

Electrawinds Seeland (Pty) Ltd

**Draft Environmental Management Programme
for the St Helena Access Road**

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DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE ST HELENA ACCESS ROAD

CONTENTS

Chapter	Description	Page
	GLOSSARY OF TERMS, DEFINITIONS AND ABBREVIATIONS	4
1	INTRODUCTION	6
	1.1 Background	6
	1.2 Summary of the Proposed Activity	7
	1.2.1 Proposed Development Site	7
	1.2.2 Service Area and Roads	7
	1.3 Impacts known to be Associated with the Proposed Activity	8
	1.3.1 Direct Impacts	8
2	ENVIRONMENTAL POLICY	9
	2.1 Environmental Policies and Guidelines	9
	2.2 Legislative Framework	9
	2.2.1 Statutory and Other Applicable Legislation and Standards	9
	2.2.2 Environmental Standards	10
3	MANAGEMENT AND ORGANISATIONAL STRUCTURE	11
	3.1 Contractual Obligation	11
	3.2 The Developer	11
	3.2.1 Role	11
	3.2.2 Responsibilities	11
	3.2.3 Reporting Structure	11
	3.3 Project Manager (PM)	12
	3.3.1 Role	12
	3.3.2 Responsibilities	12
	3.3.3 Reporting Structure	13
	3.4 Environmental Control Officer (ECO)	13
	3.4.1 Role	13
	3.4.2 Responsibilities	13
	3.4.3 Reporting Structure	14
	3.5 Contractor	14
	3.5.1 Role	14
	3.5.2 Responsibilities	15
	3.5.3 Reporting Structure	15

3.6	Sub Contractors	16
3.6.1	Role	16
3.6.2	Responsibilities	16
3.6.3	Reporting Structure	16
4	DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME: ENVIRONMENTAL AUTHORISATION AND SPECIALIST STUDIES	17
4.1	Environmental Authorisation	17
4.2	Specialist Studies	17
4.2.1	Flora and Fauna Impact Assessment	17
4.3	Regulating Authorities	18
5	DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME: PLANNING AND DESIGN	19
5.1	Environmental Principles and Best Practices Guidelines	19
5.1.1	Environmental Principles and Best Practices:	19
5.1.2	Compliance with Environmental Legislation:	19
5.1.3	Permits and Permissions:	19
5.1.4	Method Statements	20
5.1.5	Content of Method Statements	20
5.1.6	Site Drawings	21
5.1.7	Record Keeping	21
5.1.8	Social Disruption	22
5.1.9	Existing Services and Infrastructure	22
5.1.10	Site Division and Contractor's Camp	22
6	DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME: CONSTRUCTION PHASE	23
6.1	Health and Environmental Awareness	23
6.2	Emergency Preparedness	24
6.3	Site Establishment	25
6.3.1	Site Demarcation	25
6.3.2	Vegetation Clearance	25
6.3.3	Protection of Natural Features	25
6.3.4	Protection of Flora and Fauna	26
6.3.5	Protection of Archaeological and Palaeontological Sites	26
6.4	Site Maintenance	26
6.4.1	Transport of Materials/Components	26
6.4.2	Solid Waste Management (where applicable)	26
6.4.3	Stockpiling	27
6.4.4	Waste Water and Contaminated Water Management	27
6.4.5	Storm Water Management and Erosion Control	28
6.4.6	Noise Control	29
6.4.7	Dust Control	29
6.4.8	Fire Prevention and Control	29
6.4.9	Emergency Procedures	30

6.5	Construction Activities	30
6.5.1	Community Relations	30
6.5.2	Non-Working Times	31
6.5.3	Safety at the Construction Site	31
6.6	Monitoring	31
6.6.1	Obligations of the Contractor	31
6.6.2	Compliance with the EMP	32
7	DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME: OPERATIONAL PHASE	33
7.1	Environmental Procedures and Specifications	33
7.1.1	Erosion Control (if applicable)	33

GLOSSARY OF TERMS, DEFINITIONS AND ABBREVIATIONS

Construction Activity	A construction activity is any action taken by the Contractor, his Sub Contractors, suppliers or personnel during the construction process.
Contractor	That main organisation appointed by the Developer, through the Project Manager, to undertake construction activities on the site.
DEA	Department of Environmental Affairs.
Demolition	The tearing down of buildings and other structures: the opposite of construction.
Developer	Electrawinds Seeland (Pty) Ltd
ECO	Environmental Control Officer. The ECO monitors compliance with the EMP during the construction phase and advises the Project Manager on environmental matters relating to construction.
EMP	Environmental Management Programme. The EMP for the project sets out general instructions that will be included in a contract document for the construction phase of the project. The EMP will ensure the construction activities are conducted and managed in an environmentally sound and responsible manner. The EMP also details the organisational structure required to ensure the effective implementation of the EMP and measures to monitor and improve the application of the EMP.
Environment	Means the surroundings within which humans exist and that are made up of: <ol style="list-style-type: none">a. The land, water and atmosphere of the earth;b. Micro-organisms, plant and animal life;c. Any part or combination of a) and b) and the interrelationships among and between them; andd. The physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.
Environmental Specifications	Instructions and guidelines for specific construction activities designed to help prevent, reduce and/or control the potential

environmental implications of these construction activities.

Method Statement	<p>A written submission by the Contractor to the Project Manager in response to the Specification setting out the plant, materials, labour, timing and method the Contractor proposes using to carry out an activity.</p> <p>The Method Statement shall cover applicable details with regard to:</p> <ul style="list-style-type: none">• Construction procedures• Materials and equipment to be used• Getting the equipment to and from site• How the equipment/material will be moved while on site• How and where material will be stored• The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or solid material that may occur• Timing and location of activities• Compliance/ non-compliance with the Specifications• Any other information deemed necessary by the PM.
MSDS	Material Safety Data Sheet.
Project	This refers to all construction activities associated with the proposed activities.
PM	<p>Project Manager</p> <p>Appointed firm responsible for overall management of the construction phase of the project including the management of all Contractors.</p>
Rehabilitation	Rehabilitation is defined as the return of a disturbed area, feature or structure to a state that approximates to the state (where possible) that it was before disruption, or to an improved state.
SHE	Safety, Health and Environment.
Solid Waste	Means all solid waste, including construction debris, chemical waste, excess cement/concrete, wrapping materials, timber, tins and cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).

