

ALBANY WIND ENERGY FACILITY NEAR MAKHANDA (GRAHAMSTOWN), EASTERN CAPE PROVINCE

DFFE Reference Number: 14/12/16/3/3/2/1131

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

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ENVIRONMENTAL AND SOCIAL ADVISORY SERVICES

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REPORT VERSION:

DRAFT

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NAME (CES)	RESPONSIBILITY	DATE
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Ms Rosalie Evans	Compiling Draft EMPr	July 2021

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DEFINITIONS

For the purposes of this Environmental Management Programme (EMPr), the following terms, abbreviations and descriptions apply:

TERMS	DESCRIPTION
Alien Vegetation	Alien vegetation is defined as undesirable plant growth which shall include, but not be limited to all declared category 1 and 2 listed invader species as set out in the Conservation of Agricultural Resources Act (CARA) regulations. Other vegetation deemed to be alien shall be those plant species that show the potential to occupy in number, any area within the defined construction area and which are declared to be undesirable. This includes plant species identified as Alien and invasive species in the National Environmental Management Biodiversity Act of 2004, Alien and Invasive Species Regulations, 2014.
Cement-laden water	Cement laden water refers to water containing cement or concrete arising from the Contractor's activities.
Contaminated water	Contaminated water refers to water that has been contaminated by the Contractor's activities such as with hazardous substances, hydrocarbons, paints, solvents and runoff from plant, workshop or personnel wash areas but excludes water containing cement/ concrete or silt.
Construction Camp	Construction camp (site camps) refers to all storage and stockpile sites, site offices, container sites, workshops and testing facilities and other areas required to undertake construction activities.
Environment	Environment refers to the surroundings within which humans exist and that could be 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 Aspect	An environmental aspect is any component of a Contractor's construction activity that is likely to interact with the environment.
Environmental Authorisation (EA)	An Environmental Authorisation (EA) refers to a written statement from the relevant environmental authority, with or without conditions, that records the approval (partial approval or refusal) of a proposed project and the mitigating measures required to prevent or reduce the effects of environmental impacts during the lifespan of a contract.
Environmental Control Officer (ECO)	An Environmental Control Officer (ECO) refers to a suitably qualified and experienced person or entity appointed for the construction and/or operation of works, to perform the obligations specified in the EA.
Environmental Impact	An impact or environmental impact is the change to the environment, whether desirable or undesirable, that will result from the effect of a construction activity. An impact may be the direct or indirect consequence of a construction activity.
Environmental Management Plan/Programme (EMP/EMPr)	An Environmental Management Plan (EMP) or Programme (EMPr) is an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning specific to a project are prevented; and that the positive benefits of the project are enhanced.

Environmental Management System (EMS)	The internationally accepted and recognized environmental management system (EMS) which enables companies, organizations and operations to systematically manage, prevent and reduce environmental problems and associated costs. In terms of ISO 14001 an EMS is defined as, " <i>that part of the overall management system that includes organizational structure, planning activities, responsibilities, procedures, processes and resources for developing, implementing, reviewing and maintaining the environmental policy.</i> "
Environmental Policy	Environmental Policy is a statement (or statements) by the organisation of its intentions and principles in relation to its overall environmental performance which provides a framework for action and for the setting of its environmental objectives and targets.
Environmental Site Officer (ESO)	An Environmental Site Officer (ESO) refers to the site-based designated person responsible for implementing the environmental provisions of the construction contract and is appointed by the service provider that carries-out construction activities.
External Auditor	An External Auditor is a suitably qualified and experienced independent expert as per the required auditor qualifications (ISO 14012).
Independent Environmental Consultant (IEC)	An Independent Environmental Consultant (IEC) is a suitably qualified and IEC appointed by the Engineer to perform the obligations specified in the Contract. The IEC must provide reports to the regulatory authority, the Engineer and any other parties as specified by the regulatory authority.
Interested and/or Affected Party (I&AP)	An Interested and/or Affected Party (I&AP) is contemplated in Section 24(4)(d) of the NEMA (1998, Act No. 107) and which, in terms of that section, includes – (i) Any person, groups of persons, organisation interested in or affected by an activity, and; (ii) Any organ of state that may have jurisdiction over any aspect of the activity.
ISO 14001 Environmental Management System (ISO 14001)	The internationally accepted and recognised Environmental Management System as reflected in the document SABS ISO 14001: 1996; the most recent being the ISO 14001:2015.
Method Statement (MS)	A Method Statement (MS) is a written submission by the Contractor to the ECO in response to the EMPR or to a request by the ECO, setting out the plant (construction equipment), materials, labour and method the Contractor proposes to carry out an activity, identified by the relevant specification or the ECO when requesting the Method Statement. The MS should be in such detail that the ECO is able to assess whether the Contractor's proposal is in accordance with the EMPR and/or will produce results in accordance with the EMPR.
Mitigate/Mitigation	Mitigate (or mitigation) refers to the implementation of practical measures to reduce the adverse impacts, or to enhance beneficial impacts of a particular action.
No-Go Area	A no-go area refers to an area in which construction activities are prohibited.
Pollution	According to the NEMA (Act No. 107 of 1998), pollution can be defined as, " <i>Any change in the environment 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</i> ".
Potentially hazardous substance	A potentially hazardous substance refers to a substance, which, in the reasonable opinion of the ECO, can have a harmful effect on the environment. Hazardous Chemical Substances are defined in the Regulations for Hazardous Chemical Substances published in terms of the Occupational Health and Safety Act.
Reasonable	Reasonable means reasonable in the opinion of the ECO, after consultation with the ESO - unless the context indicates otherwise.
Rehabilitation	Rehabilitation refers to re-establishing or restoring something to its original state or to a healthy, sustainable capacity or state.
Site	A site, in this context, refers to the area in which construction is taking place.

Solid waste	Solid waste refers to all solid waste materials, including construction debris, chemical waste, excess cement/concrete, wrapping materials, timber, tins, cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).
Species of Conservation Concern (SCC)	Species of Conservation Concern (SCC) refers to species listed in the rare, indeterminate, or monitoring categories of the South African Red Data Books, and/or species listed in globally near threatened, nationally threatened or nationally near threatened categories (Barnes, 1998).
Threatened species	Threatened species are defined as: a) species listed in the endangered or vulnerable categories in the revised South African Red Data Books or listed in the globally threatened category; b) species of special conservation concern (i.e. taxa described since the relevant South African Red Data Books, or whose conservation status has been highlighted subsequent to 1984); c) species which are included in other international lists; or d) species included in Appendix 1 or 2 of the Convention of International Trade in Endangered Species (CITES).
Topsoil	Topsoil refers to the top 100 mm of soil and may include top material e.g. vegetation and leaf litter.

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1 INTRODUCTION

Albany Wind Power (Pty) Ltd. plans to develop, construct and operate a Wind Energy Facility (WEF) approximately seven kilometres (7 km) east of Makhanda/Grahamstown in the Eastern Cape Province. The project site is situated in the Makana Local Municipality (LM) which forms part of the Sarah Baartman District Municipality (DM). According to the data recorded by the applicant in the area as well as the WASA (Wind Atlas for South Africa, CSIR, 2018) this project site appears to have favourable wind conditions to operate a wind farm.

The proposed Albany WEF will consist of up to forty-three (43) turbines, with a maximum output generation capacity of 297 Mega Watts (MW) of power. The WEF will also include a short powerline and switching stations in order to connect the WEF to the existing Eskom Albany substation (this powerline will be applied for in a separate environmental application, however the project description of the application will appear in this document in order for the development to be considered as a whole). The turbine footprints and associated facility infrastructure (internal access roads, substations, construction compound, batching plant and operations building) will cover a maximum area of approximately 55 ha (post rehabilitation) depending on the final layout design, should the project proceed to the construction phase.

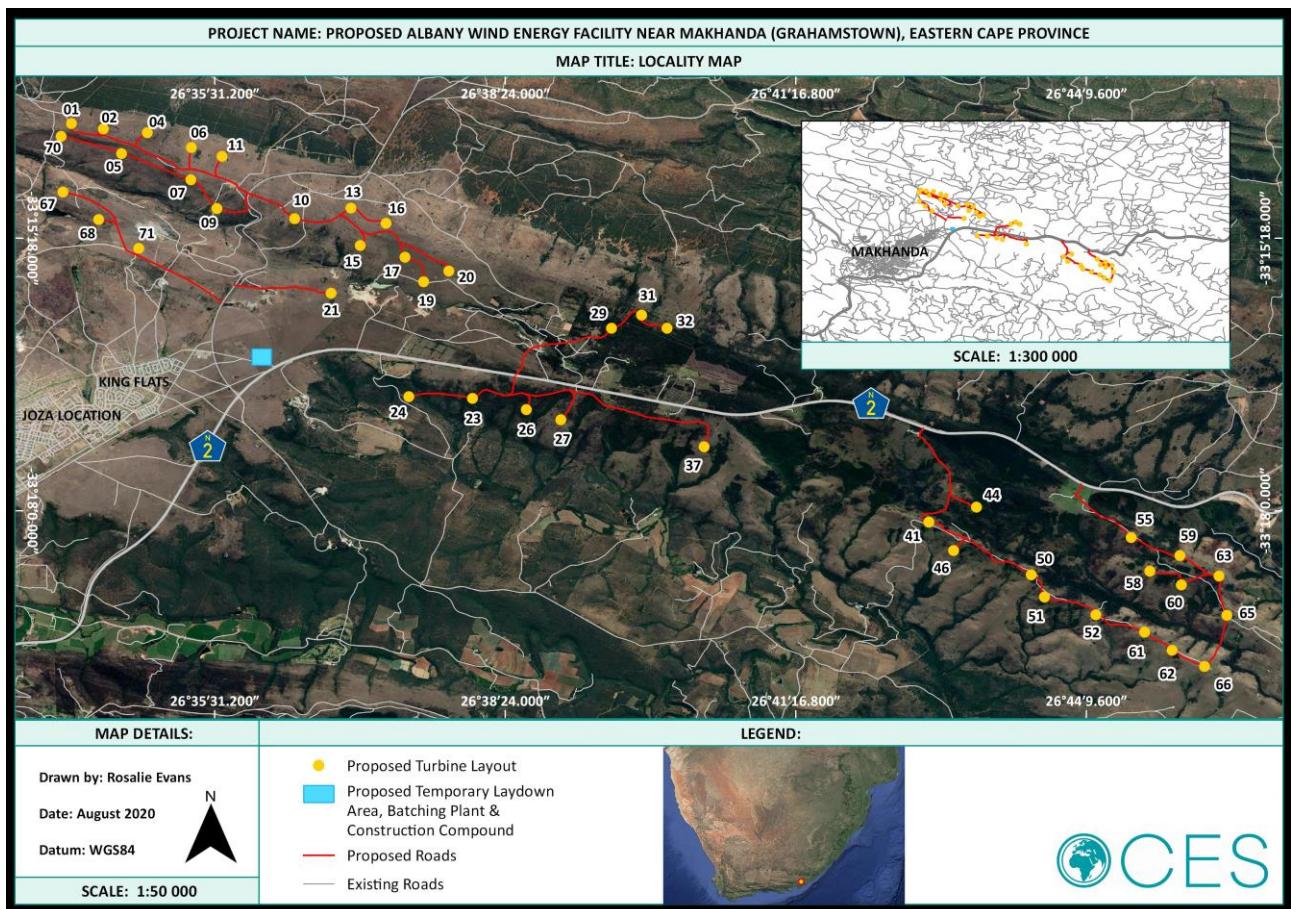


Figure 1.1: Locality Map of the Proposed Albany WEF (including the Proposed Overhead Line).

1.1 OBJECTIVES OF THE EMPr

This Environmental Management Programme (EMPr) has been compiled to provide mitigation, monitoring and institutional measures to be taken during the construction and operation of the Albany WEF near Makhanda in the Eastern Cape Province. These measures aim to eliminate, offset and/or reduce adverse environmental and social impacts.

This EMPr informs all relevant parties, in this case, the Project Coordinator, the Contractor, the Environmental Control Officer (ECO) and all other staff employed by Albany Wind Power (Pty) Ltd at the site, of their duties in the fulfilment of the legal requirements for the construction and operation of the Albany WEF, with particular reference to the prevention and mitigation of anticipated potential environmental and social impacts.

All parties should note that obligations imposed by the EMPr are legally binding in terms of the Environmental Authorisation (EA) granted by the relevant environmental permitting authority, the national Department of Forestry, Fisheries and the Environment (DFFE).

The general objectives of the EMPr are to:

- Ensure compliance with the regulatory authority stipulations and guidelines which could be local, provincial, national and/or international;
- Ensure that there is sufficient allocation of resources on the project budget so that the scale of EMPr-related activities is consistent with the significance of project impacts;
- Verify environmental performance through information on impacts as they occur;
- Respond to unforeseen events;
- Provide feedback for continual improvement in environmental performance;
- Identify a range of mitigation measures which could reduce and mitigate the potential impacts to minimal or insignificant levels;
- Detail specific actions deemed necessary to assist in mitigating the environmental impact of the project;
- Identify measures which could optimize beneficial impacts;
- Create management structures which address the concerns and complaints of I&APs relating to the development;
- Establish a method of monitoring and auditing environmental management practices during all phases of the activity;
- Ensure that safety recommendations are complied with; and
- Specify time periods within which the measures contemplated in the final EMPr must be implemented, where appropriate.

1.2 STRUCTURE AND FUNCTION OF THE EMPR

An EMPr is focused on sound environmental management practices, which will be undertaken to minimise adverse impacts on the environment through the lifetime of a development. In addition, an EMPr identifies measures which should be in place or will be actioned to manage any incidents and emergencies that could occur during the operation of the project.

As such, the EMPr provides specifications which must be adhered to in order to minimise adverse environmental and social impacts associated with the construction and operation of the Albany WEF. The contents of the EMPr are consistent with the requirements as set out in Appendix 4 of the National Environmental Management Act (NEMA) (Act No. 107 of 1998, as amended) Environmental Impact Assessment (EIA) Regulations (2014 and subsequent 2017 amendments), as stipulated below.

REQUIREMENTS OF AN ENVIRONMENTAL MANAGEMENT PROGRAMME IN TERMS OF APPENDIX 4 OF GN R. 982 (GN R. 326, 2017)

- (1) An EMPr must comply with Section 24(N) of the Act and include -
 - (a) Details of -
 - (i) The EAP who prepared the EMPr; and
 - (ii) The expertise of the EAP to prepare an EMPr, including a curriculum vitae;

- (b) A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;
- (c) A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;
- (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 –
- (i) Planning and design;
 - (ii) Pre-construction activities;
 - (iii) Construction activities;
 - (iv) Rehabilitation of the environment after construction and where applicable post closure; and
 - (v) Where relevant, operation activities;
- (f) A description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable include actions to –
- (i) Avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;
 - (ii) Comply with any prescribed environmental management standards or practices;
 - (iii) Comply with any applicable provisions of the Act regarding closure, where applicable;
 - (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);
- (h) The frequency of monitoring the implementation of the impact management actions contemplated in (f);
- (i) An indication of the persons who will be responsible for the implementation of the impact management actions;
- (j) The time periods within which the impact management actions contemplated in paragraph (f) must be implemented;
- (k) The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);
- (l) A program for reporting on compliance, taking into account the requirement as prescribed by the regulations;
- (m) An environmental awareness plan describing the manner in which –
- (i) The applicant intends to inform his or her employees of any environmental risk which may result from their work; and
 - (ii) Risks must be dealt with in order to avoid pollution or the degradation of the environment; and
- (n) Any specific information that may be required by the competent authority.
- (2) Where a government notice *gazetted* by the Minister provides for a generic EMPr, such generic EMPr as indicated in such notice will apply.

1.3 LEGAL REQUIREMENTS

Construction must 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 of their duties in the fulfilment of the project objectives, with reference to the prevention and mitigation of environmental and social impacts caused by the construction and operational activities associated with the Albany WEF. The Contractor should note that obligations imposed by the approved EMPr are legally binding in terms of environmental statutory legislation and in terms of the additional conditions to the general conditions of contract which pertain to this project. If any rights and obligations contained in this document contradict those specified in the standard or project specifications, then the latter must prevail.

The Contractor must 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 phases of the project must be complied with. The list of applicable legislation provided in Table 1.1 below is intended to serve as a guideline only and is not exhaustive.

Table 1.1: Relevant Legislation, Policies and Guidelines.

TITLE OF LEGISLATION, POLICY OR GUIDELINE:	DATE:
National Environmental Management Act (NEMA) (Act No. 107 of 1998) and its subsequent amendments	1998 and 2014 amendments
National Environmental Management Act (NEMA) (Act No. 107 of 1998) Environmental Impact Assessment (EIA) Regulations (2014 and subsequent 2017 amendments)	2014 and 2017 amendments
The Constitution Act (Act No. 108 of 1996)	1996
National Heritage Resources Act (NHRA) (Act No. 25 of 1999)	1999
National Water Act (NWA) (Act No. 36 of 1998) and its subsequent amendments	1998
National Environmental Management: Waste Act (NEMWA) (Act No. 59 of 2008) and its subsequent amendments	2008
National Environmental Management: Protected Areas Amendment Act (NEMPA) (Act No. 31 of 2004)	2004
National Environmental Management: Air Quality Act (NEMAQA) (Act No. 39 of 2004) and its subsequent amendments	2004
Conservation of Agricultural Resources Act (CARA) (Act No. 43 of 1983)	1983
National Environmental Management: Biodiversity Act (NEMBA) (Act No. 10 of 2004)	2004
National Forest Act (NFA) (Act No. 84 of 1998) and its subsequent amendments	1998
National Environmental Management: Biodiversity Act, Alien and Invasive Species Regulations (2014)	2014
Occupational Health and Safety Act (OHSA) (Act No. 85 of 1993)	1993
Hazardous Substances Act (HSA) (Act No. 15 of 1973)	1973
Spatial Planning and Land Use Management Act (SPLUMA) (Act No. 16 of 2013)	2013
Electricity Regulation Act (Act No. 4 of 2006) and its subsequent amendments	2006
Aviation Act (Act No. 74 of 1962): 13 th Amendment of the Civil Aviation Regulations 1997, dated 2008	1962, 1997 and 2008
Minerals and Petroleum Resources Development Act (MPRDA) (Act No. 28 of 2002) and subsequent 2013 amendments	2002 and 2013 amendments
Subdivision of Agricultural Land Act (Act No. 70 of 1970)	1970
National Road Traffic Act (NRTA) (Act No. 39 of 1996)	1996
National Veld and Forest Fire Act (Act No. 101 of 1998)	1998
Environment Conservation Act (ECA) (Act No. 73 of 1989) Noise Control Regulations	1989
Telecommunication Act (1966)	1966
Provincial Nature and Environmental Conservation Ordinance (No. 19 of 1974)	1974
Local Municipality: Land Rezoning Permit. LUPO Ordinance (No. 15 of 1985)	1985
National Energy Regulator of South Africa (NERSA): Generation License	
Eskom: Connection agreement and Power Purchase Agreement (PPA)	
Makhana Local Municipality Spatial Development Framework (SDF), Integrated Development Plan (IDP) and municipal by-laws	
Sarah Baartman District Municipality SDF and IDP	

1.4 ENVIRONMENTAL AUTHORISATION

In accordance with the requirements of the NEMA EIA Regulations (2014 and subsequent 2017 amendments), the proposed Albany WEF has been subjected to a Scoping and EIA Process.

In terms of the EIA Process, all reports generated from the environmental studies form part of a series of documents for the project. The Environmental Impact Report (EIR) identified potentially significant environmental and social impacts and was the main report in the series. Additional specialist assessments serve to supplement the assessment contained in the EIR.

This EMPR interprets the findings of the EIR and prescribes project-specific specifications to be achieved. The EMPR is a progressive working document which will be updated based on the relevant conditions stipulated in the Environmental Authorisation (EA). The EMPR will then be submitted to DFFE (along with the final approved layout) for approval prior to the commencement of construction.

2 DETAILS OF THE EAP AND ENVIRONMENTAL ASSESSMENT TEAM

EAP: Dr Alan Carter, Pri.Sci.Nat, EAPSA (awaiting EAPASA registration)

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DR ALAN CARTER

Alan has extensive training and experience in both financial accounting and environmental science disciplines with international accounting firms in South Africa and the USA. He is a member of the American Institute of Certified Public Accountants (licensed in Texas) and holds a PhD in Plant Sciences. Alan has been responsible for leading and managing numerous and varied consulting projects over the past 25 years. He is a registered professional with the South African Council for Natural Scientific Professionals (SACNASP). Alan has led large scale EIAs for 20+ wind and solar energy projects.

MS CAROLINE EVANS

Caroline Evans is a Senior Environmental Consultant with more than six (6) and a half years' experience and based in the Grahamstown branch. She holds a BSc degree in Zoology and Environmental Science (with distinction) and a BSc Honours degree in Environmental Science (with distinction), both from Rhodes University. Caroline has completed accredited courses in environmental impact assessments and wetland assessments. Caroline's primary focuses include Project Management, the general Environmental Impact Assessment Process, Visual Impact Assessments and Wetland Impact Assessments. Examples of fields in which Caroline was the project manager and lead report writer include Wind Energy Facilities and the associated infrastructure (including powerlines), Solar PV, Wastewater Treatment Works, Housing Developments and Agricultural Developments. Her experience with wind energy facilities and associated infrastructure includes the project management and report writing for the Umsobomvu WEF, Dassiesridge WEF, Scarlet Ibis WEF, Waaihoek WEF and the Great Kei WEF. Caroline is well versed in South African policy and legislation relating to development, particularly in the Eastern Cape Province. In addition, Caroline's project management experience has helped her gain knowledge and experience in the technical and financial management and coordination of large specialist teams, competent authority and stakeholder engagement, and client liaison.

MS ROSALIE EVANS

Rosalie is a Senior Environmental Consultant with six (6) years' experience and she is based in the Port Elizabeth branch. She holds a BA degree in Social Dynamics with majors in Geography and Psychology as well as a BA Honours degree in Geography and Environmental Studies, both from Stellenbosch University. Rosalie's honours dissertation analysed the role of small grains in soil carbon sequestration in the agricultural sector of the Western Cape. Rosalie completed the Introduction to Environmental Impact Assessment Procedure Short Course by Coastal & Environmental Services and the Department of Environmental Science Rhodes University as well as the Estuary Management Short Course by Nelson Mandela University (NMU). In addition, Rosalie is a member of the Land Rehabilitation Society of Southern Africa (LaRSSA) and a member of the International Association for Impact Assessment (IAIA). Her main focuses include the general Environmental Impact Assessment (EIA) Process, project management, the Public Participation Process, NEMA Section 24 (G) Applications and GIS Mapping.

3 PROPOSED ACTIVITY

3.1 DESCRIPTION OF THE PROPOSED ACTIVITY

Albany Wind Power is proposing the development of the Albany WEF which will consist of up to forty-three (43) turbines. The proposed maximum power output of the facility is up to 297 MW. The proposed turbine footprints and associated facility infrastructure (internal access roads, substations, construction compound, batching plant and operations building) will cover an area of approximately 55 ha depending on final layout design should the project proceed to the construction phase.

In summary, the proposed Albany WEF includes (please see Figure 1.1):

- Up to forty-three (43) turbines with a maximum nominal power output of up to 297 MW;
- The proposed WEF will include turbines with a rotor diameter of up to 170 m, a hub height of up to 130 m and blade length of up to 85 m;
- A permanent laydown area next to the locations of the proposed wind turbines (3,900 m² for crane hardstand per turbine);
- Temporary additional laydown area next to the locations of the proposed wind turbines (3,100 m² for crane hardstand and blade laydown per turbine);
- Foundations (up to 900 m²) for each wind turbine;
- Permanent 25 m² area for switchgear and/or transformer at each turbine;
- Temporary infrastructure including a site camp and a laydown area of approximately 2500 m² (all to be rehabilitated post construction);
- Internal access roads of between 8 m (during operation) and 14 m (during construction, to be partly rehabilitated) wide to each turbine;
- Existing roads will be used as far as possible. However, where required, internal access roads will be constructed between the turbines;
- Temporary infrastructure including a site camp and a laydown area of approximately 30 m² per turbine (all to be rehabilitated post construction);
- A 25 m² area for switchgear and/or transformer at each turbine;
- Medium voltage cabling between turbines and the switching stations, to be laid underground where technically feasible;
- A temporary Concrete Tower Manufacturing Facility (CTMF), laydown area and construction compound, site camp area of 90 000m²; and
- An area of up to 100 000 m² for the substation, battery storage and site office area.

In addition, the affected properties are indicated in the Cadastral Map in Figure 3.2. Please refer to Appendix F for the Sensitivity Map, which consists of the proposed layout superimposed on the identified site sensitivity.

