

BEAUFORT WEST WIND FARM RADIO MAST: DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

Prepared for: Beaufort West Wind Farm (Pty) Ltd

Authority References: To be Allocated



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EXECUTIVE SUMMARY

Beaufort West Wind Farm (Pty) Ltd ('Beaufort West Wind Farm') is proposing to install one (1) Radio Mast, up to 90 metres in height, on the authorised 132 kilovolt (kV)/400kV Linking Station (on the remaining extent of Portion 1 of Farm No. 15 of Trakas Kuilen - C06100000000001500001) (authorised under DFFE reference numbers: 14-12-16-3-3-2-925-1 & 14-12-16-3-3-2-925-2) / (12-12-20-1784-2 & 12-12-20-1784-1) located on the Beaufort West Cluster of wind farm developments, near the town of Beaufort West in the Western Cape Province.

The proposed radio mast is required by Eskom Holdings Ltd ('Eskom') in order for the Linking Station to be able to communicate via Radio frequency to other Linking stations in the area. The proposed project site is located approximately 60km south of the town of Beaufort West in the Prince Albert Local Municipality, within the Central Karoo District Municipality of the Western Cape Province.

SLR Consulting (South Africa) (Pty) Ltd (SLR) has been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the required Basic Assessment (BA) process and compile the associated Draft Environmental Management Programme (EMPr) for the proposed radio mast project, in line with Appendix 4 of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA).

As part of the BA process, specialists were requested to assess the impact of the proposed radio mast, in the form of site sensitivity verification reports, and provide confirmation with regards to its acceptability. Since the proposed radio mast will be located on an authorised linking station, no significant impact is anticipated. All specialists have confirmed that no fatal flaws and/or high sensitive areas have been identified and ultimately that the radio mast development should be authorised. In addition, measures to mitigate and/or manage potential impacts associated with the radio mast development have been provided and incorporated into the EMPr for implementation.

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ACRONYMS AND ABBREVIATIONS

| Acronym / Abbreviation | Definition |
|------------------------|---|
| DEA&DP | Department of Environmental Affairs and Development Planning |
| DFFE | Department of Forestry, Fisheries and the Environment |
| EA | Environmental Authorisation |
| EAP | Environmental Assessment Practitioner |
| ECO | Environmental Control Officer |
| EO | Environmental Officer |
| EAP | Environmental Assessment Practitioner |
| EMPr | Environmental Management Programme |
| GN | Government Notice |
| HWC | Heritage Western Cape |
| MS | Method Statement |
| MSDS | Material Safety Data Sheet |
| MTS | Main Transmission Substation |
| NEMA | National Environmental Management Act, 1998 (No. 107 of 1998) |
| REIPPP | Renewable Energy Independent Power Producer Procurement Programme |
| SAHRA | South African Heritage Resources Agency |
| SIPs | Strategic Infrastructure Projects |
| SLR | SLR Consulting (South Africa) (Pty) Ltd |

GLOSSARY

ALIEN INVASIVE PLANTS / VEGETATION: Plants that do not naturally occur in an area and is declared alien invasive pant species in terms of the National Environmental Management: Biodiversity Act, 2004. These plants may also be referred to as exotic plants, e.g. Lantana (*Lantana camara*).

CONTRACTOR: The natural or juristic person or partnership whose tender for the construction of the works has been accepted by or on behalf of the Proponent.

CONSTRUCTION ACTIVITY: A construction activity is any action taken by the Contractor, his / her subcontractors, suppliers or personnel during the construction phase of the project. **Construction** For the purpose of this document is defined as the erection of radio mast structures and the installation of electronic equipment.

CONSTRUCTION AREA(S): All areas used by the Contractor in order to carry out the required construction activities. This includes, all offices, batching areas, storage and stockpile areas, workshops, spoiling areas, borrow pits, access roads, etc.

CONSTRUCTION CAMP: Construction camp refers to all site offices, container sites, workshops and testing facilities.

ENVIRONMENT: Environment means the surroundings withing which humans exist and that are made up of – (i) the land, water and atmosphere of the earth; (ii) micro-organisms, plant and animal life; (iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and (iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

ENVIRONMENTAL MANAGEMENT PROGAMME: That part of the overall management process which includes organisational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy (DRAFT ISO 14 000, 1995). In essence, it contributes a detailed programme of action prepared to ensure recommendations for the enhancing potential positive impacts and avoiding or limiting potential negative environmental impacts are implemented during the life-cycle of a project.

ERADICATION PROGRAMME: The organised clearing and rehabilitation of land infested by invasive alien species of plants.

GROUNDWATER: The water that fills the natural openings present in the rock or unconsolidated sands.

HAZARD: This means a source of or exposure to danger.

HAZARDOUS: Contains an element of risk. Dangerous or toxic to life.

HAZARDOUS SUBSTANCES: This means any substance or mixture of substances, product or material declared to be a hazardous substance under section 2(1) of the Hazardous Substance Act, 1973.

HERBICIDE: See 'Pesticide'.

HERITAGE MATERIALS: Heritage materials include, but are not limited to, meteorites, archaeological and / or paleontological remains (including fossil Shells and trace fossils); coins; indigenous and / or colonial ceramics; any articles of value or antiquity; marine Shell heaps; stone artefacts and bone remains; structures and other built features with heritage significance; rock art and rock engravings; and graves or unmarked human burials including grave goods and / or associated burial material.

MAINTENANCE: The complete upkeep, support and protection of areas/regions/sites.

METHOD STATEMENTS: Written statements which contain details regarding construction procedures, materials (where applicable), timing, storage methods (where applicable) and sketches of proposed construction. Method Statements shall be submitted for work near environmental sensitive areas of the site. This includes environmentally sensitive aspects of the work such as cement, poisons and oil storage, treatment of wastewater, provision of ablution facilities, etc.

MITIGATION: The implementation of practical measures to reduce adverse impacts or enhance beneficial impacts of an action.

NO-GO AREA(S): Area(s) where construction activities are prohibited.

PESTICIDE: Pesticides are chemicals used by humans to kill organisms that threaten their health and well-being, pets and livestock or cause damage to crops. This includes insecticides, herbicides, fungicides, acaricides, nematicides and rodenticides.

POLLUTION: Pollution means any change in the environmental caused by – (i) substances; (ii) radioactive or other waves; or (iii) noise, odours, dust or heat, emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future.

REHABILITATION: To re-establish or restore to a healthy sustainable capacity or state.

SITE: The site refers to the total area where the contract will take place, as awarded to the Contractor and any other area reasonably required by the Contractor to undertake the construction activities in order to fulfil the contract.

Beaufort West Wind Farm Radio Mast: Draft Environmental Management Programme (EMPr)

1. INTRODUCTION

Beaufort West Wind Farm (Pty) Ltd ('Beaufort West Wind Farm') is proposing to install one (1) Radio Mast, up to 90 metres (m) in height, on the authorised 132 kilovolt (kV)/400kV Linking Station (on the remaining extent of Portion 1 of Farm No. 15 of Trakas Kuilen - C0610000000001500001) located on the Beaufort West Cluster of wind farm developments, near the town of Beaufort West in the Western Cape Province.

The radio mast is required by Eskom Holdings Ltd in order for the Linking Station to be able to communicate via Radio frequency to other Linking stations in the area. The radio mast will consist of a tapered steel lattice structure with either a square (4 leg) or triangular (3 leg) structure. The radio mast will be up to 90m in height and will be placed within the substation footprint for the authorised 33kV/132kV Main Transmission Substation (MTS) (i.e., will be built on top of the authorised MTS) (authorised under DFFE reference numbers: 14-12-16-3-3-2-925-1 & 14-12-16-3-3-2-925-2) / (12-12-20-1784-2 & 12-12-20-1784-1).

The proposed project site is located approximately 60km south of the town of Beaufort West in the Prince Albert Local Municipality, within the Central Karoo District Municipality of the Western Cape Province (see Figure 1-1).

1.1 EXISTING AUTHORISATIONS AND AMENDMENTS

The authorised Beaufort West Cluster of developments consists of two (2) wind farm projects (Beaufort West and Trakas) with associated electrical infrastructure, which include a 132kV/400kV Linking Substation, two (2) 33kV/132kV onsite substations [one (1) per wind farm] and 132kV powerlines. The two (2) wind farms which form part of the Beaufort West Cluster were first authorised as one (1) larger wind farm (namely the Beaufort West Wind Farm) in March 2012 (12-12-20-1784). Thereafter, in February 2017, the authorised Beaufort West Wind Farm was split into the Beaufort West (12-12-20-1784-1) and Trakas (12-12-20-1784-2) Wind Farms respectively. Both above-mentioned Wind Farm Environmental Authorisations (EAs) were further amended in 2020 to increase the turbine hub heights and increase the rotor diameters (Beaufort West Wind Farm–March 2020: 12-12-20-1784-1-AM5 & Trakas Wind Farm–February 2020: 12-12-20-1784-1-AM1). Further administrative amendments were also granted to both respective Wind Farms in 2020 (Beaufort West Wind Farm–March 2020: 12-12-20-1784-1-AM2 and Trakas Wind Farm–February 2020: 12-12-20-1784-2-AM2), which included changing the holder of the EAs, adding Battery Energy Storage Facilities and amending project descriptions.

The supporting powerlines, linking station and onsite substation infrastructure were authorised for both respective wind farms in January 2017 (14-12-16-3-3-2-925). This authorisation was subsequently amended to split and assign each substation and powerline to each respective wind farm in August 2021 (Beaufort West 132KV-400KV Linking Station, 132KV Power Line and onsite 132KV Substation: 14-12-16-3-3-2-925-1 & Trakas 132KV-400KV Linking Station, 132KV Power Line and onsite 132KV Substation: 14-12-16-3-3-2-925-2).