1 INTRODUCTION

Electrawinds Seeland Pty Ltd. (the Applicant) proposes the optimisation of approximately 66.4m of an existing access road, which crosses a non-perennial drainage line on Langeklip Farm (Erf 47) near St Helena Bay within the Saldanha Bay Municipality in the Western Cape Province. The modification, widening and compacting of the existing access road is required as supporting infrastructure to an approved Wind Farm development known as St Helena wind farm (DEA Reference Number: 12/12/20/2157).

In terms of the EIA Regulations, an application of this nature has to undergo a Basic Assessment process. This Basic Assessment (BA) is being undertaken due to the listed activity, triggered by the proposed activity, not being included in the environmental authorisation obtained for the approved St Helena Wind Farm. As per the Department of Environmental Affairs comments, the impacts of the infrastructural modifications associated with watercourse crossings were assessed within the Wind Farm EIA Report, although the listed activity was not specifically applied for. Thus this BA is as a result of this omission and now specifically states that an existing access road crosses a non – perennial watercourse and will be widened and hardened, and electrical cables will be laid down in the modified section of the existing road. .

This draft Environmental Management Programme (EMP) will accompany the Basic Assessment Report (BAR) to the competent authority for review and decision-making. Conditions stipulated by the competent authority will be incorporated in the final EMP for the proposed access road, should a positive authorisation be issued. Arcus GIBB (Pty) Ltd (GIBB) has been appointed as the environmental assessment practitioner.

1.1 Background

The bulk of South Africa's electricity is generated from coal (90%), with approximately 5% generated by nuclear energy and the remaining 5% by a combination of small scale hydro and pumped storage energy ventures. The Western Cape Province has no significant electricity generation capacity as the majority of generation capacity is situated outside its borders in the Gauteng and Mpumalanga Provinces.

Coal combustion in South Africa is the main contributor to carbon dioxide emissions. Consequently, South Africa has one of the highest levels of carbon dioxide emissions per capita in the World. As concerns about global climate change grow, impacts on the South African economy, especially with regards to coal exports, is imminent. Thus, alternative means of producing energy such as renewable energy sources, which have less impact on the environment compared to fossil have to be considered.

Renewable energy that is produced from sustainable natural sources will provide incremental financial resources to stimulate sustainable development. Further, it will contribute towards the country meeting its international commitments made in respect of green house gas emissions, as well as government's objectives set out in the White Paper on Renewable Energy.

Wind energy is plentiful, renewable, widely distributed, clean, and reduces greenhouse gas emissions when it displaces fossil-fuel derived electricity. It is thus attractive to many governments, organizations, and individuals. As most of the sources are indigenous and naturally available, wind energy is more secure in that it is not subject to disruption by international crises or limited supplies, being naturally available.

This access road is required as supporting infrastructure to the approved Wind Farm development.

1.2 Summary of the Proposed Activity

1.2.1 Proposed Development Site

The length of the access road as a whole is approximately 1.6km, and the non – perennial drainage line (2.4 m wide) is crossed at 32° 50' 25" S and 18° 03' 11" E. The section of the access road that, (based on the triggering of the listed activity), will directly affect the drainage line during construction is approximately 66.4m. As illustrated in Annexure 1, to install the box culvert, approximately 108m³ of road material will be cut and imported within the drainage line.

This alignment was discussed with the National Department of Agriculture in a meeting on the 4th of July 2012 where it was agreed that this would be the preferred alignment as it conforms to their requirements for Consent use and Long term leasing. This alignment was assessed by the specialist studies conducted for the Wind Farm and was deemed to be of a low sensitivity.

1.2.2 Service Area and Roads

Access roads will be required for the delivery of the turbines to their assembly positions during construction, as well as for access during the operational phase. The proposed access road that will be harden and enlarged will connect Turbine 2 to the rest of the wind farm. An electrical cable within the modified access road will connect Turbine 2 to the grid. The road will be approximately 5m wide (with an additional 1.5m of vegetation clearance for underground cabling) and approximately 66.4m long. It is envisaged that construction will take approximately 8 days to complete.

1.3 Impacts known to be Associated with the Proposed Activity

1.3.1 Direct Impacts

- (a) Loss of habitat for fauna
- (b) Impacts on flora
- (c) Noise during Construction
- (d) Damage to watercourses
- (e) Specific Construction Impacts

Impacts during the construction phase include impacts associated with:

- Air Quality - During the construction period one of the main impacts would be dust production which could be avoided or minimized through appropriate dust suppression management measures. ;
- Noise - The use of construction instruments, tools and vehicles will temporarily raise the noise levels; and
- Solid waste - The solid waste mainly includes general solid waste and construction waste, but excludes toxic waste.

It should be noted that this EMP must be read in conjunction with the approved EMP for the St Helena Wind Farm and should a conflict arise, the ECO will outline the way forward.

2 ENVIRONMENTAL POLICY

2.1 Environmental Policies and Guidelines

The Contractor is required to develop an environmental management policy before commencement of the proposed works. This policy must consider:

- The Contractor's mission, vision and core values;
- Guiding principles;
- Requirements of, and communication with interested and affected parties (I&APs);
- The commitment to prevent pollution and ecological degradation;
- The importance of coordination with other organisational policies (e.g. quality, occupational health and safety, etc.);
- Reference to specific local and/or regional conditions; and
- A commitment to comply with relevant environmental laws, regulations, by-laws.

The policy, once approved by Project Manager and ECO, must be communicated to all employees and Contractors (and sub-Contractors) of the Contractor, and made available to the public, if requested.

2.2 Legislative Framework

This EMP informs the Contractor as to his 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. All parties associated with the project should note that obligations imposed by the approved EMP are legally binding in terms of environmental statutory legislation. In the event that any rights and obligations contained in this document contradict those specified in the standard or project specifications then the latter shall prevail.

