impacts Services impacts Zero contact with hazardous materials Zero destruction of reusable and/or recoverable materials 	Ongoing	<ul style="list-style-type: none"> Contractor Developer RE ESR ECO

Phase of development	PRE-CONSTRUCTION			
Impact / issue	GENERAL PLANNING (A)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
iv. Such repair or reinstatement will be to the Contractor’s cost and shall receive top priority over all other activities. v. A time limit for the repairs must be stipulated by the RE in consultation with the Contractor and the affected service provider vi. Where infrastructure outside the boundaries of the construction is damaged during construction activities, e.g. movement of construction vehicles, the owner of the infrastructure must be consulted and arrangements for repairs made by the Contractor				
A7 ENVIRONMENTAL AWARENESS TRAINING	<ul style="list-style-type: none"> • Raise awareness of importance of Environmental protection 	<ul style="list-style-type: none"> • Environmental Management • Reduce and manage potential Environmental impacts 	Daily	<ul style="list-style-type: none"> • Contractor • ECO

Phase of development	PRE-CONSTRUCTION			
Impact / issue	GENERAL PLANNING (A)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
<p>The ECO must undertake an initial environmental induction during the site establishment for all Contractors and staff/ labourers on site. Such training shall be repeated by the Contractor and extended in the Toolbox Talks.</p> <p>i. It is the Contractor’s responsibility to provide ongoing environmental training to ensure that all labourers have sufficient understanding to pass this information onto the construction staff. Translators are to be used where necessary.</p> <p>ii. The need for a “clean site” policy also needs to be explained to the workers.</p> <p>iii. The Contractor must monitor the performance of construction workers to</p>				<ul style="list-style-type: none"> • ESR

Phase of development	PRE-CONSTRUCTION			
Impact / issue	GENERAL PLANNING (A)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
<p>ensure that the points relayed during their induction have been properly understood and are being followed.</p> <p>iv. The Contractor must ensure that all subcontractors are informed of the importance of the adherence to the EMPr.</p> <p>v. The Contractor shall ensure that all site personnel have a basic level of environmental awareness training. Topics covered should include;</p> <ul style="list-style-type: none"> • What is meant by "Environment"? • Why should the environment be protected and conserved? • How can construction 				

Phase of development	PRE-CONSTRUCTION			
Impact / issue	GENERAL PLANNING (A)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY
<p>activities impact on the environment?</p> <ul style="list-style-type: none"> • What can be done to mitigate against environmental impacts? • Awareness of emergency and spills response provisions • Social responsibility during construction e.g. being considerate to local residents 				

Phase of development	CONSTRUCTION			
Impact / issue	Facility (B)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES
<p>B1 CONSTRUCTION SITE</p> <p>i. The contractors must provide and maintain a Site layout indicating the proposed location of all key infrastructure which are:</p> <ul style="list-style-type: none"> a. Site Office (where necessary) b. Toilets c. Eating Areas d. Smoking Area e. Waste Storage Areas f. Laydown areas g. Concrete mixing areas (where applicable) h. Stockpile Areas for topsoil and cleared vegetation i. Cement Storage Area <p>ii. The buffers around the two streams, as recommended in the Freshwater Impact Assessment compiled by BlueScience (Pty) Ltd dated March 2019 should be adhered to and treated as “no-go” areas,</p>	<ul style="list-style-type: none"> • Minimise unwarranted environmental damage outside the footprint • Maintain a clean and healthy working environment 	<ul style="list-style-type: none"> • No signs of soil contamination • No complaints received from the surrounding landowners / I&AP’s • No visible signs of litter at the crew camps <p>Method statements adhered to</p>	<p>Monitor daily</p>	<ul style="list-style-type: none"> • Contractor • ESR • ECO

Phase of development	CONSTRUCTION			
Impact / issue	Facility (B)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES
<p>and the construction and operational phase activities must be strictly controlled to ensure that disturbance is restricted to the existing substation’s footprint.</p> <p>iii. The following infrastructure should not be permitted on site:</p> <ul style="list-style-type: none"> a. Vehicle washing areas b. Hazardous material storage areas with the exception of cement storage areas where applicable c. Cooking Areas <p>iv. The construction site must be monitored for dust fallout and dust suppression applied as required.</p> <p>v. The contractor must provide labourers with plastic bags or other containers to allow for the storage of litter during the clean-up of the construction site on a daily basis. These areas must then be inspected by the contractor or his / her ESR to ensure compliance with this requirement.</p>				