Further to the above, Beaufort West Wind Farm recently received EAs for an additional 33/132kV onsite Substation, one (1) Battery Energy Storage System (BESS), one (1) laydown area and one (1) Operations & Maintenance (O&M) Building ([14/12/16/3/3/1/2464](#)) and one (1) 132kV switching station yard of the onsite substation and associated 132kV powerline ([14/12/16/3/3/1/2465](#)). This new substation, powerline and BESS will be constructed to service the authorised Beaufort West and Trakas Wind Farm developments.

Regarding the above mentioned EAs, it should be noted that the Department of Forestry, Fisheries and the Environment (DFFE) authorised Alternative 2 for both respective EAs, however, it was found that Alternative 1 is more technically feasible (as well as acceptable from an environmental perspective) and as such Part 2 Amendments have been submitted to the DFFE for consideration to change the authorised alternatives (from Alternative 2 to Alternative 1). These amendment applications were subjected to a 30-day Public Participation Process, from 28 July 2022 until 29 August 2022 (excluding public holidays) ([14/12/16/3/3/1/2464/AM1](#) & [14/12/16/3/3/1/2465/AM1](#)), and the final amendment reports were subsequently submitted to the DFFE for decision making on 5 October 2022.

1.2 RENEWABLE ENERGY INDEPENDENT POWER PRODUCER PROCUREMENT PROGRAMME (REIPPPP)

It should be noted that on 28 October 2021, the Minister of Mineral Resources and Energy announced the Preferred Bidders of the Round 5 Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), and both above-mentioned wind energy facilities (Beaufort West Wind Farm: [12-12-20-1784-1-AM2](#) & Trakas Wind Farm: [12-12-20-1784-2-AM2](#)) received Preferred Bidder status. These wind energy facilities have now become Strategic Infrastructure Projects (SIPs) (i.e., SIPs 8 and 10), which target the development of sustainable green energy initiatives in support of the South African economy and the expansion of electricity transmission and distribution networks respectively.

SLR Consulting (South Africa) (Pty) Ltd ('SLR') has been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the required Basic Assessment (BA) process and compile the associated Draft Environmental Management Programme (EMPr) for the proposed radio mast project, in line with Appendix 4 of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA).

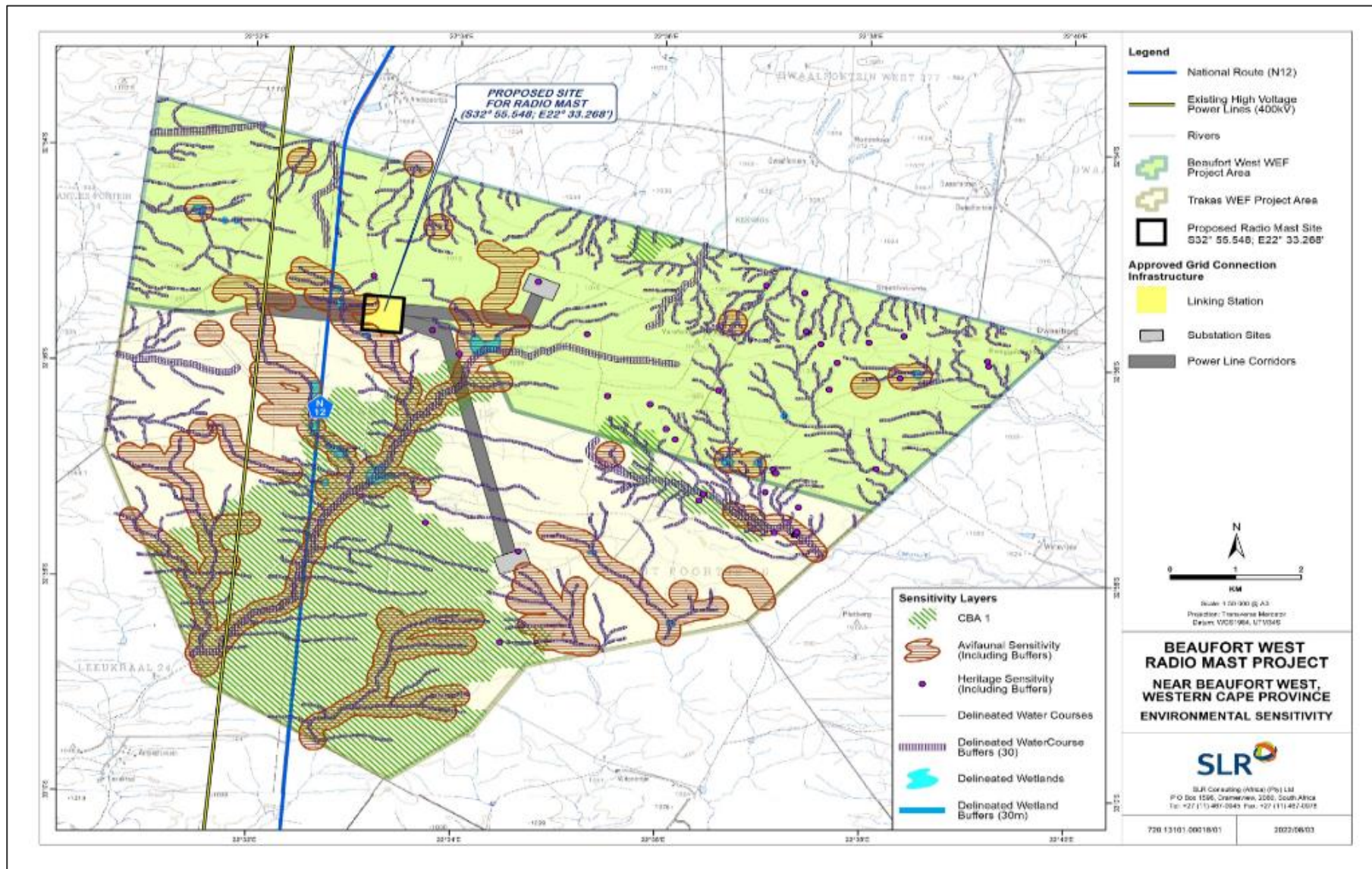


Figure 1-1: Site Locality Map

1.3 LEGAL REQUIREMENT OF THE EMPr

As mentioned, SLR was appointed by **Beaufort West Wind Farm** as the independent EAP to undertake the BA process that is required in terms of the NEMA (Act No. 107 of 1998). The compilation of this EMPr forms part of the requirements of the BA process, in terms of the EIA Regulations, 2014 (as amended). This EMPr will be submitted to the competent authority, namely the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP), for approval as part of the BA process and the final version, if necessary, will be updated to comply with any conditions of the authorisation.

The Construction and Operation EMPr is comprised of the following sections:

- **Chapter 1- Introduction:** This section includes the project background and describes the contents and purpose of this EMPr, as well as the aims of this EMPr.
- **Chapter 2- Expertise of the EAP:** This section provides information on the EAP(s) responsible for the compilation of the EMPr. This includes the expertise of the EAP(s), including qualifications, experience, and professional registrations.
- **Chapter 3- Legislative Overview:** This section provides information on the relevant environmental legislation pertinent to environmental processes in South Africa.
- **Chapter 4- Administration and regulation of environmental obligations:** This section identifies the management structure, as well as the roles and responsibilities of the various stakeholders. The procedures for environmental management and monitoring of the construction and operation phases are also presented.
- **Chapter 5- Environmental specifications:** This section includes environmental specifications relating to the construction and operation phases of the proposed project infrastructure. It contains the specific actions and/or measures that must be taken in order to minimise and control the impact of construction and operation activities on the affected biophysical and socio-economic environment.

1.4 PURPOSE OF THE EMPr

The purpose of the EMPr is to ensure that potential impacts on the environment associated with the construction and operation phases of the project are prevented and, where they cannot be prevented, are kept to a minimum and rehabilitated. Moreover, it is to ensure that any positive impacts associated with the project during the construction and operation phases are enhanced. The EMPr sets environmental targets for the Contractor (defined as the lead Contractor and any nominated or selected Sub-contractors) and Operator, as well as reasonable standards against which the Contractor's and Operator's performance can be measured during the construction and operation phases, respectively.

This document will form the basis for the environmental specifications that the Contractor, in terms of the construction contract, will be obliged to adhere to during construction, as well as the Operator, in terms of sale of land and binding agreements associated. This document will be included in the contract documentation for the construction and operational phase and will thus form a binding agreement between the Contractor and the Proponent. It will also be included in the terms of sale and will form a binding agreement between the Operator and the Proponent.

This EMPr has been prepared in compliance with Appendix 4 of the EIA Regulations, 2014 (as amended), the contents of which are outlined in **Table 1-1** below.