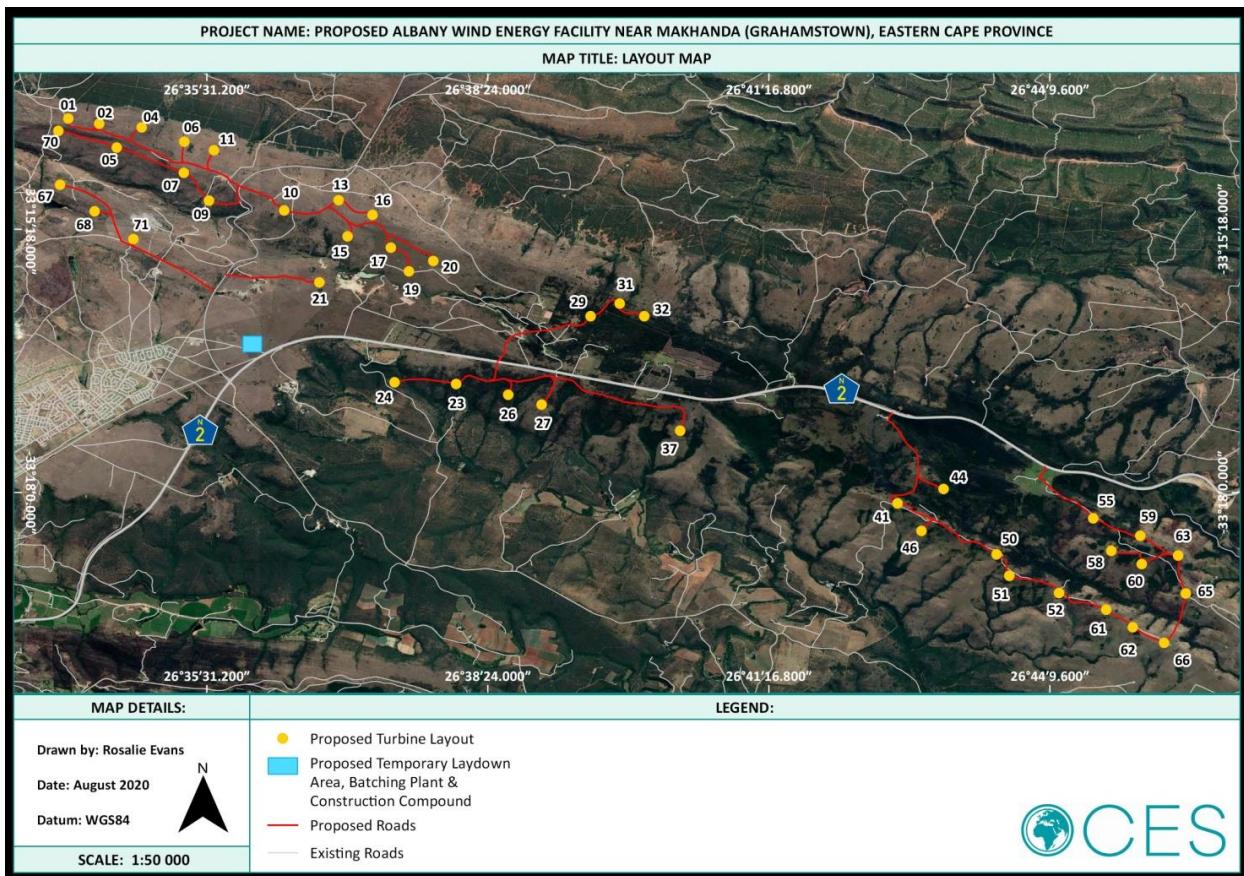


Figure 3.1: Layout Map of the Albany WEF.

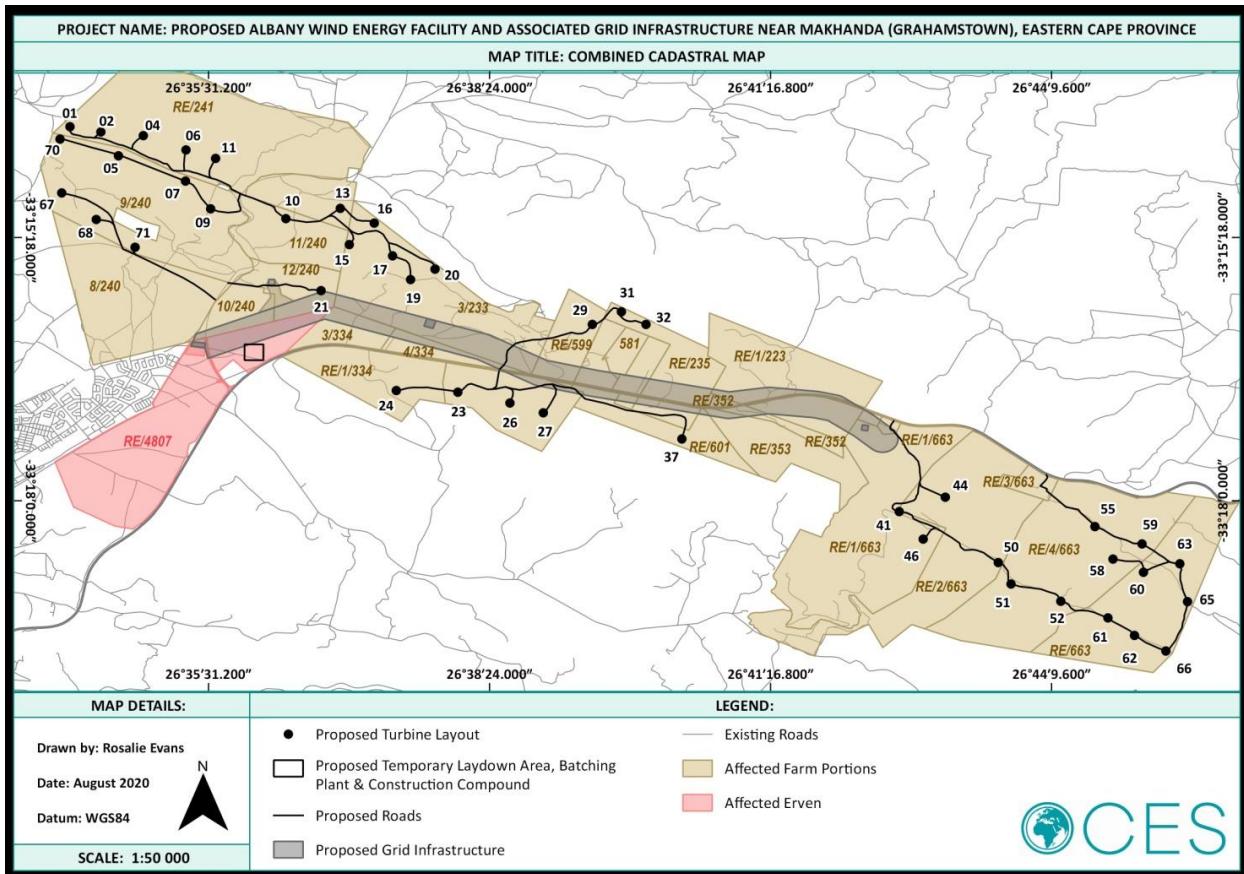


Figure 3.2: Cadastral Map of the Albany WEF.

4 LAYOUT OF THE EMPr

In order to ensure a holistic approach to the management of environmental and social impacts during the planning and design, construction, operational and decommissioning phases of the proposed Albany WEF, this EMPr sets out the methods by which proper environmental controls are to be implemented by the Contractor and all other parties involved. The phases of development have been discussed in more detail below and have specific potential issues unique to each phase.

4.1 PLANNING AND DESIGN PHASE

The Planning and Design Phase is an integral component of the project life cycle and requires interaction between the design engineers and environmental consultants to ensure that the engineers are aware of the environmental constraints which must be considered and incorporated into the final design of the project.

The format of the Planning and Design Phase section is to ensure that all specifications are included in the design phase. It requires ongoing and in-depth discussions between the final design team and the appointed Environmental Control Officer (ECO). The engineer will have to cost for, and be available for, ongoing discussions with the ECO at all stages of final design.

4.2 CONSTRUCTION PHASE

The Construction Phase section details the environmental management system/framework within which construction activities will be governed, and it consists of various actions, initiatives and systems which the Contractor will have to ensure are in place and are undertaken. It consists of both a management system and environmental specifications which contain detailed specifications that will need to be undertaken or adhered to by the Contractor.

The Construction Phase section will need to be developed parallel to the Final Design Stages, and constructive input should be invited from the selected Contractor. Sound environmental management is orientated around a pragmatic, unambiguous but enforceable set of guidelines and specifications, and for this reason it is imperative that the Contractor, while being bound by the EMPr, fully understands it and has had input into its final development. For this reason, the final construction EMPr will need to be signed-off after input from the selected Contractor prior to the initiation of construction activities. It should, however, be noted that the Contractor must tender on the existing document and that in areas of uncertainty, a precautionary approach to the environmental guidelines and specifications must be adopted.

4.3 OPERATIONAL PHASE

The Operational Phase section provides specific guidance related to operational activities associated with the development. By taking proactive measures during the Construction Phase, potential environmental and social impacts emanating during the Operational Phase will be minimised. Monitoring of certain issues, such as the success of vegetation re-establishment and erosion control, will be required to continue during operation. The final Operational Phase section should be developed in conjunction with any other relevant stakeholders prior to the adoption thereof.

4.4 CLOSURE & DECOMMISSIONING PHASE

This section includes principles for the decommissioning and closure phase of the Albany WEF. This section will be required to be re-visited and updated at the time of decommissioning.

5 Mitigation and/or management measures

5.1 GENERAL CONSTRUCTION PHASE MITIGATION AND MANAGEMENT MEASURES

In addition to the mitigation and management measures which are stipulated in the Albany WEF EIR (Section 5.2) and associated specialist reports (Section 5.3), the following general Construction Phase mitigation and management measures apply. Should the mitigation and management measures specified in the Table below contradict any of the measures in Sections 5.2 and 5.3, the latter will take precedence.

		GENERAL CONSTRUCTION PHASE
Activity		Mitigation and/or Management Measure
1.	Demarcation	<p>The location, layout and method of establishment of the construction camp, including the following, must be clearly indicated and demarcated prior to the commencement of construction:</p> <ul style="list-style-type: none"> ● All Contractors' offices; ● Laydown areas; ● Vehicle wash areas (if any); ● Workshops and drip trays; ● Fuel storage areas (including filling and dispensing from storage tanks); ● Cement/concrete mixing areas (including the methods employed for the mixing of concrete and particularly the containment of runoff water from such areas and the method of transportation of concrete); and ● Other infrastructure required for the project. <ul style="list-style-type: none"> ● The Contractor must erect and maintain permanent and/or temporary fences in the locations directed by the ECO. Such fences should, if so specified, be erected before undertaking designated activities; and ● Should "no-go" areas exist on the site, the Contractor must ensure that, insofar as he/she has the authority, no person, machinery, equipment or materials enter the "no-go" areas at any time.
2.	Site Access	<p>Details, including a drawing, showing where and how the access points and routes will be located and managed must be submitted to the ECO and the Developer. These should be supported by the following management requirements:</p> <ul style="list-style-type: none"> ● On the site and within such distance of the site as may be stated, the Contractor should control the movement of all vehicles, including vehicles of suppliers so that they remain on designated routes, are distributed so as not to cause an undue concentration of traffic and that all relevant laws are complied with. In addition, such vehicles should be routed and operated in a manner that minimises the disruption to regular users of the routes; ● On gravel or earth roads on site and within 500 m of the site, the Contractor's vehicles as well as the suppliers' vehicles must not exceed a speed of 40 km/h or as per the conditions of the EA; and ● The Contractor must supply the ECO with a Method Statement detailing the location and management of all access points and roads.
3.	Materials Handling, Use & Storage	<ul style="list-style-type: none"> ● The Contractor must ensure that any delivery drivers are informed of all procedures and restrictions (including identified "no-go" areas) required to comply with this EMPR; ● The Contractor must ensure that these delivery drivers are supervised during offloading, by someone with an adequate understanding of the requirements of the EMPR; ● Materials must be appropriately secured to ensure safe passage between destinations. Loads including, <i>but not limited to</i>, sand, stone chip, fine vegetation, refuse, paper and cement, should have appropriate cover to prevent them spilling from the vehicle during transit.;

		<ul style="list-style-type: none"> ● The Contractor will be responsible for any clean up resulting from the failure by his/her employees or suppliers to properly secure transported materials; ● All manufactured and/or imported material should be stored within the Contractor's camp and out of the rain; ● All laydown areas outside of the construction camp should be subject to the ECO's approval; and ● Imported gravel, fill, soil and sand materials should be free of weeds, alien invasive seed matter, plant material, litter and contaminants and must be obtained from sources approved by the ECO.
4.	Stockpiling	<ul style="list-style-type: none"> ● Any stockpiling of gravel, cut, fill or any other material including spoil must only be in areas that have been approved by the ECO within the defined working area; ● The Contractor should ensure that the material does not blow or wash away. If the stockpiled material is in danger of being washed or blown away, the Contractor should spray it with Dustex or cover it with a suitable material, such as hessian or plastic. Stockpiles of topsoil must not be covered with plastic; and ● No stockpiling of any material will be allowed within 20 m of any "no-go" areas (<i>if applicable</i>).
5.	Solid Waste Management	<ul style="list-style-type: none"> ● Onsite burning, burying or dumping of any waste materials, litter or refuse must not occur; ● The Contractor should provide vermin and weatherproof bins with lids of sufficient number and capacity to store the solid waste produced on a daily basis. The lids must always be kept firmly on the bins; ● Bins must not be allowed to become overfull and should be emptied daily; ● The waste from bins may be temporarily stored onsite in a central waste area that is weatherproof and scavenger proof, and which the ECO has approved; ● Recyclable waste should be disposed of into separate skips/bins and removed offsite for recycling; ● All solid waste must be disposed of offsite at an approved registered landfill site; The Contractor must supply the ECO with the appropriate disposal certificates; and ● The Contractor must submit a solid waste management plan, as part of the Pollution Control Method Statement, to the ECO.
6.	Water Use	<ul style="list-style-type: none"> ● All sources of water for construction purposes must be approved by the ECO in writing before any such sources can be used to obtain water; and ● All wash water should be recycled for use as wash water again or for dust suppression, <i>where applicable</i>.
7.	Hazardous Substances	<ul style="list-style-type: none"> ● The transportation and handling of hazardous substances must comply with the provisions of the Hazardous Substances Act (Act No.187 of 1993) and associated regulations as well as SABS 0228 and SABS 0229; ● The Contractor must also comply with all other applicable regional and local legislation and regulations regarding the transport, use and disposal of hazardous substances. Hazardous chemical substances (as defined in the Regulations for Hazardous Chemical Substances) used during construction must be stored in secondary containers. The relevant Material Safety Data Sheets (MSDS) should be available onsite; ● Procedures detailed in the MSDSs must be followed in the event of an emergency; ● The Contractor should be responsible for the training and education of all personnel onsite that will be handling hazardous materials about their proper use, handling and disposal; and ● If potentially hazardous substances are to be stored or used onsite, the Contractor must submit a Method Statement to the ECO detailing the substances/materials to be used, together with the transport, storage, handling and disposal procedures for the substances.
8.	Cement & Mixing of Concrete	<ul style="list-style-type: none"> ● The proposed location of cement mixing areas (including the location of cement stores as well as sand and aggregate stockpiles) must be indicated on the site layout plan and approved by the ECO;

		<ul style="list-style-type: none"> ● All wastewater generated from the operation and cleaning of concrete mixing equipment and other sources of concrete should be passed through a concrete wastewater settlement system; ● The Contractor must ensure that minimal water is used for washing of concrete and cement mixing equipment; ● Used cement bags must be disposed of in weatherproof bins onsite to prevent the generation of wind-blown cement dust and to prevent the bags from blowing away; ● The Contractor must ensure that concrete is mixed on mortar boards, all visible remains of concrete are removed and disposed of as waste and that all surplus aggregate is removed; and ● As part of the Pollution Control and Concrete Mixing Method Statement, a plan detailing all actions to be taken to comply with the requirements must be submitted to the ECO.
9.	Fuel & Oil	<p><u>Fuel Storage</u></p> <ul style="list-style-type: none"> ● All construction materials including fuels and oil should be stored in demarcated areas which are contained within berms/bunds. Washing and cleaning of equipment should also be done in berms or bunds, in order to trap any cement and prevent excessive soil erosion; ● All necessary approvals with respect to fuel storage and dispensing must be obtained from the appropriate authorities. Symbolic safety signs depicting "No Smoking" and "Danger", conforming to the requirement of SABS 1186, must be prominently displayed in and around the fuel storage area. There must be adequate fire-fighting equipment at the fuel storage area; ● The Contractor must ensure that all liquid fuels and oils are stored in tanks with lids, which are kept firmly shut and under lock and key at all times. The capacity of the tank should be clearly displayed, and the product contained within the tank clearly identified using the emergency information system detailed in SABS 0232 Part 1. The capacity of fuel storage tanks should not exceed 9 000 litres and must be kept on site only for as long as fuel is needed for construction activities, on completion of which they must be removed; ● Tanks onsite should not be linked or joined via any pipe work but should remain as separate entities. The tanks must be situated on a smooth impermeable base with a bund. The volume inside the bund should be 110% of the total capacity of the largest storage tank. The base may be constructed of concrete, or of plastic sheeting with impermeable joints with a layer of sand over to prevent perishing. The impermeable lining should extend to the crest of the bund. The floor of the bund should be sloped to enable any spilled fuel and/or fuel-contaminated water to be removed. Appropriate material, approved by the ECO that absorbs/breaks-down or encapsulates minor hydrocarbon spillage and which is effective in water, should be installed in the sump; ● The tanks and bundled areas should be covered by a roofed structure, taken offsite to a disposal site approved by the ECO and the material, which absorbs/breaks-down or encapsulates minor hydrocarbon spillages, should be replenished; ● Adequate precautions should be provided to prevent spillage during the filling of any tank and during the dispensing of the contents. The dispensing mechanism for the fuel storage tanks should be stored in a waterproof container when not in use; and ● As part of the required site layout for the construction camp, a plan must be submitted to the ECO detailing the design, location and construction of the fuel storage area as well as for the filling and dispensing from storage tanks and for the type of absorbing/breaking-down or encapsulating material to be used. <p><u>Refuelling</u></p> <ul style="list-style-type: none"> ● Where reasonable and practical, the plant should be refuelled at a designated refuelling area/depot or at a workshop as applicable. If this is not reasonable or practical then the surface under the refuelling area must be protected and

		<p>appropriately bunded against pollution to the reasonable satisfaction of the ECO prior to any refuelling activities;</p> <ul style="list-style-type: none"> ● If fuel is dispensed from 200 litre drums, the proper dispensing equipment must be used, and the drum should not be tipped in order to dispense fuel. The Contractor should ensure that the appropriate fire-fighting equipment is present during refuelling operations; and ● The Contractor must ensure that there is always a supply of absorbent material readily available to absorb/breakdown or, where possible, be designed to encapsulate minor hydrocarbon spillages. The quantities of such materials should be able to handle a minimum of 200 ℥ of hydrocarbon liquid spill. Prior to any refuelling or maintenance activities, the ECO must approve this material. <p><u>Used oil and hydrocarbon contaminated materials</u></p> <ul style="list-style-type: none"> ● Used oil should be stored at a central location onsite prior to removal offsite for disposal at an approved disposal site; and ● Old oil filters and oil, petrol and diesel-soaked material must be treated as hazardous waste. The Contractor should remove all oil, petrol, and diesel-soaked sand immediately and should dispose of it as hazardous waste or treat it onsite with material which breaks-down or encapsulates such spillages, as approved by the ECO.
10.	Workshop, Equipment Maintenance & Storage	<ul style="list-style-type: none"> ● The Contractor should ensure that in the workshop and other plant maintenance facilities, including those areas where, after obtaining the ECO's approval, the Contractor carries out emergency plant maintenance, there is no contamination of the soil or vegetation. The workshop must have a smooth impermeable (concrete or thick plastic covered with sand) floor; ● The floor should be bunded and sloped towards an oil trap or sump to contain any spillages. When servicing equipment, drip trays should be used to collect the waste oil and other lubricants. Drip trays should also be provided in construction areas for stationary plant (such as compressors) and for "parked" plant (such as scrapers, loaders and vehicles); ● All vehicles and equipment must be kept in good working order and serviced regularly. Leaking equipment should be repaired immediately or removed from the site; ● All vehicle and equipment washing must be undertaken in the workshop or maintenance areas, and these areas must be equipped with a suitable impermeable floor and sump/oil trap. The use of detergents for washing should be restricted to low phosphate and nitrate products and low sudsing-type detergents; and ● As part of the site layouts, a plan must be submitted to the ECO detailing the design of the bunding of the workshop and how runoff from the workshop will be managed as well as how drip trays, which are used under plant, will be managed.
11.	Ablution Facilities	<ul style="list-style-type: none"> ● Washing, whether of a person or of personal effects, and acts of excretion and urination are strictly prohibited other than at the facilities provided. The Contractor must provide the necessary ablution facilities for all the personnel prior to the commencement of work; ● Ablution facilities must be supplied by the Contractor for the workers at a ratio of at least 1 toilet per 20 workers in areas approved by the ECO. Toilets should be situated within 200 m of any area where work is taking place and in numbers which are enough to meet the ratio depicted above for the workers in the area; ● The facilities should be maintained in a hygienic state and serviced regularly. Toilet paper must be provided. Temporary/portable toilets should be secured to the ground to prevent them toppling due to wind or any other cause. This should be to the satisfaction of the ECO; and ● Discharge into the environment and burial of waste is strictly prohibited. The Contractor must ensure that no spillage occurs when the toilets are cleaned or emptied and that the contents are removed from the site. Toilets must be emptied before any temporary site closure.
12.	Eating Areas	<ul style="list-style-type: none"> ● The Contractor should designate eating area(s), subject to the approval of the ECO. No cooking is allowed outside of the Contractor's camp area onsite;

		<ul style="list-style-type: none"> At mealtimes, all workers should eat in designated eating areas. These areas should have shade for the workers; Enough bins must be present in these areas. All disposable food packaging must be disposed of in the bins after every meal; and The feeding- or leaving of food for animals is strictly prohibited.
13.	Site Structures	<ul style="list-style-type: none"> All site establishment components (as well as equipment) should be positioned to limit visual intrusion on neighbouring areas and the size of the land area disturbed. The type and colour of roofing and cladding materials of the Contractor's temporary structures should be selected to reduce reflection; and The Contractor should supply and maintain adequate and suitable sheds for the storage of materials. Sheds for the storage of materials which could deteriorate or corrode if exposed to the weather should be weatherproof, adequately ventilated and provided with raised floors.
14.	Lighting	<ul style="list-style-type: none"> The Contractor should ensure that any lighting installed on the site for their activities does not cause a reasonably avoidable disturbance to neighbouring residents or the naturally occurring fauna.
15.	Noise	<ul style="list-style-type: none"> The Contractor should take precautions to minimise noise generated on site (e.g. install and maintain silencers on machinery); The Contractor must comply with the Noise Induced Hearing Loss Regulations published under the Occupational Health and Safety Act; Appropriate directional and intensity settings are to be maintained on all hooters and sirens; Where reasonable and practical, work should be limited to daylight hours – between 06:00 and 18:00; and No amplified music must be allowed on site. The Contractor must not use sound amplification equipment on site unless in emergency situations.
16.	Dust Control	<ul style="list-style-type: none"> The Contractor will be responsible for the continued control of dust arising from their activities. The Contractor should take all reasonable measures to minimize the generation of dust as a result of construction activities to the satisfaction of the ECO. Appropriate dust suppression measures include spraying or dampening with water, using a commercial dust binder (such as Hydropam or Dustex), rotovating straw bales, planting of open cleared space and the scheduling of dust-generating activities. If the conditions are such that the Contractor cannot dampen the dust to the satisfaction of the ECO, then the ECO may halt operations until such time as the conditions are more suitable for lower dust generating construction activities; Areas which are to have the topsoil stripped for construction purposes must be limited and only stripped prior to the work taking place; Other activities and situations which could result in nuisance dust include site clearance and other earth moving operations, open cleared space, stockpiles of topsoil or sand and activities associated with concrete mixing; and The appropriate health and safety equipment (e.g. dust masks) should be worn by workers during the phases of dust-producing construction activity.
17.	Environmental Awareness Training	<ul style="list-style-type: none"> Environmental awareness training courses should be run for all personnel onsite (See <u>Annexure A</u> for a proposed Basic Environmental Education Course). Two (2) courses should be run, one (1) for the Contractor's and Subcontractor's management and one (1) for all site staff and labourers. Courses should be run in the morning during normal working hours at a suitable venue provided by the Contractor. All attendees should remain for the duration of the course and sign an attendance register on completion, that clearly indicates participant's names, a copy of which must be handed to the ECO; <u>The size of each session should be limited to twenty (20) people and/or in accordance with Covid-19 Directions at the time of the meeting sessions. Suitable protective masks should always be worn during the meetings and all personnel must make use of sanitizer before entering the meeting facility. The meeting facility should allow for the flow of fresh air to reduce the risk of contracting Covid-19. This condition will be valid for the duration of the Covid-19 pandemic;</u>