Phase of development	CONSTRUCTION			
Impact / issue	Facility (B)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES
vi. The contractor is responsible for cleaning the construction site of all structures, equipment, residual litter and building materials at the end of the construction period.				
<p>B2 EATING AND SMOKING AREAS</p> <p>i. The Contractor must, in conjunction with the ECO, designate restricted eating areas for eating during normal working hours. Adequate covered and labelled refuse bins must be provided in these areas and emptied at least once a week or as and when the need arises. Overspill of the bin should not occur and neither should waste be allowed to lie on the ground near the bin or anywhere else on site.</p> <p>ii. Under no circumstance should informal food traders be allowed on site</p>	<ul style="list-style-type: none"> • Control potential influx of vermin and flies and rats • Neat work place and hygienic environment • Minimise negative social impacts to the employees. 	<ul style="list-style-type: none"> • No visual sign of vermin, flies and rats • No complaints from I&APs and the landowner / client 	Once off, monitor daily	<ul style="list-style-type: none"> • Contractor • ESR • ECO

Phase of development	CONSTRUCTION			
Impact / issue	Facility (B)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES
iii. Open fires must not be permitted anywhere on site. iv. The feeding, or leaving of food, for stray or other animals in the area is strictly prohibited. v. The Contractor must provide smoking areas for construction workers. Fire extinguishers and an outdoor ashtray or similar suitable container must be provided by the Contractor in all smoking areas.				
B3 TOILETS i. The contractor is responsible for providing all sanitary arrangements for his and the sub-contractors team. A minimum of one chemical toilet must be provided for no more than 15 workers of the appointed Contractor. ii. Toilets must be easily accessible to ensure they are utilised.	<ul style="list-style-type: none"> • Ensure proper sanitation is achieved which will encourage the workforce to utilise toilets provided and not the surrounding environment. • Minimise potential of diseases onsite and influence the health of the employees • Minimise potential to pollute soils and natural habitats 	<ul style="list-style-type: none"> • Workforce use toilets provided and not the bush • No complaints received from I&APs as well as members of the workforce • No visible or measurable signs pollution of the environment (soils, ground and surface water) 	As and when required	<ul style="list-style-type: none"> • Contractor • ESR • ECO

Phase of development	CONSTRUCTION			
Impact / issue	Facility (B)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES
<ul style="list-style-type: none"> iii. The location of all toilets must be approved by the ECO and must not be located on areas that are already disturbed on site. iv. Toilets out onsite must be located on a flat surface and must be secured to the ground to avoid tipping over and spilling contents. The toilets must also have a sufficient locking mechanism that must be operational at all times. v. . Toilets must be of the chemical type. The contractor must keep the toilets in a clean, neat and hygienic condition. Under no circumstances should pit toilets be constructed on site vi. The contractor must supply toilet paper at all toilets at all times. Toilet paper dispensers must be provided in all toilets. vii. The contractor must ensure that they source the services of a reputable service provider who will be responsible for the 				

Phase of development	CONSTRUCTION			
Impact / issue	Facility (B)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES
cleaning, maintenance and servicing of the toilets at least once a week or more frequently based on the levels of usage				
<p>B4 WASTE</p> <p>i. The contractor must provide and maintain a method statement for “solid waste management” including the garden waste that will be removed from site during clearing</p> <p>ii. Where hazardous waste is mixed with general waste, the entire content of waste will be classified as hazardous and must therefore be disposed at a licensed hazardous waste disposal facility.</p> <p>iii. A safety data sheet for the hazardous waste is prepared in accordance with SANS 10234.”</p> <p>iv. All liquid chemicals and fuel must be stored in a bunded area with a capacity of at least 110% of the maximum allowable volume;</p>	<ul style="list-style-type: none"> • Minimise illegal disposal of waste • Minimise litigation and complaints by I&APs • Control potential influx of vermin and flies thereby minimising the potential of diseases and pests onsite and the surrounding environment. • Minimise potential to pollute soils and natural habitats • Adherence to the waste disposal management plan 	<ul style="list-style-type: none"> • Disposal of rubble and refuse in an appropriate manner with no rubble and refuse lying onsite • Ensuring the site is neat and tidy. • No complaints are received from surrounding residents, businesses and road users. • Sufficient containers available onsite for disposal of domestic and construction related impacts • No visible or measurable signs of pollution of the environment (soils, ground and surface water) • Method statement adhered to and waste disposed of in accordance with the waste disposal management plan 	Continuous throughout the construction phase of the project	<ul style="list-style-type: none"> • Contractor • ESR • ECO

Phase of development	CONSTRUCTION			
Impact / issue	Facility (B)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES
v. Proof of legal dumping of waste must be kept and produced on request. In the case of Hazardous waste, waste manifests must be obtained. vi. Bins must be clearly marked for ease of waste management and located on flat areas to the satisfaction of the ECO vii. Sufficient refuse bins must be covered with adequate lids and must be adequate to handle the waste streams and volumes generated on site. viii. A waste disposal management plan for the removal of vegetation must be compiled ix. Chemical containers and packaging brought onto the site must be removed for disposal at a suitable and licenced site.				
B5 DUST	<ul style="list-style-type: none"> • Reduce dust fall out at construction site • Minimise loss of valuable soil material 	<ul style="list-style-type: none"> • No visible signs of dust around the contractor’s camp • No complaints from I&APs 	Monitor daily	<ul style="list-style-type: none"> • Contractor • ESR