Table 1-1: Requirements of an EMPr in terms of the EIA Regulations, 2014 (as amended).

| ITEM | CONTENT OF EMPr | COMPLETED (Y) OR NOT APPLICABLE (N/A) | LOCATION IN EMPr |
|--|--|---------------------------------------|--|
| 1 a) | i) Details of the EAP who prepared the EMPr; | Y | Section Error! Reference source not found.. |
| | ii) Details of the expertise of that EAP to prepare an EMPr, including a curriculum vitae; | Y | Section Error! Reference source not found. and Appendix A. |
| b) | A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description; | Y | Section Error! Reference source not found.. |
| c) | A map at an appropriate scale which superimposes the proposed activity, its associated infrastructure, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers; | Y | Section 1 |
| d) | A description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including - | Y | Tables 5-1. |
| | i) planning and design; | | |
| | ii) pre-construction activities; | | |
| | iii) construction activities; | | |
| | iv) rehabilitation of the environmental after construction and where applicable post closure; and | Y | Table 5-1. |
| v) where relevant, operation activities; | | | |
| e) | [Deleted by amendments to the EIA Regulations, 2014] | | |
| f) | A description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraphs (d) will be achieved, and must, where applicable, include actions - | Y | Table 5-1 |
| | i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; | | |

| ITEM | CONTENT OF EMPr | COMPLETED (Y) OR NOT APPLICABLE (N/A) | LOCATION IN EMPr |
|------|---|---------------------------------------|------------------|
| | 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; | | |
| g) | The method of monitoring the implementation of the impact management actions contemplated in paragraph (f); | Y | Table 5-1. |
| h) | The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f); | Y | Table 5-1 |
| i) | An indication of the persons who will be responsible for the implementation of the impact management actions; | Y | Table 5-1 |
| j) | The time periods within which the impact management actions contemplated in paragraph (f) must be implemented; | Y | Table 5-1 |
| k) | The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f); | Y | Table 5-1 |
| l) | A program for reporting on compliance, taking into account the requirements as prescribed by the Regulations; | Y | Table 5-1. |
| m) | An environmental awareness plan describing the manner in which - | Y | Section 4.5. |
| | i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and | | |
| | ii) risk must be dealt with in order to avoid pollution or the degradation of the environment; | Y | Section 4.5 |
| n) | Any specific information that may be required by the competent authority; | | N/A |
| 2) | Where a government notice gazetted by the Minister provides for a generic EMPr, such generic EMPr as indicated in such notice will apply. | | N/A |

2. EXPERTISE OF THE EAP

The details and role of the EAP and other members of the SLR project team that were involved in the preparation of this EMPr are provided in Table 2-1 below. Curriculum Vitae of the SLR project team are attached as Appendix A.

It should be noted that SLR has no interest in the proposed project, other than fair payment for consulting services rendered as part of the environmental assessment process.

Table 2-1: Expertise of the EAP

| EAP | |
|----------------------------------|--|
| Stuart Heather-Clark | |
| Responsibility | Registered EAP |
| Qualification | BSc (Hons) Civil Engineering Masters Environmental Science |
| Professional Registration | <ul style="list-style-type: none"> Registered EAP (2019-613) CEAPSA -Certified as an Environmental Practitioner with the Interim Certification Board for Environmental Assessment Practitioners of South Africa (2006) IAIAsa- Member of the International Association for Impact Assessment South Africa IAIA International- Member of the International Association for Impact Assessment |
| Experience in years | 24 Years |
| Experience | Stuart has 24 years of experience in local EIAs and international ESIA's. He has worked on over 100 development projects in 13 sub-Saharan African countries. His key strength is identifying and managing ESG risks for major capital projects from the concept phase through to the pre-feasibility, feasibility and implementation phases. Stuart has acted as an environmental advisor to various development agencies and financiers and he has an integral understanding of the Equator Principles and IFC Performance Standards and other international lender sustainability Frameworks. |

3. LEGISLATIVE OVERVIEW

3.1 GENERAL

The construction phase activities included as part of the EMPr are in respect of any future construction, upgrades or expansions at the project site. Construction and operation shall be according to the best industry practices, as identified in the project documents. This EMPr, which forms an integral part of the contract documents, informs the contractor and operator as to their duties in the fulfilment of the project objectives, with particular reference to the prevention and mitigation of environmental impacts caused by construction activities associated with the project. **The contractor should note that obligations imposed by the EMPr are legally binding in terms of this contract.**

3.2 STATUTORY AND OTHER APPLICABLE LEGISLATION

The contractor and operator are deemed to have made themselves conversant with all legislation pertaining to the environment, including provincial and local government ordinances, which may be applicable to the contract. Major environmental legislation, as amended from time to time, includes but is not limited to the following:

3.2.1 The Constitution of the Republic of South Africa, 1996 (Act No. 6 of 1996)

The Constitution of the Republic of South Africa states that everyone has the right to an environment that is not harmful to their health or well-being, and to have the environment protected through reasonable legislative and other measures to prevent pollution and ecological degradation; promote conservation and ensure ecologically sustainable development and use of natural resources.

3.2.2 Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)(CARA)

This act provides for control over the utilisation of the natural agricultural resources of South Africa in order to promote the conservation of soil, water sources and vegetation, as well as combating weeds and invader plants.

3.2.3 Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)

This act makes provision for equitable access to, and sustainable development of, minerals and petroleum resources.

3.2.4 National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA)

This act supports the Bill of Rights within the Constitution of the Republic of South Africa and highlights principles of sustainable development, including preservation of ecosystems and biological diversity and avoidance, minimisation and remediation of pollution and environmental degradation. It also sets the stage for the control of listed activities and the procedural requirements for authorisation thereof through the EIA Regulations, 2014 (as amended). Environmental authorisation (EA) must be obtained prior to the commencement of any activities listed in the EIA Regulation Listing Notices, 2014 (as amended).

3.2.5 National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)

This act provides reasonable measures for the prevention of pollution and ecological degradation from activities with emissions to atmosphere; and provides for specific air quality measures; for national norms and standards regulating air quality monitoring, management and control by all spheres of government.

3.2.6 National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA)

This act makes provisions to accomplish the objectives of the United Nations' Convention on Biological Diversity. Mainstream may be required to apply for permits to conduct certain listed activities which, together with the listed threatened or protected species, may be identified by the Minister.

In addition, Section 73 (3) of this act empowers a competent authority to direct a person to take steps to remedy any harm to biodiversity resulting from the actions of that person or as a result of occurrence of listed invasive species occurring on land on which that person is the owner.

3.2.7 National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)

This act provides for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity, natural landscapes and seascapes.

3.2.8 National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)

This act aims to regulate waste management practices through provision of national norms and standards, specific waste measures, licensing and control of waste activities, remediation of contaminated land as well as providing for compliance and law enforcement. It sets the stage for the control of listed waste management activities and the procedural requirements for authorisation thereof through the EIA Regulations, 2014 (as amended).

3.2.9 National Forests Act, 1998 (Act No. 84 of 1998)

This act makes provision for promoting the sustainable management and development of forests, and for the protection of certain forests and trees for environmental, economic, educational, recreational, cultural, health and spiritual purposes.

3.2.10 National Heritage Resources Act, 1999 (Act No. 25 of 1999)

This act provides for an integrated and interactive system for identification, assessment and management of South Africa's heritage resources, and empowers civil society to nurture and conserve their heritage resources. It provides for the control of specific activities that could impact heritage resources and for the procedural requirements for authorisation thereof from the heritage authority. Importantly, the Provincial Heritage Authority, Heritage Western Cape (HWC), must be notified immediately if any items of cultural heritage importance are noted during construction activities.

3.2.11 National Water Act, 1998 (Act No. 36 of 1998)

This act makes provision for the protection of surface water and groundwater and their sustainable management for the prevention and remediation of the effects of pollution, as well as for the management of emergency situations. Authorisation is required for any activity which may compromise the water resource quality objectives.

4. ADMINISTRATION AND REGULATION OF ENVIRONMENTAL OBLIGATIONS

Details of the management structure for this EMPr during the construction and operation phases are presented below. All official communication and reporting lines, including instructions, directives and information, shall be channelled according to the management structure presented below during the construction and operation phases.

4.1.1 Construction Phase

The construction phase activities included as part of the EMPr are in respect of any future construction, upgrades or expansions at the project site. The implementation of this EMPr requires the involvement of several stakeholders, each fulfilling a different but vital role to ensure sound environmental management during the construction phase. The organisational structure during the construction phase is presented in **Figure 4-1** below.

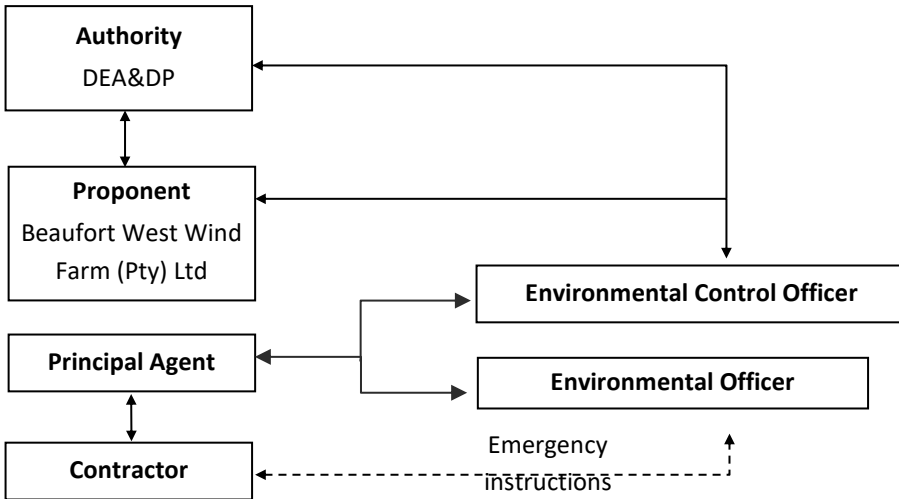


Figure 4-1: Organisational structure during the construction phase.

4.1.1.1 Competent Authority: Department of Environmental Affairs & Development Planning (DEA&DP)

DEA&DP is the designated competent authority responsible for authorising this EMPr. DEA&DP has overall responsibility for ensuring that Beaufort West Wind Farm complies with the conditions of its EA as well as this EMPr. DEA&DP shall also be responsible for approving any amendments that may be required to the EMPr. In terms of Section 30 of NEMA, DEA&DP is to be notified immediately should there be an incident on-site where the release of a hazardous substance was unexpected, sudden, and uncontrolled, including from a major emission, fire or explosion, that causes, has caused or may cause significant harm to the environment, human life or property.