2.2.1 Statutory and Other Applicable Legislation and Standards

The Contractor shall identify and comply with all South African national and provincial environmental legislation, including associated regulations and all local by-laws relevant to the project. Key legislation currently applicable to the design, construction and implementation phases of the project include:

- The Constitution of the Republic of South Africa;

- National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended;
- National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003);
- National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004);
- National Water Act, 1998 (Act No. 36 of 1998);
- Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983);
- National Veld and Forest Fire Act, 1998 (Act No. 101 of 1998);
- Hazardous Substances Act, 1973 (Act No. 15 of 1973);
- National Heritage Resources Act, 1999 (Act No. 25 of 1999);
- National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004);
- National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008);
- Subdivision Of Agricultural Land Act, 1970 (Act No. 70 of 1970);
- Occupational Health and Safety Act, 1993 (Act No. 85 of 1993); and
- All relevant provincial legislation, Municipal by-laws and ordinances.

The following permit requirements would be relevant to the proposed project:

- Water Use Licence from the Department of Water Affairs.

The list of applicable legislation and permits provided is intended to serve as a guideline only and is not exhaustive.

2.2.2 Environmental Standards

All applicable environmental standards will be adhered to.

3 MANAGEMENT AND ORGANISATIONAL STRUCTURE

3.1 Contractual Obligation

In order to ensure that the EMP and/or derivatives are enforced and implemented, these documents must be given legal standing. This shall be achieved through incorporating the EMP and/or derivatives documents as an addendum to the contract documents for the particular project and specifying under particular conditions of the contract for the tender that the requirements of the EMP and/or derivatives apply and must be met. This will ensure that the obligations are clearly communicated to Contractors and that submitted tenders have taken into account, and budgeted for the environmental requirements specified in the EMP and/or its derivatives. The successful tender ultimately becomes the signed contract, thereby ensuring that the included EMP becomes legally binding.

3.2 The Developer

Electrawinds Seeland (Pty) Ltd is the Developer and has overall responsibility for ensuring that the widening and hardening of the access road is undertaken in an environmentally sound and responsible manner, and in particular, reflects the requirements and specifications of the EMP and recommendations from the relevant authorities.

3.2.1 Role

The Developer will be required to assume overall responsibility for the environmental aspects of the construction and development of the project.

3.2.2 Responsibilities

The responsibilities of the Developer will include the following:

- Establish and maintain regular and proactive communications with the PM, Contractor(s) and ECO.
- Review and comment on environmental reports produced by the ECO.
- Ensure that the EMP is reviewed and updated as necessary.

3.2.3 Reporting Structure

The developer will liaise with and/or take instruction from the following:

- Authorities.
- General Public.

3.3 Project Manager (PM)

The PM will ensure that the approved EMP is included in the contract documentation issued to prospective Contractors.

3.3.1 Role

The success of environmental compliance is determined to a large degree by the continual presence of the technically responsible party.

Specific to the implementation of the EMP, the role of the PM will be to:

- Review and approve (in association with the ECO) Method Statements produced by the Contractor in connection with the EMP.
- Oversee the general compliance of the Contractor with the EMP and other pertinent site specifications.
- Liaise between and with the Contractor and ECO on environmental matters, as well as any pertinent engineering matters where these may have environmental consequences.

3.3.2 Responsibilities

The PM's responsibilities will include:

- Be familiar with the contents of the EMP, and his/her role and responsibilities as defined therein.
- Communicate to the Contractor, verbally and in writing, the advice of the ECO and the contents of the ECO reports.
- Request for, review and approve the Method Statements prepared by the Contractor in consultation with the ECO.
- Review and approve drawings produced by the Contractor or professional team for the widening and hardening of the access road.
- Issue site instructions giving effect to the ECO requirements where necessary.
- Review complaints received and make instructions as necessary.
- Maintain a record of complaints from the public and communicate these to the Contractor and the ECO.
- Ensure adequate feedback is given in respect to complaints received.
- Discuss with the ECO the application of penalties for the infringement of the Environmental Specifications, and other possible enforcement measures when necessary.
- Issue penalties as and when necessary.

- Implement Temporary Work Stoppages as advised by the ECO, where serious environmental infringements and non-compliances have occurred.
- Facilitate proactive communication between all role-players in the interests of effective environmental management.

3.3.3 Reporting Structure

The PM will report to the Developer, as and when required.

3.4 Environmental Control Officer (ECO)

The ECO must be acquainted with all legislation pertaining to the environment applicable to this project and must be appropriately trained in environmental management. The ECO must possess the skills necessary to impart environmental management skills to all personnel involved in the contract.

The ECO will monitor, review and verify the implementation of the EMP. The ECO is independent from the Developer, the PM and the Contractor(s). The ECO is given authority to ensure that the EMP is fully implemented and that appropriate actions are undertaken to address any discrepancies and non-compliances.

3.4.1 Role

The overall role of the ECO is to be the site 'custodian' for the implementation, integration and maintenance of the EMP in accordance with the contractual requirements. The ECO will be required to liaise with the PM on the level of compliance with the EMP achieved by the Contractor on a regular basis for the duration of the contract.

3.4.2 Responsibilities

The ECO will have the following responsibilities, at a minimum:

- To advise the PM on the interpretation and enforcement of the Environmental Specifications (ES), including evaluation of non-compliances.
- To supply environmental information as and when required.
- To review and approve Method Statements produced by the Contractor, in conjunction with the PM.
- To demarcate particularly sensitive areas (including all No-Go areas) and to pass instructions through the PM concerning works in these areas.
- To monitor any basic physical changes to the environment as a consequence of the construction works – e.g. evidence of erosion, dust generation and silt loading in runoff – according to an audit schedule.

- Attend regular site meetings between engineers and Contractors.
- To undertake regular monthly audits of the construction works and to generate monthly audit reports. These reports are to be forwarded to the PM who will communicate with the Developer.
- To communicate frequently and openly with the Contractor and the PM to ensure effective, proactive environmental management, with the overall objective of preventing or reducing negative environmental impacts and/or enhancing positive environmental impacts.
- To advise the PM on remedial actions for the protection of the environment in the event of any accidents or emergencies during construction, and to advise on appropriate clean-up activities.
- Review complaints received and make instructions as necessary.
- Identify and make recommendations for minor amendments to the EMP as and when appropriate.
- Ensure that the Contractor, his employees and/or Sub Contractors receive the appropriate environmental awareness training prior to commencing activities.

3.4.3 Reporting Structure

The ECO will report to the Project Manager, who in turn will report to the Developer.