		<ul style="list-style-type: none"> ● The Contractor should allow for enough sessions to train all personnel. Subsequent sessions should be run for any new personnel entering the site. A Method Statement with respect to the organisation of these courses should be submitted; and ● Notwithstanding the specific provisions of this clause, the Contractor is obligated to convey the sentiments of the EMPr to all personnel and Subcontractors involved with the works.
18.	Fire Control	<ul style="list-style-type: none"> ● The Contractor must take all the necessary precautions to ensure that fires are not started as a result of site activities; ● No open fires must be permitted on the site; ● Smoking must not be permitted in areas where there is a fire hazard. Such areas include the workshop and fuel storage areas and any areas where vegetation or other material is such as to support the rapid spreading of an initial flame; ● The Contractor should appoint a Fire Officer who will be responsible for ensuring immediate and appropriate actions in the event of a fire and will ensure that employees are aware of the procedures to be followed. The Contractor must forward the name of the Fire Officer to the ECO for approval within seven (7) days of being on site; ● The Contractor must ensure that basic firefighting equipment is always available onsite. This should include at least rubber beaters, when working in urban open spaces and natural areas, and at least one (1) fire extinguisher of the appropriate type when welding or other “hot” activities are undertaken; and ● The Contractor will be liable for any expenses incurred by any organisations called to assist with fighting fires which resulted due to their activities or the activities of their personnel, and for any cost relating to the rehabilitation of burnt areas, or consequential damages.
19.	Emergency Procedures	<ul style="list-style-type: none"> ● Emergency procedures, including the names and contact details of responsible personnel and emergency services must be made available to all staff and should be clearly displayed at relevant locations at the site. The Contractor should advise the ECO of any emergencies onsite, together with a record of action taken, within 24 hours of the emergency occurring; and ● The Contractor must submit a Method Statement which covers the procedures for emergencies, such as fire and accidental leaks and spillages. <p><u>Fire</u></p> <ul style="list-style-type: none"> ○ The Contractor should advise the relevant authority of a fire as soon as one (1) starts. It is crucial that this is done before the fire is out of control; and ○ The Contractor must ensure that all employees are aware of the procedures to be followed in the event of a fire. <p><u>Accidental leaks and spillages</u></p> <ul style="list-style-type: none"> ○ The Contractor must ensure that all employees are aware of the procedures to be followed for dealing with spills and leaks, which must include notifying the ECO and the relevant authorities. The Contractor must ensure that all the necessary materials and equipment for treating and remedying spills and leaks are available onsite at all times. Treatment and remediation of the spill areas must be undertaken to the reasonable satisfaction of the ECO; ○ In the event of a hydrocarbon spill, the source of the spillage must be isolated, and the spillage contained. The area should be cordoned off and secured. The Contractor should ensure that there is always a supply of absorbent material readily available to absorb/breakdown or where possible, be designed to encapsulate minor hydrocarbon spillages. The quantities of such materials should be able to handle a minimum of 200 ℥ of hydrocarbon liquid spill; and ○ Any spills must be cleared, and the contaminated soil or sludge disposed of in an appropriate manner, approved by the ECO, or at a licensed hazardous waste disposal site.
20.	Protection of Natural Features	<ul style="list-style-type: none"> ● The Contractor must not deface, paint, damage or mark any natural features (e.g. rock formations or trees) situated in or around the site for survey or other purposes

		<p>unless agreed upon beforehand with the ECO. Any features affected by the Contractor in contravention of this clause must be restored/rehabilitated to the satisfaction of the ECO; and</p> <ul style="list-style-type: none"> ● The Contractor and staff may not enter dense, intact vegetation without written approval from the ECO.
21.	Protection of Flora & Fauna	<ul style="list-style-type: none"> ● A suitably qualified Botanist or Horticulturist should identify the need for plant search and rescue (prior to construction) to identify any plant Species of Conservation Concern (SCC) which require relocation; ● Protected plant species should then be removed from the designated construction footprint and relocated to adjacent areas of similar habitat which will not be affected by construction activities. Or the plants should be stored in a suitable nursery and used in landscaping once construction is complete (if applicable); ● Except to the extent necessary for the carrying out of the works, flora should not be removed, damaged or disturbed; ● The removal and stockpiling of topsoil must be carried out in accordance with this EMPR; ● Trapping, poisoning and/or shooting of animals is strictly forbidden. No domestic pets or livestock are permitted onsite during construction; ● The use of chemicals of all forms should be carefully controlled and monitored to avoid contamination of surrounding areas; and ● The construction phase should allow for the education of staff as to the significance of floral and faunal SCC.
22.	Protection of Heritage Features	<ul style="list-style-type: none"> ● Construction managers and/or foremen must be informed, prior to the commencement of the construction phase, of the possible types of heritage sites and cultural material which could be encountered during construction activities and the procedures to follow if/when they find such sites; ● If concentrations of palaeontological and/or archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the Eastern Cape Provincial Heritage Resources Authority (ECPHRA), the South African Heritage Resources Agency (SAHRA) (021 642 4502) and/or the South African Police Service (SAPS) in the case of human remains so that systematic and professional investigation/excavation can be undertaken; and ● 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 (Act No. 25 of 1999).
23.	Vegetation Clearance	<ul style="list-style-type: none"> ● Vegetation clearing and trampling should be avoided in areas demarcated as "no-go" areas (<i>if any</i>); ● Temporary infrastructure such as the site camp, laydown areas and storage areas must be placed in the location which has been approved by the ECO; ● The Contractor must work according to a plan, which demarcates areas to be cleared. The plan should be part of the Project Layout Plan developed during the Site Design Phase; ● The minimum amount of vegetation clearance must take place; and ● Collection of, or wilful damage to, any plants outside of the areas demarcated for clearing is not allowed.
24.	Topsoil	<ul style="list-style-type: none"> ● Topsoil should only be stripped from the areas as indicated below: <ul style="list-style-type: none"> ○ The approved development footprint; ○ Any area which is to be used for temporary storage of materials; ○ Areas which could be polluted by any aspect of the construction activity; and ○ Areas designated for the dumping of soil. ● Stripping of topsoil should be undertaken in such a manner as to minimise erosion by wind or runoff; ● Outside of the development footprint, topsoil should not be stripped to a depth below 150 mm from the original ground level;

		<ul style="list-style-type: none"> ● Areas from which the topsoil is to be removed must be cleared of any foreign material which could form part of the topsoil during removal, these materials include bricks, rubble, any waste material, litter, excess vegetation and any other material which could reduce the quality of the topsoil; ● The Contractor must ensure that subsoil and topsoil are not mixed during stripping, excavation, storage, reinstatement or rehabilitation. If mixed with clay sub-soil the usefulness of the topsoil for rehabilitation of the site will be lost; ● Soils should be exposed for the minimum time possible once cleared; ● Topsoil should be temporarily stockpiled, separately from (clay) subsoil and rocky materials; ● Topsoil should only be stockpiled in areas designated by the ECO; ● Stockpiles should either be vegetated with indigenous grasses or covered by a suitable fabric to prevent erosion and invasion of weeds; and ● Stockpiled topsoil must not be compacted.
25.	Stormwater Management	<ul style="list-style-type: none"> ● Stormwater should be managed using suitable structures such as swales, gabions and rock rip-wrap so that any runoff from the development site is attenuated prior to discharge. Silt and sedimentation should be kept to a minimum, using the above-mentioned structures. Ensure that the structures do not create any form of erosion; and ● Natural runoff must be diverted to stormwater drains, where these are available.
26.	Erosion & Sedimentation Control	<ul style="list-style-type: none"> ● The Contractor must take all reasonable measures to limit erosion and sedimentation due to construction activities and must comply with such detailed measures as required by the EMPR; ● Revegetate areas, which have been disturbed, as soon as possible; ● Where erosion and/or sedimentation occur, whether on site or in proximity to the site, despite the Contractor complying with the aforementioned, rectification should be carried out in accordance with details specified by the ECO. Where erosion and/or sedimentation occur due to the fault of the Contractor, rectification must be carried out to the reasonable requirements of the ECO and at the expense of the Contractor; and ● Actions must also be taken in the event of heavy rains and potential flooding, whereby diversion barriers must not cause excessive erosion.
27.	Aesthetics	<ul style="list-style-type: none"> ● The Contractor must take reasonable measures to ensure that construction activities do not have an unreasonable impact on the aesthetics of the area.
28.	Community Relations	<ul style="list-style-type: none"> ● The Contractor must keep a "Complaints Register" onsite. The Register should contain all contact details of the person who made the complaint, and information regarding the complaint itself as well as the date and time that the complaint was resolved; ● The ECO and/or the Community Liaison Officer (CLO) will be responsible for responding to queries and/or complaints and may request assistance from the Contractor's Management Staff; and ● Construction materials and other purchases relating to the project should be done, where possible, within the nearby community and at local stores.
29.	Temporary Site Closure	<ul style="list-style-type: none"> ● If the site is closed for a period exceeding five (5) days, the Contractor's Safety, Health and Environment (SHE), in consultation with the ECO, should carry out the following checklist procedure and ensure that the following conditions are adhered to and report on compliance with this clause: <p style="text-align: center;"><u>Fuels/flammables/hazardous materials stores</u></p> <ul style="list-style-type: none"> ● Fuel stores are as low in volume as practicable; ● There are no leaks; ● The outlet is secure and locked; ● The bund is empty; ● Fire extinguishers are serviced and accessible; ● The area is secure from accidental damage through vehicle collision and the like; ● Emergency and contact numbers are available and displayed; and

	<ul style="list-style-type: none"> There is adequate ventilation in enclosed spaces. <p><u>Safety</u></p> <ul style="list-style-type: none"> Ensure that the site safety checks have been carried out in accordance with the Occupational Health and Safety Act (Act No. 85 of 1993) prior to site closure; An inspection schedule and log for use by security or contracts staff is developed; All trenches and manholes are secured; Applicable notice boards are in place and secured; Emergency and Management contact details are prominently displayed; The contact details of the CLO are prominently displayed; Security personnel have been briefed and have the facilities available to contact or be contacted by relevant management and emergency personnel; Night hazards such as reflectors, lighting, traffic signage, etc. have been checked; Fire hazards identified and the local authority notified of any potential threats e.g. large brush stockpiles, fuels etc.; Pipe stockpiles are wedged/secured; Scaffolds are secure; and Structures vulnerable to high winds are secure. <p><u>Erosion</u></p> <ul style="list-style-type: none"> Wind and dust mitigation measures such as straw, brush packs, irrigation, etc. are in place; Excavated and filled slopes and stockpiles are at a stable angle; Re-vegetated areas have a watering schedule and the supply to such areas is secured; and There are enough detention ponds or channels in place. <p><u>Water contamination and pollution</u></p> <ul style="list-style-type: none"> Hazardous fuel stores are secure; Cement and material stores are secure; Toilets are empty and secured; Refuse bins are empty and secured; Bunding is clean and treated with appropriate material which will absorb/breakdown and, where possible, be designed to encapsulate minor hydrocarbon spillages; and Drip trays are empty and secure.
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5.2 EIR MITIGATION AND MANAGEMENT MEASURES

The following table sets out the potential general environmental and social issues which could occur during the lifespan of the Albany WEF development, as per the *Draft Environmental Impact Report (EIR): Albany Wind Energy Facility Near Makanda (Grahamstown), Eastern Cape Province. CES. July 2020*. The Draft EIR provides mitigation measures and recommendations in an effort to reduce the significance of potential negative impacts and enhance potential benefits for the Planning and Design, Construction, Operational and Decommissioning Phases of the proposed Albany WEF.

ISSUE	DESCRIPTION OF IMPACT	MITIGATION MEASURES	
		PLANNING & DESIGN PHASE	
		GENERAL IMPACTS	
Traffic & Transport	Inadequate planning for the transportation of turbine parts and specialist construction equipment to the site by long and/or slow-moving vehicles could cause traffic congestion, especially if temporary road closures are required. No passes are present between Port Elizabeth and Grahamstown,	Project planning must include a plan for traffic control that will be implemented, especially during the construction phase of the development. Consultation with the local Road Traffic Unit in this regard must be done early in the planning phase. The necessary road traffic permits must be obtained for	

ISSUE	DESCRIPTION OF IMPACT	MITIGATION MEASURES
	<p>reducing the impact of the transport of parts when compared to Cookhouse, for example.</p> <p>The integrity of existing highway infrastructure such as bridges and barriers may be compromised by the heavy vehicle traffic delivering components to the site.</p>	<p><i>transporting parts, containers, materials and construction equipment to the site.</i></p> <ul style="list-style-type: none"> ▲ <i>Careful planning of the routes taken by heavy vehicles must highlight areas of road that may need to be upgraded in order to accommodate these vehicles. Once identified, these areas must be upgraded if necessary.</i>
Storage of Hazardous Substances	<p>Inappropriate planning for the storage of hazardous substances such as diesel, paint, pesticides, etc, tools and equipment used on site could lead to surface and ground water pollution e.g. due to oil leaks, spillage of diesel etc. In addition, these hazardous substances could be washed off into nearby drainage lines. The mixing of cement on site could result in ground water contamination from compounds in the cement. In addition, a large number of cement mixing stations on site could increase the presence of impermeable areas which in turn could increase rates of runoff and thereby increase the risk of localized flooding, soil erosion, silting, gully formation, etc.</p>	<ul style="list-style-type: none"> ▲ <i>All hazardous substances such as paints, diesel and cement must be stored in a bunded area with an impermeable surface beneath them.</i> ▲ <i>Cement mixing must be conducted at a single location which must be centrally located, where practical. This mixing must take place on an impermeable surface, and dried waste cement must be disposed of with building rubble.</i>
Environmental Legal and Policy Compliance	<p>Failure to adhere to existing policies and legal obligations could lead to the project conflicting with local, provincial and national policies, guidelines and legislation. This could result in lack of institutional support for the project, overall project failure and undue disturbance to the natural environment.</p>	<ul style="list-style-type: none"> ▲ <i>Ensure that all relevant legislation and policy is consulted and further ensure that the project is compliant with such legislation and policy.</i> ▲ <i>These must include (but not restricted to):</i> <ul style="list-style-type: none"> ■ <i>Local and District Spatial Development Frameworks</i> ■ <i>Local Municipal bylaws</i> ▲ <i>In addition, planning for the construction and operation of the proposed energy facility must consider available best practice guidelines.</i>
Stormwater Management and Erosion	<p>The introduction of roads and impermeable areas could increase rates of runoff and therefore the risk of localised flooding.</p>	<ul style="list-style-type: none"> ▲ <i>Structures must be located at least 32m away from identified drainage lines.</i> ▲ <i>A Stormwater Management Plan must be designed and implemented to ensure maximum water seepage at the source of water flow.</i> ▲ <i>The plan must also include management mitigation measures for water pollution, wastewater management and the management of surface erosion e.g. by considering the applicability of contouring, etc.</i>
Management of General Waste	<p>Inappropriate planning for management and disposal of waste e.g. storage disposal could result in surface and ground water contamination.</p>	<ul style="list-style-type: none"> ▲ <i>Develop and implement a waste management plan for handling on site waste.</i> ▲ <i>Designate an appropriate area where waste can be stored before disposal.</i> ▲ <i>General Waste must be disposed of at a registered landfill site.</i>
Scheduling of Construction	<p>Construction scheduling that does not take into account the seasonal requirements of</p>	<ul style="list-style-type: none"> ▲ <i>Wherever possible, construction activities must be undertaken during the driest part of</i>

ISSUE	DESCRIPTION OF IMPACT	MITIGATION MEASURES
	the aquatic environment, e.g. allowing for unimpeded flood events, could lead to short-term (and potentially long-term) impacts such as excessive sediment mobilization, etc.	<p><i>the year to minimize downstream sedimentation due to excavation, etc.</i></p> <p>▲ <i>When not possible, suitable stream diversions structures must be used to ensure that riversstreams are not negatively impacted by construction activity.</i></p>
CONSTRUCTION PHASE		
GENERAL IMPACTS		
Nuisance Dust	Dust is likely to be a potential nuisance due to the construction activities.	<p>▲ <i>Fugitive/nuisance dust must be reduced by implementing one or a combination of the following:</i></p> <ul style="list-style-type: none"> ■ <i>Damping down of un-surfaced and un-vegetated areas;</i> ■ <i>Retention of vegetation where possible;</i> ■ <i>Excavations and other clearing activities must only be done during agreed working times and permitting weather conditions to avoid drifting of sand and dust into neighbouring areas;</i> ■ <i>A speed limit of 40km/h must not be exceeded on dirt roads;</i> <p>▲ <i>Any complaints or claims emanating from the lack of dust control must be attended to immediately by the Contractor.</i></p>
Fire	Risk of runaway fires from construction activities related to having people on site, such as cooking, smoking or burning of vegetation might lead to the burning of surrounding vegetation.	<p>▲ <i>There must be no burning of construction waste or debris onsite.</i></p> <p>▲ <i>Cooking and burning of vegetation is not permitted on site.</i></p> <p>▲ <i>Smoking on site must be confined to a designated area in the vicinity of the site office which must be equipped with the necessary fire extinguishers.</i></p>
Stormwater Management	Sediment is likely to be created during construction. This could be washed off into the nearby drainage line e.g. during the excavation of foundations, the laying of access roads within the site, digging of cable runs and soil stripping and stockpiling to create foundations and temporary areas of hard-standing, such as the construction camp.	<p>▲ <i>The recommendations of the stormwater management plan must be implemented to avoid soil erosion and siltation of drainage line.</i></p>
Degradation of Drainage Lines from Earthworks	Unplanned construction activities or earthworks that occur close to onsite drainage lines could cause adverse impacts such as soil erosion, siltation, and blockage of the drainage line.	<p>▲ <i>There must be no earthworks within 32m of the drainage lines to avoid contamination of water sources.</i></p>
Management of General Waste	Littering by construction workers could cause surface and ground water pollution.	<p>▲ <i>A waste management plan incorporating recycling and waste minimisation must be implemented. The Waste Management Plan must be explained to all employees as part of the environmental induction training.</i></p>

ISSUE	DESCRIPTION OF IMPACT	MITIGATION MEASURES
Hazardous Substances	Onsite maintenance of construction vehicles/machinery and equipment could result in oil, diesel and other hazardous chemicals contaminating surface and ground water. Surface and ground water pollution could arise from the spillage or leaking of diesel, lubricants and cement during construction activities.	<ul style="list-style-type: none"> ▲ The storage of fuels and hazardous materials must be located away from sensitive water resources. ▲ All hazardous substances (e.g. diesel, oil drums, etc.) must be stored in a bunded area. ▲ The recommendations of the stormwater management plan must be implemented during construction.
Management of Construction Waste	Waste from construction activities e.g. excess concrete and cement mixture, empty paint containers, oil containers, etc., could cause pollution of ground and surface water when they come into contact with runoff water.	<ul style="list-style-type: none"> ▲ A waste management plan for the project must be developed and implemented in the construction phase. ▲ All waste must be disposed of at an appropriately licensed landfill site. ▲ All construction materials must be stored in a central and secure location with controlled access with an appropriate impermeable surface. ▲ The recommendations of the Stormwater Management Plan must be implemented to mitigate the impacts of runoff water on pollution.
Water Quality	Wet concrete is highly alkaline. This could result in flash kills of macroinvertebrates and fish species in the vicinity. Soil erosion will decrease the quality of the aquatic habitat downstream of the construction activities by silting over exposed rocks and decreasing the clarity and oxygen saturation of the water. Soil erosion will decrease the quality of the aquatic habitat downstream of the construction activities by silting over exposed rocks and decreasing the clarity and oxygen saturation of the water.	<ul style="list-style-type: none"> ▲ No concrete mixing will take place within 32m of any watercourse. ▲ The concrete batching plant must be clearly demarcated, and no sprawl must be tolerated.
Infilling/Excavation in a Watercourse	Excavated material stockpiles may increase sediment loads in watercourses during rainfall events. Materials used for the infilling of watercourses in order to construct watercrossings may not be compatible with the surrounding bed/banks, etc., which could change the characteristics of the watercourse.	<ul style="list-style-type: none"> ▲ Stockpiled excavated material must not be stored within 32m of a watercourse. ▲ Stockpile areas must be suitably bunded to prevent Waterborne erosion of exposed soils where there is a likelihood that the soils will be washed into a watercourse. ▲ Materials used for infilling must be suitably stabilized to ensure that scour and erosion of the existing bed/banks is exacerbated.
Disposal of Spoil Material	Incorrect disposal of subsoil/spoil material could result in significant loss of a useful resource.	<ul style="list-style-type: none"> ▲ Subsoil cannot be disposed of onsite without the appropriate Waste License in terms of the NEMA: Waste Act. ▲ Spoil could be used to rehabilitate open borrow pits or erosion features. ▲ Disposal of spoil material to a registered landfill must be the last option. ▲ No spoil stockpiles will be allowed to remain onsite once construction activities have ceased.
OPERATIONAL PHASE		
GENERAL IMPACTS		
Air Quality Climate Change	The electricity generated by the development will displace some of that	<ul style="list-style-type: none"> ▲ Enhance this impact by promoting the use of renewable energy locally.

ISSUE	DESCRIPTION OF IMPACT	MITIGATION MEASURES
	produced by fossil fuel-based forms of electricity generation. The scheme, over its lifetime, will therefore avoid the production of a significant amount of CO ₂ , SO ₂ and NO ₂ that would otherwise be emitted to the atmosphere.	
Architecture of Ancillary Infrastructure	Control buildings, toilet facilities and other ancillary infrastructure could cause negative visual intrusion if allowed to fall into disrepair and not maintained properly.	▲ <i>All project structures and buildings must be maintained.</i>
Hazardous Chemical Storage	Inappropriate storage of chemical, herbicides, diesel and other hazardous substances on site could result in soil and water contamination and pose a high accident danger risk.	▲ <i>All hazardous substances must be stored in appropriately bunded locations.</i>
Increased Stormwater Runoff	Failure to maintain the storm water system could increase the risk of surface water damage to the landscape and vegetation from increased rates of runoff and therefore the risk of localised flooding and increased sheet erosion downstream due to the presence of roads and impermeable areas of hard standing.	▲ <i>Recommendations of the Stormwater Management Plan must be implemented.</i>
Waste Management	There could be littering by maintenance workers and security personnel on site	▲ <i>A waste management plan incorporating recycling and waste minimisation must be implemented. The Waste Management Plan must be explained to all employees as part of the environmental induction training.</i>
DECOMMISSIONING PHASE		
GENERAL IMPACTS		
Pollution	Littering by construction workers could cause surface and ground water pollution.	▲ <i>Littering must be avoided, and litter bins must be made available at various strategic points on site.</i> ▲ <i>Refuse from the construction site must be collected on a regular basis and deposited at an appropriate landfill.</i>
	Onsite maintenance of construction vehicles/machinery and equipment could result in oil, diesel and other hazardous chemicals contaminating surface and ground water. Surface and ground water pollution could arise from the spillage or leaking of diesel, lubricants, and cement during construction activities.	▲ <i>No storage of fuels and hazardous materials must be permitted near sensitive water resources. All hazardous substances (e.g. diesel, oil drums, etc.) to be stored in a bunded area.</i>
Dust	Dust is likely to be a potential nuisance due to the decommissioning activities.	▲ <i>Fugitive/nuisance dust could be implemented through the following:</i> <ul style="list-style-type: none">■ <i>Damping down of un-surfaced and un-vegetated areas;</i>■ <i>Retention of vegetation where possible; Demolitions and other clearing activities must only be done during agreed working times and permitting weather conditions to avoid drifting of sand and dust into neighbouring areas;</i>

ISSUE	DESCRIPTION OF IMPACT	MITIGATION MEASURES
		<ul style="list-style-type: none"> ▪ A speed limit of 40km/h must not be exceeded on dirt roads. ▲ Any complaints or claims emanating from the lack of dust control must be attended to immediately by the Contractor.
Traffic & Transport	A high number of heavy vehicle movements will occur during the decommissioning phase. This may have a detrimental effect on sensitive receptors.	<ul style="list-style-type: none"> ▲ Construction vehicles and machinery must make use of existing infrastructure such as roads as far as possible to minimise disturbance on the receiving environment.
Soil Erosion	After the removal of all wind turbine related structures, the disturbed soils could become exposed, unstable and prone to erosion.	<ul style="list-style-type: none"> ▲ After the removal of all wind turbine-related structures, the disturbed soils must be re-vegetated to avoid unnecessary soil erosion.
Land-Use	Land previously unavailable for certain types of land use will now be available for those uses.	<ul style="list-style-type: none"> ▲ No mitigation necessary

5.3 SPECIALIST MITIGATION AND MANAGEMENT MEASURES

In addition to Section 5.2, which contains the General Albany WEF EIR issues with suitable recommendations and mitigation measures. The following table sets out the specialist issues which could occur during the lifespan of the Albany WEF development, as included in the *Draft Environmental Impact Report (EIR): Albany Wind Energy Facility near Makhanda (Grahamstown), Eastern Cape Province. CES. May 2021*. The specialists have each provided mitigation measures and recommendations in an effort to reduce the significance of potential negative impacts and enhance potential benefits for the Planning and Design, Construction, Operational and Decommissioning Phases of the proposed Albany WEF.

ISSUE	DESCRIPTION OF IMPACT	MITIGATION MEASURES
PLANNING & DESIGN PHASE		
<i>It is important to note that specialist planning and design phase impacts were not expected since the developer designed the layout presented in both the Scoping and EIR based on sensitivity data and constraints provided by the various specialists.</i>		
<i>The planning and design impacts were therefore mitigated at Scoping Phase.</i>		
AGRICULTURE IMPACT ASSESSMENT		
<i>None identified by specialist</i>		
AVIFAUNAL IMPACT ASSESSMENT		
<i>None identified by specialist</i>		
BAT IMPACT ASSESSMENT		
<i>None identified by specialist</i>		
ECOLOGICAL IMPACT ASSESSMENT		
<i>None identified by specialist</i>		
HERITAGE IMPACT ASSESSMENT		
<i>None identified by specialist</i>		
NOISE IMPACT ASSESSMENT		
<i>None identified by specialist</i>		
PALAENTOLOGICAL IMPACT ASSESSMENT		
<i>None identified by specialist</i>		
SOCIO-ECONOMIC IMPACT ASSESSMENT		
<i>None identified by specialist</i>		
TRAFFIC IMPACT ASSESSMENT		
<i>None identified by specialist</i>		
VISUAL IMPACT ASSESSMENT		
<i>None identified by specialist</i>		
CONSTRUCTION PHASE		
AGRICULTURE IMPACT ASSESSMENT		
<i>Loss of High Potential Agricultural Land</i>	Sustainable land use and protection of agricultural resources is a core functions of the Department of Agriculture. This has led to promulgation of various pieces of legislation to guide agricultural development. The more important are the following:	▲ No mitigation required.
<i>Loss of Cultivated Land</i>	<ul style="list-style-type: none"> ▲ Conservation of Agricultural Resources Act No 43 of 1983; ▲ Preservation and Development of Agricultural Land Framework Bill, 2014; ▲ National Policy on the Preservation of High Potential and Unique Agricultural Land, June 2006; ▲ Land use Management Bill, 2008; <p>This impact is assessed with this in mind.</p> <ul style="list-style-type: none"> ▲ There is no high potential or unique land or land that is irrigated on or in proximity of available surface water. 	▲ No mitigation required.