4.1.1.2 Proponent: Beaufort West Wind Farm (Pty) Ltd

Beaufort West Wind Farm (Pty) Ltd is ultimately responsible for the implementation of the EMPr and the financial cost of all environmental control measures arising from the construction phase. Beaufort West Wind Farm (Pty) Ltd must ensure that any person acting on its behalf complies with the conditions/specifications contained in this EMPr. Beaufort West Wind Farm (Pty) Ltd is also responsible for the appointment of a Principal Agent, Contractor and Environmental Control Officer (ECO). Beaufort West Wind Farm (Pty) Ltd shall address any site problems pertaining to the environment at the request of DEA&DP, the Contractor and/or ECO. The Proponent shall also ensure that all EAs and permits, if any, have been obtained from the relevant authorities.

4.1.1.3 Principal Agent

For the purposes of this document the “Principal Agent” refers to any person (such as the architect, engineer or project manager) authorised by Beaufort West Wind Farm (Pty) Ltd to oversee the planning, design and construction phases of the project. Any on-site decisions regarding environmental management are ultimately the responsibility of the Principal Agent.

The responsibilities of the Principal Agent are to:

- Ensure that the requirements as set out in this EMPr and by the relevant Authorities are adhered to and implemented.

- Assist the ECO in ensuring that the conditions of the EA and/or EMPr are being adhered to and promptly issuing instructions requested by the ECO, to the Contractor. All site instructions pertaining to environmental matters issued by the Principal Agent are to be copied to the ECO.
- Ordering the removal of person(s) and/or equipment not complying with the specifications or issuing a “stop works” order (as required by the ECO or otherwise).
- Issuing of penalties for transgressions of environmental site specifications.
- Providing input into the ECO’s on-going internal review of the EMPr.

4.1.1.4 Contractor

The Contractor shall have the following responsibilities:

- To implement all provisions of the EMPr during the construction phase. If the Contractor encounters difficulties with specifications, he/she must discuss alternative approaches with the Principal Agent and/or the ECO prior to proceeding.
- To ensure that all staff are familiar with the EA and EMPr.
- Monitoring and verifying that the environmental impacts are kept to a minimum.
- To make personnel aware of environmental issues and to ensure that they show adequate consideration of the environmental aspects of the project.
- To prepare the required Method Statements (MS) (see Section 4.4).
- To report any incidents of non-compliance with the EA and/or EMPr to the Principal Agent and/or the ECO.
- To rehabilitate any sensitive environments damaged due to the Contractor’s negligence. This shall be done in accordance with Beaufort West Wind Farm and the ECO’s specifications.

Failure to comply with the EA and/or EMPr may result in fines (see Section 4.9) and reported non-compliance may result in the suspension of work or termination of the contract by the Principal Agent.

4.1.1.5 Environmental Officer (EO)

The Contractor shall appoint, at his/her own cost, an EO to ensure that the EMPr is implemented and ensure that all environmental specifications and EA and EMPr requirements are met at all times. The EO shall be responsible for monitoring, reviewing and verifying the Contractor’s compliance with the EA and/or EMPr.

The EO’s duties in this regard shall include the following:

- Monitoring and verifying that the EA, EMPr and MS are always adhered to and taking action if specifications are not followed.
- Monitoring and verifying that environmental impacts are kept to a minimum.
- Assisting the Contractor and ECO in finding environmentally responsible solutions to problems.
- Inspecting the project site on a regular basis with regard to compliance with the EA and/or EMPr.
- Completing weekly checklists detailing the above-mentioned inspections.
- Keeping a photographic record of progress on site from an environmental perspective.
- Reporting any incidents of non-compliance with the EA and/or EMPr to the Principal Agent and ECO.
- Keeping a register of complaints on site and recording community comments and issues and the actions taken in response to these complaints.

4.1.1.6 Environmental Control Officer (ECO)

The ECO's duties shall include the following:

- Confirming that the necessary EAs and permits, if any, have been obtained from the relevant authority(ies).
- Advising the Contractor and/or Proponent on environmental issues within defined construction areas.
- Reviewing MS (see Section 3.5).
- Undertaking regular site visits to ensure compliance with the EA and EMPr, and verifying that negative environmental impacts are kept to a minimum and positive impacts are enhanced throughout the contract.
- Completing environmental checklists during site visits.
- Keeping a photographic record of progress on site from an environmental perspective.
- Assisting the Contractor and/or the Proponent in finding environmentally acceptable solutions to construction problems.
- Recommending additional environmental protection measures should this be necessary.
- Review the register of complaints and records and dealings with any community issues or comments.
- Giving a report back on any environmental issues at site meetings.
- Prepare an environmental audit report at the conclusion of the construction phase.

The ECO shall communicate directly with the Principal Agent. If the Principal Agent does not respond, the ECO shall take the matter up with Proponent.

4.1.2 Operation Phase

The implementation of this EMPr requires the involvement of several stakeholders, each fulfilling a different but vital role to ensure sound environmental management during the operation phase. The organisational structure during the operation phase is presented in **Figure 4-2** below.

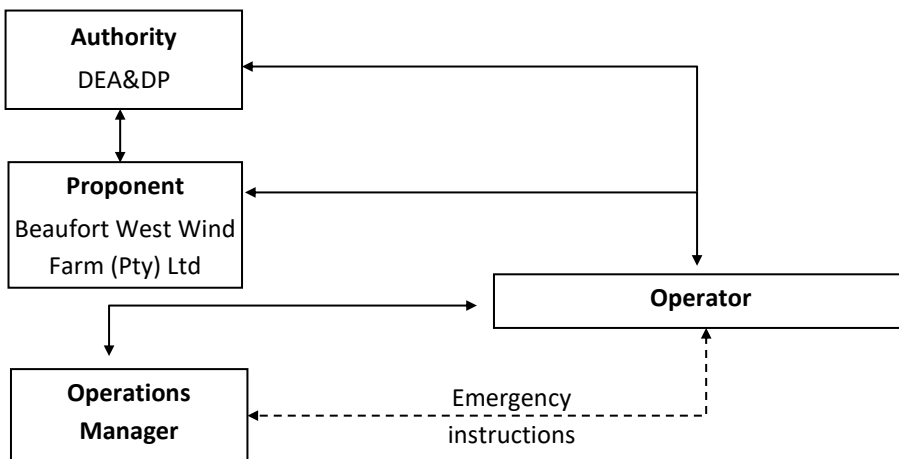


Figure 4-2: Organisational structure during the operation phase.

4.1.2.1 Authority: Department of Environmental Affairs and Development Planning (DEA&DP)

DEA&DP is the designated authority responsible for authorising this EMPr. DEA&DP has overall responsibility for ensuring that Beaufort West Wind Farm (Pty) Ltd complies with the conditions of its EA as well as this EMPr. DEA&DP shall also be responsible for approving any amendments that may be required to the EMPr.

4.1.2.2 Proponent: Beaufort West Wind Farm (Pty) Ltd

The Proponent is ultimately responsible for ensuring the implementation of the EMPr. Beaufort West Wind Farm (Pty) Ltd must ensure that any person acting on its behalf complies with the conditions/specifications contained in this EMPr. Beaufort West Wind Farm (Pty) Ltd shall address any site problems pertaining to the environment at the request of the Operator and Operations Manager. In addition, Beaufort West Wind Farm (Pty) Ltd shall address any site problems pertaining to the environment at the request of DEA&DP, the Contractor and/or ECO. The Proponent shall also ensure that all EAs and permits, if any, have been obtained from the authorities.

4.1.2.3 Operator

The Operator shall ensure that its responsibilities are executed in compliance with the EA and EMPr. Any on-site decision regarding environmental management is ultimately the responsibility of the Operator. The Operator shall appoint an Operations Manager for all day-to-day environmental management activities. Additionally, the Operator shall have the following responsibilities:

- To ensure implementation of all provisions of the EA and EMPr during the operation phase. If the Operator encounters difficulties with specifications, he/she must discuss alternative approaches with the Proponent and/or DEA&DP prior to proceeding.
- To ensure that all staff are familiar with the EA and EMPr.
- Confirming that the environmental impacts are kept to a minimum.
- To ensure personnel are aware of environmental issues and to ensure they show adequate consideration of the environmental aspects of the project.
- To ensure the rehabilitation of any sensitive environments damaged due to the Operator's negligence.
- To address any issues at the request of DEA&DP and/or the public.
- To oversee the implementation of internal operations and activities.
- Appointment of various contractors e.g. landscaping, maintenance, cleaning, etc.

Failure to comply with the EMPr may result in suspension of the EA.

4.1.2.4 Operations Manager

An Operations Manager shall be responsible for the following:

- To implement all provisions of the EA and EMPr during the operation phase. If the Operations Manager encounters difficulties with specifications, he/she must discuss alternative approaches with the Operator prior to proceeding.
- To familiarise all staff with the EA and EMPr.
- To keep negative environmental impacts to a minimum and to enhance positive impacts.
- To make personnel aware of environmental issues and to ensure they show adequate consideration of the environmental aspects of the project.
- To rehabilitate any sensitive environments damaged due to the Operator's negligence.

- To address any issues at the request of DEA&DP and/or the public.
- To implement internal operations and activities.
- Management of various contractors e.g. landscaping, maintenance, cleaning, etc.
- Monitoring and undertaking all day-to-day maintenance/management activities.
- Implementing the provisions of operation-related measures in accordance with the EMPr.
- Undertaking continual internal review of the property and operations.
- Reporting any incidents of non-compliance with the EA and/or EMPr to the Principal Agent and/or DEA&DP.
- Keeping a register of complaints on site and recording community comments and issues, as well as the actions taken in response to these complaints.