3.5 Contractor

The Developer, or PM acting on his behalf, will appoint a Contractor(s) to undertake the activity. The Contractor(s) will be contractually required to undertake their activities in an environmentally responsible manner, as described in the EMP.

3.5.1 Role

Specific to the EMP, the role of the Contractor will be to:

- Implement, manage and maintain the EMP for the duration of his/her contract.
- Designate, appoint and/or assign tasks to personnel who will be responsible for managing all or parts of the EMP.
- Assign appropriate authority, accountability and responsibility for these personnel to carry out their duties.
- Ensure that all Sub Contractors and other workers appointed by the Contractor are aware of their environmental responsibilities while on site or during the provision of their services off site.
- Ensure that all Sub Contractors and other workers appointed by the Contractor are complying with and implementing the EMP during the duration of their specific contracts.

- Provide appropriate resources including budgets, equipment, personnel and training for the effective control and management of the environmental risks associated with the construction.

3.5.2 Responsibilities

The Contractor will have the following responsibilities:

- Be familiar with the contents of the EMP, and their role and responsibilities as defined therein.
- Comply with the Environmental Specifications contained in the EMP and subsequent revisions.
- Confirm legislative requirements for the construction works, and to ensure that appropriate permissions and permits have been obtained before commencing activities.
- Prepare Method Statements, programme of activities and drawings/plans for submission to the PM (and ECO).
- Method Statements must be submitted to the ECO for approval prior to construction activities commencing.
- Review the site inspection reports and take cognisance of the information and implement recommendations contained therein.
- Notify the ECO and PM, verbally and in writing, immediately in the event of any accidental infringements of the Environmental Specifications and ensure appropriate remedial action is taken.
- Notify the ECO and PM, verbally and in writing at least 10 working days in advance of any activity he/she has reason to believe may have significant adverse environmental impacts, so that mitigation measures may be implemented timely.
- Ensure environmental awareness among employees, sub-contractors and workforce so that they are fully aware of, and understand the Environmental Specifications and the need for them.
- Maintain a register of environmental training for site staff and sub-contractor's staff for the duration of the contract.
- Undertake the required works within the designated working areas.
- Rehabilitating services, utilities, private/public property and other areas adversely affected by construction activities outside of demarcated areas in accordance with the PM's instructions.
- Communicate and liaise frequently and openly with the PM and ECO to ensure effective, proactive environmental management with the overall objective of preventing or reducing negative environmental impacts while enhancing positive environmental impacts.

3.5.3 Reporting Structure

The Contractor will report to and receive instructions from the PM.

3.6 Sub Contractors

The Contractor may from time to time appoint Sub Contractors.

3.6.1 Role

On behalf of the Contractor, Sub-Contractors perform certain services and/or provide certain products. The Sub Contractors will be contractually required to undertake their activities in an environmentally responsible manner, as described in the EMP.

3.6.2 Responsibilities

The Sub-Contractor will have the following responsibilities:

- Be familiar with the contents of the EMP, and his role and responsibilities as defined therein.
- Sub Contractors shall comply with the Environmental Specifications in the EMP and associated instructions issued by the Contractor to ensure compliance.
- Notify the Contractor verbally and in writing, immediately in the event of any accidental infringements of the Environmental Specifications and ensure appropriate remedial action is taken.
- Notify the Contractor, verbally and in writing at least 10 working days in advance of any activity he/she has reason to believe may have significant adverse environmental impacts, so that mitigation measures may be implemented timely.
- Ensure environmental awareness among employees so that they are fully aware of, and understand the Environmental Specifications and the need for them.

3.6.3 Reporting Structure

Sub Contractors will report to and receive instructions from the Main Contractor.

4 DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME: ENVIRONMENTAL AUTHORISATION AND SPECIALIST STUDIES

The Environmental Management Programme typically includes stipulations and mitigation measures identified in mitigation of general and specific issues identified by the Environmental Assessment Practitioner during the EIA process. However, stipulations issued in the Environmental Authorisation, in the event environmental authorisation is granted, recommendations and stipulations made by specialists at the conclusion of their specialist reports, and stipulations made by regulating authorities such as SAHRA are included in this section.

4.1 Environmental Authorisation

The Environmental Authorisation generally stipulates measures deemed necessary by the regulating environmental authority in addition to measures that has been stipulated in the EIA by the EAP. The regulating authority generally also requires the submission of a draft EMP to the authority after environmental authorisation has been granted for review and approval. The EMP will thus incorporate measures stipulated in the Environmental Authorisation. These measures and stipulations will be incorporated in this section of the draft EMP.

4.2 Specialist Studies

Relevant recommendations and mitigation measures made by specialists in their specialist's reports for the larger Wind Farm development are summarised in this section.

4.2.1 Flora and Fauna Impact Assessment

Detailed requirements for minimizing impacts on flora and fauna are as follows:

- The existing access road that connects Turbine 2 to the rest of the Wind Farm affects a watercourse and impacts on this system must be carefully managed to avoid damaging downstream areas. The following mitigation measures have been proposed:
 - Cross watercourses perpendicularly, where possible, to minimize the construction footprint.
 - Adequate culvert and/or bridge structures are required at crossings.
 - Construction must not cause the width of the watercourse to be narrowed or the velocity of the water to significantly increase.

- Disturbed areas must be rehabilitated as quickly as possible after construction. Re-vegetation of disturbed areas must make use of species indigenous to the site.
- A storm water management plan and erosion management plan is to ensure that no damage to watercourses takes place. This management plan/s must indicate how overland flow is managed, surface water velocities attenuated, and how water is returned to natural watercourses without causing canalization or erosion. These plans should be compiled if directed by the ECO.

Alien Invasive Management

- There are various measures that can be employed to control alien invasive plants on site. These include the following:
 - Disturbance of indigenous vegetation must be kept to a minimum. Where disturbance is unavoidable, disturbed areas should be rehabilitated as quickly as possible.
 - Soil stockpiles should not be translocated from areas with alien plants into the site and within the site alien plants on stockpiles must be controlled so as to avoid the development of a soil seed bank of alien plants within the stock-piled soil.
 - Any alien plants must be immediately controlled, including existing invasions near to proposed infrastructure, especially within wetlands and watercourses.
 - An ongoing monitoring programme should be implemented to detect and quantify any aliens that may become established and provide information for the management of aliens within the area of control of the project.