Phase of development	CONSTRUCTION			
Impact / issue	Facility (B)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES
<ul style="list-style-type: none"> i. The Contractor must provide and maintain a method statement for “dust control”. The method statement must provide information on the proposed source of water to be utilised and the details of any licenses or permits required. ii. The construction site must be watered during dry and windy conditions to control dust fallout. iii. Dust production must be controlled by regular watering of access roads and roads and working areas, should the need arise. iv. Construction vehicles must adhere to low speeds to avoid the generation of dust on the construction site v. All vehicles transporting material that can be blown off (e.g. soil, rubble, etc.) must be covered with a tarpaulin, and adhere to speed limits on public roads 		<ul style="list-style-type: none"> • No incidences reported to ECO • No visible evidence of dust contamination on the surrounding environment • Method statements adhered to 		<ul style="list-style-type: none"> • ECO

Phase of development	CONSTRUCTION			
Impact / issue	Facility (B)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES
vi. Excessive dust conditions must be reported to the ECO.				
<p>B6 LAYDOWN AREAS</p> <p>i. The contractors must identify a location of the laydown area/s and ensure that this is demarcated</p> <p>ii. These must be on currently disturbed areas or areas cleared for this purpose</p>	<ul style="list-style-type: none"> • Prevent pollution of the environment • Minimise chance of transgression of the acts controlling pollution • Disposal of hazardous substances in an appropriate manner 	<ul style="list-style-type: none"> • No pollution of the environment • No litigation due to transgression of pollution control acts • Method statement adhered to 	Monitor daily	<ul style="list-style-type: none"> • Contractor • ESR • ECO
<p>B7 CONCRETE AND CEMENT HANDLING</p> <p>i. Mixing of concrete must only be permitted on site in designated and disturbed areas approved by the ECO</p> <p>ii. Under no circumstances should concrete be mixed directly on the ground but on an adequate liner</p> <p>iii. Cement bags must be stored in a designated and secure area on site. Empty cement bags must be placed in litter bins</p>	<ul style="list-style-type: none"> • Prevent adverse impacts on the environment as a result of poor concrete handling and overall management 	<ul style="list-style-type: none"> • Minimal to no damage to the environment 	Monitor daily	<ul style="list-style-type: none"> • Contractor • ESR • ECO

Phase of development	CONSTRUCTION			
Impact / issue	Facility (B)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES
iv. Where ready mix concrete is brought on site, all vehicles drive along set access roads. v. All concrete spillages must be cleaned within 24 hours of occurrence				
B8 NOISE i. All construction activities must be limited to daylight hours which are between 06:00 and 18:00 in the summer months and between 07:00 and 17:00 in the winter months unless otherwise stated in the environmental authorization and or as agreed with the landowner or as stipulated in other guiding documents by the Municipality or other key stakeholders. ii. All construction vehicles must be in a good working order to reduce possible noise pollution.	<ul style="list-style-type: none"> Maintain noise levels below “disturbing” as defined in the National Noise Regulations Minimise the nuisance factor of the development 	<ul style="list-style-type: none"> No complaints from surrounding landowners or I&AP’s 	As and when required	<ul style="list-style-type: none"> Contractor ESR ECO

Phase of development	CONSTRUCTION			
Impact / issue	Facility (B)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/PARTIES
<ul style="list-style-type: none"> iii. Noise reduction is essential and Contractors must endeavour to limit unnecessary noise, especially loud talking, shouting or whistling, radios, sirens or hooters, motor revving, etc. iv. The Contractor must inform all I&APs in writing 24 hours prior to any planned activities that will be unusually noisy or any other activities that could reasonably have an impact on the neighbouring residents. v. Blasting must not take place on site under any circumstances 				