4.2 EMPr ADMINISTRATION

Copies of this EMPr shall be kept at the site office(s) during the construction and operational phases, along with a copy of the EA. All senior personnel shall be required to familiarise themselves with the contents of this document. Any revisions to the EMPr document must be approved by DEA&DP before the revised EMPr is implemented. The Operations Manager shall be responsible for the implementation and distribution of any “approved” revisions to the EMPr during the operation phase.

4.3 INFORMATION BOARDS

The Contractor shall be responsible for erecting a general information board during the construction phase. The general information board shall, as a minimum, provide the name and contact number of the EO, to ensure that the public has access to the EO to request information and/or to lodge any complaints.

4.4 METHOD STATEMENTS (MS)

The Contractor shall submit written MS to the Principal Agent and ECO for all environmentally sensitive aspects of the work during the construction phase. An MS Control Sheet, signed by the Contractor, must accompany each MS (a pro forma Control Sheet is provided in Appendix B). A MS shall cover applicable details with regard to:

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

A MS shall be submitted to the Principal Agent and ECO **at least five (5) days prior to the commencement of the construction activities for which the MS is required**. It should be noted that an MS must contain sufficient information and detail to enable the Principal Agent and ECO to apply their minds to the potential impacts of the

works on the environment. The Contractor will also need to thoroughly understand what is required of them in order to undertake the works.

Work shall not commence until the MS have been approved by the Principal Agent. Failure to submit a MS may cause the Principal Agent to order the Contractor to suspend part or all of the works concerned until a MS has been submitted and approved. **Failure to submit a MS at least five (5) days prior to commencing the relevant activity may result in a fine (see Section 3.10).** Any damage caused to the surrounding environment by work done without prior approval shall be rehabilitated at the Contractor's cost.

As a minimum the following MSs are required:

- MS for indicating the location, preparation and layout of the construction camps and laydown areas.
- MS for the containment, handling, storage and disposal of hazardous substances.
- MS for handling accidental leaks and spills.
- MS for management of hazardous waste.
- MS for management of general waste.
- MS for management of wastewater.
- MS for dust control.
- MS for management of cement and concrete batching.
- MS for erosion and sedimentation control.
- MS for traffic accommodation and diversions.
- MS for fire prevention and control.
- MS for site rehabilitation.

The Principal Agent and/or the ECO shall specify any additional MS that may be required. Where relevant, the MSs indicated above can be combined on agreement with the Principal Agent/ECO.

4.5 ENVIRONMENTAL AWARENESS TRAINING

Environmental awareness is defined as *'the growth and development of awareness, understanding and consciousness toward the biophysical environment and its problems, including human interactions and effect'*. It is further stated that it is *'the educational process that deals with the human interrelationships with the environment and that utilizes an interdisciplinary problem-solving approach with value clarification'*.

As part of continual improvement in environmental management performance, environmental as well as health and safety awareness training should be provided to all employees in order to promote the effective implementation of the EMPr actions¹.

Prior to the commencement of any work on-site, the Contractor's site management staff shall attend an environmental awareness training course presented by the ECO. The Contractor shall liaise with the ECO prior to the commencement of construction to fix a date and venue for the course. The Contractor shall provide a suitable venue with facilities and ensure that the specified employees attend the course. The information presented at the course shall be communicated by the Contractor to the rest of his employees on the site, to any new

¹ DEA&DP Guideline for Environmental Management Programmes, June 2005

employees coming onto site after the initial training course and to his/her suppliers, as appropriate. The presentation shall be conducted, as far as is possible, in the employees' language of choice.

As a minimum, training shall include:

- Explanation of the importance of complying with the EA and/or EMPr.
- Discussion of the potential environmental impacts of construction activities.
- Employees' roles and responsibilities, including emergency preparedness.
- Explanation of the mitigation measures that must be implemented when carrying out their activities.
- Explanation of the specifics of this EMPr and its specification (no-go areas, etc.).
- Discussion of waste awareness and provision of training to ensure proper waste management is implemented when carrying out their activities.
- Explanation of the management structure of individuals responsible for matters pertaining to the EMPr.

The Contractor shall keep records of all environmental training sessions, including names of attendees, dates of their attendance and the information presented to them. A list of general environmental do's and don'ts are provided in Appendix C.

4.6 MEETINGS

The ECO shall meet with the Principal Agent on a monthly basis, or more frequently as required during the initial stages of the project. The ECO shall attend scheduled construction site meetings on a monthly basis throughout the contract period.

4.7 INSPECTION PROCEDURES

The day-to-day monitoring and verification that the EA and/or EMPr is being adhered to shall be undertaken by the EO. The ECO shall visit and inspect the site at least on a monthly basis to ensure that correct procedures are being implemented and that the Contractor is complying with the environmental specifications in the EA and/or EMPr. Additional site inspections by the ECO may be needed during the initial stages of the project. The ECO shall address any queries to the Proponent. If the queries cannot be resolved at this level, they shall be referred to the Principal Agent and, if necessary, to DEA&DP.

4.8 RECORD OF ACTIVITIES

The EO shall keep a record of activities on-site, including but not limited to meetings attended, MSs received and approved, issues arising on-site, cases of non-compliance with the EA and/or EMPr, penalties/fines issued and corrective action taken to solve problems that arise and any complaints received and how they were addressed.

The EO shall undertake photographic monitoring for the duration of the construction phase. This shall include a photographic record of all areas that will be impacted by the construction activities prior to construction activities commencing. The EO shall monitor all sensitive work environments, which may also include photographic monitoring.

4.9 FINES

A system of fines shall be implemented to ensure compliance with the EA and EMPr (see Appendix E). Where the Contractor inflicts non-repairable damage upon the environment or fails to comply with any of the

environmental specifications of the EA and/or EMPr, this would constitute a breach of contract for which the Contractor may be liable to pay a fine. The Contractor is deemed not to have complied with the EMPr if, amongst others:

- There is evidence of contravention of the EMPr specifications, including any non-compliance with an approved MS.
- Construction activities take place outside the defined boundaries of the site.
- Environmental damage ensues due to negligence.
- The Contractor fails to comply with corrective or other instructions issued by the Principal Agent within a specific time period.
- The Contractor fails to respond adequately to complaints from the public.

If excessive infringement with regard to any of the above is registered, then the Principal Agent reserves the right to fine the Contractor, or in the extreme event terminate the Contractor's contract. The system of fines shall be implemented in the following way:

- Fines shall be issued per incident at the discretion of the Principal Agent.
- Fines shall be issued in addition to any remedial costs incurred as a result of non-compliance with the environmental specifications.
- The Principal Agent shall inform the Contractor of the contravention and the amount of the fine and will deduct the amount from the Contractor's monthly Payment Certificates.
- Fines, including but not limited to those activities presented in Appendix E, shall be imposed by the Principal Agent on the Contractor, his staff and/or the Sub-contractors' staff for contravention of the environmental specifications. Where there are ranges, the amount shall depend on the severity and extent of the damage done to the environment.

Should a fine be issued, the Principal Agent shall, in conjunction with the ECO, identify an appropriate environmental-focussed non-profit organisation in the area to which to donate the money.

Failure by any employee of the Contractor or their sub-contractors to show adequate consideration to the environmental aspects of the contract shall be considered sufficient cause for the Principal Agent to have that employee removed from the site. The ECO may, through the Principal Agent, also order the removal of equipment that is causing continual environmental damage.

4.10 INTERNAL REVIEW AND AUDITING

The Contractor shall establish an internal review procedure to monitor the progress and implementation of the EMPr during the construction phase.

Where necessary, and upon the recommendation of the Principal Agent and/or the ECO, procedures that require modification will be changed to improve the efficiency of the EMPr. All modifications to the EMPr shall be approved by DEA&DP before, if possible, any changes or adjustments to the EMPr are implemented. Any changes or adjustments to the EMPr shall be registered in the daily records of the Principal Agent. Adjustment and update of the original EMPr document is not required when these ad hoc changes are made.

At the conclusion of the construction phase, an environmental audit report shall be compiled and submitted to DEA&DP. This report shall be compiled by the ECO, in collaboration with the Principal Agent and the EO. It shall, as a minimum, outline the implementation of the EMPr during the construction phase, and highlight any problems and issues that arose during the construction period to report, on a formal basis, the lessons learned from this project.

4.11 EXTERNAL REVIEW AND AUDITING

The Proponent must, for the period during which the EA and EMPr remain valid, ensure compliance with the conditions of the EA and EMPr is audited. The environmental audit report must be prepared by an independent person, with the relevant environmental auditing expertise, and be submitted to DEA&DP upon completion or within six (6) months of completion of the construction phase. The environmental audit report must contain all the information required as presented in Appendix 7 of the EIA Regulations, 2014 (as amended).

The Proponent, within seven (7) days of the submission of the environmental audit report to DEA&DP, must notify all interested and/or affected parties (I&APs) of the submission and make the report available to anyone on request and on a publicly accessible website (if applicable).

Access to the project site must be granted to any authorised official representing the competent authority who requests to undertake a site visit for the purposes of assessing and/or monitoring compliance with the relevant conditions contained in the EA and/or EMPr. In addition, the environmental audit reports, ECO reports and other relevant documentation must be produced to any authorised official representing the Competent Authority who requests to see it for the purposes of assessing and/or monitoring compliance with the conditions contained therein.