4.3 Regulating Authorities

Regulating authorities may provide comment and recommendations in their approval of the Final BAR. These recommendations will be included in this section if the Final BAR is approved.

5 DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME: PLANNING AND DESIGN

The following section details the minimum range of constraints, controls, procedures and standards that are typically required during the planning and design phase of the proposed wind farm development.

5.1 Environmental Principles and Best Practices Guidelines

5.1.1 Environmental Principles and Best Practices:

- The environment is considered to be composed of both biophysical and social components;
- Construction is a disruptive activity and all due consideration must be given to the environment, including the social environment during the execution of the project to minimise the impact on affected parties;
- Minimisation of areas disturbed by construction activities (i.e. the ‘footprint’ of the construction area) should minimise many of the construction related environmental impacts of the project and reduce rehabilitation requirements and costs;
- All relevant standards relating to international, national, provincial and local legislation, as applicable, should be adhered to. This includes requirements relating to waste emissions, waste disposal practices, noise regulations, road traffic ordinances, etc; and
- Every effort should be made to minimise, reclaim and/or recycle waste materials.

5.1.2 Compliance with Environmental Legislation:

- The Contractor shall ensure that all pertinent legislation concerning the protection of the environment is adhered to and that prevention of pollution is strictly enforced; and
- The ECO/PM shall maintain a database of all pertinent legislation, regulations and guidelines pertinent to the environmental management of the activities being undertaken.

5.1.3 Permits and Permissions:

- The Contractor shall ensure that all relevant permits, certificates and permissions have been obtained prior to any activities commencing on site and are strictly enforced/adhered to; and

- The Contractor shall maintain on site a database of all relevant permits and permissions obtained for the contract as a whole and for pertinent activities for the duration of the contract.

5.1.4 Method Statements

- The Contractor shall submit written Method Statements to the PM and ECO for the activities identified by the PM and/or the ECO;
- Method Statements must indicate what will be done to comply with relevant environmental specification as set out in the EMP;
- Method Statements shall be submitted prior to the proposed commencement of construction activities to allow the PM (and/or ECO) time to study and approve the method statement;
- The Contractor shall not commence work on any activity until such time as the Method Statement has been approved in writing by the ECO and/or PM;
- The ECO may require changes to a Method Statement if it does not comply with the specification or if, in the reasonable opinion of the ECO, the proposal may result in, or carries a greater than reasonable risk of damage to the environment in excess of that permitted by the EMP or any legislation;
- The Contractor shall carry out the activities in accordance with the approved Method Statement;
- Approved Method Statements shall be readily available on the site and shall be communicated to all relevant personnel;
- Approval of the Method Statement shall not absolve the Contractor from any of his obligations or responsibilities in terms of the contract; and
- No claim for delay or additional cost incurred by the Contractor shall be entertained due to inadequacy of a Method Statement.

5.1.5 Content of Method Statements

The Method Statement shall state clearly:

- The type of construction activity;
- Locality where the activity will take place;
- Timing of activities;
- Materials to be used;
- Equipment and staffing requirements;
- Identification of activities, and resultant impacts that may result from the activity;
- Methodology and/or specifications for impact prevention or containment;
- The system to be implemented to ensure compliance with the specifications;
- Emergency or disaster incident and reaction procedures;
- Other information deemed necessary by the ECO; and
- The Contractor shall be responsible for the implementation of the method statements and must demonstrate that these measures are working effectively.

The following Method Statements shall be prepared by the Contractor for approval:

- **Contractor's SHE Officer and Fire Officer**
The name and letter of appointment of the Contractors SHE Officer and Fire Officer must be given to the ECO and the terms of reference for the work to be undertaken must be detailed including time on site, roles and responsibility, interaction with the Contractor and environmental offices, etc.

- **Pollution control**
Expected solid waste types, quantities, methods and frequency of collection and disposal as well as location of disposal sites must be identified and stated in a Method Statement. The Method Statement shall further include methods of minimising, controlling, collecting and disposing of contaminated water, and details of any hazardous substances/materials to be used, together with the transport, storage, handling and disposal procedures for the substances (where applicable).

- **Emergency procedures**
The Contractor shall provide details regarding all relevant emergency procedures that will be implemented for fire control and accidental leaks and spillages of hazardous substances (including fuel and oil). The Contractor shall further include details of risk reduction measures to be implemented including fire fighting equipment, fire prevention procedures and spill kits.

- **Stormwater and erosion control**
The Contractor shall provide details of how stormwater emanating within or adjacent to the construction site may impact on construction activities. Details on how the Contractor will deal with stormwater runoff and potential erosion within the construction footprint must further be provided. Details of any service provider(s) appointed to manage this task must also be provided.

5.1.6 Site Drawings

- The Contractor shall submit to the engineer for his approval a layout plan at least 7 days before construction can begin.

5.1.7 Record Keeping

- Non-compliances identified by the ECO shall be documented and communicated to the Contractor, or designated representative, during the environmental audit as non-compliances are identified, in the monthly audit reports, and during the formal monthly progress/site meetings.

- The Contractor shall maintain an environmental site file containing at a minimum the following documents:
 - Environmental Management Programme;
 - Final Basic Assessment Report;
 - Final design documents and diagrams issued to and by the Contractor;
 - All communications detailing changes of design/scope that may have environmental implications;
 - Daily, weekly and monthly site monitoring reports;
 - Complaints register;
 - Training manual;
 - Training attendance registers;
 - Incident and accident reports;
 - Emergency preparedness and response plans;
 - Copies of all relevant environmental legislation;
 - Disciplinary procedures;
 - Monthly site meeting minutes during construction;
 - All relevant permits (such as a Water Use Licence);
 - Letters or legal documents authorising identified site staff to act in a specified authoritative capacity relating to the protection and preservation of the environmental, and on behalf of the Contractor;
 - Environmental Authorisation on the application from the DEA;
 - All method statements from the Contractor for all phases of the project.

5.1.8 Social Disruption

- The Contractor shall give at least seven days notice to the residents in the vicinity of the construction activities of his intention to begin construction activities in their area.