Phase of development	CONSTRUCTION				
Impact / issue	Materials (C)				
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE TARGETS	OUTCOME	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES
<p>C1 STOCKPILES</p> <p>i. Stockpiles of any material only be placed within demarcated areas which will not create nuisances to adjacent land owners by blocking access roads,etc. The stockpiles must not be located within 100m from the edge of the watercourse or riparian area.</p> <p>ii. All soil stockpiles, including sand stockpiles where concrete will be mixed on site, must be covered to prevent wind and water erosion during seasons when wind or rainfall is prevalent</p> <p>iii. Stormwater runoff from any stockpile sites and other related areas must be directed into the stormwater system with the necessary pollution prevention measures such as silt traps.</p> <p>iv. Stockpiles are to be stabilised if signs of erosion are visible.</p> <p>v. Topsoil stockpile must be separated to allow for reuse of the soil for rehabilitation</p>	<ul style="list-style-type: none"> • Minimise scaring of the soil surface and land features • Minimise disturbance and loss of soil • Minimise construction footprint • Containment of invasive plant growth should be encouraged • Minimise contamination of stormwater run-off will be encouraged 	<ul style="list-style-type: none"> • No visible erosion scars once construction is completed 		Daily	<ul style="list-style-type: none"> • Contractor • ESR • ECO

Phase of development	CONSTRUCTION			
Impact / issue	Materials (C)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES
<p>vi. Topsoil stockpiles must be clearly demarcated as no-go areas. Although it is noted that there is minimal topsoil on site, this must be conserved for use in the future landscaping of the development.</p> <p>vii. Topsoil stockpiles should not be higher than 2.5 meters to avoid compaction, while the slopes of the stockpiles should not be steeper than 1 vertical to 1.5 meters horizontally.</p> <p>viii. Topsoil stockpiles must be monitored for invasive vegetation growth. Contractors must remediate as and when required in consultation with the ECO.</p> <p>ix. Plant, workforce or any construction related activities must not be allowed onto topsoil stockpiles.</p>				
<p>C2 HANDLING OF TOXIC CHEMICALS</p> <p>i. Any event resulting in the spill or leak of hydrocarbons or any other hazardous</p>	<ul style="list-style-type: none"> Prevention of pollution of the environment 	<ul style="list-style-type: none"> No pollution of the environment 	<p>Daily</p>	<ul style="list-style-type: none"> Contractor ESR

Phase of development	CONSTRUCTION			
Impact / issue	Materials (C)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES
<p>substances into the soil and/or watercourses must be reported to all relevant authorities, including the Western Cape Provincial Governments Department’s Pollution and Chemicals Management Directorate.(Ms Shehaam Brinkhuis (Shehaam.Brinkhuis@westerncape.gov.za; Tel: (021) 483 8309);</p> <p>ii. The handling, storage and management of the electrolyte (dangerous goods) contained in the battery containers must be undertaken in terms of the SANS standard 10234-A: List of classification and labelling of chemicals in accordance with the Globally Harmonized System (GHS)</p> <p>iii. Section 28 of the NEMA, 1998 compels the Contractor on behalf of Eskom to ensure that environmental pollution or degradation is prevented.</p> <p>iv. Should there be storage of hydrocarbons on site, he contractor must provide method statements for the “handling & storage of oils and chemicals” (where these will be kept on site) and “accidental spills management”</p>	<ul style="list-style-type: none"> Minimise chances of transgression of the acts controlling pollution 	<ul style="list-style-type: none"> No litigation due to transgression of pollution control acts Method statements as set out by the contractor adhered to. 		<ul style="list-style-type: none"> ECO Health and Safety Personnel

Phase of development	CONSTRUCTION				
Impact / issue	Materials (C)				
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE TARGETS	OUTCOME	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES
<p>v. All chemicals kept on site must be clearly labelled and stored with MSDs</p> <p>vi. Drip trays (minimum of 10 cm deep) must be placed under all vehicles that stand for more than 24 hours. Vehicles suspected of leaking must not be left unattended, drip trays must be utilised to prevent environmental harm.</p> <p>vii. The surface area of the drip trays will be dependent on the vehicle and must be large enough to catch any hydrocarbons that may leak from the vehicle while standing.</p> <p>viii. The depth of the drip tray must be determined considering the total amount / volume of oil in the vehicle. The drip tray must be able to contain the volume of oil in the vehicle.</p> <p>ix. Spill kits must be obtained from reputable service providers and restocked once any material within the kit has been depleted. Contaminated Material must be removed by service provider or by the contractor to a</p>					

Phase of development	CONSTRUCTION				
Impact / issue	Materials (C)				
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE TARGETS	OUTCOME	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES
licenced facility. Proof of all removal (i.e. waste manifest) must be kept by the Contractor. x. All spilled hazardous substances must be contained in impermeable containers for removal to a licensed hazardous waste site, (this includes contaminated soils, and drenched spill kit material). xi. A record must be kept of all spills and the corrective action taken.					