ISSUE	DESCRIPTION OF IMPACT	MITIGATION MEASURES
	<ul style="list-style-type: none"> ▲ No cultivated land will be lost ▲ Approximately 67.1 ha of low potential land will be permanently lost. <p>Loss Of Grazing Land</p> <p>Sustainable land use and protection of agricultural resources is a core functions of the Department of Agriculture. This has led to promulgation of various pieces of legislation to guide agricultural development. The more important are the following:</p> <ul style="list-style-type: none"> ▲ Conservation of Agricultural Resources Act No 43 of 1983; ▲ Preservation and Development of Agricultural Land Framework Bill, 2014; ▲ National Policy on the Preservation of High Potential and Unique Agricultural Land, June 2006; ▲ Land use Management Bill, 2008; <p>This impact is assessed with this in mind.</p> <ul style="list-style-type: none"> ▲ The loss of grazing land is temporary and will be for one or two rainy season. The land will remain as grazing after construction. The construction footprint is the only area is permanently lost. 	<ul style="list-style-type: none"> ▲ Compensate farmers for what is lost (turbine rental income). ▲ Keep the construction period as short as possible. ▲ Employ dust-supressing practices to protect adjoining grazing land.
Loss of Agricultural Production (Yield and Income)	<p>Sustainable land use and protection of agricultural resources is a core functions of the Department of Agriculture. This has led to promulgation of various pieces of legislation to guide agricultural development. The more important are the following:</p> <ul style="list-style-type: none"> ▲ Conservation of Agricultural Resources Act No 43 of 1983; ▲ Preservation and Development of Agricultural Land Framework Bill, 2014; ▲ National Policy on the Preservation of High Potential and Unique Agricultural Land, June 2006; ▲ Land use Management Bill, 2008; <p>This impact is assessed with this in mind.</p> <ul style="list-style-type: none"> ▲ The loss of grazing is the only impact that translates to income loss. 	<ul style="list-style-type: none"> ▲ Compensate farmers for what is lost. ▲ Keep the construction period as short as possible.
Loss of Agricultural Resources	<p>Sustainable land use and protection of agricultural resources is a core functions of the Department of Agriculture. This has led to promulgation of various pieces of legislation to guide agricultural development. The more important are the following:</p> <ul style="list-style-type: none"> ▲ Conservation of Agricultural Resources Act No 43 of 1983; ▲ Preservation and Development of Agricultural Land Framework Bill, 2014; ▲ National Policy on the Preservation of High Potential and Unique Agricultural Land, June 2006; ▲ Land use Management Bill, 2008; <p>This impact is assessed with this in mind.</p> <ul style="list-style-type: none"> ▲ The loss of resources relates to soil due to 	<ul style="list-style-type: none"> ▲ Replace topsoil during rehabilitation and ensure that the soil is well fertilised and rolled. ▲ Sow seed of local plants that is adapted to the climate. ▲ Irrigate the soil to ensure germination and establishment of the seed occurs. ▲ Remove all alien plants and weeds until the natural plants are well established.

ISSUE	DESCRIPTION OF IMPACT	MITIGATION MEASURES
	erosion and water that can be used for farming purposes.	
AVIFAUNAL IMPACT ASSESSMENT		
Destruction of Bird Habitat	Construction of the facility will result in a certain amount of destruction and removal of natural vegetation which was previously available to avifauna for use. This impact is anticipated to be of MODERATE NEGATIVE significance pre mitigation. The area is also significantly disturbed by various human activities including: the N2 highway; pipelines; roads; power lines; and general farming practices.	<ul style="list-style-type: none"> ▲ No unauthorised individuals must be allowed to access the site without permission from the landowners and/or the developers. Theft and vandalism can be reduced by providing additional security to farmers where necessary. ▲ The construction period is for a short period. Discuss the possible restriction of access to farm housing or farming infrastructure like watering facilities, boreholes, etc. with the farmers and come up with solutions. ▲ Maintenance workers must not handle or remove any livestock or wildlife from the site or the surrounding properties. ▲ Police must be notified if any illegal actions take place.
Disturbance of Birds	This is rated as LOW NEGATIVE significance, on account of there being no known breeding sites of sensitive bird species on or near site.	<ul style="list-style-type: none"> ▲ The sensitivity map in Chapter 6 of the Avifaunal Report must be adhered to.
BAT IMPACT ASSESSMENT		
Destruction / Disturbance of Bat Roosts	If the construction of roads, power lines, turbines, office and maintenance buildings, substations and other infrastructure for the proposed Albany WEF causes disturbance or destruction of a few small farm buildings on site, this would affect only a small number of house-dwelling bats. However, construction would have a significant impact on local bats if it affected larger roosts. While IWS only found small roosts, there is a moderate to high potential of roosts in the steeper, rocky sections in the south and south-east of the Albany WEF site. The deep rocky gorges are likely to provide suitable roosting habitat to several species and the diversity of species recorded at AL2 is testament to this. These areas were not accessible to fully assess. This potential impact, therefore, has a Medium Significance rating, which can be reduced to Low by the following recommended mitigation measures.	<ul style="list-style-type: none"> ▲ Minimise disturbance and destruction of farm buildings on site. ▲ No part of any turbine, including the entire rotor swept zone to be constructed within areas of High and bat sensitivity. IWS discourages the development in areas of Medium and Medium-High bat sensitivity, however, operational mitigation measures are recommended Section 9.3.2 to minimise bat fatalities in these zones. ▲ Clearing of natural vegetation areas be kept to a minimum. ▲ Construction near cliff-faces and mountainous areas in south and south-east of site to be avoided. ▲ Whilst it is unlikely that any new large roosts (consisting of more than 50 bats) will be discovered on site or immediately adjacent, such roosts must be reported if found during the

ISSUE	DESCRIPTION OF IMPACT	MITIGATION MEASURES
Fragmentation of Bat Habitat	<p>If the construction of roads, power lines, turbines, office and maintenance buildings, substations and other infrastructure for the proposed Albany WEF causes disturbance or destruction of locally limited water resources and woody vegetation, this would have a Significant impact on bats, especially the clutter-edge and clutter foraging bat species. Construction will involve vegetation clearance at the footprint of each turbine, along the road network and other office and substation buildings. General dust and noise will increase in the area which may cause more sensitive species to disperse either temporarily or permanently.</p> <p>The physical infrastructure, movement, noise and lights of the operational turbines could act as barriers and disturbance to bats during foraging and movement. Lights could also act as an attractant to certain species. At some operational WEFs in the Eastern Cape where IWS is monitoring, artificial light around the substation and O&M buildings seem to be attract insects and therefore foraging bats, resulting in high activity recorded at the nearby bat monitoring stations. This potential impact, therefore, has a Medium significance rating, which can be reduced to Low by the following recommended mitigation measures.</p>	<p><i>operational phase.</i></p> <ul style="list-style-type: none"> ▲ Turbines, including the blade length, must be spaced ≥300 m from each other. ▲ All turbines (including their full rotor swept zone) to be kept out of all High bat sensitivity areas. ▲ There must be at least a 500m no turbine development zone around any sub-stations or office/operations and maintenance buildings. ▲ Clearing of natural and agricultural areas be kept to a minimum. ▲ Minimise impacts to natural and artificial wetlands and water bodies.
Loss or Population Disturbances to Conservation Important Bat Species	<p>None of the eleven bat species confirmed for the Albany WEF study area are listed as Red Data species (Childs <i>et al.</i>, 2016), however, they are all listed as protected in terms of the Ciskei Nature Conservation Act 10 of 1987 (the Act) and the [Western] Cape: Nature Conservation Ordinance 19 of 1974 (the Ordinance). This impact was, therefore, given a Medium significance rating, which would be reduced to Low maintained by the mitigation measures provided.</p>	<ul style="list-style-type: none"> ▲ no development in the greater Grahamstown area should be approved without each project allowing for in their EMP and budget, Operational monitoring at each WEF South African Good Practise Guidelines for Operational Monitoring for Bats at Wind Energy Facilities (Aronson <i>et al.</i>, 2020) or later editions valid at the time of monitoring and data sharing, and curtailment takes place at turbines where multiple bat fatalities are found.
Reduction in Size, Genetic Diversity, Resilience and Persistence of Bat Populations	<p>Bat populations are likely to be reduced in size by the fatality of bats at WEFs, especially where multiple facilities occur. Because bats have low reproductive rates, they have slow generation turn-over and low population resilience against mass die-offs. Smaller populations also contain less genetic diversity, and are more susceptible to genetic drift and inbreeding. WEFs may, therefore, reduce the long-term persistence of local and even regional bat populations. This potential impact, therefore, has a Medium-High significance rating, which can be reduced to Low by the mitigation measures provided</p>	<ul style="list-style-type: none"> ▲ IWS also recommends that the DEA and the ECDEDEAT commission an individual or a Company to collate data gathered from the various projects in the area to assess the actual cumulative impact and to make recommendations from a regional perspective.
ECOLOGICAL IMPACT ASSESSMENT		
Faunal Habitat Loss And Fragmentation	<p>The habitats within the proposed site and those of the surrounding areas form part of a functional ecosystem. An ecosystem provides more than simply a 'home' for a set of organisms, it is a</p>	<ul style="list-style-type: none"> ▲ Where possible, internal roads and turbine hardstands must be planned and constructed to avoid highly sensitive areas.

ISSUE	DESCRIPTION OF IMPACT	MITIGATION MEASURES
	<p>functional system where biological and biophysical processes such as nutrient cycling, soil formation, reproduction, migration, competition, predation, succession, evolution and migration take place. Destruction or modification of habitats causes disruption of ecosystem function and threatens the interplay of processes which ensure environmental health and the survival of individual species.</p> <p>Faunal habitats will be impacted on and could be lost during the clearing of vegetation for the construction of internal roads and the construction of turbine hardstands. This is usually accompanied by the loss of food sources and/or shelter but may also include the loss of temporary wetlands, caves or rocky outcrops. Construction of turbine hardstands and road infrastructure through these habitats could have a significant impact on an already fragmented population of species due to the existing infrastructure, such as the N2 and R67 roads.</p>	<ul style="list-style-type: none"> ▲ Where access roads and/or turbine hardstands do need to be located within highly sensitive areas then there must be further ground-truthing to determine the exact road routes and turbine hardstand locations so to, where possible, avoid site specific sensitive areas. ▲ Wherever possible, existing service/access roads must be used. ▲ Clearing of vegetation must be kept to a minimum and all rocky outcrops and wetlands must be avoided. ▲ Construction areas must be demarcated with hazard tape and no clearing must occur outside of these areas. Laydown areas and construction camps must be located in areas of low sensitivity. Where this is not feasible, then in areas of moderate sensitivity. ▲ An Environmental Control Officer (ECO) must be employed to monitor the clearing of vegetation for the construction of roads and hardstands.
Loss Of Reptile Diversity	<p>It is likely that some of the reptile species, which occur within the proposed site, will be disturbed or killed due to construction activities. This could be due to habitat loss or mortality associated with road mortality or poaching.</p> <p>Due to the existing primary and secondary roads in proximity to the proposed site, it is likely that reptile habitats have already been disturbed in some areas within the proposed site. It is also likely that reptiles have been and will continue to be killed along these roads in the absence of the proposed development.</p>	<ul style="list-style-type: none"> ▲ All the lizards and tortoises, which are likely to occur within the proposed site that are listed as Schedule II species on the PNCO List, and it is therefore illegal for any construction staff to remove them from the site. It will be difficult to avoid all areas where reptiles are likely to occur, but it is recommended that construction staff are educated with regards to reptile conservation and that all staff employed by the developer ensure that any reptiles encountered are not killed. Any reptiles encountered must be allowed to move away from the area but those which require relocation must be relocated in accordance with local legislation. ▲ No reptiles must be removed from the site without proper authorisation from the relevant authority. ▲ A rescue plan must be developed to protect reptiles which could fall into construction pits. ▲ The construction of turbine hardstands on rocky outcrops must be avoided. ▲ Speed restrictions (40 km per hour is recommended) must be in place to reduce the likelihood of reptiles being killed along the roads. ▲ Driving within the site must be

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		<p>restricted to day-light hours as far as practically possible. Driving before sunrise and after sunset must be restricted as far as practically possible.</p> <ul style="list-style-type: none"> ▲ Wherever possible, existing service/access roads must be used. ▲ Access to all internal roads must be restricted through locked gates and/or guarded booms. ▲ It is recommended that construction staff are educated regarding poaching and any such activities must be strictly prohibited.
Loss Of Amphibian Diversity	<p>It is likely that some of the amphibian species, which occur within the proposed site near surface water habitats, will be disturbed or killed due to construction activities. However, as amphibians are primarily associated with surface water, the likelihood of directly encountering amphibians during construction and operation is lower than that of reptiles. Although, the increase in traffic in the area could result in road fatalities, especially the fatalities of amphibians moving between the wetlands, rivers and streams within the site. In addition, an increase in noise could impact the breeding behaviour of some amphibian species.</p> <p>Due to the existing primary and secondary roads in some areas the proposed site, it is likely that amphibian habitats have already been disturbed to some degree. It is also likely that amphibians have been, and will continue to be, killed along these roads in the absence of the proposed development.</p>	<ul style="list-style-type: none"> ▲ All frogs and toads are listed as Schedule II species on the PNCO List and it is therefore illegal to remove them from the site without a permit. ▲ Where possible, the placement of turbine hardstands must avoid all aquatic habitats as they are valuable habitats for protected amphibian species. ▲ If amphibians are encountered during construction works, all construction staff must be educated with regards to amphibian conservation to ensure that they are not harmed or killed. Any amphibians encountered must be allowed to move away from the area or carefully relocated to an area within the same catchment. ▲ No amphibians will be allowed to be removed from the site. ▲ The construction of turbine hardstands must avoid the wetland areas. ▲ Speed restrictions (40 km per hour is recommended) must be in place to reduce the likelihood of amphibians being killed along the roads. ▲ Driving within the site must be restricted to day-light hours as far as practically possible. Driving before sunrise and after sunset must be restricted as far as practically possible. ▲ Vehicles must be well maintained so as not to leak oils and fuels which could pollute surface water sources. ▲ Oils and fuels must be stored on impermeable surfaces and preferably under lock and key to reduce the likelihood of the pollution of surface water. ▲ Where possible, existing service/access/haul roads must be used. ▲ Access to all internal roads must be

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	<p>It is likely that some mammal species will be impacted during the construction phase as a result of habitat loss and road mortality within the proposed site. During the operation phase, noise may affect communication and breeding potential. The proposed site traverses extensive areas of land which contain numerous large and small mammal species. Most of these large and small mammals, including mammal SCC, will move out of the disturbed areas during the construction phase, but may return once habituated for foraging opportunities. It is possible that some of the smaller, and more secretive mammal species, may still be encountered within the site throughout these phases.</p> <p>In the absence of the proposed development, it is likely that most of the large and small mammal species will probably still move around within and outside of the site due to movement towards foraging opportunities and/or moving away from anthropogenic activities and associated noises within the site.</p>	<ul style="list-style-type: none"> restricted through locked gates and/or guarded booms. It is recommended that construction staff are educated regarding poaching and any such activities must be strictly prohibited. In the event of the unearthing of any mole species during construction, all construction staff must be educated with regards to mammal conservation to ensure that they are not killed, and any mammals encountered must be allowed to move away from the area or carefully moved to an area outside of the project activities. A mole specialist must be appointed to undertake a detailed survey to confirm the presence/absence of Golden moles and assist with micro-siting of the WEF and associated infrastructure and developing a plan to mitigate impacts if detected or favourable habitat is identified (such as relocation). Speed restrictions (40 km per hour is recommended) must be in place to reduce the likelihood of mammals being killed along the roads. Driving within the site must be restricted to day-light hours as far as practically possible. Driving before sunrise and after sunset must be restricted as far as practically possible. Where possible, existing service/access roads must be used. Access to all access/service roads must be limited by having locked gates. It is recommended that construction staff are educated regarding poaching and any such activities must be strictly prohibited.
Impact Of Noise And Dust On Faunal Species	<p>The construction of the proposed WEF and associated infrastructure will result in an increase in noise and dust within the proposed site and surrounds. Roads are known to alter the physical characteristics of the environment and it is possible that numerous species within the proposed site will be affected by the increase in noise and dust to some extent. The faunal group which is most likely to be impacted by the increase in noise and dust levels is amphibians. Increased dust levels alter wetlands and riparian areas which could affect the feeding and breeding of amphibians within these areas.</p> <p>Fauna vary in the degree to which they can tolerate such disturbances and the increase in</p>	<ul style="list-style-type: none"> Soil stockpiles must be limited to 1.5 m in height. Construction activities such as the digging of trenches, which could result in excessive dust pollution, must preferably cease during period of high winds, where practically feasible. Newly cleared and exposed areas must be managed for dust and landscaped with indigenous vegetation to avoid soil erosion. Where necessary, temporary stabilization measures must be used until vegetation establishes. Speed restrictions (40 km per hour is recommended) must be in place to

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	<p>noise and dust could potentially have adverse impacts on various faunal groups. Increased noise and motor vibrations in wetland areas could also impact amphibian breeding choruses, but these impacts will be localised and many amphibian species are surprisingly tolerant of vehicle noise. Noise pollution will occur during all phases of development (construction, operational, and decommissioning/ closure).</p>	<ul style="list-style-type: none"> ➤ reduce the amount of dust caused by vehicle movement along the roads. ➤ Where possible, fine materials must be covered or kept in containers during transportation to avoid contamination of the surrounding areas. ➤ Driving within the site must be restricted to day-light hours as far as practically possible. Driving before sunrise and after sunset must be restricted as far as practically possible. ➤ All reasonable and feasible measures must be implemented to reduce noise in ecologically sensitive areas, such as adjacent to wetlands and rivers.
Loss Of Vegetation Communities	<p>Plant communities are dynamic ecosystems which provide habitats that support all forms of life. Different types of plant communities (and habitats) exist within the proposed site. The vegetation types which will be affected by the proposed development footprints include Grahamstown Grassland Thicket, Albany Bontveld, Albany Valley Thicket, Bhisho Thornveld, Suurberg Shale Fynbos and Suurberg Quartzite Fynbos from the Albany Thicket, Savanna and Fynbos Biomes. The current condition of these vegetation communities varies from good to poor condition, depending on the level of transformation caused by anthropogenic activities. In accordance with Mucina et al., (2018), the conservation statuses of all these vegetation types are least threatened, except for Albany Valley Thicket which is classified as vulnerable. Sections of these vegetation types will be lost due to vegetation clearance during the construction phase of the Albany WEF.</p> <p>Currently, vegetation communities have been and will continue to be lost and/or fragmented in the area, in absence of the Albany WEF development, due to transformation for agricultural activities and other development.</p>	<ul style="list-style-type: none"> ➤ The turbine and road layouts need to undergo micro-siting prior to finalisation of the turbine layout. ➤ A comprehensive Plant Search and Rescue must be undertaken by a suitably qualified specialist prior to vegetation clearance. ➤ All relevant plant permits must be in place prior to the removal or removal and relocation of protected species. ➤ Plant SCC found within the proposed site must either be housed in an onsite nursery for use during rehabilitation or be relocated to suitable areas where vegetation clearance will not occur. ➤ Areas of the proposed site which contain large populations of SCC must be avoided where possible. ➤ The clearance of vegetation, at any given time, must be kept to a minimum to reduce the possibility of soil erosion. ➤ The clearing of vegetation and damage to plants may not be permitted in any areas which have demarcated as no-go areas, these include the Southern Mistbelt Forest patches (Beggars Bush State Forest) as well as the Ecca Local Authority Nature Reserve. ➤ Where possible, all temporary infrastructure must be placed in areas which have already been transformed. ➤ Existing roads must be used as far as practically possible.
Removal Of Alien Vegetation	<p>The clearance of vegetation associated with the development of the Albany WEF and associated infrastructure will include the clearance of alien vegetation which is already present on portions of the proposed site. This will be a positive impact as alien invasive species will be removed, which will improve the condition of the existing</p>	<ul style="list-style-type: none"> ➤ A site-specific Alien Vegetation Management Plan must be implemented during the construction phase, and continued monitoring and eradication needs to take place throughout the life of the project. ➤ Alien vegetation, within the

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	indigenous vegetation as there will be less competition from alien invasive species.	<p><i>development footprints, must be removed from the site and disposed of at a registered waste disposal site.</i></p> <ul style="list-style-type: none"> ▲ <i>The development footprints and immediate surroundings must be monitored for the growth/regrowth of alien vegetation throughout the construction (and operation) phase.</i>
Pollution Of Surface Water Resources	<p>The proposed site contains numerous wetlands and watercourses. None of the proposed turbines, according to the current layout, are situated within wetlands or watercourses but numerous turbines are located within the 500 m regulatory buffer of wetlands. Sections of associated infrastructure, such as roads, are also routed within 500 m of numerous wetlands and within the 100 m regulatory buffer of a watercourses. Water use authorisation is required from the Department of Water and Sanitation (DWS) prior to the commencement of any construction activities within the regulatory buffers of these wetlands and watercourses.</p> <p>Activities associated with the proposed development could result in the pollution of surface water resources both directly and indirectly through activities such as the inappropriate storage of hazardous materials which could result in spillages and the resultant contamination of surface water resources.</p>	<ul style="list-style-type: none"> ▲ <i>No concrete mixing must take place within 50 m of a wetland or watercourse during the construction phase.</i> ▲ <i>Concrete mixing must only take place on impermeable surfaces.</i> ▲ <i>No construction machinery must be parked within 50 m of a wetland or watercourse overnight.</i> ▲ <i>Construction machinery must be maintained regularly to reduce the risk of oil and fuel leaks.</i> ▲ <i>All stationary machinery must be equipped with drip trays to retain potential oil and fuel leaks.</i> ▲ <i>Emergency plans must be in place to remedy oil and fuel spill leaks.</i> ▲ <i>Chemical toilets must not be placed within 50 m from wetlands and watercourses. Toilets must be maintained/serviced regularly to prevent the contamination of the surrounding environments, including wetlands and watercourses.</i>
Rehabilitation	Inadequate rehabilitation could result in limited revegetation and/or an invasion of alien vegetation which will result in long term ecological degradation and damage.	<ul style="list-style-type: none"> ▲ <i>A Rehabilitation Management Plan must be developed and implemented during the construction phase as construction is complete at each site.</i> ▲ <i>Measures must be put in place to prevent the accidental or unintentional introduction of alien vegetation during rehabilitation.</i> ▲ <i>The development footprints and immediate surroundings must be monitored for the growth/regrowth of alien vegetation throughout the construction phase.</i> ▲ <i>Indigenous species must be used for rehabilitation.</i>
HERITAGE IMPACT ASSESSMENT		
Destruction Of Heritage Artifacts	Middle Stone Age (MSA) stone artefacts occurred in various locations over the proposed development area within the exposed and disturbed surface areas. This would generally be expected as the immediate and wider region is rich in the occurrence of Middle Stone Age as well as Early Stone Age archaeological material. It is possible that stone artefacts will occur between	<ul style="list-style-type: none"> ▲ <i>An archaeological walk-through assessment must be conducted when the final layout of the Albany wind energy facility is determined. The walk-through assessment will be conducted to assess changes in the positions of the turbines, access roads and cabling between the turbines as</i>

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	<p>the surface and 50 cm – 80 cm below the ground.</p> <p>Several stone packed features were also recorded within the proposed development area. These included stone packed / walled kraals, an historical stone packed / walled farm boundary as well as the remains of foundations.</p> <p>The built environment component included historical ruins that included farmhouses, other buildings and a church. A graveyard is associated with the church.</p> <p>An old historical wagon route was pointed out by the owner of the Farm Grobbeler's Kloof situated at the entrance to the farm south off the N2 national, running parallel to N2 national road. The potential negative impact on the stone walling (BHSW2) was initially of concern. The revised layout followed the recommendation that an alternative access road be constructed south of the stone walling to access the four turbines (WTG 70, WTG 5, WTG 7, WTG 9) on the northern boundary of the Farm Glen Craig 241. The road has been realigned to the south running parallel to the stone walling in order to avoid this impact.</p> <p>At a cumulative level, the archaeological and historical heritage resources must be appropriately mitigated at a project / site specific level so that there is less of a risk of losing the information after the construction of these alternative energy facilities. The loss of information at regional scale is at risk as these facilities cause an immense amount of surface disturbance and destruction where archaeological and historical heritage resources are at risk of being destroyed without justification.</p>	<p><i>well as other associated infrastructure relative to the original footprint. Further mitigatory recommendations may be necessary if any of the changes may impact negatively upon heritage resources.</i></p> <ul style="list-style-type: none"> ▲ <i>The stone packed features and stone walling must be noted and a no-impact / no-development buffer of 20 m be established.</i> ▲ <i>If any of the buildings are planned to be demolished during the course of development, a built environment specialist, historical architect should be appointed to assess the buildings proposed for demolition.</i> ▲ <i>If concentrations of pre-colonial archaeological heritage material and/or human remains (including graves and burials) are uncovered during construction, all work must cease immediately and be reported to the Albany Museum (046 622 2312) and/or the Eastern Cape Provincial Heritage Resources Agency (ECPHRA) (043 745 0888) so that systematic and professional investigation/excavation can be undertaken. Phase 2 mitigation in the form of test-pitting/sampling or systematic excavations and collections of the pre-colonial shell middens and associated artefacts will then be conducted to establish the contextual status of the sites and possibly remove the archaeological deposit before development activities continue.</i> ▲ <i>A person must be trained as a site monitor to report any archaeological sites found during the development. Construction managers/foremen and/or the Environmental Control Officer (ECO) should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.</i> ▲ <i>The developer / ECO / or construction manager must apply to the Eastern Cape Provincial Heritage Resources Agency (ECPHRA) for a destruction permit to disturb the stone artefact scatters prior to the commencement of the development.</i>

NOISE IMPACT ASSESSMENT

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Construction Noise	<p>Considering the projected noise levels as well as the expected daytime ambient sound level (higher than 45 dBA), there is a very low risk for a noise impact during the construction phase for daytime construction activities (see Table 9-1). Similarly, considering potential night-time equivalent rating levels for a rural noise district (35 – 42 dBA) the significance of a construction noise impact would be low. Construction noises will cumulatively add to any other noises in the area, but it will be insignificant.</p>	<ul style="list-style-type: none"> ▲ Ensure a good working relationship between the developer/contractor and all potentially noise-sensitive receptors. Communication channels must be established to ensure prior notice to the sensitive receptor if work is to take place close to them (especially if work is to take place within 500m from them at night). Information that must be provided to potentially sensitive receptor(s) includes: <ul style="list-style-type: none"> ■ Proposed working dates, the duration that work will take place in an area and working times; ■ The reason why the activity is taking place; ■ The construction methods that will be used; and ■ Contact details of a responsible person where any complaints can be lodged should there be an issue of concern. ▲ Minimize simultaneous night-time construction activities close to receptors 17, 28, 18, 19, 21 and 10 where possible. When night-time activities are to take place close to these receptors they must be as per previous recommendation; ▲ The use the smaller/quieter equipment when operating near receptors; ▲ Ensure that equipment is well maintained and fitted with the correct and appropriate noise abatement measures if available. Engine bay covers over heavy equipment could be pre-fitted with sound absorbing material. Heavy equipment that fully encloses the engine bay must be considered, ensuring that the seam gap between the hood and vehicle body is minimised; ▲ Locate access routes as far as possible from identified receptors, especially if these roads will be used during night-time construction activities.
PALAEONTOLOGICAL IMPACT ASSESSMENT		
Destruction Of Palaeontology Resources	<p>Due to the extreme weathering of strata at surface along the ridges, soil development and extensive vegetation cover, current outcrop was found to be extremely sparse and no palaeontological material was observed at the actual proposed wind tower positions.</p> <p>Quarries and roadworks within the study area</p>	<ul style="list-style-type: none"> ▲ All excavated holes for wind tower footings (with the exception of WTG positions 19 and 21) should be examined by a palaeontologist after excavation and before casting of footings. ▲ All new access roads should simultaneously be inspected by a

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	<p>and within the district have however demonstrated that excavation into the Witpoort Formation not infrequently intercepts black shale layers and lenses that may be of great palaeontological value. Palaeontological investigations of these layers, in the Grahamstown district, has provided the world's only window into high latitude conditions at the end of the Devonian, a time of extreme importance in understanding the process of vertebrate terrestrialisation and the lead up to the second global Mass Extinction Event.</p> <p>There is therefore a reasonable chance that excavation of holes for casting wind tower footings will intercept fossiliferous shales, which may contain important unique heritage material. Lag deposits, containing fossil stems and possibly bones might also be found preserved within the quartzites. The extreme inaccessibility of many of the proposed positions furthermore suggests that access roads will need to be excavated in order for construction equipment to reach the positions. These may also disturb palaeontological material.</p> <p>Excavations into Lake Mentz Subgroup strata are somewhat less likely to disturb palaeontological material, but should they do so this would also be significant, potentially providing insights into the recovery fauna and flora after the end Devonian Extinction.</p>	<p>palaeontologist prior to any rehabilitation.</p> <ul style="list-style-type: none"> ▲ During excavation of WTG positions 19 and 21 the ECO should check for any palaeontological material and immediately report any finds or suspected finds to the palaeontologist.