5.1.9 Existing Services and Infrastructure

- It is the Contractor's responsibility to familiarise himself with the position of existing services and infrastructure that may get damaged due to construction activities.
- The Contractor shall undertake proper planning to ensure that existing services (e.g. roads, pipelines, power lines and telephone services) are not damaged or disrupted unless required by the contract and with the permission of the PM.

5.1.10 Site Division and Contractor's Camp

- The construction camp approved for the greater Wind Farm development shall be used for the hardening and enlargement of the access road.

6 DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME: CONSTRUCTION PHASE

6.1 Health and Environmental Awareness

- The ECO will train the Contractor and his representatives on the conditions of the EMP and Environmental Authorisation and provide them with training material in order to undertake ongoing environmental training on site.
- The Contractor shall ensure that adequate health and environmental training takes place on a continuous basis.
- All employees shall undergo project induction on environmental awareness.
- Where possible, the presentation needs to be conducted in the language of the employees and can be conducted as part of weekly "toolbox talks".
- The Contractor shall provide evidence that such environmental awareness induction courses have been presented.
- The emphasis should be on any (potential) environmental impacts relating to the construction activities to be undertaken on site and the related environmental precautions, which need to be taken to avoid or mitigate these impacts.
- The environmental training should, as a minimum, include the following:
 - The importance of conformance with all environmental policies;
 - The significance of environmental impacts, actual or potential, as a result of their work activities;
 - Their roles and responsibilities in achieving conformance with the environmental policy and procedures, including emergency preparedness and response requirements;
 - The mitigation measures required to be implemented when carrying out their work activities.
 - The importance of not littering;
 - The need to use water sparingly;
 - Details of, and encouragement to, minimise the production of waste and re-use, recover and recycle waste where possible;
 - Details regarding fauna and flora of special concern, including protected/endangered plant and animal species, and the procedures to be followed should these be encountered during the construction phase;
- A training needs analysis shall be conducted by the Contractor and ECO to identify the appropriate environmental and health training programmes, and the appropriate target groups amongst the employees of the Contractor;
- The results of the environment and health training needs analysis shall be filed with the environmental records and used to set objectives and targets;
- Environmental awareness training programmes should contain the names, positions and responsibilities of personnel to be trained, the framework for

appropriate training plans, and a schedule for the presentation of the training courses;

- The Contractor, or designated representative, shall ensure that records of all training interventions are kept;
- The ECO shall monitor the records and undertake regular follow ups.

6.2 Emergency Preparedness

- The Contractor shall compile and maintain environmental emergency procedures to ensure that there will be an appropriate response to unexpected or accidental incidents that may cause environmental impacts.
- Activities that may be addressed in the environmental emergency procedures include, for example, accidental exposure of employees to hazardous substances, veld fires and accidental spillage of hazardous substances.
- These plans should include as a minimum:
 - A list of key personnel;
 - Internal and external communication plans, including prescribed reporting procedures where required by legislation;
 - Actions to be taken in the event of different types of emergencies;
 - Incident recording, progress reporting and remediation measures required to be implemented;
 - Information on hazardous materials, including the potential impact associated with each, and measures to be taken in the event of accidental release;
 - Training plans, testing exercises and schedules for effectiveness;
 - The Contractor shall comply with the emergency preparedness and incident and accident-reporting requirements, as required by the Occupational Health and Safety Act, 1993 (Act No 85 of 1993), the National Environmental Management Act, 1998 (Act No 107 of 1998), the National Water Act, 1998 (Act No 36 of 1998) and the National Veld and Forest Fire Act, 1998 (Act No 101 of 1998) as amended and/or any other relevant legislation.
 - The Contractor shall further maintain an environmental incidents register to record incidents that occur on site as a result of the activities associated with the contract. Environmental incidents constitute all those activities and incidents that may have a negative impact on the surrounding natural environment.
 - Each environmental incident shall be investigated by the ECO and an environmental incident report shall be forwarded to the Contractor, Proponent and relevant authority.

- Each environmental incident report shall contain as a minimum a description of the incident, a statement on the severity and significance of the impact, and actions taken to remediate the resultant damage.
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6.3 Site Establishment

6.3.1 Site Demarcation

- The construction camp approved for the greater Wind Farm development will be used for the enlargement and hardening of the access road.

6.3.2 Vegetation Clearance

- Vegetation that will be cleared will be 1.5m on either side of the enlarged road.
- The minimum amount of vegetation clearance must take place.
- All plants not interfering with construction should be left undisturbed.
- Collection or wilful damage to any plants outside of the areas demarcated for clearing is not allowed.
- The Contractor shall destroy all alien vegetation within the designated area.
- The Contractor, or responsible sub-contracted service provider, must ensure that seeds from alien vegetation collected during site clearance are not dispersed so as to counter the spread of alien vegetation type. Failure to do so may result in prosecution in terms of the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983), which states that any person removing any weed (which includes alien vegetation) shall ensure that it is not able to reproduce itself. A fine and/or imprisonment can be imposed.
- The ECO must undertake a targeted survey of protected trees within the development footprint, and marked with red tape all protected individuals.
- A permit must be obtained from the Department of Agriculture, Forestry and Fisheries (DAFF) prior to the removal or damage of any protected tree species.
- Only trees and shrubs directly affected by the works may be felled or cleared.
- Once construction has been completed, re-vegetation of severely disturbed areas must be undertaken (as per the discretion of the ECO).

6.3.3 Protection of Natural Features

- The Contractor shall not deface, paint, damage or mark any natural features situated in or around the Site for survey or other purposes unless agreed beforehand with the ECO. Any features affected by the Contractor in contravention of this clause shall be restored / rehabilitated to the satisfaction of the ECO.

- The Contractor shall not permit his employees to make use of any natural water sources (e.g. springs, streams, and open water bodies) for the purposes of swimming, personal washing and the washing of machinery or clothes.

6.3.4 Protection of Flora and Fauna

- Flora shall not be removed, damaged or disturbed nor shall any vegetation be planted except to the extent necessary for the carrying out of the construction works.
- There are no plant species of conservation concern along the access road, thus a plant rescue and protection plan is not required.