Phase of development	CONSTRUCTION			
Impact / issue	Construction Phase Activities (D)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES
D1 FIRES i. Under no circumstances should fires be lit on site	<ul style="list-style-type: none"> Minimise risk of veld fires and loss of natural habitat Maintain safety on site and the community in general 	<ul style="list-style-type: none"> No veld fires started by the contractor's workforce 	Monitor daily	<ul style="list-style-type: none"> ECO EO Contractor

Phase of development	CONSTRUCTION				
Impact / issue	Construction Phase Activities (D)				
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES	
ii. Serviced Fire extinguishers must be kept at the smoking area. At least one serviced fire extinguisher should be available on site at all times and all site personnel in senior positions and who will be on site on a full-time basis must be trained on the usage of fire extinguishers iii. The Contractor to ensure that no person smokes in any place in which a flammable liquid is used or stored. The contractor must further affix a suitable and conspicuous no smoking sign notice at all entrances to areas prone to fire iv. No flammable material, including cotton waste, paper, cleaning rags or similar material should be stored with flammable liquids. v. In all areas prone to fire, suitable fire breaks must be created		<ul style="list-style-type: none"> No claims from landowners for damages due to veld fires Method statement adhered to 			
D2 EROSION AND SEDIMENTATION i. To reduce the loss of soil by erosion, the contractor must ensure that disturbance on site is kept to a minimum and in areas agreed upon with the ECO	<ul style="list-style-type: none"> Minimise erosion occurring on site 	<ul style="list-style-type: none"> No erosion scars No loss of topsoil No interference with the natural flow of water 	As and when required	<ul style="list-style-type: none"> Contractor ESR ECO 	

Phase of development	CONSTRUCTION				
Impact / issue	Construction Phase Activities (D)				
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES	
ii. The contractor is responsible for rehabilitating all eroded areas in such a way that the erosion potential is minimised after construction has been completed. iii. Erosion control measures must be implemented to ensure zero siltation to the streams located to the west and downstream. The stream flows through the road via two pipe culverts therefore activities along the access roads must be monitored.		<ul style="list-style-type: none"> The footprint has not exceeded the agreed boundaries All damaged areas successfully rehabilitated by the landscaper 			
D3 FAUNA i. All construction workers must be informed that the intentional killing of any animal, including snakes, is not permitted as faunal species are a benefit to society. Poaching is illegal and it must be a condition of employment that any employee caught poaching must be disciplined accordingly. ii. Where a snake is encountered on site and must be removed, a specialist must be called in to safely relocate the snake	<ul style="list-style-type: none"> Minimise disturbance to animals Minimise interruption of breeding patterns of birds Minimise destruction of habitat and impacts on the riparian habitat No casual access of workers and the general community 	<ul style="list-style-type: none"> No complaints from any I&AP No litigation concerning applicable animal protection acts 	Monitor daily	<ul style="list-style-type: none"> Contractor ECO Faunal Specialist 	

Phase of development	CONSTRUCTION			
Impact / issue	Construction Phase Activities (D)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES
iii. All construction activities must be limited to daylight hours.				
<p>D4 FLORA</p> <p>i. All areas planned for clearing of vegetation must be demarcated prior to the commencement of the construction</p> <p>ii. Clearing of vegetation should only be limited to the substation footprint, vehicle turning area, access roads as well as a 2m buffer area around each of these areas. Under no circumstances should unnecessary clearing of vegetation be undertaken. The site camp (where applicable) must be located in the substation.</p> <p>iii. The vegetation outside the substation is dominated by rushes such as <i>Juncus lomatophyllus</i> and <i>Juncus effusus</i> as well as <i>Pennisetum macrourum</i> grass. Although the stream is seasonal, the hydrophilic rushes growing along the stream are evidence of regular soil wetness. The western stream is wetter than the eastern stream due to the lack of upstream</p>	<ul style="list-style-type: none"> Minimal disturbance to vegetation where such vegetation does not interfere with construction Prevent litigation concerning removal of vegetation Minimise scarring of the soil surface and land features Minimise disturbance and loss of topsoil Minimise risk of veld fires Removal of alien plant species to encourage indigenous plant growth Remove only vegetation where essential for construction and do not allow any disturbance to adjoining natural cover. 	<ul style="list-style-type: none"> No litigation due to removal of vegetation without necessary permission No visible erosion scars once construction is completed The footprint has not exceeded the agreed boundaries All damaged areas and banks successfully rehabilitated No veld fires started by contractor’s workforce 	As and when required	<ul style="list-style-type: none"> Contractor ECO Ecological Specialist (where applicable)

Phase of development	CONSTRUCTION				
Impact / issue	Construction Phase Activities (D)				
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES	
<p>impoundments. Construction activities or movement must be barred in these areas.</p> <p>iv. Construction workers must not remove flora or collect seed from any plants outside the areas on which vegetation clearing has not been planned.</p> <p>v. Under no circumstances should chemicals be used in the removal of plant species</p> <p>vi. Only indigenous plants must be used in the rehabilitation of disturbed areas</p> <p>vii. At least one serviced fire extinguisher should be available on site at all times and all site personnel in senior positions and who will be on site on a full-time basis must be trained on the usage of fire extinguishers</p> <p>viii. All construction vehicles and equipment as well as construction material should be free of plant material.</p> <p>ix. Provision of adequate sanitation facilities located outside of the wetland/riparian area or its associated buffer zone during construction activities.</p>		<ul style="list-style-type: none"> No claims from landowners for damages due to veld fires Plants that are found during clearing should be planted into landscaped gardens. 			