SOCIO-ECONOMIC IMPACT ASSESSMENT

Employment	EMPLOYMENT OPPORTUNITIES <p>During the 24-month labour intensive construction period, skilled employment amounts to 613 person-month and unskilled to 900 person-month. Unskilled workers are required to do basic labour such as site clearing, digging of trenches, erection of fences and the laying of foundations. Skilled professionals would include, but not be limited to Land Surveyors, Project Managers, Assistant Project Managers, Engineers and an Environmental Control Officer, machine operators and so forth.</p> <p>Although the construction periods do not overlap, construction of the two wind farms in Makana LM contribute positively towards employment and skills transfer for locals, including semi- and higher skilled individuals. Social and economic advantages for individuals and families.</p> <p>No-go: No employment and associated benefits will accrue to local communities or the broader</p>	<ul style="list-style-type: none"> ▲ Maximise local employment (unskilled, semi- and skilled workers) as well as the number of local SMMEs and vendors. Set standards for local employment in the Contractor Services Management Plans. ▲ Implement a fair and transparent employment process through the EPC contract and employ a Community Employer Relations Officer for the duration of the construction period. ▲ Implement a SMME skills development programme (training on how to tender, understanding contracts, etc.) at least 4 months prior to inviting SMMEs to tender. The programme must not only assist local small businesses but also aim to do skills development for the local Municipality. ▲ Communication with the affected communities must be done constructively through one channel,
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	<p>Makana LM as a result of this project.</p> <p>EMPLOYMENT EQUITY</p> <p>Many local businesses, especially those headed by youth, women and persons with disabilities, are feeling left out in the economic agenda of the province. To address this concern the Makana LM is implementing the Local Economic Development Procurement Framework ("LEDPF") and the revised Preferential Procurement Policy Framework Act has been in effect since April 2017, which makes it compulsory for all contracts above R30 million to sub-contract 30% of work to small or black owned enterprises where feasible. Equally important is the development of skills and sustainable youth enterprises as part of the radical economic transformation agenda and Makana LM has allocated a budget to cater for this demand. SMMEs are registered on the 'Central Supplier Database' to enable them to do business with government (Makana IDP).</p> <p>For this project, the inclusion of Blacks in employment and the entire supply chain forms part of the scorecard according to which the DMRE will rank the projects submitted for bidding. At this stage, DMRE requires a minimum of 30% skilled Black people to be involved in the construction phase, which could be raised during the course of the process. The DMRE encourages the Project to procure with suppliers that have a BBBEE Generic scorecard or who are Qualifying Small Enterprises, Exempt Micro Enterprises and Women Owned Vendors. However, no constructive guidelines/thresholds exist to address employment equity for women, youth and the disabled.</p> <p>It is unknown what the cumulative contribution towards employment of minority groups have been and the impact on employment equity can thus not be determined.</p> <p>No-go: Minority groups will not have an opportunity to take part in the Makana local economy through this construction project.</p>	<p>such as the Community Employer Relations Officer through the assistance of the local councillors. This will assist to manage expectations and avoid potential conflict.</p> <ul style="list-style-type: none"> ➤ A policy regarding employment equity of minority groups must be formulated and implemented wherever possible. ➤ As part of the tender documents, the Contractor/s have to provide subcontracting values per package and the plan on how they will meet procurement of minority groups (women, youth, disabled) and SMMEs targets assigned. ➤ Implement relevant measures should the Contractor/s not comply with the social management plan they submitted (impose penalties, termination where necessary, review of future prospective work, etc.).
	<p>LOCAL EMPLOYMENT</p> <p>The term "local" means a community or communities residing within the area of jurisdiction of the district municipality in which the project site is located (i.e. SBDM); or residing in one or more residential areas or villages within 50km from the Project Site (refer Figure 3. 50km radius). At this stage DMRE prescribes that between 12 and 20% of people employed on a project have to be residents of local communities (as defined above). This threshold is not set and</p>	

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	<p>could change.</p> <p>From a socio-economic perspective, the benefits and overall significance of this impact would increase if the number of locals working on the project is maximised.</p> <p>It is anticipated that the majority of the unskilled and semi-skilled positions could be filled by locals. The number of foreigners/expatriates employed on renewable energy projects has decreased over time, as skills have gradually been transferred to South Africans. Skilled professional would be available locally due to experience gained during construction of the Waainek Windfarm and similar projects in the Eastern Cape.</p> <p>Although probable, the percentage of local employment at Waainek Wind Farm is unknown and the cumulative impact cannot be rated. In the Eastern Cape (in BW1-4) 4 737 construction jobs (job years) have been created for all renewable energy projects combined; and 53% local people (2 509) were employed in construction. This is more than the Northern and Western Cape provinces, where 51 and 45% locals retained construction jobs (McDaid, 2016).</p> <p>No-go: No economic benefits, skills development or economic spin-offs will manifest for locals during construction.</p>	
Local Economic Impacts	<p>PROCUREMENT</p> <p>In order to promote preferential procurement and local content, a percentage of the scorecard ranked by DMRE to select winning bids will be based on:</p> <ul style="list-style-type: none"> ▲ How much of the facility is manufactured in South Africa; and ▲ The amount of goods and services procured through South African companies that have a BBBEE Generic scorecard or who are Qualifying Small Enterprises, Exempt Micro Enterprises and Woman Owned Venders. <p>It is anticipated that many of the high-technology components required would be imported and local procurement would thus be more focused on general construction material and goods and infrastructure elements. Building material could be sourced from local towns and aggregate material from licenced borrow pits as close to the site as possible.</p> <p>The specific procurement strategy will be formulated closer to the time. Some of the strategies are confidential and can thus not be</p>	<ul style="list-style-type: none"> ▲ <i>Formulate a local procurement strategy that specifically also aims to increase the local content of the Project to its maximum.</i> ▲ <i>Involve the Makana LED Department in the early processes and commence discussions with them during financial close already.</i> ▲ <i>Do a Value-chain analysis of services required (directly and indirectly related to construction such as transport, laundry, catering, uniform supplies, etc.) and communicate this to the Makana LM at least four months prior to the tender process commencing. Do skills development and training for the SMME's and Makana LM to ensure that SMMEs / contractors are prepared and equipped to take part in the tender processes.</i>

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	<p>revealed at this stage.</p> <p>Local procurement at the various wind energy projects in the Eastern Cape would result in technology development and positive cumulative economic impacts for the local and regional economies.</p> <p>No-go: No positive local economic impacts as a result of procurement. None of the local suppliers and manufacturers would benefit.</p> <p>IMPACTS AS A RESULT OF SALARIES AND WAGES</p> <p>The unemployment rate in Makana LM is 32.5%, and averages 29.8% in the three affected wards (refer Section 7.1: Unemployment rate and employment status). This is higher than National and Provincial averages. Between 12 and 20% of people employed on the project have to be residents of local communities and the assumption can be drawn that the majority of the unskilled workforce will be unemployed prior to the construction phase commencing. Incomes in the form of salaries and wages would thus hold economic benefits for these individuals, households and communities for the duration of the construction period.</p> <p>Cumulative local economic impacts as a result of an increase in spending power would benefit the Eastern Cape region.</p> <p>No-go: No economic benefits for individuals and households or induced impacts for the municipality/region as a result of salaries and wages.</p>	
	<p>INDUCED IMPACTS</p> <p>When households spend earnings from project development, salaries and wages as well as procurement, these earnings circulate in the regional economy and manifest as induced impacts. These effects associated with the construction phase could include:</p> <ul style="list-style-type: none"> ▲ Contracts with SMME's and local service providers (catering, transport, etc.) that are not directly related to construction; ▲ Manufacturing jobs related to turbine and supply chain impacts; ▲ Retail sales, childcare, leisure and hospitality; and ▲ Real estate sectors and accommodation of foreigners in local establishments and related spin-offs, such as tourism. <p>Cumulative enhanced local economic opportunities, industrialisation, job creation and other economic spin-offs for the region.</p>	

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Impacts On The Social And Demographic Structure Of The Local Municipality	<p>No-go: No economic spin-offs will manifest for the Makana LM or region.</p> <p>INFLUX OF JOBSEEKERS AND THE IMPACT OF TEMPORARY CONSTRUCTION WORKERS</p> <p>Should the project be a successful bidder and the construction period becomes public knowledge, jobseekers and temporary construction workers from the Eastern Cape Province, or wider country, could pose various challenges and negative impacts:</p> <ul style="list-style-type: none"> ➤ Conflict between locals and 'outsiders' if an outside labour force receives preference; ➤ Conflict due to cultural differences and impacts on social networks; ➤ An increase in the size and number of informal settlements in and around the study area; ➤ Provision of accommodation for temporary workers could become an economic and social burden for the Project and the local and district Municipalities (erection of a construction camp to house workers is however not foreseen); ➤ Workers that remain in the area after the construction period ended could place additional pressure on local government for housing and associated infrastructure and services; ➤ 'Outsiders' that have short-term relationships with local women resulting in unwanted pregnancies and an increase in HIV/AIDS and other STD's, thereby placing more pressure on healthcare facilities; ➤ An increase of single-headed households without a main income provider and pressure on healthcare, social grants and infrastructure; and ➤ Safety and security issues for the surrounding landowners due to an influx of 'jobless' people. <p>It is unknown whether Waainek Wind Farm (or other renewable energy projects in the region) resulted in an influx of jobseekers and the severity of the cumulative impact can thus not be rated. The likelihood of the impact manifesting is possible but is rated with an overall LOW significance as locals should have been primarily employed in accordance with DMRE requirements. Confidence in the rating is low.</p> <p>IMPACTS ON THE SIZE AND STRUCTURE OF THE LOCAL MUNICIPAL POPULATION</p> <p>Changes in the size, gender, race and age composition of the local population would be affected by the scale of 'outsiders' moving into</p>	<ul style="list-style-type: none"> ➤ Ensure that the Community Employer Relations Officer has knowledge of the local communities, is educated with good public relation skills, committed to the cause and is accessible for community members. ➤ Care must be taken to communicate the project requirements and time frames to the local communities to avoid raising unrealistic expectations. Work through limited communication channel such as the Community Employer Relations Officer and ward Councillor. ➤ Contractually obligate contractors and subcontractors to employ temporary workers through the labour desk/job seeker registration database and make this fact known to the communities. This would address and limit the uncoordinated influx of jobseekers to the site and to the surrounding towns, as they would be unable to secure work if not through the established routes. ➤ Recruitment of temporary workers at the access to the construction site is not allowed.

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	<p>the area and the length of the period that they remain. Adequate management of the employment processes and strict measures in terms of local employment would mitigate this impact effectively.</p> <p>Although possible, the severity of this impact manifesting for the Municipality as a result of cumulative factors is unknown and a LOW overall negative significance is awarded. Confidence in the rating is low.</p>	
Skills Development, Capacity Building And Social Responsibility	<p>TRAINING / SKILLS DEVELOPMENT OF INDIVIDUALS / GROUPS / SMMES</p> <p>During the construction phase the Project's subcontractors will provide locally recruited staff with suitable training to safely undertake the roles they will perform on site. If required as part of the subcontractors' own strategy to maintain their BBBEE Level, subcontractors may provide additional capacity building to specific individuals, groups of individuals or SMMEs employed on the Project. The type of training and/or capacity building would generally be specific to the needs of the individuals/groups/SMMEs being supported. For example, this may include training in health and safety legislation, first aid, fire-fighting, construction skills, basic electrical training, quality management, legal compliance or business skills. Any such capacity building or training is at the discretion of the individual subcontractor.</p> <p>An important outcome of skills development and training is that it increases the employability of a region's workforce, resulting in enhanced economic opportunities and thus addressing poverty alleviation over the medium to long term.</p> <p>Cumulative impacts include: Capacity building for unskilled and semi-skilled individuals and SMMEs in the broader Makana LM, thereby increasing its employability; Individuals would be able to use their skills gained to secure employment at similar renewable energy projects in future.</p> <p>No-go: No positive impacts for the employability of the local and regional labour force over the medium or long term.</p> <p>BENEFICIARY IDENTIFICATION</p> <p>Communities within a 50km radius of the project are eligible to become beneficiaries of the program. The identification of beneficiary communities could however be problematic as the social and political dynamics can be negatively impacted by selectively identifying</p>	<ul style="list-style-type: none"> ▲ Clearly define the study area and beneficiary communities who would benefit directly through employment, equity, SED and ED spend. ▲ Collaborate with Waainek Wind Farm to determine the beneficiaries on its Community trust, and how their SED and ED expenditures are allocated. This will ensure that overlapping do not take place. Co-ordinate projects and training programmes wherever possible. ▲ Monitor social performance of contractors and determine how contractors fair on each KPI. Implement relevant measures should the contractors not comply with the social management plan they submitted (impose penalties, termination where necessary, review of future prospective work). ▲ Require larger contractors to work with small SMMEs to train and transfer skills and include this requirement in the CSMP. ▲ Implement a SMME skills development programme to train and educate SMMEs and other small vendors how to tender, understanding contracts, basic business skills and so forth. ▲ Partner with consulting firms and initiatives that support the Eastern Cape Department of Economic Development Environment and Tourism's SMME support programme. Conduct workshops for the eligible SMMEs that were selected for tailored support measures, issue SMME Resource Packs, provide one-on-one enterprise development support, provide office space (where feasible), finance and support liaising with relevant government and state-owned agencies. ▲ Create a point of contact for the public

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	<p>some people as beneficiaries over others. Also, the 50km radius often competes with other administrative boundaries. Such a radius can stretch over one or more municipal areas and can even cross provincial and national boundaries, which makes the alignment of SED and ED plans with Government policies difficult.</p> <p>For the Albany WEF the 50km radius would include Grahamstown and a number of smaller inland and coastal towns (refer Figure 3: 50km radius). It is thus necessary to shrink the 'project impact area' that would benefit directly through equity, SED and ED significantly and the Albany WEF will aim to prioritize projects implemented in close proximity to the project site. Coordination and cooperation in terms of beneficiary identification between the Waainek and Albany WEF's would avoid fragmented spending, ensuring that economic advantages of the Project are fairly and equally distributed.</p> <p>Cumulative impacts associated with beneficiary identification (such as conflict) is possible, but it is not known whether the beneficiation process resulted in negative impacts at other WEF projects.</p> <p>COMMUNITY PROJECTS, ED AND SED CONTRIBUTIONS</p> <p>Due to the ED and SED commitments being linked to revenue received during the operational phase of the project, Albany Wind Power will not be implementing any ED and SED projects during its construction phase. However, the developer will assess the potential of utilising ED and SED funds from its neighbouring project (Waainek Wind Farm) for the benefit of the commonage farmers occupying land on the Albany Site.</p> <p>Waainek Wind Power has committed to allocating a total of 2.1% of its revenues on ED (0.6%) and SED (1.5%) projects within a 50km radius from the project. Although few ED and SED benefits are anticipated during the Albany WEF's construction phase, the cumulative impact would hold some benefits for the local Municipality over the medium term. Plan 8 WEF SED and ED contributions are unknown.</p>	<p><i>such as a community liaison office, a visitor centre, a website with contact details or even a Facebook group.</i></p>
Individual And Family Level Impacts	<p>DISRUPTIONS IN DAILY LIVING AND MOVEMENT PATTERNS</p> <p>Short-term disruptions in daily living and movement patterns for surrounding community members and road users could manifest as a result of the transport of components and construction activities on site. The majority of these impacts would take place during the laying</p>	<p>↗ <i>Road safety:</i></p> <ul style="list-style-type: none"> ▪ <i>If major roads are used, it is proposed that abnormal trucks transporting components (which would normally result in road closures over a long periods) rather be segmented into two trucks at a time, to allow normal</i>

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	<p>of foundations and the erection phases. Disruptions could include:</p> <ul style="list-style-type: none"> ▲ The construction phase of potential road improvements to accommodate the development (widening of accesses and so forth); ▲ Road closures to cater for abnormal loads (transport of turbine components); ▲ Damage to road infrastructure due to the frequency of heavy vehicles; ▲ Potential unroadworthy construction vehicles and negligent drivers that disobey traffic rules; and ▲ Potential noise, dust, visual and air pollution for land owners in close proximity to the site and along gravel access roads (addressed in Section 11.5.2: Intrusion impacts). <p>Infrastructure components will in all likelihood be transported from the Coega Harbour (Port Elizabeth) by road (N2 freeway) to the project site. A Traffic Impact Assessment ("TIA") and traffic management plan will be prepared to select the most appropriate route, and all relevant approvals and permits sought from the relevant authorities such as SANRAL and Eastern Cape Department of Transport.</p> <p>The proposed accesses to the site are via existing accesses. No new accesses/intersections are proposed. There are three proposed accesses along the R67 and a further four accesses along the N2. The existing accesses to be used are general "farm" type accesses and will need to be temporary improved in order to facilitate the expected abnormal loads during the construction stage (Traffic feasibility study, January 2020).</p> <p>It is possible that the construction of other wind farms in the Eastern Cape Province take place simultaneous with Albany WEF and cumulative impacts as a result of the transport of large turbine components and road closures on the N2 is thus possible. However, these factors are unknown at this stage and the overall significance cannot be determined.</p> <p>INTRUSION IMPACTS AT THE CONSTRUCTION SITE</p> <p>Intrusion impacts refer to noise, visual and light pollution and possible dust/air pollution during the construction phase, as a result of emissions, movement of construction vehicles on site, earthworks and general construction activities. Where relevant these impacts were investigated and rated individually in a scientific manner by the respective Specialists. Although short-term in</p>	<p><i>traffic to use the roads at intervals during the affected days.</i></p> <ul style="list-style-type: none"> ■ <i>Collaborate with the traffic department and use relevant mediums to inform the public of road closures and alternative routes, e.g. erect sign boards well in advance, radio broadcasts on local radio stations and notices to the established community organisations.</i> ■ <i>Impose penalties for reckless drivers as a way to enforce compliance to traffic rules.</i> ■ <i>Inspect trucks and other heavy vehicles on a regular basis to avoid oil spillages and unroadworthy vehicles that could lead to accidents.</i> ■ <i>Display a contact number on the construction vehicles where motorists can report reckless driving.</i> ■ <i>Erect signboards indicating accesses to the construction site.</i> ■ <i>No informal traders to be allowed on or near the construction site.</i> ■ <i>Upgrade the access roads prior to the construction period commencing and maintain the roads during the length of the construction period. Once construction is finalised, ensure that damaged road surfaces have been repaired.</i> ■ <i>Implement all mitigation and management measures as proposed in the TIA Report.</i> <p>▲ Security measures:</p> <ul style="list-style-type: none"> ■ <i>Do a security risk assessment and base the exact security measures on the detailed assessment of the risks at the site.</i> ■ <i>Clearly demarcate and/or fence the construction areas, ensure access control and allow no trespassing of workers outside the designated construction areas.</i> ■ <i>Security personnel that patrol the wider areas surrounding the turbine construction footprints, and not limited to the construction areas, could be considered pending the outcome of the security risk assessment.</i> ■ <i>Fencing surrounding all</i>

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	<p>nature, the severity of the impact would increase if sensitive receptors are located close to the construction areas.</p> <p>There is no potential for a cumulative noise and dust/air impacts from other wind farms in the area. Cumulative visual impacts may occur if the construction phases of the Albany and Plan 8 WEF's overlap.</p> <p>SECURITY IMPACTS</p> <p>Crime and security issues during the construction phase are often associated with the influx of outsiders and an increase in jobless people. The increase in human activities and materials and equipment brought to site could attract criminals, which would be exacerbated by the mismanagement of the recruitment process.</p> <p>Although possible, this cumulative impact cannot be rated, as the security risks and issues experienced at the other wind farms are unknown.</p>	<p>construction areas.</p> <ul style="list-style-type: none"> ▪ <i>Signboards at the accesses and along the major roads warning motorists of the dangers of a construction site and of heavy vehicles turning.</i> ▪ <i>Workers must not be allowed to remain in and around the construction site when they are off duty; workers transported to their places of residence after each shift.</i> <p><i>Intrusion impacts:</i></p> <ul style="list-style-type: none"> ▪ <i>Dust alleviation methods: Vehicles carrying dusty materials must be securely covered before leaving the site; water gravel, dirt and roads regularly; temporarily cover earthworks if possible and minimize drop heights; monitor the dust fall out concentrations; etc.</i> ▪ <i>Generally construction activities must not take place before 8am and after 5pm nor on Sundays and public holidays. This would however not always be realistic, as deadlines and specific construction activities could take 12+ hours.</i> ▪ <i>Implement all mitigation and management measures of the respective Specialist Reports (AIA, VIA and Noise Impact Assessment).</i> <p><i>Awareness and communication:</i></p> <ul style="list-style-type: none"> ▪ <i>Keep open communication channels with the landowners and address any potential issues as a matter of priority.</i> ▪ <i>Make contact details of the Contractor and procedures to lodge complaints available to the local communities through the local Councillor, a visitor centre, a website with contact details or even a Facebook group.</i> ▪ <i>Make a complaints register / log book available at the entrance to the construction site and act immediately should issues arise. Circulate summaries of monitoring results to the local communities / landowners when necessary.</i> ▪ <i>Announce road disruptions such</i>