5. ENVIRONMENTAL SPECIFICATIONS

5.1 ENVIRONMENTAL ACTIONS AND OUTCOMES APPLICABLE TO THE PLANNING, CONSTRUCTION AND OPERATIONAL PHASE

The planning, construction and operational phase activities included as part of the EMPr are in respect of any future construction, upgrades or expansions at the project site. **Table 4-1 is only deemed applicable to any future construction upgrades or expansions at the site.**

Table 4-1: Environmental actions and outcomes applicable to the Planning (Pre-Construction), Construction and Operational Phases.

| Ref # | Project activity/aspect | Environmental Outcome | Management Action | Responsibility | Timing | Records/Indicators | Monitoring Requirements |
|--|------------------------------|---|--|----------------|-----------------------|--|-----------------------------|
| Planning (Pre-Construction) Phase | | | | | | | |
| 5.1.1 | Site environmental personnel | Effective management and monitoring of the EMPr and EA requirements | <ul style="list-style-type: none"> An EO shall be appointed. | Contractor | Prior to construction | Letters of appointment. | Site audits |
| | | | <ul style="list-style-type: none"> An independent ECO shall be appointed. | Proponent | | | |
| 5.1.2 | Compliance documentation | Compliance with legislative requirements | <ul style="list-style-type: none"> EA shall be obtained prior to any construction. The EMPr shall be approved by DEA&DP. Any additional environmental-related documentation / permits etc. shall be obtained. All project-related documentation, including EA, EMPr, MS, Material Safety Data Sheets (MSDS), Complaints Registers, waste disposal slips, ablution facility service slips, etc. must be kept at the construction camp. All the requirements of the National Water Act, 1998 (Act 36 of 1998) in terms of water use and pollution control management must be adhered to at all times. | Proponent | Prior to construction | Copies of EA, DEA&DP approval of EMPr and copy of the approved EMPr. Copies of project-related documentation and additional environmental-related permits etc. kept on file at the construction camp. | Site Inspections and Audits |

| Ref # | Project activity/aspect | Environmental Outcome | Management Action | Responsibility | Timing | Records/Indicators | Monitoring Requirements |
|-------|---|--|--|---|---|---|------------------------------|
| 5.1.3 | Design Considerations | Compliance with Requirements and recommendations specified in the Environmental Authorization (EA) | <ul style="list-style-type: none"> The site must be positioned and designed in accordance with the specific conditions as set out in the Environmental Authorization. The contractor shall observe all requirements and recommendations specified in the Environmental Authorization with specific reference to the type, height and colour of the mast and equipment. | Beaufort West Wind Farm and contractor responsible for construction | During planning/ pre-construction phase | Design specifications. | Site Development Plan |
| 5.1.4 | Construction Camps / Laydown Areas | Damage to the environment is avoided or minimised | <ul style="list-style-type: none"> The construction camp shall be demarcated by a fence. Suitable signs shall be erected to clearly demarcate construction camp areas. Areas outside of the construction camp (that are not part of the property boundary are considered No-Go areas and shall be demarcated as such. | Contractor | Prior to construction | Approved MS indicating the location, preparation and layout of the construction camps and laydown areas | Site Inspections and Audits. |
| | | Clean and well-maintained ablution facilities provided in suitable locations | <ul style="list-style-type: none"> Suitable sanitary arrangements (e.g. chemical toilets) at each construction site as per building guidelines (SABS 0400) shall be provided. One (1) toilet shall be provided for every 15 workers on site. Toilet/s shall be located where there will be a concentration of labour. The siting of toilets shall be done in consultation with the Principal Agent or ECO to ensure that they are easily accessible for employees. | Beaufort West Wind Farm | Prior to construction | Ablution service records. Incident Reports | Site Inspections and Audits. |

| Ref # | Project activity/aspect | Environmental Outcome | Management Action | Responsibility | Timing | Records/Indicators | Monitoring Requirements |
|-------|-------------------------|-------------------------------|---|----------------|----------------------------------|---|---|
| | | | <ul style="list-style-type: none"> Toilets shall not be more than 50 m away from where construction activities are being undertaken. Toilets shall be secured to the ground, in order to prevent them from blowing over. Toilets shall be serviced regularly and kept in a neat and tidy state. Toilets shall be provided with locks and toilet paper shall be provided. Performing ablutions outside of the toilet facility is strictly prohibited. | | | | |
| | | Effective housekeeping | <ul style="list-style-type: none"> Eating areas shall be established in agreement with the Principal Agent. The Contractor shall provide adequate facilities for his / her staff. Eating areas shall provide adequate shade. Refuse bins with lids shall be provided at eating areas. The eating area shall be cleaned up on a daily basis. Any cooking on site shall be done using gas cookers. | Contractor | Prior to and during construction | Principal approval. Clean eating areas. | Agent Site Inspections and Audits. |
| | | Safe supply of drinking water | <ul style="list-style-type: none"> Access to clean drinking water shall be provided to employees and visitors. If water is stored on site, drinking water and multi-purpose water storage facilities shall be clearly distinguished and demarcated. | Contractor | Prior to construction | Clearly marked drinking water storage and supply points | Site Inspections and Audits. |
| 5.1.5 | | | <ul style="list-style-type: none"> No-Go areas shall be clearly demarcated prior to the commencement of construction activities. | | | | |

| Ref # | Project activity/aspect | Environmental Outcome | Management Action | Responsibility | Timing | Records/Indicators | Monitoring Requirements |
|--|---|--|---|----------------|--|--|------------------------------|
| | | | <ul style="list-style-type: none"> A photographic record of all construction areas before, during and after construction shall be kept. All property outside of designated construction areas is to be considered as No-Go areas. The Contractor shall ensure that his / her staff do not enter properties adjacent to the construction areas under any circumstances except for official business. | | | | |
| Construction & Operation Phases | | | | | | | |
| 5.1.6 | Materials handling and storage: Handling | Safe passage of goods between destinations | <ul style="list-style-type: none"> The Contractor shall ensure that all sub-contractors, suppliers and their delivery drivers are aware of procedures and restrictions in terms of this EMPr. The Contractor (and suppliers) shall ensure that all materials are appropriately secured to ensure safe passage between destinations. Loads including, but not limited to sand, stone chip, refuse, paper and cement, shall have appropriate cover to prevent them spilling from the vehicle during transit. Where this is not practical, the Contractor shall ensure that construction vehicles are not overfilled. The Contractor shall be responsible for any clean-up resulting from the failure by his employees or suppliers to properly secure transported materials. Haul vehicles shall be limited to specific haul routes. | Contractor | Daily, during construction and operation | Contractor instructions to sub-contractors and suppliers. Well-secured and covered loads (or no overfilled hauling trucks). Photographs. | Site Inspections and Audits. |

| Ref # | Project activity/aspect | Environmental Outcome | Management Action | Responsibility | Timing | Records/Indicators | Monitoring Requirements |
|-------|--|---|--|----------------|--|---|------------------------------|
| | | | <ul style="list-style-type: none"> All vehicles shall comply with speed limits 30km/h. The dangers associated with the movement of large haulage should be sign-posted in both directions leading up to the construction areas. The Contractor shall ensure that delivery drivers are supervised during offloading. | | | | |
| 5.1.7 | Materials handling and storage: Storage of hazardous substances | Effective containment, handling, storage and disposal of hazardous substances | <ul style="list-style-type: none"> The Contractor shall prepare an MS for the containment, handling, storage and disposal of hazardous substances. All hazardous substances (i.e., degreasers, paint cleaners, poisons, etc.) shall be confined to demarcated, adequately bunded areas within the construction camp and stored in suitable containers / storage facilities. Suitable warning signs indicating the nature of the stored materials shall be displayed at the storage facilities or containment structure. Suitable fire-fighting equipment, to the approval of the Principal Agent, shall be supplied and installed by the Contractor at the hazardous substance storage areas. The Contractor shall ensure that contaminated rainwater or spillages collecting in hazardous substance storage areas do not enter the environment. This must be collected and suitable disposed of. | Contractor | Daily, during construction and operation | <p>Approved MS for the containment, handling, storage and disposal of hazardous substances.</p> <p>Suitable hazardous substance storage areas.</p> <p>Adequate warning sign and fire-fighting equipment.</p> <p>Emergency response plan (with evidence of municipality consultations)</p> <p>MSDS for all hazardous substances on site.</p> | Site Inspections and Audits. |

| Ref # | Project activity/aspect | Environmental Outcome | Management Action | Responsibility | Timing | Records/Indicators | Monitoring Requirements |
|-------|---|---|---|----------------|--|--|--|
| | | | <ul style="list-style-type: none"> The Contractor shall have a copy of the MSDS readily available and ensure that their employees who are required to use such substances are fully conversant with the safe handling precautions, protective equipment to be used and storage precautions to be taken. All spilled / redundant hazardous substances shall be disposed of at a suitably approved waste management facility. All hazardous substances containers shall be either disposed of at a suitably approved waste management facility or returned to the supplier | | | Proof of safe disposal of hazardous substances. Incident Reports. Photographs. | |
| 5.1.8 | Materials handling and storage: Storage / use of equipment | Prevention of the spillage of hazardous substances from equipment | <ul style="list-style-type: none"> Drip trays or similar forms of secondary containment shall be provided for stationary plant (such as compressors, pumps, generators, etc.) and for "parked" plant (e.g. hauling trucks, etc.). All plant, construction equipment, vehicles or other items shall be stored within the construction camp, unless prior arrangements have been made with the Principal Agent or ECO. | Contractor | Daily, during construction and operation | Drip trays or similar forms of secondary containment (especially for leaking equipment). Photographs. | Site Inspections and Audits. |
| 5.1.9 | Waste Management: General waste | Avoidance of the contamination of the environment as a result of waste management | General waste includes inert construction waste (e.g. rubble, packaging, timber, scrap metal, wire, nails, etc.) and office waste (e.g. paper, cardboard, stationary, etc.) and domestic waste (food, packaging, cans, bottles, etc.). <ul style="list-style-type: none"> The Contractor shall ensure a Principal Agent-approved MS is in place for management of general waste. The MS shall include a list of general waste streams and the storage, handling and disposal management measures related to each waste stream. | Contractor | Daily, during construction and operation | Approved MS for management of general waste. Proof of suitably licensed waste disposal and recycling facilities used. | Site Inspections and Audits. Monthly general waste reconciliation |