Phase of development	CONSTRUCTION				
Impact / issue	Construction Phase Activities (D)				
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES	
x. Prevention of erosion, and where necessary rehabilitation of eroded areas. xi. Rehabilitation of disturbed vegetation as soon as undertaken as soon as construction has ended in the area that has been disturbed.					
D7 HERITAGE RESOURCES i. Should any historically significant finds (e.g. artefacts, human remains or sites of cultural or archaeological importance) be uncovered, work must cease and the Heritage Western Cape (HWC) on 021 483 9533 as well as the local South African Police Service (SAPS) must be notified of the find. Work in the area can only be resumed once the site has been completely investigated and HWC as well as SAPS has given permission to the Developer/ Contractor to resume activities. ii. The Contractor must be trained to recognise any heritage features. Should there be a sign of such objects, construction must halt in that area immediately and a suitably qualified heritage specialist must be called to investigate through the ECO;	<ul style="list-style-type: none"> • Avoid damage to heritage resources. • Report all finds of human artefacts to police • Include section on possible heritage finds in induction prior to construction activities take place • Implement chance find procedures in case where possible heritage finds area made 	<ul style="list-style-type: none"> • Limited or no damage to heritage resources 	Monthly	<ul style="list-style-type: none"> • Contractor • ECO • Heritage Specialist 	

Phase of development	CONSTRUCTION				
Impact / issue	Construction Phase Activities (D)				
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES	
<p>D8 NO-GO / SENSITIVE AREAS/RIVERS</p> <p>iii. the proposed activity must be restricted to the already developed footprint of the substation to prevent water quality impairment as a result of storm water run-off or contaminated spills from the site. These can be mitigated by conducting the construction phase during the summer months when surface water run-off from the site is less likely. Furthermore, good housekeeping and good management of potential contaminants is very important.</p> <p>iv. All construction activities must be demarcated at the start of construction and maintained accordingly during the construction phase. These must be maintained within the substation and the only other active areas outside the substation should be the access roads.</p> <p>v. The Contractor must communicate the importance of specific working methods in sensitive areas close to the site.</p> <p>vi. Demarcate all sensitive sites e.g. topsoil stockpiles</p>	<ul style="list-style-type: none"> Reduce the impacts of water quality impairment downstream of the substation. 	<ul style="list-style-type: none"> Containment of footprint Zero complaints from sensitive adjacent land owners/ users 	<p>Monitor Daily</p>	<ul style="list-style-type: none"> Contractor ESR ECO 	

Phase of development	CONSTRUCTION				
Impact / issue	Construction Phase Activities (D)				
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES	
<p>D9 CRIME, SAFETY AND SECURITY</p> <p>i. The site and crew are to be managed in strict accordance with the OHS Act and the National Building Regulations</p> <p>ii. The contractor must ensure that all emergency procedures are in place prior to commencing work. Emergency procedures must include (but not be limited to) fire, spills, contamination of soil, accidents to employees and limiting casual access to the construction site for workers, use of hazardous substances and materials, etc.</p> <p>iii. The Contractor must 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 construction site.</p> <p>iv. The nearest emergency service provider must be identified during all phases of the project as well as its capacity and the magnitude of accidents it will be able to handle. The contact details of this emergency</p>	<ul style="list-style-type: none"> • Reduce the risk of potential incidences • Minimise the potential for impacts associated with loss of human lives and risk of injuries • Reduce the likelihood of the occurrence of traffic accidents as result of the presence of construction vehicles 	<ul style="list-style-type: none"> • No incidents reported by any I&AP 	<p>Monitor daily</p>	<ul style="list-style-type: none"> • Contractor • ESR • ECO • Health and Safety Personnel 	