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		<p>as road closures by using the local media, road sign boards and other Municipal structures.</p> <ul style="list-style-type: none"> ▪ Consult with surrounding landowners whose livestock, private residences and other infrastructure could be affected by dust, noise and other impacts that result from traffic movement and construction activities. ▪ Provide a schedule of the construction activities to landowners and relevant I&APs. ▪ Keep the local SAPS, other emergency services and Ward Councillors informed about the construction progress and timelines. ▪ Consider circulating summaries of monitoring results (dust, ambient noise levels, etc.) to the local Councillor and landowners. ▪ Agree on a procedure to notify the Municipality and emergency services, so that immediate and appropriate measures can be put in place to rectify any problems. ▪ Comply with all regulations of the Occupational Health and Safety Act.
Impacts on Infrastructure and Services and General Impacts on the Makana LM	<p>DISRUPTIONS OF SERVICES Temporary road closures when turbine components are transported to the construction site are eminent and have been assessed in the previous impact: Disruptions in daily living and movement patterns.</p> <p>Electricity might be disrupted temporarily when the wind farm switching station is connected into the grid, but this will be done within acceptable parameters prescribed by Eskom.</p> <p>DAMAGE TO ROAD INFRASTRUCTURE AND SURFACES Damage to road infrastructure as a result of an increase in traffic and large/abnormal vehicles could impact financially on government and landowners (repairs to road surfaces) as well as on the safety of road users. The N2 freeway and access roads that lead to the construction sites will mainly be affected.</p> <p>Cumulative impacts relating to damage to road infrastructure in the region and province is possible but cannot be rated.</p> <p>No-go: Road infrastructure will not be impacted</p>	<p>▲ Upgrade access roads prior to the construction period commencing and maintain the roads during the length of the construction period. Once construction is finalised, ensure that damaged road surfaces have been repaired.</p> <p>▲ Should electricity or any other service disruptions occur, inform the local landowners/communities thereof in advance and restore the service as quickly as possible.</p> <p>▲ Include Makana LM in all relevant processes from the onset of the Project:</p> <ul style="list-style-type: none"> ▪ Inform Council on a regular basis of expected timelines and issues arising; ▪ Establish a Project Steering Committee ("PSC") or similar structure for the duration of the construction period. Members of the PSC (developer, Contractor, Municipality, land owner representatives, etc.) would meet on a quarterly basis to discuss

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	<p>on; Upgrading of local access roads would not take place.</p> <p>GENERAL IMPACTS ON THE MAKANA LM</p> <p>The proposed construction project would hold economic advantages for the Makana LM in terms of employment, skills development, SMME development and so forth. However, local government is also faced with various responsibilities and challenges during the feasibility and construction phases, which could place pressure on municipal resources, such as:</p> <ul style="list-style-type: none"> ▲ Collaboration with the Project for permits for the submission of a compliant bid; ▲ Management of stakeholder and community relations; ▲ Involvement in the employment process by assisting the Community Employer Relations Officer with the job seeker registration database; ▲ Participation in SMME training and SMME support programmes; ▲ Monitoring of the construction site and processes to ensure compliance with municipal bylaws; and so forth. <p>It is possible that there are shortfalls in capacity and management experience within the municipality and bureaucratic procedures and financial constraints could also hamper progress.</p> <p>As a result of Waainek, Plan 8 and Albany Wind Farms pressure on roles, responsibilities and resources of Makana LM would increase.</p>	<p><i>issues that may arise during the course of the construction period;</i></p> <ul style="list-style-type: none"> ■ <i>Include the affected local Councillors in the employment process to cooperate with the Community Employer Relations Officer in compiling and managing the job seeker registration database;</i> ■ <i>Involve the relevant LED structure in training and skills development programmes for SMME development and certification;</i> ■ <i>Inform the municipality of the Procurement strategy to be implemented and obtain their inputs where required and feasible;</i> ■ <i>Apply timeously for the relevant zonings and permits with Council.</i> <p>▲ <i>Establish a protocol for landowners and other affected parties to raise complaints: make a complaints' register available at the entrance to the construction site; make the contact details of the main contractor, CLO, PSC and Ward Councillor available; address complaints speedily.</i></p>
Health And Safety Impacts	<p>HEALTH AND SAFETY RISKS FOR CONSTRUCTION WORKERS</p> <p>Inadequate management of the construction process and general construction related activities could result in health and safety risks for workers, manifesting in the following ways:</p> <ul style="list-style-type: none"> ▲ Construction related accidents due to structural safety of project infrastructure; ▲ Dust generation and air pollution resulting in respiratory diseases; ▲ High ambient noise levels caused by machinery and construction equipment resulting in loss in hearing or similar health issues; ▲ Dehydration, sunburn and related issues due to unsafe and insufficient drinking water and high temperatures during summer months; and ▲ An increase in HIV/AIDS and other STDs due to prostitution activities and temporary sexual relationships with local women, unwanted pregnancies that place further pressure on Basic Health Care Services. 	<p>▲ <i>Health and safety measures to protect workers and the broader community:</i></p> <ul style="list-style-type: none"> ■ <i>Construction workers to wear protective clothing (e.g. masks that minimize dust inhalation and clothing that protects against sunburn) and earplugs.</i> ■ <i>Lock away dangerous plant, equipment and material when not supervised or in use.</i> ■ <i>Provide safe and clean drinking water and instil regular water breaks to keep workers hydrated.</i> ■ <i>Provide sufficient ablution facilities (chemical/portable toilets, etc.) at strategic locations that are cleaned regularly.</i> ■ <i>Keep the local police, emergency and ambulance services informed of construction times and progress.</i> ■ <i>Ensure that emergency vehicles / ambulance is on stand-by for the</i>

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	<p>It is unknown whether construction related accidents and/or health issues as a result of the construction process manifested at Waainek Wind Farm and the severity of the cumulative impact cannot be determined.</p>	<p>duration of the construction period.</p> <ul style="list-style-type: none"> ▪ Erect a safety fence around the entire construction site to prevent illegal trespassing of humans and livestock. ▪ Display “danger” warning signs and “no public access” signs at all potential accesses, paths and along the periphery of the construction areas in English and the local languages. ▪ Ensure good visibility at the accesses to the site. ▪ Adhere to the Emergency and Safety plan procedures for the duration of the construction phase. ▪ Implement all mitigation measures as proposed in Section 11.5.4: MITIGATION AND MANAGEMENT MEASURES to address individual and family level impacts during the construction phase; and as proposed in the Specialist Noise and Air Impact Assessment Reports to address potential community health and safety impacts. <p>▲ Environmental health and safety measures:</p> <ul style="list-style-type: none"> ▪ Implement measures to suppress dust, such as spraying water on gravel roads, surfaces and stock piles on a regular basis. ▪ Dispose of the various types of waste generated in the appropriate manner at licensed waste landfill sites at regular intervals. ▪ Store any materials away from sensitive locations in fenced-off areas. ▪ Accommodation and facilities of security guards and any other personnel that may stay on site must comply with health and safety standards. ▪ Inform the Municipality and emergency services if harmful substances are spilled. ▪ Designate a suitable area for cooking fires (if required).
	<p>COMMUNITY HEALTH AND SAFETY RISKS Community health and safety impacts as a result of poor management of the construction site and</p>	<p>▲ Health and safety measures to protect workers and the broader community:</p> <ul style="list-style-type: none"> ▪ Construction workers to wear

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	<p>construction activities could include:</p> <ul style="list-style-type: none"> ➢ Road accidents, subsequently placing pressure on local emergency, disaster management and health services (fire, ambulance, police services, etc.); ➢ Unauthorized access / trespassing at the construction site, resulting in theft, public safety issues and accidents; ➢ Fire hazards at the construction site and the possibility of fires spreading and damaging surrounding farmland and infrastructure; ➢ Pollution problems, flies, rodents and pests and possible contamination of ground and surface water sources due to poor management of the construction activities (e.g. insufficient sanitation facilities, littering and refuse); ➢ High ambient noise levels that damage hearing (unlikely); and ➢ Dust generation and air pollution caused by gravel roads, construction activities and machinery resulting in respiratory diseases. <p>The risk/liability of the impact manifesting as well as its severity will, to a large extent, depend on the proximity of sensitive receptors (residences, farming activities, livestock, etc.) to the construction sites. It is required of the Project to comply with all the provisions of the Occupational Health and Safety Act 85 of 1993 in order to mitigate potential health and safety issues.</p> <p>It is not known whether community health and safety risks manifested during the construction of Waainek Wind Farm and the severity of the cumulative impact cannot be determined.</p>	<p>protective clothing (e.g. masks that minimize dust inhalation and clothing that protects against sunburn) and earplugs.</p> <ul style="list-style-type: none"> ▪ Lock away dangerous plant, equipment and material when not supervised or in use. ▪ Provide safe and clean drinking water and instil regular water breaks to keep workers hydrated. ▪ Provide sufficient ablution facilities (chemical/portable toilets, etc.) at strategic locations that are cleaned regularly. ▪ Keep the local police, emergency and ambulance services informed of construction times and progress. ▪ Ensure that emergency vehicles / ambulance is on stand-by for the duration of the construction period. ▪ Erect a safety fence around the entire construction site to prevent illegal trespassing of humans and livestock. ▪ Display "danger" warning signs and "no public access" signs at all potential accesses, paths and along the periphery of the construction areas in English and the local languages. ▪ Ensure good visibility at the accesses to the site. ▪ Adhere to the Emergency and Safety plan procedures for the duration of the construction phase. ▪ Implement all mitigation measures as proposed in Section 11.5.4: MITIGATION AND MANAGEMENT MEASURES to address individual and family level impacts during the construction phase; and as proposed in the Specialist Noise and Air Impact Assessment Reports to address potential community health and safety impacts. ➢ Environmental health and safety measures: <ul style="list-style-type: none"> ▪ Implement measures to suppress dust, such as spraying water on gravel roads, surfaces and stock piles on a regular basis. ▪ Dispose of the various types of

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		<p>waste generated in the appropriate manner at licensed waste landfill sites at regular intervals.</p> <ul style="list-style-type: none"> ▪ Store any materials away from sensitive locations in fenced-off areas. ▪ Accommodation and facilities of security guards and any other personnel that may stay on site must comply with health and safety standards. ▪ Inform the Municipality and emergency services if harmful substances are spilled. ▲ Designate a suitable area for cooking fires (if required).
TRAFFIC FEASIBILITY STUDY AND MANAGEMENT PLAN		
Transportation Of Infrastructure	Vehicles required for the transport of infrastructure (e.g. turbines and cables) and materials would result in a direct negative impact on the used roads and road users.	<p>▲ Please see Appendix A of the Traffic and Transport Management Plan for a full detailed plan regarding mitigation for this impact.</p>
Construction Traffic	Increased traffic from workers travelling to and from the site will result in a negative direct impact on people who use the site, the N2, the R67 and the access roads within the site.	<p>▲ Please see Appendix A of the Traffic and Transport Management Plan for a full detailed plan regarding mitigation for this impact.</p>
Delays Close To Site Access Roads	Increased delays on vehicles at road construction sites, particularly at the accesses onto the two national roads (i.e. the N2 and the R67).	<p>▲ Please see Appendix A of the Traffic and Transport Management Plan for a full detailed plan regarding mitigation for this impact.</p>
VISUAL IMPACT ASSESSMENT		
Visual Impact Of Construction Activity	<p>There are various activities which will take place during the construction phase which may have impacts on sensitive visual receptors:</p> <ul style="list-style-type: none"> ▲ Large areas of vegetation will need to be cleared to make way for digging of the turbine foundations, hardstand areas, substation footprints, access roads, laydown areas, workshops and storage yards. ▲ Construction of wind turbines will potentially draw attention if they are exposed above the skyline. ▲ There will be an increase in the movement of vehicles in the area: large trucks delivering supplies and construction material; graders, excavators and bulldozers; light vehicle movement around site; large trucks hauling rubble and construction waste, etc. ▲ Soil stockpiles and heaps of vegetation debris. ▲ Dust emissions from construction activity. ▲ Activity at night is also probable since transport of large turbine components may occur after work hours to minimise 	<p>▲ The construction contractor must clearly demarcate construction areas to minimise site disturbance.</p> <p>▲ Construction of new roads must be minimised, and existing roads must be used where possible.</p> <p>▲ Clearance of vegetation must be minimised, and restoration of cleared areas must start as soon as possible.</p> <p>▲ Erosion risks must be assessed and minimised as erosion scarring can create areas of strong visual contrast which can often be seen from long distances.</p> <p>▲ Laydown areas and stockyards must be located in low visibility areas (e.g. valleys between ridges) and existing vegetation must be used to screen them from views where possible.</p> <p>▲ Treat roads to reduce dust emissions.</p> <p>▲ The site must be kept neat and tidy. Littering must be fined, and the ECO must organise rubbish clean-ups on a regular basis.</p>

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	<p>disruption of traffic on main roads.</p> <p>The most significant cumulative visual impacts will come from the Operational Waainek WEF and the Proposed Plan 8 WEF. Both these facilities are located within 20km of the Albany site. The Waainek Wind Farm consists of eight turbines, each with a hub height of 84m and a rotor diameter of 117m, and the Plan 8 facility will host up to 22 turbines, each with a hub height of up to 91.5m and a rotor diameter of up to 117m.</p> <p>The cumulative visual impacts of these three facilities will be high, with the proposed Albany WEF making the largest contribution to the impact.</p>	<ul style="list-style-type: none"> ▲ Night lighting of the construction sites must be minimised within requirements of safety and efficiency. See section on lighting for more specific measures.
OPERATIONAL PHASE		
AGRICULTURE IMPACT ASSESSMENT		
<i>None identified by specialist</i>		
AVIFAUNAL IMPACT ASSESSMENT		
Displacement Of Birds	Once operational the facility could displace certain birds from the area or cause them to fly further to get around the facility. Displacement of birds is judged to be of LOW NEGATIVE significance pre mitigation.	<ul style="list-style-type: none"> ▲ The duration and scope of post-construction monitoring must be informed by the outcomes of the previous year's monitoring and must be reviewed annually. Post-construction monitoring of bird abundance and movements should span a minimum of one year and monitoring for fatalities should take place over a minimum of two to three years and repeated at year five and every five years thereafter. The duration of monitoring must be increased should significant impacts be observed. ▲ A contingency mitigation budget must be planned for in the operational phase to allow adaptive management of impacts that arise. If such a situation arises possible necessary mitigation measures could include: further research into the problem (including possibly bird tracking studies); human based turbine shutdown on demand; habitat alteration; bird deterrence from site; and any others identified as feasible at the time.
Collision Of Birds With Turbine Blades	Birds in flight on the site could collide with operational turbine blades, thereby being killed or seriously injured. Collision of birds with turbines is judged to be of MODERATE NEGATIVE significance pre mitigation.	<ul style="list-style-type: none"> ▲ The duration and scope of post-construction monitoring must be informed by the outcomes of the previous year's monitoring and must be reviewed annually. Post-construction monitoring of bird abundance and movements should

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		<p>span a minimum of one year and monitoring for fatalities should take place over a minimum of two to three years and repeated at year five and every five years thereafter. The duration of monitoring must be increased should significant impacts be observed.</p> <ul style="list-style-type: none"> ▲ A contingency mitigation budget must be planned for in the operational phase to allow adaptive management of impacts that arise. If such a situation arises possible necessary mitigation measures could include: further research into the problem (including possibly bird tracking studies); human based turbine shutdown on demand; habitat alteration; bird deterrence from site; and any others identified as feasible at the time.
BAT IMPACT ASSESSMENT		
Barotrauma	<p>FORAGING BAROTRAUMA</p> <p>Bat deaths by collision with or due to barotrauma caused by wind turbines have been reported worldwide (Kunz et al., 2007; Arnett et al., 2008; Baerwald et al., 2008; Rydell et al., 2010; Baerwald and Barclay, 2011; Hull and Cawthen, 2013; Voigt et al., 2012; Lehnert et al., 2014), including for South Africa (SA) (Doty and Martin, 2012; MacEwan, 2016). There is not a single WEF in SA, where operational monitoring is being conducted, that has not had any bat fatalities (Perrold and MacEwan, 2017).</p> <p>There are various hypotheses as to why certain species of bats are killed by wind turbines, but one common hypothesis that is emerging worldwide, is that bats that move and feed in less cluttered and more open air space environments, are more vulnerable to collisions with wind turbines than those moving and feeding in more cluttered environments (Arnett, 2017).</p> <p>Based on the activity levels measured during pre-construction monitoring, the Albany WEF is classified as having a High turbine fatality risk for its Ecoregion, according to the estimated bat fatality risk levels in Sowler et al (2017). Therefore, the significance of bat fatality impacts during foraging is considered High, especially considering the fact that numerous bat fatalities of the <i>T. aegyptiaca</i> and <i>N. capensis</i>, the two most common bat species recorded at the Albany WEF, are being found at operational WEFs in the Eastern and Western Cape. This impact can be</p>	<ul style="list-style-type: none"> ▲ During operational monitoring, quarterly progress reports and annual monitoring reports to be submitted to SABAAP, EWT, the DEA, the Eastern Cape Department of Economic Development (EC: DEDEAT), Environmental Affairs and Tourism and to the SANBI Bird and Bat Database. ▲ The above recommendations must be written into the authorisation of this application. ▲ With the exception of compulsory civil aviation lighting, minimise artificial lighting at night, especially high-intensity lighting, steady-burning, or bright lights such as sodium vapour, quartz, halogen, or other bright spotlights at sub-station, offices and turbines. ▲ All non-aviation lights must be hooded downward and directed to minimise horizontal and skyward illumination. ▲ All non-aviation internal turbine nacelle and tower lighting must be extinguished when unoccupied. ▲ For turbines built within the Medium and Medium-High bat sensitive zones, Table 9, Bat Impact Assessment is recommended from the commencement of operation in order to keep bat fatalities to a minimum. ▲ Post-construction/ operational bat monitoring must be performed

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	<p>reduced to Low by the following mitigation measures.</p>	<p>according to the South African Good Practise Guidelines for Operational Monitoring for Bats at Wind Energy Facilities (Aronson et al 2014) or later version valid at the time of monitoring. IWS recommends the initial 2 years and then every third year for the remainder of the project.</p> <ul style="list-style-type: none"> ▲ The above measures are highly likely (50-75% certainty) to minimise bat fatalities, as only 50% of bat activity occurs above wind speeds of 5 m/s and 25% of bat activity occurs above 7.5 m/s. ▲ However, should operational monitoring show that adjusted annual bat fatalities (adjusted for biases such as searcher efficiency and carcass persistence) ever equal or exceed the threshold level of fatalities guided by SABAAP: <ul style="list-style-type: none"> ■ 60 bats per annum based on the thresholds provided for Drakensberg Montane Grasslands, Woodlands and Forest ecoregion in MacEwan et al. (2017). ■ 39 bats per annum based on site specific thresholds calculated according to the methods provided in MacEwan et al. (2017). ▲ Both methods use the entire 6500ha project boundary area and both threshold levels apply to fatalities of single species, i.e. if two species were among the fatalities estimated for a site, the threshold would apply to each, not to the grouped number of all species combined. ▲ Then mitigation actions will only be required at specific turbines that have killed 2 or more bats of the particular bat species that has exceeded the fatality threshold for the previous year of monitoring. ▲ Such actions at the individual turbines include increasing the cut-in wind speed to 7.5m/s (only exposing 25% of bat activity to spinning blades). ▲ When dealing with living animals that can respond in different and unpredictable ways to changing environmental, climatic and developmental parameters, it is very

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		<p>difficult to make guaranteed predictions. Lintott et al. (2016) state that the nightly and seasonal activity data collected during pre-construction surveys may provide an indication of the extent of curtailment that is required and therefore the economic viability of the project, however, they highlight the need for a feedback mechanism for practitioners to share the success or failure of mitigation strategies, i.e. adaptive mitigation. The bat specialist conducting the operational monitoring has the right to make further recommendations should they see fit.</p> <ul style="list-style-type: none"> ▲ Given the magnitude and extent of wind-turbine related bat fatalities worldwide, the conservation implications are critically important and bat fatalities must be avoided, minimised or mitigated proactively.
	<p>MIGRATION BAROTRAUMA Internationally, migrating bats have been shown to be at risk of fatality due to wind turbines. Whilst the migrating bats in South Africa are different species and are not tree-roosting species, the long distances that they travel and the height at which they fly also puts them at risk of fatality. In South Africa, migrating bat species, such as <i>M. natalensis</i> and the Egyptian Rosetta <i>Rousettus aegyptiacus</i> have been fatality victims at wind turbines in the Eastern Cape (MacEwan, 2016), however, only a handful of each to date. At the Albany WEF, there is evidence of increased <i>M. natalensis</i> activity in autumn, although the numbers are moderate. The significance of this impact is considered to be Medium. Mitigation measures recommended above will assist to reduce the risk of fatalities of migrating bats and reduce the significance of the impact to Low.</p>	<ul style="list-style-type: none"> ▲ During operational monitoring, quarterly progress reports and annual monitoring reports to be submitted to SABAAP, EWT, the DEA, the Eastern Cape Department of Economic Development (EC: DEDEAT), Environmental Affairs and Tourism and to the SANBI Bird and Bat Database. ▲ The above recommendations must be written into the authorisation of this application. ▲ With the exception of compulsory civil aviation lighting, minimise artificial lighting at night, especially high-intensity lighting, steady-burning, or bright lights such as sodium vapour, quartz, halogen, or other bright spotlights at sub-station, offices and turbines. ▲ All non-aviation lights must be hooded downward and directed to minimise horizontal and skyward illumination. ▲ All non-aviation internal turbine nacelle and tower lighting must be extinguished when unoccupied. ▲ For turbines built within the Medium and Medium-High bat sensitive zones, Table 9, Bat Impact Assessment is recommended from the commencement of operation in order to keep bat fatalities to a minimum. ▲ Post-construction/ operational bat

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		<p>monitoring must be performed according to the South African Good Practise Guidelines for Operational Monitoring for Bats at Wind Energy Facilities (Aronson et al 2014) or later version valid at the time of monitoring. IWS recommends the initial 2 years and then every third year for the remainder of the project.</p> <ul style="list-style-type: none"> ▲ The above measures are highly likely (50-75% certainty) to minimise bat fatalities, as only 50% of bat activity occurs above wind speeds of 5 m/s and 25% of bat activity occurs above 7.5 m/s. ▲ However, should operational monitoring show that adjusted annual bat fatalities (adjusted for biases such as searcher efficiency and carcass persistence) ever equal or exceed the threshold level of fatalities guided by SABAAP: <ul style="list-style-type: none"> ■ 60 bats per annum based on the thresholds provided for Drakensberg Montane Grasslands, Woodlands and Forest ecoregion in MacEwan et al. (2017). ■ 39 bats per annum based on site specific thresholds calculated according to the methods provided in MacEwan et al. (2017). ▲ Both methods use the entire 6500ha project boundary area and both threshold levels apply to fatalities of single species, i.e. if two species were among the fatalities estimated for a site, the threshold would apply to each, not to the grouped number of all species combined. ▲ Then mitigation actions will only be required at specific turbines that have killed 2 or more bats of the particular bat species that has exceeded the fatality threshold for the previous year of monitoring. ▲ Such actions at the individual turbines include increasing the cut-in wind speed to 7.5m/s (only exposing 25% of bat activity to spinning blades). ▲ When dealing with living animals that can respond in different and unpredictable ways to changing environmental, climatic and

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		<p><i>developmental parameters, it is very difficult to make guaranteed predictions. Lintott et al. (2016) state that the nightly and seasonal activity data collected during pre-construction surveys may provide an indication of the extent of curtailment that is required and therefore the economic viability of the project, however, they highlight the need for a feedback mechanism for practitioners to share the success or failure of mitigation strategies, i.e. adaptive mitigation. The bat specialist conducting the operational monitoring has the right to make further recommendations should they see fit.</i></p> <ul style="list-style-type: none"> ▲ <i>Given the magnitude and extent of wind-turbine related bat fatalities worldwide, the conservation implications are critically important and bat fatalities must be avoided, minimised or mitigated proactively.</i>
	<p>ROOSTING BAROTRAUMA Bats have been shown, through thermal imagery studies, to be attracted to wind turbines, either looking for potential roost sites, or out of curiosity and are often struck by the moving blades (Horn et al., 2008). This has been further confirmed by Rollins et al. (2012). Unfortunately, no mitigation measure has been found to effectively prevent this. Whilst ultrasonic sound emitters are currently being investigated as a deterrent for bats from wind turbines internationally and in South Africa, the research is still in its infancy. Hence, we cannot yet recommend this, but as more information comes available, deterrents could be a valuable mitigation measure. The most well-documented measure is curtailment.</p>	<ul style="list-style-type: none"> ▲ <i>During operational monitoring, quarterly progress reports and annual monitoring reports to be submitted to SABAAP, EWT, the DEA, the Eastern Cape Department of Economic Development (EC: DEDEAT), Environmental Affairs and Tourism and to the SANBI Bird and Bat Database.</i> ▲ <i>The above recommendations must be written into the authorisation of this application.</i> ▲ <i>With the exception of compulsory civil aviation lighting, minimise artificial lighting at night, especially high-intensity lighting, steady-burning, or bright lights such as sodium vapour, quartz, halogen, or other bright spotlights at sub-station, offices and turbines.</i> ▲ <i>All non-aviation lights must be hooded downward and directed to minimise horizontal and skyward illumination.</i> ▲ <i>All non-aviation internal turbine nacelle and tower lighting must be extinguished when unoccupied.</i> ▲ <i>For turbines built within the Medium and Medium-High bat sensitive zones, Table 9, Bat Impact Assessment is recommended from the commencement of operation in order to keep bat fatalities to a minimum.</i>

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		<ul style="list-style-type: none"> ▲ Post-construction/ operational bat monitoring must be performed according to the South African Good Practise Guidelines for Operational Monitoring for Bats at Wind Energy Facilities (Aronson et al 2014) or later version valid at the time of monitoring. IWS recommends the initial 2 years and then every third year for the remainder of the project. ▲ The above measures are highly likely (50-75% certainty) to minimise bat fatalities, as only 50% of bat activity occurs above wind speeds of 5 m/s and 25% of bat activity occurs above 7.5 m/s. ▲ However, should operational monitoring show that adjusted annual bat fatalities (adjusted for biases such as searcher efficiency and carcass persistence) ever equal or exceed the threshold level of fatalities guided by SABAAP: <ul style="list-style-type: none"> ■ 60 bats per annum based on the thresholds provided for Drakensberg Montane Grasslands, Woodlands and Forest ecoregion in MacEwan et al. (2017). ■ 39 bats per annum based on site specific thresholds calculated according to the methods provided in MacEwan et al. (2017). ▲ Both methods use the entire 6500ha project boundary area and both threshold levels apply to fatalities of single species, i.e. if two species were among the fatalities estimated for a site, the threshold would apply to each, not to the grouped number of all species combined. ▲ Then mitigation actions will only be required at specific turbines that have killed 2 or more bats of the particular bat species that has exceeded the fatality threshold for the previous year of monitoring. ▲ Such actions at the individual turbines include increasing the cut-in wind speed to 7.5m/s (only exposing 25% of bat activity to spinning blades). ▲ When dealing with living animals that can respond in different and unpredictable ways to changing