| Ref # | Project activity/aspect | Environmental Outcome | Management Action | Responsibility | Timing | Records/Indicators | Monitoring Requirements |
|-------|-------------------------|-----------------------|---|----------------|--------|---|-------------------------|
| | | | <ul style="list-style-type: none"> • General waste that cannot be recycled shall be disposed of at a suitably licensed waste management facility. • Keep site free of litter. • At all places of work the Contractor shall provide bins (with lids) of sufficient number and capacity to store general waste produced on a daily basis. The lids shall be kept firmly on the bins at all times. The bins must be clearly marked accordingly to prevent confusion to staff onsite as well as encourage the separation of waste on site for recycling. • All used Personal Protective Equipment (PPE) such as face masks and latex gloves must be correctly stored in a manner that minimises the risk and the spread of Covid-19 to all staff, contractors and visitors to the site. Healthcare risk waste should also be treated or disposed of in the appropriate manner. • Erect signage on-site encouraging workers not to litter, or dump waste and to promote the separation of waste for recycling. • Where practical, food waste should be collected for beneficiation in an appropriate manner. • Bins shall be emptied on a weekly basis or more frequently as required. • Solid waste may be temporarily stored at the construction camp site in a designated area approved by the Principal Agent and ECO prior to collection and disposal. The general waste storage facilities must be designed to prevent windblown waste and ingress of rainwater. | | | <p>No litter around site.</p> <p>Presence of suitably designed waste bins.</p> <p>Suitably designed waste storage areas.</p> <p>No signs of on-site waste disposal / burning.</p> <p>Records of general waste types, volumes and disposal sites used.</p> <p>Photographs.</p> | |

| Ref # | Project activity/aspect | Environmental Outcome | Management Action | Responsibility | Timing | Records/Indicators | Monitoring Requirements |
|--------|------------------------------|-------------------------|---|----------------|--|---|------------------------------|
| | | | <ul style="list-style-type: none"> An integrated waste management approach shall be used, based on the principles of waste minimisation, reduction, re-use and recycling of materials. Containers for recycling of at least glass, paper, metals and plastics shall be provided at the construction camp. Waste storage containers shall be covered, tip-proof, weatherproof and scavenger proof. No waste material or litter shall be burnt or buried on site. All solid waste shall be disposed of off-site at an approved landfill site. The Contractor shall supply the Principal Agent with receipts of disposal. In addition, disposal receipts shall be kept at the site office for inspection by the ECO and any relevant authority. | | | | |
| 5.1.10 | Traffic accommodation | Safe traffic management | <ul style="list-style-type: none"> Vehicle movement shall be limited to the defined access route. All vehicles shall comply with speed limits 30km/h. Erect sufficient signage near the entry point to the site. Ensure the site has adequate traffic control measures in place at the entrance to the site. Schedule delivery of construction materials outside of peak morning (6 am to 9 am) and evening (3 pm to 6 pm) traffic times. The Contractor shall also ensure that adequate vehicular and pedestrian traffic accommodation, signage and safety measures (as appropriate) are put in place on site. | Contractor | Daily, during construction and operation | Appropriate safety signage. Photographs. | Site Inspections and Audits. |

| Ref # | Project activity/aspect | Environmental Outcome | Management Action | Responsibility | Timing | Records/Indicators | Monitoring Requirements |
|--------|-------------------------------------|--|---|----------------|--|--|------------------------------|
| 5.1.11 | Cement and concrete batching | Prevention of the contamination of the environment as a result of batching | <ul style="list-style-type: none"> • Cement and concrete mixing directly on the ground shall not be allowed and shall take place on impermeable surfaces to the satisfaction of the Principal Agent and ECO. • Unused (full) cement bags shall be stored undercover and away from surface runoff. • Used (empty) cement bags shall be collected and stored in weatherproof containers to prevent wind-blown cement dust and water contamination. • Used cement bags shall not be used for any other purpose and shall be disposed of on a regular basis as general waste (as described above). • All excess concrete shall be removed from site on completion of concrete works and disposed of at a suitably licenced waste facility. • Washing of the excess cement / concrete into the ground shall not be allowed. • All excess aggregate shall also be removed and disposed of as general waste (as described above). | Contractor | Daily, during construction and operation | No cement bags lying around. No cement / concrete / aggregate patches after construction. Photographs. | Site Inspections and Audits. |
| 5.1.12 | Fire control | Effective fire prevention and control | <ul style="list-style-type: none"> • The Contractor shall ensure a Principal Agent-approved MS is in place for fire prevention and control. • No open fires shall be allowed on site. • The Contractor shall take all reasonable steps to prevent the accidental occurrence or spread of fire. • The Contractor shall appoint fire officers who shall be responsible for ensuring immediate and appropriate action in the event of a fire. | Contractor | Daily, during construction and operation | Approved MS is in place for fire prevention and control. No signs of open fires. | Site Inspections and Audits. |

| Ref # | Project activity/aspect | Environmental Outcome | Management Action | Responsibility | Timing | Records/Indicators | Monitoring Requirements |
|-------|-------------------------|-----------------------|---|----------------|--------|---|-------------------------|
| | | | <ul style="list-style-type: none"> The appointed fire officers shall notify the local Fire and Emergency Service in the event of a veldfire and shall not delay doing so until such time as the fire is beyond his / her control. The Contractor shall establish a fire-fighting team who shall be suitable trained in controlling fires. The Contractor shall ensure that all site personnel are aware of the procedure to be followed in the event of a fire. The Contractor shall ensure that there is adequate fire-fighting equipment on site at all times (which shall include, but not limited to, fire extinguishers, protective clothing and beaters). Any work that requires the use of fire may only take place at that designated and shielded "hot work" area and as approved by the Principal Agent. Fire-fighting equipment shall be available in these areas. The Contractor shall ensure that the telephone numbers of the local Fire and Emergency Service are displayed at the site offices, construction camps and laydown areas. The Contractor shall establish a procedure for communicating with surrounding landowners in the event of a fire. This should include the names and contact details of the relevant landowners, as well as a map showing their properties. Smoking is not allowed on site, other than at designated smoking points which are clearly marked as such. Cigarette butts shall not be discarded on the ground. | | | <p>Fire-fighting team appointment and training records.</p> <p>Displayed telephone numbers of the local Fire and Emergency Service.</p> <p>Clearly marked designated smoking points.</p> <p>No cigarette butts discarded on the ground.</p> <p>Photographs.</p> | |

| Ref # | Project activity/aspect | Environmental Outcome | Management Action | Responsibility | Timing | Records/Indicators | Monitoring Requirements |
|--------|--|--|--|----------------|---|--|--|
| | | | <ul style="list-style-type: none"> The Contractor shall pay the costs incurred by organisations called to put out fires started by their, or any of their sub-contractor's activities. The Contractor shall also pay the costs incurred to reinstate burnt areas as deemed necessary. | | | | |
| 5.1.13 | Noise control and working hours | Minimisation of noise disturbance to neighbouring properties | <ul style="list-style-type: none"> The Contractor shall be familiar with and adhere to, any local by-laws and regulations regarding the generation of noise and hours of operation. In addition, the provisions of SANS 10103 regarding the generation of noise shall apply to all areas within audible distance of residents whether in urban, peri-urban or rural areas. The Contractor shall endeavour to keep noise-generating activities to a minimum, particularly during night-time work. Implement a procedure for recording and managing external grievance / complaints. Noise monitoring shall be conducted when a noise-related complaint has been received, after consultation and agreement with the Principal Agent and ECO. Actions shall be identified as required. No high noise-generating activity outside of normal hours, regardless of its proximity to residences, can take place without application to the Principal Agent for approval. The application must include proposed noise containment measures. High noise-generating activities include for example pile driving, grinding, road material loading / unloading, hammering, excavating, etc. | Contractor | Ad hoc, during construction and operation | Procedure for recording and managing external grievance / complaints, and complaints register. Agreements with the Principal Agent and local authority (as required). | Site Inspections and Audits. Noise monitoring in accordance with SANS 10103 (when noise-related complaints have been received). |

| Ref # | Project activity/aspect | Environmental Outcome | Management Action | Responsibility | Timing | Records/Indicators | Monitoring Requirements |
|--------|-------------------------|-----------------------|--|----------------|--|---|---|
| | | | <ul style="list-style-type: none"> The Contractor shall restrict all operations that result in high noise disturbance to the local community to daylight working hours on weekdays or as otherwise agreed with the Principal Agent and local authority. Ensure vehicles and equipment are maintained and in good working order. Should a generator be deployed such generator shall comply with the maximum noise levels as stipulated in the Noise Control Regulations published under the Environment Conservation Act,1989 (Act No 73 of 1989) | | | | |
| 5.1.14 | Dust control | Minimisation of dust. | <ul style="list-style-type: none"> Minimise dust generation by implementing a dust control programme (e.g. wetting of areas being disturbed). The dust control programme shall include the following measures: <ul style="list-style-type: none"> Limit stockpile heights to 2 m and protect exposed soils and materials against wind. Ensure that a water truck is readily available, and that exposed areas and material stockpiles are adequately protected against the wind (e.g. wetting exposed soil / gravel areas during windy conditions, covering of material stockpiles with hessian, etc.). The location of stockpiles shall take into consideration the prevailing wind directions and locations of sensitive receptors (e.g. crops, businesses and houses). Implement a procedure for recording and managing external grievance / complaints. Dust monitoring shall be conducted when dust-related complaints have been received, | Contractor | Daily, during construction and operation | No excessive dust generation. Adequately protected exposed areas and material stockpiles. Procedure for recording and managing external grievance / complaints, and register. Photographs. | Site Inspections and Audits. Dust monitoring in accordance with the National Dust Control Regulations, 2013 (when dust-related complaints have been received). |