6.3.5 Protection of Archaeological and Palaeontological Sites

- If any palaeontological/archaeological artefacts (human remains, shell middens, Stone Age tools, fossil bones, graves, etc.) are unearthed during excavations the Contractor shall stop work immediately and inform the ECO and PM. The ECO will inform the South African Heritage Resources Agency (SAHRA) and arrange for a palaeontologist/archaeologist to inspect, and if necessary excavate, the material, subject to acquiring the requisite permits from SAHRA.
- Any person who causes intentional damage to archaeological or historical sites and/or artefacts could be penalised or legally prosecuted in terms of the National Heritage Resources Act, 1999 (Act No. 25 of 1999).

6.4 Site Maintenance

The construction camp approved as part of the greater Wind Farm will be utilised for the enlargement and hardening of the access road.

6.4.1 Transport of Materials/Components

- Components and materials shall be appropriately secured to ensure safe passage between destinations. Loads including, but not limited to sand, stone chip, fine vegetation, refuse, paper and cement, shall have appropriate cover to prevent it from spilling over the side of the vehicle during transit.
- The Contractor shall be responsible for any clean-up resulting from the failure by his staff or supplier to properly secure materials to be transported.

6.4.2 Solid Waste Management (where applicable)

- The Contractor will be required to prepare and submit a Method Statement on waste control and management at the site.

- No burning, burying or dumping of any waste materials, vegetation, litter or refuse shall be permitted.
- Solid waste shall be removed from site on a weekly or fortnightly basis by the Contractor or appropriate service provider.
- Solid waste must be recycled where possible and the remainder spoiled at an approved municipal land fill site or waste disposal service provider.
- Disposal certificates for each waste removal event shall be issued and kept in the site environmental file for auditing purposes.
- The Contractor must facilitate the re-use of cleared trees and bush (e.g. by allowing controlled wood cutting and removal of wood).
- No burning of cleared vegetation shall be allowed on site. Chipping or composting of vegetation shall be allowed where viable.

6.4.3 Stockpiling

- Any stockpiling of gravel, cut, fill or any other material including spoil shall be in areas approved by the ECO within the defined working area.
- The Contractor shall ensure that stockpiled material is not lost due to exposure to the elements. If the stockpiled material is in danger of being washed or blown away, the Contractor shall cover it with a suitable material, such as hessian or plastic. Stockpiles of topsoil shall not be covered with plastic.
- No stockpiling of any material shall be allowed within the 100 m of any residential areas or 20 m of any “no go” area.

6.4.4 Waste Water and Contaminated Water Management

- The Contractor shall prepare a Method Statement on the control and management of waste water on site, including providing for the appropriate disposal of contaminated water.
- No grey water runoff or uncontrolled discharges from the site/working areas (including wash down areas) to adjacent or nearby water bodies shall be permitted.
- Water containing environmental pollutants shall be discharged into a conservancy tank, where appropriate, for removal from site.
- The Contractor shall also prevent runoff loaded with sediment and other suspended materials from the site/working areas from discharging to adjacent watercourses and/or stormwater infrastructure.
- Potential pollutants of any kind and in any form shall be kept, stored and used in such a manner that any escape can be contained.
- Wash down areas must be approved by the PM and ECO and shall not pollute the surrounding environment.
- The Contractor shall notify the PM and ECO of any pollution incidents on site.

6.4.5 Storm Water Management and Erosion Control

- The following areas will require appropriate erosion control measures and re-vegetation methods as these are regarded as being of high erosion risk:
 - Slopes > 20°;
 - Slopes with convergent sub-surface drainage (percolines);
 - Road culverts;
 - Cut and fill slopes in areas of slope instability or erodable geology.
- The Contractor shall take all reasonable measures to control storm water and the erosive effects thereof and shall provide a Method Statement for approval by the PM and ECO.
- Streams, rivers, pans, wetlands, dams, and their catchments shall be protected from erosion, direct or indirect spillage of pollutants such as refuse, garbage, cement, concrete, sewage, chemicals, fuels, oils, aggregate, tailings, wash water, organic materials and bituminous products.
- During construction, the Contractor shall protect areas susceptible to erosion by installing necessary temporary or permanent drainage works as soon as possible when directed by the PM or ECO.
- Areas affected by construction related activities and/or susceptible to erosion must be monitored regularly for evidence of erosion.
- Storage containers must be inspected regularly to prevent leaks into the aquatic system.
- Weather forecasts of up to three days in advance must be monitored on a daily basis to avoid exposing soil or building works or materials during a storm event and appropriate action must be taken in advance to protect construction works should a storm event be forecasted.
- On any areas where the risk of erosion is evident, special measures may be necessary to stabilise the areas and prevent erosion. These may include, but not be restricted to:
 - Confining construction activities.
 - Using cut-off berms.
 - Using mechanical cover or packing structures such as geofabric to stabilise steep slopes or hessian, gabions and mattress and retaining walls.
 - Straw stabilising.
 - Brush cut packing.
 - Constructing anti-erosion berms.
 - The erosion prevention measures must be implemented to the satisfaction of the PM and ECO.
 - Where erosion does occur on any completed work/working areas, the Contractor shall reinstate such areas and areas damaged by the erosion at his own cost and to the satisfaction of the PM and ECO.

- Traffic and movement over stabilised areas shall be restricted and controlled. Any damage to the stabilised areas shall be repaired and maintained to the satisfaction of the PM and ECO.
- The Contractor shall be liable for any damage to downstream property caused by the diversion of overland storm water flows.

6.4.6 Noise Control

- The Contractor shall keep noise level within acceptable limits. The Contractor shall comply with all relevant guidelines and regulations.
- All vehicles and machinery shall be fitted with appropriate silencing technology that shall be properly maintained.
- Reverse hooters of heavy earthmoving vehicles must be set at such a level that the beeping sound does not create a nuisance to residents of nearby houses.
- The use of all plant and machinery shall be appropriate to the task required in order to reduce noise levels and/or environmental damage.
- Should the PM approve any noisy construction activities outside of normal working hours, affected residents and ECO shall be notified by the Contractor at least 5 days in advance of the event.
- Any complaints received by the Contractor regarding noise will be recorded and communicated to the PM and ECO.

6.4.7 Dust Control

- The Contractor shall be responsible for the control of dust arising from his operations and activities.
- Control measures shall include regular spraying of working/exposed areas with water at an application rate that will not result in soil erosion or runoff. The frequency of spraying will be agreed with the PM.
- The excavation, handling and transport of erodible materials shall be avoided under high wind conditions.
- Soil stockpiles shall be wetted and/or sheltered from the wind, as required.