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		<p>environmental, climatic and developmental parameters, it is very difficult to make guaranteed predictions. Lintott et al. (2016) state that the nightly and seasonal activity data collected during pre-construction surveys may provide an indication of the extent of curtailment that is required and therefore the economic viability of the project, however, they highlight the need for a feedback mechanism for practitioners to share the success or failure of mitigation strategies, i.e. adaptive mitigation. The bat specialist conducting the operational monitoring has the right to make further recommendations should they see fit.</p> <ul style="list-style-type: none"> ▲ Given the magnitude and extent of wind-turbine related bat fatalities worldwide, the ▲ conservation implications are critically important and bat fatalities must be avoided, minimised or mitigated proactively.
Electromagnetic Interference	<p>Bat collision with power lines is considered as a negligible impact on bats at the Albany WEF, owing to no evidence of this occurring in South Africa to date and no evidence of fruit bats occurring on site. Furthermore, whilst some laboratory studies have shown that electromagnetic radiation can have behavioural effects on bats and rats, it is uncertain that this would be the case outside of the lab in natural circumstances.</p>	<ul style="list-style-type: none"> ▲ The only mitigation, at this stage, would be for all power line routes to avoid High Bat Sensitive areas, where possible. Should evidence of bats being affected by power lines be reported at Albany WEF, adaptive mitigation measures must be implemented, in consultation with a bat specialist.
ECOLOGICAL IMPACT ASSESSMENT		
Invasion Of Alien Vegetation	<p>The clearance of vegetation associated with the development of the Albany WEF and associated infrastructure will create open/bare habitats which are likely to be colonised by pioneer plant species. While this is partly a natural revegetation/regeneration process, which would ultimately lead to the re-establishment of secondary vegetation cover, it also favours the establishment of alien vegetation.</p>	<ul style="list-style-type: none"> ▲ The site-specific Alien Vegetation Management Plan must be implemented for the first two (2) years of the operational phase. Thereafter, alien vegetation must continue to be monitored and eradicated annually throughout the life of the project. ▲ Alien vegetation, within the development footprints, must be removed from the site as they appear and must be disposed of at a registered waste disposal site.
HERITAGE IMPACT ASSESSMENT		
<i>None identified by specialist</i>		
NOISE IMPACT ASSESSMENT		
Operational Noise Of Wind Turbines	<p>Considering long term ambient sound levels of the Albany WEF site, projected noise levels are less than the noise limits as proposed by MoE (see Figure 2-1 of Noise Impact Report) at all wind speeds for all receptors. The duration will be the</p>	<ul style="list-style-type: none"> ▲ Should the houses at NSD17 be (continue to be) used for residential purposes during the operational phase: <ul style="list-style-type: none"> ■ the applicant should undertake

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	<p>full project life. The wind turbines may be audible up to 1,500 m during special conditions.</p> <p>The proposed renewable power generation activities (worst-case evaluated) could raise the ambient sound levels at potential noise-sensitive developments (mainly NSD17 during the operational phase at night). It is expected that the noise from the wind turbines may be audible at most of the identified receptors during very quiet periods and audible at NSD17. The sound levels will not be disturbing (will not change the existing ambient sound levels with more than 7 dB).</p> <p>The reduction in the number of turbines and amendment of the layout was also influenced by the identification of sensitive noise receptors (NSD17), which were initially identified as having a medium risk of noise impact during the operational phase. Mitigation was proposed that would reduce this potential impact. There is no potential for a cumulative noise impact from other wind farms in the area.</p> <p>Following the change in the scope of the AWEF (reduction in the number of turbines from 66 to 43, the relocation of 7 turbines and the inclusion of the Grid Infrastructure), EARES submitted a supplementary report, which concluded the following:</p> <p>The proposed layout:</p> <ul style="list-style-type: none"> ▲ Locates the WTGs on average further from the identified NSD. ▲ No WTG is moved closer than 1,000m from any NSD. ▲ The total number of WTG within 1,000 m from NSD 17, are reduced from three (3) to two (2). This reduction will result in a slight reduction in noise levels due to the reduction in cumulative noises (from three to two WTGs) and likely reduce the significance of the operational noise impact from Medium to Low. WTGs further than 1,000m from any identified NSD, with the closest WTG approximately 1,580 m from NSD10. <p>Therefore, considering the proposed locations of the WTGs and the potential noise impact, that:</p> <ul style="list-style-type: none"> ▲ The change will not increase the significance of the noise impact (the noise level will likely reduce at NSD 17 considering previous noise levels modelled). ▲ A full noise impact assessment with new modelling will not be required and the 	<p><i>ambient sound level measurements over a period of at least 5 nights to clearly define the night-time ambient sound levels at this point;</i></p> <ul style="list-style-type: none"> ■ <i>These measurements should be repeated during the operational phase of the WEF to ensure that the noise levels are less than 45 dBA.</i> ▲ <i>If the noise levels (due to the operational wind turbines) exceed 45 dBA, the applicant should develop a noise curtailment programme.</i>

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	<p>recommendations as contained in the previous document will still be valid.</p> <ul style="list-style-type: none"> ▲ The cumulative noise impact will not change, as there are no new or proposed wind turbines (from a different WEF), located within 2,000m from identified NSDs that will cumulatively increase the noise levels. ▲ There are no new limitations or assumptions. ▲ The changes will not increase the significance of the noise impacts identified in the original report and as such an updated noise impact assessment would not be required. <p>Noise levels will be of medium-high magnitude at a number of other receptors. The wind turbines will be clearly audible, but considering the likely ambient sound levels the significance of the noise impact is considered to be low. Mitigation is not required but general recommendations are proposed for the developer to consider.</p> <p>There is no potential for a cumulative noise impact.</p>	

PALAEONTOLOGICAL IMPACT ASSESSMENT

None identified by specialist

SOCIO-ECONOMIC IMPACT ASSESSMENT

Impacts On Employment	<p>DIRECT EMPLOYMENT</p> <p>The Albany WEF shall have permanent Service Technicians on site during the operational phase and assistants (if any). At this point the following person-months are estimated:</p> <ul style="list-style-type: none"> ▲ Skilled: 1690 person-months; and ▲ Unskilled: 240 person-months. <p>Skilled positions usually relate to technicians, electricians, IT specialists, engineers and mechanics and unskilled workers entail cleaners and site maintenance. Furthermore, ahead of the operational phase, an Implementing and Monitoring Agent ("IMA") is appointed to administer and manage ED and SED contributions.</p> <p>Temporary staff will be employed periodically through service providers for civil works and site maintenance (roads, crane pads, etc.), site clearance to minimize potential veld fires, painting of buildings and small maintenance jobs such as plumbing. These numbers cannot accurately be determined at this stage.</p> <p>The cumulative impact of permanent and temporary employment of the three wind energy facilities in Makana LM would hold benefits of</p>	<ul style="list-style-type: none"> ▲ Even though mitigation will not impact on employment significantly, it is proposed to: <ul style="list-style-type: none"> ▪ Make use of local service providers and SMMEs and increase the frequency and number of temporary employment opportunities wherever possible; ▪ Through ED contributions do training and capacity building of SMMEs where necessary; ▪ Make employment creation one of the SED program's targets, aims and objectives. Local businesses that apply for SED funding to demonstrate their commitment to employment creation as one of the criteria for evaluation by the Implementing and Monitoring Agent. ▲ No mitigation is possible to address job losses due to a potential decline in tourism, as turbines cannot be screened (height and size). It is however suggested that: <ul style="list-style-type: none"> ▪ Wherever possible turbines not be erected in direct view of lodges
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	<p>LOW overall significance, as the wind farms are not labour intensive. Employment, training and capacity building at the three wind farms would enhance skills of the workers, especially if the local workforce is maximised.</p> <p>No-go: The Municipality will not benefit in terms of employment or any other economic spin-offs.</p> <p>INDIRECT EMPLOYMENT</p> <p>Job creation as a result of the funding spent on SED projects, such as construction/infrastructure projects, literacy/educational programmes, sport development and so forth, is probable. At this premature stage it is not possible to determine or estimate the number of indirect job opportunities that will manifest.</p> <p>Indirect job creation, training and capacity building at the three wind farms in Makana LM could contribute to individual/household incomes, address poverty levels and enhance skills of the local municipal workforce.</p> <p>No-go: Local communities will not benefit in terms of indirect job creation, skills development or any other economic spin-offs.</p>	<p><i>and strategic viewpoints at the Game Reserves.</i></p> <ul style="list-style-type: none"> ▲ Even though mitigation will not impact on employment significantly, it is proposed to: <ul style="list-style-type: none"> ▪ Make use of local service providers and SMMEs and increase the frequency and number of temporary employment opportunities wherever possible; ▪ Through ED contributions do training and capacity building of SMMEs where necessary; ▪ Make employment creation one of the SED program's targets, aims and objectives. Local businesses that apply for SED funding to demonstrate their commitment to employment creation as one of the criteria for evaluation by the Implementing and Monitoring Agent. ▲ No mitigation is possible to address job losses due to a potential decline in tourism, as turbines cannot be screened (height and size). It is however suggested that: ▲ Wherever possible turbines not be erected in direct view of lodges and strategic viewpoints at the Game Reserves.
	<p>LOSS OF EXISTING JOBS AS A RESULT OF THE PROJECT</p> <p>Turbines will not impact agricultural land uses and no negative impact on existing jobs in this sector is foreseen. Socio-economic studies commissioned by Indalo determined that on average game reserves employ 4.5 times as many people as agricultural ventures. Section 5.3 of the SIA Report (Land uses and socio-economic background of the study area) makes reference to employment numbers at the five affected Private Game Reserves. There is thus no doubt that the existing tourism industry contribute meaningfully towards local and regional employment on a direct and indirect level. The assumption that the Project could result in job losses therefore has to be analysed and considered. This impact is directly linked to the potential impact of the</p>	

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	<p>Project on tourist volumes at these five Game Reserves, which is assessed in greater detail in Section 12.2.1 (Potential loss in incomes: Tourism/Gaming/Hunting industries) of the SIA Report.</p> <p>Game farms impacted by the Waainek WEF reported no negative economic impacts on tourism or job losses. Should tourism decline, cumulative impacts on retrenchments and job losses are possible once Plan 8 WEF is operational. Confidence in the rating is low, as currently no evidence exists to support this statement.</p> <p>No-go: Status quo in terms of direct and indirect employment by the agriculture, tourism, gaming and hunting sectors would prevail. No additional employment as a direct result of the Project or indirectly through SED and ED contributions and community projects.</p>	
Local Economic Impacts	<p>POTENTIAL LOSS IN INCOMES: TOURISM/GAMING/HUNTING INDUSTRIES</p> <p>The assessment of this potential impact is unique in the sense that not many existing wind farms visually impact Game Reserves, hunting and similar eco-tourism activities to the extent of the Albany WEF. Although other wind farms such as Cookhouse, Dassiesridge and Waainek WEF's also affect some game/hunting farms, the Albany WEF's potential negative impact on these establishments could be higher due to various factors:</p> <ul style="list-style-type: none"> ▲ Five Private Game Reserves are visually impacted and many of these tourist, gaming and hunting establishments are high-end luxury tourist attractions frequented by overseas visitors; ▲ The number of turbines planned are high (66), which would increase the severity of the potential impact; and ▲ The viewshed area for the proposed Albany WEF will be 1 272km². Therefore, based on the Visual Assessment Criteria the proposed Albany WEF will have a High visibility (Visual Impact Assessment, March 2020). <p>I&APs concerns about the potential impact that turbines (especially visual and aesthetic impacts) could have on their businesses, livelihoods and investments are thus understandable.</p> <p>International research with regards to wind farms' impacts on tourism revealed the following conclusions and results:</p> <ul style="list-style-type: none"> ▲ Local authorities, business owners and 	<ul style="list-style-type: none"> ▲ <i>Mitigate potential intrusion impacts, implement relevant security measures, maintain infrastructure, fencing and roads and implement dust control measures in co-operation with the private landowners to ensure that their property values do not decrease.</i> ▲ <i>Assist and guide the local community with regards to the needs of the WEF plant and the types of supporting industries and services required for its successful operation. Make ED funding available to assist the local SMME's with skills training and capacity building, etc.</i> ▲ <i>It is suggested that turbines, if possible, not be erected in direct view of lodges and strategic viewpoints at the Game Reserves.</i> ▲ <i>Implement all recommendations, mitigation and management measures of the Visual Impact Specialist wherever necessary to ensure that any intrusion impacts on surrounding establishments be limited.</i>

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	<p>residents in rural areas that fall within strategic areas for wind farm developments continue to voice oppositions to such development, increasing citing negative impact on tourism as a reason to reject applications. However, opposition to wind farms tend to fall away after construction.</p> <ul style="list-style-type: none"> ▲ Impacts on tourism are extremely nebulous and vulnerable to assessment by assumption rather than by evidence; it is an area where it is easy to hold opinions, but harder to back them up with firm data. ▲ The opposition to wind farms on tourism grounds is informed more by fear than fact (which constituted one of the motivations for studies into this controversial topic). ▲ In many cases the research findings (primary and secondary research methods) revealed overwhelming support for renewable energy in general. Findings demonstrated that wind farms would not have a detrimental impact on visitor numbers (volume), tourist experience (satisfaction) or tourist expenditures (value). ▲ Wind turbines have minor effect on tourist destination choice. ▲ It is however not advisable to claim that there would be no negative impact on tourism as some of the respondents in the various studies (usually less than 15%) revealed they would not frequent areas with visible turbines. ▲ Some research demonstrated that the development of sustainable tourism, and the attraction of tourists with an interest in the environment, natural heritage and culture, is wholly compatible with the development of renewable energy including wind farms. ▲ Aesthetic perceptions (both positive and negative) are the strongest single influence on individuals' attitudes towards wind power projects. ▲ The degree of acceptance increases with proximity to the turbines. The reported avoidance effect diminishes with greater distance from the tourist area, which would thus assist to mitigate this potential impact. ▲ Foreign tourists have substantially more positive attitudes towards renewable energies than local tourists. ▲ There is no evidence to demonstrate or support the assertion that any wind farm development overseas has resulted in any adverse impact on tourism. ▲ The findings from both primary and secondary research relating to the actual and 	

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	<p>potential tourism impact of wind farms indicate that there will be neither an overall decline in the number of tourists visiting an area nor any overall financial loss in tourism-related earnings as a result of a wind farm development.</p> <p>On a local level, game farm owners in close proximity to Cookhouse (66 turbines) and Waainek (8 turbines) WEF's were consulted and the following transpired:</p> <ul style="list-style-type: none"> ▲ Some of the game farms are affected visually, usually only from specific localities from the crests of mountains/hills; ▲ Natural features (such as mountainous areas) assist to mitigate potential visual impacts to a certain extent; ▲ Existing turbines do not affect any of the lodges at the game/hunting farms visually; ▲ The distances to the wind farms (approximately 8 km or more) does not result in major concerns for game farm owners, but should the turbines be closer visual (and even noise) impacts might spark greater concerns; ▲ None of the game/hunting farms interviewed have received complaints from guests regarding turbines and their visual impacts. It was stated that many of the overseas visitors are from Europe where they have become used to the sight of wind farms; and ▲ The game/hunting farms interviewed reported that the turbines/wind farms have not in any way affected their tourism and businesses negatively. <p>The following conclusions are drawn:</p> <ul style="list-style-type: none"> ▲ Tourism in the study area is associated with the "Africa and bush experience" and the tourism landscape thus differs from studies done in Europe, UK and USA. Parallels can however still be drawn and it is the opinion of the SIA Specialist that research results can safely be used for this study; ▲ No evidence has transpired to demonstrate or support the assertion that any wind farm development overseas has resulted in any adverse impact on tourism; ▲ None of the local private game farms that have been consulted and are visually affected by existing wind farms have experienced negative economic impacts; ▲ It is however not prudent to claim that there would be no negative impact on tourism as aesthetic and visual impacts (proximity to 	

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	<p>turbines) are strong influences on individuals' attitudes towards wind power projects; and</p> <ul style="list-style-type: none"> ▲ Proximity to turbines and their localities (visual impacts on lodges and strategic viewpoints on the game farms) could be the determining factors for visitor satisfaction and impacts on visitor volumes. <p>It should be noted that communities often become "desensitised" towards man-made structures such as Eskom power lines and railway lines and certain structures could even be regarded as iconic (e.g. windmills in the Karoo). Individuals and communities become more "tolerant" as they recognize the advantages of clean energy for the country as a whole and it is therefore possible that initial negative perceptions by tourists (if any) could decline over time.</p> <p>No negative economic impacts on tourism/gaming have been reported from game farms affected by the Waainek Wind Farm. Once the Plan 8 WEF is operational cumulative impacts are possible for the broader municipal area. Confidence in the rating is low, as currently no evidence exists to support this statement.</p>	
	<p>POTENTIAL IMPACTS ON INCOMES: RENTAL INCOMES</p> <p>For the duration of the operational phase 15 landowners/legal entities directly involved in the Project, would benefit financially. Long-term lease agreements are put in place and a positive economic impact is experienced in this regard.</p> <p>Cumulatively, landowners at the three wind farms benefit financially through rental incomes.</p>	<ul style="list-style-type: none"> ▲ <i>Mitigate potential intrusion impacts, implement relevant security measures, maintain infrastructure, fencing and roads and implement dust control measures in co-operation with the private landowners to ensure that their property values do not decrease.</i> ▲ <i>Assist and guide the local community with regards to the needs of the WEF plant and the types of supporting industries and services required for its successful operation. Make ED funding available to assist the local SMME's with skills training and capacity building, etc.</i> ▲ <i>It is suggested that turbines, if possible, not be erected in direct view of lodges and strategic viewpoints at the Game Reserves.</i> ▲ <i>Implement all recommendations, mitigation and management measures of the Visual Impact Specialist wherever necessary to ensure that any intrusion impacts on surrounding establishments be limited.</i>
	<p>POTENTIAL IMPACTS ON LAND VALUES: FARM PORTIONS INCLUDED IN THE PROJECT</p>	<ul style="list-style-type: none"> ▲ <i>Mitigate potential intrusion impacts, implement relevant security measures,</i>

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	<p>The Albany Wind Farm and related infrastructure would in all likelihood add value to land that is included in the Project, as rental incomes would be secured for the duration of the project. For the duration of the operational phase a possible positive economic impact in terms of land values is anticipated for those landowners.</p> <p>On a cumulative level, economic benefits for the landowners affected by the three WEFs are expected.</p>	<p><i>maintain infrastructure, fencing and roads and implement dust control measures in co-operation with the private landowners to ensure that their property values do not decrease.</i></p> <ul style="list-style-type: none"> ▲ <i>Assist and guide the local community with regards to the needs of the WEF plant and the types of supporting industries and services required for its successful operation. Make ED funding available to assist the local SMME's with skills training and capacity building, etc.</i> ▲ <i>It is suggested that turbines, if possible, not be erected in direct view of lodges and strategic viewpoints at the Game Reserves.</i> ▲ <i>Implement all recommendations, mitigation and management measures of the Visual Impact Specialist wherever necessary to ensure that any intrusion impacts on surrounding establishments be limited.</i>
	<p>POTENTIAL IMPACTS ON LAND VALUES/MARKET VALUES: SURROUNDING FARMS AND GAME RESERVES</p> <p>Concerns have been raised that visual impacts of wind farms could potentially impact negatively on land values/market values of surrounding agricultural land and/or Game Reserves.</p> <p>From a socio-economic perspective, experience indicates that infrastructure such as Eskom power lines and turbines would not have a negative impact on agricultural property values, although the potential impact on commercial land values would be more complex to determine. In addition to this, research done on the impact of wind turbines on tourism landscapes recognises that wind turbines are perceived more positively compared to other types of industrial facilities.</p> <p>The SIA Specialist conducted an interview with a land Valuer in 2014 who at the time indicated that Farm No. 68, Bedford district in extent of 919,920 hectares and located in very close proximity to the Cookhouse WEF, sold for R11,5 million (R150 000/ha for irrigated land and R7 800/ha for veld), which was far above market value. The wind turbines have a significant visual impact on Farm No. 68 as well as surrounding farms. Thirty hectares of Farm No. 68 were under irrigation then and 889 hectares veld (grazing). Construction of the Cookhouse WEF therefore had no negative impact on the market value of the farm.</p>	<ul style="list-style-type: none"> ▲ <i>Mitigate potential intrusion impacts, implement relevant security measures, maintain infrastructure, fencing and roads and implement dust control measures in co-operation with the private landowners to ensure that their property values do not decrease.</i> ▲ <i>Assist and guide the local community with regards to the needs of the WEF plant and the types of supporting industries and services required for its successful operation. Make ED funding available to assist the local SMME's with skills training and capacity building, etc.</i> ▲ <i>It is suggested that turbines, if possible, not be erected in direct view of lodges and strategic viewpoints at the Game Reserves.</i> ▲ <i>Implement all recommendations, mitigation and management measures of the Visual Impact Specialist wherever necessary to ensure that any intrusion impacts on surrounding establishments be limited.</i>

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	<p>In a more recent interview, a former estate agent in the Somerset-East area indicated that the resale value of an agricultural farm in close proximity (approximately 8km) to the Cookhouse WEF has also increased significantly over the last number of years when it was sold recently.</p> <p>In terms of commercial land, the former owner of eZulu Game Reserve, located close to Cookhouse WEF and visually impacted by turbines, informed that the Reserve was sold to overseas buyers at the beginning of 2020 “who made an offer that could not be refused”.</p> <p>Negative cumulative impacts are unlikely. However, the detailed assessment of possible cumulative impacts on land/market values of farms fall outside the scope of this SIA study and should be investigated and rated by a Land Valuer/Economist if required.</p>	
	<p>GENERAL IMPACTS FOR THE LOCAL ECONOMY</p> <p>During the operational phase, the local economy could benefit in the following ways:</p> <ul style="list-style-type: none"> ▲ A possible increase in municipal rates and taxes, as the lease areas would be zoned “Special Use for Renewable Energy Infrastructure”, resulting in higher levels of rateable income. ▲ Induced impacts on retail sales, childcare, leisure and hospitality, real estate, etc. as more money circulates in the local economy due to: ▲ Salaries and wages; ▲ SED and ED contributions (currently the target set by DMRE is 2.1% of revenue); and ▲ Shareholding in respect of local ownership (currently expected to be around 26%) , which leads to the increase in financial resources for the local community (local ownership dividends start accruing in most projects from year five to fifteen onwards, depending on the project finance structure); and ▲ The establishment of local downstream industries and services that would support the Wind Farm’s operations (to a lesser extent). <p>Cumulative: Positive impacts that are beneficial for the local economy have already been generated and would further be enhanced with the implementation of the Albany and Plan 8 WEF’s. Locally, the Makana Winds of Change Community Trust, which emanates from the neighbouring Waainek Wind Farm, is a 26% shareholder in Waainek Wind Power (RF) (Pty)</p>	<ul style="list-style-type: none"> ▲ Mitigate potential intrusion impacts, implement relevant security measures, maintain infrastructure, fencing and roads and implement dust control measures in co-operation with the private landowners to ensure that their property values do not decrease. ▲ Assist and guide the local community with regards to the needs of the WEF plant and the types of supporting industries and services required for its successful operation. Make ED funding available to assist the local SMME’s with skills training and capacity building, etc. ▲ It is suggested that turbines, if possible, not be erected in direct view of lodges and strategic viewpoints at the Game Reserves. ▲ Implement all recommendations, mitigation and management measures of the Visual Impact Specialist wherever necessary to ensure that any intrusion impacts on surrounding establishments be limited.