| Ref # | Project activity/aspect | Environmental Outcome | Management Action | Responsibility | Timing | Records/Indicators | Monitoring Requirements |
|--------|--------------------------|---|--|----------------|--|--------------------|------------------------------|
| | | | <p>after consultation and agreement with the Principal Agent and ECO. Actions shall be identified as required.</p> <ul style="list-style-type: none"> ○ Ensure compliance with the National Dust Control Regulations, 2013 and the dust-fall rates specified therein. ○ Construction vehicles shall comply with speed limits and haul distances shall be minimised. ○ Material loads shall be suitably covered during transportation. Where this is not practical (e.g. hauling material from cut to fill), the Contractor shall ensure that construction vehicles are not overfilled. ○ Appropriate dust suppression measures, to the satisfaction of the Principal Agent, shall be used when dust generation is unavoidable, particularly during prolonged periods of dry, windy weather. Such measures may include the use of temporary stabilising measures (e.g. chemical soil binders, straw, brush packs, chipping etc.). | | | | |
| 5.1.15 | Cultural heritage | Minimisation / prevention of impacts on cultural heritage resources | <ul style="list-style-type: none"> • The Contractor shall be on the alert for the uncovering of human remains, fossil bone, archaeological implements and fossil plant / peaty material. <ul style="list-style-type: none"> ○ Monitoring for fossil material by the ECO is required during construction. The frequency and duration of such monitoring by the ECO will be in accordance with those set out in Section 4.1.1 above. Details of this monitoring must be included in the relevant ECO close-out report which must be submitted to Heritage Western Cape (HWC). | Contractor | Ongoing, during construction and operation | Photographs. | Site Inspections and Audits. |

| Ref # | Project activity/aspect | Environmental Outcome | Management Action | Responsibility | Timing | Records/Indicators | Monitoring Requirements |
|--------|------------------------------------|--|--|----------------|--|--|------------------------------|
| | | | <ul style="list-style-type: none"> Should any possible fossils and / or archaeological finds be uncovered, work must cease in the area and the Principal Agent and ECO shall be notified immediately, as well as, the HWC. | | | | |
| 5.1.16 | Herbicides and Insecticides | Use of herbicides and insecticides to protect the installations | <ul style="list-style-type: none"> Should it be necessary to make use of herbicides and insecticides to protect the installations, the application of such chemicals shall be restricted to the base station site. The application of the herbicides and insecticides shall be done in accordance with the stipulations of The Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act No 36 of 1947. The contractor applying any herbicides and insecticides shall be in possession of a Pest Control Operator (PCO) license. The application of the chemicals shall not exceed the prescribed dosage for the specific product used. In all instances the application of the herbicides and insecticides should be of such nature that it will not cause any environmental harm. | Contractor | Ad hoc, during construction and operation | Herbicides and Insecticides records register to be kept on site. | Site Inspections and Audits. |
| 5.1.17 | Construction camp: Lights | Minimisation / avoidance of disturbance to road traffic and surrounding community. | <ul style="list-style-type: none"> Installed lighting for site activities shall not interfere with road traffic or cause a reasonably avoidable disturbance to the surrounding community. Implement a procedure for recording and managing external grievance / complaints | Contractor | Ongoing, during construction and operation | External grievance / complaints procedure and register. | Site Inspections and Audits. |

| Ref # | Project activity/aspect | Environmental Outcome | Management Action | Responsibility | Timing | Records/Indicators | Monitoring Requirements |
|--------|-----------------------------------|--|--|----------------|--|--|---|
| 5.1.18 | Site demarcation and No-Go areas | Prevention of access to No-Go area. | <ul style="list-style-type: none"> The Contractor shall maintain in good order all demarcation fencing and barriers for the duration of construction activities, or as otherwise instructed. The method of site demarcation must be practical and effective. Entry into No-Go areas without the Principal Agent's permission will result in a penalty The Contractor shall be responsible for any clean-up and / or rehabilitation of all areas impacted outside designated construction areas. | Contractor | Ongoing, during construction and operation | Clear demarcations of construction areas and No-Go areas. Photographs. | Site Inspections and Audits. |
| 5.1.19 | Priming and Painting | Prevention of paint spillages | <ul style="list-style-type: none"> Care shall be taken by the contractor to avoid the spillage of painting and solvent material on site. Adequate containers for cleaning of equipment and for the storage of waste products must be provided and all waste products resulting from the painting operation must be entirely removed from the site by the contractor | Contractor | Construction phase / Operational phase | Priming and Painting register to be kept on site | Site Inspections and Audits. |
| 5.1.20 | Waste from Electrical Connections | Avoidance of the contamination of the environment as a result of waste from electrical connections | <ul style="list-style-type: none"> All waste products resulting from electrical connections must be removed from the site by the contractor. | Contractor | Construction phase | Approved MS for management of general waste. Proof of suitably licensed waste disposal and recycling facilities used. No litter around site. | Site Inspections and Audits. Monthly electrical waste reconciliation |

| Ref # | Project activity/aspect | Environmental Outcome | Management Action | Responsibility | Timing | Records/Indicators | Monitoring Requirements |
|--------|-------------------------|---------------------------------------|--|----------------|--------------------|---|------------------------------|
| | | | | | | Presence of suitably designed waste bins. Suitably designed waste storage areas. | |
| 5.1.21 | Visual | Limit visual impact of the radio mast | <ul style="list-style-type: none"> • Naked light sources must not be visible outside of the development footprint. • Light sources must be shielded to prevent “light spillage”. • Shielded down-lights to be used in open public areas. • The contractor shall comply with the visual requirements of the Environmental Authorisation. • The contractor shall ensure that the visual impact of the construction activities is minimised. • Due to the fact that the infrastructure in question will be a 30m high mast. • The mast will be a lattice mast and one can look “through” it. This will assist to lessen the visual impact. Beaufort West Wind Farm will implement elements of good visual design. The mast will remain galvanised. | Contractor | Construction phase | Complaints register | Site Inspections and Audits. |

APPENDIX A: CURRICULUM VITAE OF THE PROJECT TEAM

APPENDIX B: METHOD STATEMENT CONTROL SHEET

APPENDIX C: ENVIRONMENTAL DO'S AND DON'TS

APPENDIX D: CHANCE FINDS PROTOCOL

| Beaufort West Cluster of Wind Farm and Grid Connection developments (Beaufort West & Trakas Wind Energy Facilities) and associated infrastructure (including Radio Mast) on Portion 1 of Farm No. 15 Trakas Kuilen near Beaufort West | |
|---|--|
| Province & region: | Western Cape: Central Karoo District Municipality (Prince Albert Local Municipality) |
| Responsible Heritage Resources Agency | Heritage Western Cape (3 rd Floor Protea Assurance Building, 142 Longmarket Street, Green Market Square, Cape Town 8000. Private Bag X9067, Cape Town 8001. Tel: 021 483 5959 Email: ceoheritage@westerncape.gov.za) |
| Rock unit(s) | Abrahamskraal Formation & Poortjie Member of Teekloof Formation (Lower Beaufort Group, Middle Permian) Late Caenozoic colluvium / alluvium / eluvium / soils. |
| Potential fossils | Fossil vertebrate bones, teeth, invertebrate trace fossils, tetrapod burrows and trackways, petrified wood, plant-rich beds in the Lower Beaufort Group bedrocks. Fossil mammal bones, teeth, horn cores, freshwater molluscs, plant material, trace fossils in Late Caenozoic sediments. |
| ECO protocol | 1. Once alerted to fossil occurrence(s): alert site foreman, stop work in area immediately (<i>N.B.</i> safety first!), safeguard site with security tape / fence / sand bags if necessary. |
| | 2. Record key data while fossil remains are still <i>in situ</i> : <ul style="list-style-type: none"> • Accurate geographic location – describe and mark on site map / 1: 50 000 map / satellite image / aerial photo • Context – describe position of fossils within stratigraphy (rock layering), depth below surface • Photograph fossil(s) <i>in situ</i> with scale, from different angles, including images showing context (<i>e.g.</i> rock layering) |
| | 3. If feasible to leave fossils <i>in situ</i> : <ul style="list-style-type: none"> • Alert Heritage Resources Agency and project palaeontologist (if any) who will advise on any necessary mitigation • Ensure fossil site remains safeguarded until clearance is given by the Heritage Resources Agency for work to resume |
| | 3. If <i>not</i> feasible to leave fossils <i>in situ</i> (emergency procedure only): <ul style="list-style-type: none"> • <i>Carefully</i> remove fossils, as far as possible still enclosed within the original sedimentary matrix (<i>e.g.</i> entire block of fossiliferous rock) • Photograph fossils against a plain, level background, with scale • Carefully wrap fossils in several layers of newspaper / tissue paper / plastic bags • Safeguard fossils together with locality and collection data (including collector and date) in a box in a safe place for examination by a palaeontologist • Alert Heritage Resources Agency and project palaeontologist (if any) who will advise on any necessary mitigation |
| | 4. If required by Heritage Resources Agency, ensure that a suitably-qualified specialist palaeontologist is appointed as soon as possible by the developer. |
| | 5. Implement any further mitigation measures proposed by the palaeontologist and Heritage Resources Agency |
| Specialist palaeontologist | Submit Work Plan for approval by HWC. Record, describe and judiciously sample fossil remains together with relevant contextual data (stratigraphy / sedimentology / taphonomy). Ensure that fossils are curated in an approved repository (<i>e.g.</i> museum / university / Council for Geoscience collection) together with full collection data. Submit Palaeontological Mitigation report to Heritage Resources Agency. Adhere to best international practice for palaeontological fieldwork and Heritage Resources Agency minimum standards. |

APPENDIX E: FINES

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