6.4.8 Fire Prevention and Control

- The Contractor shall take all reasonable and precautionary steps to ensure that fires are not started as a consequence of his activities on site.
- The Contractor shall ensure that there is basic fire-fighting equipment available on site. Fire-fighting equipment must be in working order and serviced to date.
- The Contractor shall appoint a Fire Officer who shall be responsible for ensuring immediate and appropriate actions in the event of a fire and shall ensure that employees are aware of the procedures to be followed. The Contractor shall forward the name of the Fire Officer to the ECO for his approval within 7 days of being on site.

- Flammable materials should be stored under conditions that will limit the potential for ignition and the spread of fires.
- Smoking shall not be permitted in those areas where there is a fire hazard, e.g. fuel storage areas and areas susceptible to the rapid spread of fires.
- The Contractor shall hold fire prevention talks with staff to create an awareness of the risks of fire.

6.4.9 Emergency Procedures

- The Contractor shall ensure that his employees and Sub Contractors on site are aware of the procedure for dealing with accidental spills and leaks.
- The Contractor shall also ensure that the necessary materials and equipment for dealing with the spills and leaks are available on site at all times.
- The site shall have a supply of absorbent material readily available to absorb any accidental hydrocarbon spills. The quantity of such material shall be able to absorb/ deal with a minimum of 200 litres of spill.
- The Contractor may contain the spill using sand berms, sandbags, sawdust or absorbent materials.
- The area shall be cordoned off and secured.
- The Contractor shall notify the ECO, PM and relevant authorities of any spills that occur.
- The treatment and remediation of all spills shall require method statements.
- The Contractor shall assemble and clearly list the relevant emergency telephone contact numbers for staff and brief staff on the required procedures. These contact details shall be listed in English, and any other relevant language, in the site office, construction camp and any other suitable areas.
- The treatment and remediation of areas affected by emergencies shall be undertaken to the satisfaction of the PM and ECO at the cost of the Contractor where his staff have been proven to be responsible for the emergency.

6.5 Construction Activities

6.5.1 Community Relations

- The Contractor shall erect and maintain information boards in the positions, quantities, designs and dimensions required by municipal specifications. Such boards shall include contact details for complaints by members of the public in accordance with details provided by the ECO.
- The Contractor must keep a Complaints Register on Site. The Register shall contain contact details of complainants, the nature of the complaint, details on the complaint itself, as well as the date and time that the complaint was made and resolved.

- The Contractor, or if required the ECO, shall be responsible for responding to queries and/or complaints and may request assistance from the Contractor's Management Staff.
- The Contractor's staff shall in no way be a nuisance to residents or clients seeking the services of the established businesses in the area. Any complaints received by the PM will be investigated, addressed and, if deemed necessary, the relevant persons will be suspended from the project.
- The PM may request a representative of the Contractor to be available to discuss issues raised by residents and make information available to them on construction activities.

6.5.2 Non-Working Times

- Ordinarily, construction works shall be executed solely between sunrise and sunset from Monday to Saturday, inclusive, of any week, unless work is necessary for the saving of life or property or for the safety of the work.
- For any deviation from the ordinary working hours the written approval of the PM must be obtained before such works commences.

6.5.3 Safety at the Construction Site

- Safety precautions must be taken to ensure that residents and pedestrians residing in the area do not come to harm.
- The Contractor must ensure that all staff is compliant with the relevant safety regulations on site and wears applicable safety clothing and gear at all times while on site.

6.6 Monitoring

6.6.1 Obligations of the Contractor

- The Contractor, or suitably qualified and experienced staff member acting on his behalf, shall inspect the site on a daily basis to ensure that the environmental specifications of the EMP are adhered to.
- The Contractor shall provide the PM with a verbal report, at least fortnightly, detailing compliance with the EMP as well as environmental performance.
- The Contractor shall maintain a record of incidents (spills, impacts, complaints, legal transgressions, etc.) as well as corrective and preventive actions taken, for submission to the PM at the scheduled project meetings.
- The PM shall appoint a qualified and experienced ECO to ensure implementation of and adherence all parties to the EMP.

- The appointed ECO shall conduct a pre-construction site inspection to identify all sensitive environments, habitats, and No-Go areas.
- The ECO shall prepare a pre-construction audit report, which will include a photographic record of the site and will report on the key features of the site. The photographic record of the site shall serve as a measuring staff against which rehabilitation will be measured later.
- The ECO shall conduct regular audits to ensure that the system for implementation of the EMP is operating effectively. The audit shall check that a procedure is in place to ensure that:
 - The EMP and the Method Statements being used are the up to date versions.
 - Variations to the EMP, Method Statements and non-compliances and corrective actions are documented.
 - Emergency procedures are in place and effectively communicated to personnel.
- The audit programme shall consist of the following at a minimum:
 - First audit no later than 1 month after construction commences;
 - Thereafter audits at monthly intervals;
 - An audit one week prior to practical completion of the project is granted; and
 - A post construction audit within 1 week after the Contractor has moved off site. This is to ensure that the Contractor has met all his environmental obligations in terms of the EMP.

6.6.2 Compliance with the EMP

The Contractor and/or his agents are deemed not to have complied with the EMP and remedial action if:

- There is evidence of contravention of the EMP clauses within the boundaries of the site or extensions.
- Environmental damage ensues due to negligence.
- The Contractor fails to comply with corrective or other instructions issued by the PM, within a time period specified by the PM.

7 DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME: OPERATIONAL PHASE

7.1 Environmental Procedures and Specifications

7.1.1 Erosion Control (if applicable)

The various protective measures that were installed during the construction phase must be properly maintained, e.g. the vegetation of road verges and cut faces must be inspected and maintained on a regular basis.

Operational impacts are not envisaged to occur as the underground cabling will be placed in sleeves for easy maintenance and vegetation will be allowed to re-establish by reintroducing topsoil and the access road. Once construction is complete the farm road will remain gravel in nature and will remain the property of the land owner and no further hardening will be required. As such, decommissioning of the access road is not foreseen either. The pre-cast concrete box culvert will allow controlled movement of water (with limited impediment) via its natural course and limit the amount of erosion that occurs.

ANNEXURE 1 – Affected Section of Access Road