Phase of development	CONSTRUCTION			
Impact / issue	Construction Phase Activities (D)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES
<p>centre, including police and ambulance services must be available at prominent locations around the construction site.</p> <p>v. A Health and Safety Officer as well as an independent firm must be appointed to audit the site's compliance with the OHS Act during construction.</p>				
<p>D10 VISUAL IMPACTS</p> <p>i. Clearly demarcate the construction site to limit the area of disturbance.</p> <p>ii. Dust levels must be kept down by regularly wetting dirt roads and exposed soil areas inside the site;</p> <p>iii. Clearly demarcate the construction site to limit the area of disturbance;</p> <p>iv. Remove all waste, including cleared vegetation from site as soon as possible unless the material will be reused on site. A dedicated area for the placement of waste that will either be removed or reused must be identified and demarcated; and</p>	<ul style="list-style-type: none"> • Minimise visual impact. • To achieve the goal of reducing the visual intrusion of the proposed development and to assist in blending the proposed development into the surrounding character, the environmental architectural design guidelines will inform the key aspects of architectural form, materials and finishes for the proposed development. It should be noted that no precise formula or model exists to ensure innovative design and blending with the visual character of the area. • Reduce and limit dust clouds. • Limit area of disturbance. 	<ul style="list-style-type: none"> • No complaints regarding the visual aspect of the project from I&AP's and local residents. • No evidence of windblown litter 	<p>Monitor daily</p>	<ul style="list-style-type: none"> • Contractor • ESR • ECO

Phase of development	CONSTRUCTION				
Impact / issue	Construction Phase Activities (D)				
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES	
v. Domestic waste generated from the site camp must be kept in bins with lids and removed every week or more often as the need arises and be disposed of at a registered landfill. Proof of this disposal must be kept by the Contractor.	<ul style="list-style-type: none"> Limit the duration of exposed soil surfaces. Locate construction site and stockpiles in the least visible area. Provide additional screening to increase the visual absorption capacity of the site. 				
D11 IMPACT ON AIR QUALITY i. Implement dust suppression measures (wetting or application of soil binding compound) in all areas that will be affected by construction activities and where dust will be generated. Dust suppression must also be undertaken during windy and dry weather conditions. ii. A continuous dust monitoring process needs to be undertaken during construction. iii. Speed restriction of no more than 10km/h must be implemented for all construction vehicles within the construction site.	<ul style="list-style-type: none"> To ensure that air quality is not affected 	<ul style="list-style-type: none"> No signs of dust on site 	Daily	<ul style="list-style-type: none"> Contractor ESR ECO 	

Phase of development	CONSTRUCTION				
Impact / issue	Construction Phase Activities (D)				
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES	
iv. All vehicles transporting friable materials (materials that can be blown off) such a sand, rubble etc. must be covered by a tarpaulin or wetted down should the need arise v. All construction vehicles must be maintained to avoid adverse impacts on air quality as a result of a lack of maintenance					
D12 IMPACT ON SOCIO ECONOMICS i. All adjacent landowners must be informed of the commencement of construction activities at least 30 days prior to commencement or as otherwise stated in the Environmental Authorisation. ii. Adjacent land owners must be informed timeously, at least 7 days of any planned service stoppages in their areas. iii. Notification must include possible timeframes for stoppages and consequences of such stoppages must be clearly indicated to all surrounding/affected land owners.	<ul style="list-style-type: none"> To ensure that communities in the vicinity of the facility are involved in the project and are able to improve their economic conditions through the acquisition of employment 	<ul style="list-style-type: none"> Locals' knowledge about the employment opportunities for community members on the project 	Ongoing	<ul style="list-style-type: none"> Developer Contractor ECO 	

Phase of development	CONSTRUCTION			
Impact / issue	Construction Phase Activities (D)			
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES
iv. As far as possible and based on the Developers' required skills for the construction of the proposed infrastructure, locals must be employed on the project in consultation with the Ward Councillor.				
<p>D13 IMPACT ON TRAFFIC AND LOCAL ROADS</p> <p>i. There must be an erection of signage warning motorists about the presence of construction vehicles.</p> <p>ii. Construction activities must be limited to daytime hours.</p> <p>iii. Construction vehicles must not exceed speeds on 10km within the construction site</p> <p>iv. Construction vehicles travelling on public roads must adhere to speed limits;</p> <p>v. Construction vehicles must not dispose of soil of other material on roads. Where this occurs, the material must immediately be removed before the end of the working day</p>	<ul style="list-style-type: none"> To ensure that locals are not negatively affected by the presence of construction vehicles through events such as car accidents. 	<ul style="list-style-type: none"> Locals' knowledge about the presence of construction vehicles on site 	Ongoing	<ul style="list-style-type: none"> Contractor and Sub Contractors ECO

Phase of development	CONSTRUCTION				
Impact / issue	Construction Phase Activities (D)				
MITIGATION MEASURE	MANAGEMENT OUTCOME	MEASURABLE OUTCOME TARGETS	FREQUENCY OF ACTION	RESPONSIBLE PARTY/ PARTIES	
<p>D14 HEALTH AND SAFETY IMPACTS</p> <p>Detailed Health and Safety issues will be addressed in reports compiled by the most relevant parties within the Health and Safety Team</p> <ul style="list-style-type: none"> i. Contractor must appoint a Health and Safety Officer for the construction phase of the project; ii. Suitable Personal Protective Equipment (PPE) must be worn at all times by all employees on site during the construction and maintenance phases of the project iii. With the exception of the Project Team members, no persons should be allowed to enter the construction site area 	<ul style="list-style-type: none"> • To ensure safety of employees, site visitors as well as surrounding land users 	<ul style="list-style-type: none"> • Community knowledge about the importance of safety on the site 	Ongoing	<ul style="list-style-type: none"> • Contractor • Health and Safety personnel 	

8. MONITORING/ POST CONSTRUCTION PHASE EMPR

The following tables form the core mitigation measures appropriate to the monitoring phase of the project subsequent to the completion of the construction phase. The tables present the objectives to be achieved and the management actions that need to be implemented in order to mitigate the negative impacts and enhance the benefits of the project. Associated responsibilities, criteria / targets and timeframes are specified.

The table consists of four parts as follows:

Environmental Consideration / Impact / issue - This row will identify the issue being addressed, e.g. Materials, site demarcation, heritage, etc.

Mitigation Measure - This column will include all the necessary mitigation measures for each impact / issue'.

Frequency of action - Provides time guidelines for the 'Responsible party' by which he / she is to action or manage the required mitigation

Responsible Party – Provides the details of the responsible team member which should account on the activities highlighted in column 1 to 4.

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Where applicable, the mitigation measures for the construction phase will be carried forward to other phases. In addition, the following specific measures presented in **Table 2** will also apply:

Table 2: Core mitigation measures appropriate to the rehabilitation phase of the EMPr subsequent to construction

ENVIRONMENTAL IMPACTS	MITIGATION MEASURES	FREQUENCY OF ACTION	OBJECTIVES	RESPONSIBLE PARTY/PARTIES
1. Proliferation of exotic vegetation and weeds in disturbed areas.	<ul style="list-style-type: none"> All exotic flora and weeds to be eradicated in an environmentally friendly manner 	<ul style="list-style-type: none"> Monthly for the first year after rehabilitation. 	To ensure that indigenous plants are well established	Developer
2. Damage to plants established as part of rehabilitation	<ul style="list-style-type: none"> All areas under rehabilitation must be cordoned off as no-go areas. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access. The survival rate of plant species established as part of rehabilitation must be monitored and replanted where necessary 	<ul style="list-style-type: none"> Weekly for the first two months after establishment and after that, monthly for the first year after construction 	To ensure that indigenous plants are well established	Developer
3. Soil erosion	<ul style="list-style-type: none"> All areas that have been eroded by construction activities must be rehabilitated accordingly 	<ul style="list-style-type: none"> Monthly for the first year after construction. Frequency must be increased during the rainy season 		Developer

APPENDIX 1: EXAMPLE OF DECLARATION OF UNDERSTANDING BY THE DEVELOPER/ENGINEER/CONTRACTOR

I, _____

Representing _____

Declare that I have read and understood the contents of the Environmental Management Programme (EMPr) for:

Contract _____

I also declare that I understand my responsibilities in terms of enforcing and implementing the Environmental Specifications for the aforementioned Contract.

Signed: _____

Place: _____

Date: _____

Witness 1: _____

Witness 2: _____

APPENDIX 2: EXAMPLE OF METHOD STATEMENT

METHOD STATEMENT FOR DUST CONTROL		Document Number
		Revision Number
		Issue Date
Purpose of Method Statement		
Date of compilation	Name and Designation of Compiler	Signature of Compiler
Date of approval	Name and Designation of Approver	Signature of Approver
Name of project		
Site address/location		
Key Personnel Involved in execution of Method Statement	Name	Designation
Key equipment used in the undertaking of the Method Statement		
Brief Description of when, how and where work that requires Method Statement will be undertaken		
When?		
How?		
When?		

APPENDIX 3: EXAMPLE OF INCIDENT AND ENVIRONMENTAL LOG

INCIDENT AND ENVIRONMENTAL LOG

ENVIRONMENTAL INCIDENT LOG				
Date	Environmental Incident	Comments <i>(Include any possible explanations for current condition and possible responsible parties. Include photographs, records etc. if available)</i>	Corrective Action Taken <i>(Give details and attach documentation as far as possible)</i>	Name & Signature of party confirming the undertaking of corrective actions

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- 4) Department of Environmental Affairs. Undated. *Invasive Alien Plants*. <https://www.environment.gov.za/projectsprogrammes/wfw/invasiveplants>.
- 5) Lochner, P (2005). Guideline for Environmental Management Plans. CSIR Report No ENV-S-C 2005-053 H. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town.
- 6) Republic of South Africa (1998), National Environmental Management Act (Act No. 107 of 1998) (NEMA).
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