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	<p>Ltd, which is operational since 2016. Dividends received are contributed on community development projects/initiatives within a 50 km radius of the wind farm (Refer Addendum, Section 17.2 for the SED and ED projects implemented). The cumulative impact of renewable energy projects for the country as a whole is significant. Based on the submitted numbers in the bid documents there is a 90% probability that the total resources committed to SED and ED around the 64 approved projects in round one to three of the procurement programme will accumulate to R570 780 737 million over the next 20 years. Local ownership is also expected to result in a significant financial value associated with dividends. Summarising the financial commitments of projects in the first three rounds for SED, ED and local ownership, a total of R1.17 billion has been allocated towards local economic development investments in communities around projects. This is generated and will be available over the next 20 years (Wlokas, 2015). In the Eastern Cape Province the IPP projects procured will make a combined SED commitment of R4.5 billion over the 20-year project life and R1.2 billion has been committed to ED alone (IPP Office, 2018).</p>	
Skills Development And Social Responsibility	<p>COMMUNITY PROJECTS, SED AND ED CONTRIBUTIONS</p> <p>To identify suitable projects for the SED and ED component, an Implementation and Monitoring Agent ("IMA") is appointed ahead of the operational phase to do a needs assessment and, following a stringent application process, source projects that are in line with the ED/SED program targets, aims and objectives. Pursuant to thorough evaluation by both the IMA and the Project, a decision is made by the Project Company to enter into a contract with the beneficiary for a specified duration. Such contract makes provision for a subsequent monitoring period of 6 months after the funding commitment has been fulfilled. Such monitoring is to ensure the project delivers as per its proposal and provide the necessary reports.</p> <p>The Project is required to report quarterly to the DMRE's Independent Power Producer Office ("IPPO"), which allows the IPPO to monitor use of SED and ED funds as committed by the Project (approximately 2.1% of revenue), as well as monitor the impact such contributions have on the community through funding of existing projects and enterprises. Albany WEF is committed to further design its own KPIs to assist monitor the direct impact each beneficiary has on</p>	<ul style="list-style-type: none"> ▲ Mitigate potential intrusion impacts, implement relevant security measures, maintain infrastructure, fencing and roads and implement dust control measures in co-operation with the private landowners to ensure that their property values do not decrease. ▲ Assist and guide the local community with regards to the needs of the WEF plant and the types of supporting industries and services required for its successful operation. Make ED funding available to assist the local SMME's with skills training and capacity building, etc. ▲ It is suggested that turbines, if possible, not be erected in direct view of lodges and strategic viewpoints at the Game Reserves. ▲ Implement all recommendations, mitigation and management measures of the Visual Impact Specialist wherever necessary to ensure that any intrusion impacts on surrounding establishments be limited. ▲

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	<p>the community, i.e. social inclusion, job creation and skills transfer.</p> <p>Cumulative: The collaboration of the three wind energy projects would increase the economic power within the “renewable energy development nodes” and ED and SED projects would be able to compete in the broader economy of the region and country. Enhance local food security, employment creation and skills development, thereby increasing the local workforce. In the Eastern Cape up to date, R4.5 billion has been committed to SED in local communities (IPP Office 2018).</p> <p>No-go: None of the benefits associated with community shareholding, ED and SED would manifest for locals. Skills development and capacity building through training and enterprise development would not occur.</p>	
	<p>TRAINING, SKILLS DEVELOPMENT AND CAPACITY BUILDING</p> <p>Training, skills development and capacity building during the operational phase will take place as follow:</p> <ul style="list-style-type: none"> ➢ Training for employees during operations. This shall be determined by the needs identified during the operational phase of the project and cannot be quantified at this stage; ➢ Offering internships and possibly bursaries; and ➢ Support of educational projects through ED contributions (approximately 0.6% of revenue). In addition to the contractual obligation with the DMRE in terms of targets and obligations, Albany WEF would set their own set of KPIs to assist to monitor the impact of skills transfer. <p>Positive cumulative impacts of capacity building and training due to the three WEFs in Makana LM would hold some benefits and enhance skills of the local and regional workforce. As a result of the Waainek Wind Power’s GYD Programme since inception in 2016, 619 people have benefited from skills transfer. This impact has been achieved with a 24MW wind farm, and the cumulative impact with Albany (140MW) is thus expected to be greater. In the Eastern Cape up to date, 37.9% of SED contributions have been used for education and skills development (IPP Office 2018).</p> <p>No-go: No skills transfer and capacity building in terms of renewable energy technology. No skills</p>	<ul style="list-style-type: none"> ➢ Mitigate potential intrusion impacts, implement relevant security measures, maintain infrastructure, fencing and roads and implement dust control measures in co-operation with the private landowners to ensure that their property values do not decrease. ➢ Assist and guide the local community with regards to the needs of the WEF plant and the types of supporting industries and services required for its successful operation. Make ED funding available to assist the local SMME's with skills training and capacity building, etc. ➢ It is suggested that turbines, if possible, not be erected in direct view of lodges and strategic viewpoints at the Game Reserves. ➢ Implement all recommendations, mitigation and management measures of the Visual Impact Specialist wherever necessary to ensure that any intrusion impacts on surrounding establishments be limited.

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	<p>development and training in terms of community upliftment and income-generating projects. No long-term advantages associated with training (entrepreneurial development, small business development, poverty alleviation, etc.) would manifest.</p>	
Individual And Family Level Impacts	<p>IMPACTS ON THE 'SENSE OF PLACE' 'Sense of place' has at least two meanings. Firstly, even though someone has not even visited a place they could have a sense of what it is like. That image could be realistic or unrealistic, or may be dramatically simplified, but is usually based on the physical characteristics of that place. The second meaning is the particular sense that individuals have of places they know by experience (www.encyclopedia.com).</p> <p>In the project area biodiversity conservation is particularly important, which is exemplified by the Indalo Protected Environment and the supporting land uses of the majority of farms in and around the project area (eco-tourism, game viewing and so forth). Potential impacts of turbines on wildlife and aesthetics, and even an increase in crime, could alter this sense of place. However, wind farms are usually perceived less negative than other industrial infrastructure and sensitivity/opposition towards wind turbines usually reduce once operational.</p>	<ul style="list-style-type: none"> ▲ Do a Security Risk Assessment with the inputs of private landowners and include land use management responsibilities for all affected parties in the lease agreements where applicable. ▲ Implement all mitigation and management measures as proposed in the Specialist Noise and Visual Impact Assessment Reports. ▲ Implement measures to increase communication and transparency between the landowners and Project as proposed in the previous sections of this report.
Impacts On Infrastructure And Services	<p>IMPACTS ON SERVICES AND COMMUNITY INFRASTRUCTURE The Project will contribute to constant supply of energy to the region, which would be conducive for future developments and industry. On-site roads and fencing are likely to be upgraded and should be maintained as part of the landowners' lease agreement.</p> <p>Positive cumulative impacts of energy supply to the region, with advantages for households, business and industry.</p>	<ul style="list-style-type: none"> ▲ Engage with the LED Unit and inform them of local investments and plans. This unit is crucial for the needs analysis and for the planning and implementation of local community investments. Ensure that results of the needs assessment and SED and ED expenditure are aligned and included with the IDP priorities. ▲ Build capacity within the Municipality and include the relevant officials in training programmes that is provided for the consultants and company top- and middle management in terms of conflict resolution, community engagement, gender and race awareness, development economics, social justice and constitutionalism.
	<p>GENERAL IMPACTS ON MAKANA LM AND THE BROADER REGION Even though the cost-competitiveness of renewable energy sources still holds many challenges, the proposed Albany Wind Farm would also introduce positive impacts on a local and regional level. The proposed Wind Farm reinforces the strategy of the Eastern Cape to gear the Eastern Cape as the capitol for energy</p>	<ul style="list-style-type: none"> ▲ Engage with the LED Unit and inform them of local investments and plans. This unit is crucial for the needs analysis and for the planning and implementation of local community investments. Ensure that results of the needs assessment and SED and ED expenditure are aligned and included with the IDP priorities.

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	<p>generation in South Africa, it is sustainable and cannot be depleted, requires less maintenance and lower operational costs than in the case of fossil fuels, produces little or no waste products such as carbon dioxide and other chemical pollutants and would contribute to a constant supply of energy to the region.</p> <p>Implementation and operation of renewable energy projects, however, require local government involvement to assist with managing stakeholder and community relations. This poses various challenges, as there might be shortfalls in terms of capacity and management experience within the Municipality. Engagement between the IPP and local Municipality is also required during the operational phase to align SED and ED projects with LED priorities.</p> <p>Cumulative impacts could manifest for the Makana LM, which will depend on the level of their involvement in the three WEF Projects' socio-economic and enterprise development projects and Trust/legal entity operations. Confidence in the rating is low.</p>	<ul style="list-style-type: none"> ▲ Build capacity within the Municipality and include the relevant officials in training programmes that is provided for the consultants and company top-and middle management in terms of conflict resolution, community engagement, gender and race awareness, development economics, social justice and constitutionalism.
Land Use Impacts	<p>LAND USE MANAGEMENT</p> <p>An agreement between Albany Wind Power and the landowners would be required to manage and maintain collective infrastructure such as fences and roads and to ensure that adequate resources are allocated to address potential issues of trespassing, an increase in security risks (livestock, copper and cable theft, etc.), veld fires as a result of illegal activities and so forth.</p> <p>Land use management practices and impacts at Waainek and Plan 8 WEFs are unknown and cannot be rated.</p>	<ul style="list-style-type: none"> ▲ For the duration of the lease period retain on-going involvement with the current land management structures (landowners etc.) to ensure that responsibilities with regards to land management are adequately financed - collectively and individually where required. Responsibilities and financial provisions must form part of the lease agreements and it could be a mandatory requisite of the agreements that landowners use a portion of their incomes towards land management (security, fencing and so forth).
	<p>IMPACTS ON ARCHAEOLOGICAL/HISTORICAL SITES AND CULTURAL PRACTICES</p> <p>An Archaeological Impact Assessment ("AIA") was done for the proposed Albany WEF to establish the range and importance of the exposed and in situ archaeological heritage material remains, sites and features; to establish the potential impact of the development; and to make recommendations to minimize possible damage to the archaeological heritage (Booth Heritage Consulting; May 2018, Revised May 2019). It was found that:</p> <ul style="list-style-type: none"> ▲ Middle Stone Age (MSA) stone artefacts occurred in various locations over the proposed development area within the exposed and disturbed surface areas. ▲ Several stone packed features were also recorded within the proposed development 	<ul style="list-style-type: none"> ▲ Structures and ancillary infrastructure be appropriately planned and placed and maintained in neat and appealing way. ▲ Should any land claims arise (that have been verified by the Regional Land Claims Commissioner), conduct negotiations with legitimate claimants and affected landowners to determine how economic benefits must be distributed. ▲ Consider all recommendations made in the Specialist AIA Report to minimise and/or eliminate potential impacts on archaeological / heritage resources.

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	<p>area. These included stone packed / walled kraals, an historical stone packed / walled farm boundary as well as the remains of foundations.</p> <ul style="list-style-type: none"> ▲ The built environment component included historical ruins that included farmhouses, other buildings and a church. A graveyard is associated with the church. ▲ An old historical wagon route was pointed out by the owner of the Farm Grobbeler's Kloof situated at the entrance to the farm south off the N2 national, running parallel to N2 national road. <p>Two wind energy facilities (Waainek WEF and Infinite Plan 8 WEF) that are situated within a 200 km radius of the proposed Albany WEF as well as the adjacent regions may spark a concern with regards to cumulative impacts that these projects may have on the heritage resources and the cultural landscape (Archaeological Impact Assessment, May 2019).</p>	
Community / Institutional Arrangements	<p>COMMUNITY MOBILIZATION</p> <p>Negative attitude formation and community mobilization against the Project could result should adverse social and economic impacts manifest for landowners, communities, Private Game Reserves and other tourism related businesses as a result of visual/aesthetic impacts or the general wind farm operations. Another concern raised by I&APs was the potential of social conflict amongst communities due to unequal spread of financial benefits.</p>	<ul style="list-style-type: none"> ▲ Keep open communication channels with the landowners and Private Game Reserves and address any potential issues as a matter of priority. ▲ Effective information sharing could be done through the industry associated websites, emailed newsletters, municipal noticeboards, information events and meetings and existing local community channels used by the various wards. ▲ Join the local Business Chamber of similar organisation that represent local business interests. ▲ Consult with surrounding landowners whose livestock, private residences and other infrastructure could be affected by dust, noise and traffic on access rods. ▲ Comply with all regulations of the Occupational Health and Safety Act
Health And Safety Impacts	<p>HEALTH AND SAFETY RISKS FOR WORKERS</p> <p>Operation and maintenance of the wind farm/turbines are not labour-intensive and would be intermittent, which decreases the likelihood of construction related accidents occurring. Temporary workers doing site clearance and maintenance would be on site occasionally over short periods in time, and possible health issues due to dust (respiratory issues), noise and dehydration would be limited, although still possible.</p> <p>Health and safety issues at other wind farms are</p>	<ul style="list-style-type: none"> ▲ Implement measures to suppress dust on a regular basis, such as spraying water on gravel roads, surfaces and stock piles. ▲ Workers on site to wear protective clothing. ▲ All on-site activities to comply with the Occupational Health and Safety Act and with Standards of conditions of employment. ▲ Safety fencing around the construction areas to prevent illegal trespassing. ▲ Fire breaks to prevent the spreading of

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	<p>unknown and the cumulative impact cannot be determined.</p> <p>COMMUNITY HEALTH AND SAFETY RISKS</p> <p>Community health and safety risks could include:</p> <ul style="list-style-type: none"> ➤ Uncontrolled veld fires that destroy or damage surrounding farmland and infrastructure; ➤ Road accidents if employees of the wind farm do not adhere to speed limits and implement general road safety practices; and ➤ Unauthorized access / trespassing at the wind farm infrastructure resulting in public safety issues. <p>Cumulative impacts on community health and safety may manifest once Plan 8 WEF is operational. Confidence in the rating is low.</p>	<p>veld fires.</p> <ul style="list-style-type: none"> ➤ Display "danger" warning signs and "no public access" signs in English and the local languages at all potential accesses. ➤ Implement all the safety and security measures as identified in the Security Risk Assessment. ➤ Make the procedure to lodge complaints available to the surrounding property owners and Ward Councillor/s to enable them to lodge complaints when problems with regards to community and/or environmental health arise. Keep a complaints register at the entrance to the site.
TRAFFIC FEASIBILITY STUDY AND MANAGEMENT PLAN		
<i>None identified by specialist</i>		
Impact Of Wind Turbines On Visually Sensitive Receptors	<p>The draft Albany WEF VIA was conducted for 66 wind turbines. This has been reduced by 23 turbines to 43 turbines mostly due to concerns raised by I&APs relating to the visual intrusion of turbines. This includes the removal of 12 turbines in the western turbine cluster which are particularly visible to Kwandwe and Indalo Protected Environments in the west and north west, of which five turbines were located almost immediately adjacent to the south east boundary of Kwandwe (unprotected portion). While the remaining turbines still remain visible, this reduction in turbine numbers will reduce the density of turbines and numbers of visible turbines.</p> <p>The blade tip height of the remaining 43 proposed turbines is 215m (worst case scenario) above the ground. The viewshed of the 43 wind turbines was calculated using this value.</p> <p>As seen in the cumulative viewshed for the 43 Albany WEF turbines (Please see Figures 9.1 and 9.2 in the VIA), turbine hubs and blades will be visible from a wide area surrounding the WEF. Notable features within the viewshed include: the towns of 1) Makanda, 2) Bathurst and 3) KwaNdwanyana, public nature reserves such as the 4) Great Fish River Nature Reserve, private game reserves such as 5) Kudu Ridge, 6) Bucklands, 7) Kwandwe, 8) Buffalo Kloof and 9) Coleridge, 10) multiple homesteads, 11) the N2 and R67 roads.</p> <p>The most significant cumulative visual impacts will come from the operational Waainek WEF</p>	<p>Other than the removal of further turbines from the Albany WEF project (in addition to the 23 turbines already removed since the draft VIA), there are no other feasible mitigation measures that will further reduce the visual intrusion of the wind turbines due to their size, height and visibility, and the lack of screening opportunities in the landscape. However, there are a number of measures and suggestions that can enhance the positive aspects of the impact.</p> <ul style="list-style-type: none"> ▪ Ensure that there are no wind turbines closer than 500m to a residence. ▪ Turbines must be properly maintained. A spinning rotor is perceived as being useful. If a rotor is stationary when the wind is blowing it is seen as not fulfilling its purpose and a negative impression is created (Gipe 1995). ▪ Signs near wind turbines must be avoided unless they serve to inform the public about wind turbines and their function. Advertising billboards must be avoided. ▪ According to the Aviation Act, 1962, Thirteenth Amendment of the Civil Aviation Regulations, 1997: "Wind turbines shall be painted bright white to provide maximum daytime conspicuity. The colours

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	<p>located between over 10-15 km to the south west and the Proposed Plan 8 WEF located between about 5-10km to the north east of the Albany WEF site. The Waainek Wind Farm consists of eight (8) turbines, each with a hub height of 84m and a rotor diameter of 117m, and the Plan 8 facility will host up to 22 turbines, each with a hub height of up to 91.5m and a rotor diameter of up to 117m.</p> <p>Since turbine visibility diminishes with distance, as already described in this VIA, it is suggested that, due to the distances between the three respective wind farms, that the overall cumulative visual impacts will be MODERATE during the daytime. However, the impacts of night lighting could be HIGH, with the proposed Albany WEF making the largest contribution to the impact.</p> <p>The blade tip height of the proposed turbines is 215m (worst case scenario) above the ground. The viewshed of the 66 wind turbines was calculated using this value.</p>	<p>grey, blue and darker shades of white must be avoided altogether. If such colours have been used, the wind turbines shall be supplemented with daytime lighting, as required."</p> <ul style="list-style-type: none"> ▪ Lighting must be designed to minimise light pollution without compromising safety. Investigate using motion sensitive lights for security lighting. Turbines are to be lit according to Civil Aviation regulations.
Impact Of Nightlights On Existing Landscape	<p>Wind farms are required by law to be lit at night as they represent hazards to aircraft due to the height of the turbines. Marking of turbines depends on wind farm layout and not all turbines need to be lit. Marking consists of a red flashing light of medium intensity (2000 candela).</p> <p>Sensitive visual receptors that would experience the high lighting intrusion include Ecca Nature Reserve, Kwandwe Private Game Reserve North (Indalo), Kwandwe West Indalo Protected Environment, Buffalo Kloof Protected Environment, Kwandwe Private Game Reserve (non Indalo) and Kudu Ridge Private Game Reserve. High lighting intrusion particularly relates to the 20 turbines located in the western cluster.</p> <p>The applicant estimates that up to 50-60% of the Albany WEF turbines will need to have navigation lights (i.e. 40-50% will not require lighting). While this reduced aviation lighting will significantly mitigate the night lighting impacts, this is still subject to approval and very much dependent on the requirements of the CAA.</p> <p>The most significant cumulative visual impacts will come from the operational Waainek WEF located between over 10-15 km to the south west and the Proposed Plan 8 WEF located between about 5-10km to the north east of the Albany WEF site. The Waainek Wind Farm consists of</p>	<ul style="list-style-type: none"> ▲ Aviation standards and CAA Regulations for turbine lighting must be followed. ▲ The possibility of limiting aircraft warning lights to the turbines on the perimeter according to CAA requirements, thereby reducing the overall impact, must be investigated. ▲ Other available navigation lighting technologies must be investigated such as: <ul style="list-style-type: none"> ▪ <i>Detection-Based Activated Lights Systems (where specific receptors turn on lights only when an aircraft is detected).</i> ▪ <i>Pilot Activated Lights (where the aircraft pilots activate the lights manually when they are in the vicinity – system is currently not preferred by CAA).</i> ▲ Lighting of ancillary buildings and structures should be designed to minimise light pollution without compromising safety. Motion sensitive lighting can be used for security purposes.

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	<p>eight (8) turbines, each with a hub height of 84m and a rotor diameter of 117m, and the Plan 8 facility will host up to 22 turbines, each with a hub height of up to 91.5m and a rotor diameter of up to 117m.</p> <p>The impacts of night lighting could be high, with the proposed Albany WEF making the largest contribution to the impact.</p>	
DECOMMISSIONING PHASE		
AGRICULTURE IMPACT ASSESSMENT		
<i>None identified by specialist</i>		
AVIFAUNAL IMPACT ASSESSMENT		
Destruction Of Bird Habitat	<p>Construction of the facility will result in a certain amount of destruction and removal of natural vegetation which was previously available to avifauna for use. This impact is anticipated to be of MODERATE NEGATIVE significance pre mitigation. The area is also significantly disturbed by various human activities including: the N2 highway; pipelines; roads; power lines; and general farming practices.</p>	<ul style="list-style-type: none"> ▲ The sensitivity map in Chapter 6 of the Avifaunal Report must be adhered to.
Disturbance Of Birds	<p>This is rated as LOW NEGATIVE significance, on account of there being no known breeding sites of sensitive bird species on or near site.</p>	<ul style="list-style-type: none"> ▲ The sensitivity map in Chapter 6 of the Avifaunal Report must be adhered to.
BAT IMPACT ASSESSMENT		
Destruction / Disturbance Of Bat Roosts	<p>If the construction of roads, power lines, turbines, office and maintenance buildings, substations and other infrastructure for the proposed Albany WEF causes disturbance or destruction of a few small farm buildings on site, this would affect only a small number of house-dwelling bats. However, construction would have a significant impact on local bats if it affected larger roosts. While IWS only found small roosts, there is a moderate to high potential of roosts in the steeper, rocky sections in the south and south-east of the Albany WEF site. The deep rocky gorges are likely to provide suitable roosting habitat to several species and the diversity of species recorded at AL2 is testament to this. These areas were not accessible to fully assess. This potential impact, therefore, has a Medium Significance rating, which can be reduced to Low by the following recommended mitigation measures.</p>	<ul style="list-style-type: none"> ▲ Clearing of natural vegetation areas be kept to a minimum. ▲ Whilst it is unlikely that any new large roosts (consisting of more than 50 bats) will be discovered on site or immediately adjacent, such roosts must be reported if found during the operational phase.
ECOLOGICAL IMPACT ASSESSMENT		
<p><i>The ecological impacts associated with the decommissioning phase will be similar to those listed in the construction phase and the associated mitigations measures must be updated and implemented to reduce potential adverse impacts.</i></p>		
HERITAGE IMPACT ASSESSMENT		
<i>None identified by specialist</i>		
NOISE IMPACT ASSESSMENT		
<i>None identified by specialist</i>		
PALAEONTOLOGICAL IMPACT ASSESSMENT		
<i>None identified by specialist</i>		

ISSUE	DESCRIPTION OF IMPACT	MITIGATION MEASURES
SOCIO-ECONOMIC IMPACT ASSESSMENT		
<p>The socio-economic impacts associated with the decommissioning phase will be similar to those listed in the construction phase and the associated mitigations measures must be updated and implemented to reduce potential adverse impacts.</p>		
TRAFFIC FEASIBILITY STUDY AND MANAGEMENT PLAN		
<p>None identified by specialist</p>		
VISUAL IMPACT ASSESSMENT		
Removal Of Turbine Structures	<p>Wind farms are typically designed for a 25-year life. After 25 years, the proposed Albany Wind Farm may either be refurbished (re-powered) or decommissioned. If it is decommissioned, the impacts during the decommissioning phase will be very similar to those identified in the construction phase.</p>	<ul style="list-style-type: none"> ▲ The construction contractor must clearly demarcate construction areas to minimise site disturbance. ▲ Clearance of vegetation must be minimised, and restoration of cleared areas must start as soon as possible. ▲ Erosion risks must be assessed and minimised as erosion scarring can create areas of strong visual contrast which can often be seen from long distances. ▲ Treat roads to reduce dust emissions. ▲ The site must be kept neat and tidy. Littering should be fined, and the ECO should organise rubbish clean-ups on a regular basis. ▲ Night lighting of the construction sites must be minimised within requirements of safety and efficiency. See section on lighting for more specific measures.

6 ADMINISTRATION AND REGULATION OF ENVIRONMENTAL OBLIGATIONS

6.1 MANAGEMENT STRUCTURE

In line with this EMPr, the Contractor must prepare a document clearly outlining and demonstrating the environmental responsibilities, accountability and liability of the Contractor's employees. The Contractor must assign responsibilities for the following:

- Reporting structures;
- Actions to be taken to ensure compliance;
- Overall design, development and implementation of the EMPr;
- Documenting the environmental policy and strategy;
- Implementing the EMPr in all stages/phases of the project; and
- All the aspects which require action under the other core elements and sub-elements of the EMPr.

All official communication and reporting lines, including instructions, directives and information, should be channelled according to the organisation structure.

6.2 ROLES AND RESPONSIBILITIES

6.2.1 The Applicant/Developer

Albany Wind Power (Pty) Ltd (hereafter referred to as the Developer) is a Special Purpose Vehicle (SPV) established for the sole purpose of developing, owning and operating the proposed Albany WEF. The Developer is the responsible entity for monitoring the implementation of the EMPr and compliance with the EA. However, if the Developer appoints a Contractor to implement the project and hence implement the recommended mitigation measures documented in this EMPr on their behalf, then the successful Contractor's responsibilities are outlined as per the section that follows.

The Developer will also be responsible for stipulating and enforcing fines and penalties to the Contractor for contravention or any non-compliances against the EMPr, the EA and other approved plans.

6.2.2 The Contractor

The successful Contractor will:

- Be responsible for the finalisation of the EMPr in terms of methodologies which are required to be implemented to achieve the environmental specifications contained herein and the relevant requirements contained in the EA;
- Be responsible for the overall implementation of the EMPr in accordance with the requirements of the Developer and the EA;
- Ensure that all third parties, who carry out all or part of the Contractor's obligations under the contract, comply with the requirements of this EMPr;
- Be responsible for obtaining any outstanding permits and licenses which are required for the construction of the Albany WEF; and
- Ensure that the appointment(s) of the ECO and the Environmental Site Officer (ESO) are subject to the approval of Albany Wind Power (Pty) Ltd.

6.2.3 The Resident Engineer

The Resident Engineer (RE) should be appointed by the Developer and will be required to oversee the construction programme and construction activities performed by the Contractor. The RE is expected to liaise with the Contractor and ECO on environmental matters, as well as any pertinent engineering matters where

these may have environmental consequences. The RE will oversee the general compliance of the Contractor with the EMPR and other pertinent site specifications. The RE should also be familiar with the EMPR specifications and further monitor the Contractor's compliance with the environmental specifications daily, through a Site Diary, and enforce compliance.

6.2.4 The Environmental Site Officer (ESO)

The Contractor should appoint a nominated representative of the Contractor as the ESO for the contract. The ESO must be site-based and should be the responsible person for implementing the environmental provisions of the construction contract.

The approved ESO must be onsite at all times.

The ESO's duties will include, *inter alia*, the following:

- Ensuring that all the environmental authorisations, licenses and permits, required in terms of the applicable legislation, have been obtained prior to construction commencing;
- Reviewing and approving construction method statements with input from the ECO and RE, where necessary, in order to ensure that the environmental specifications contained within the construction contract are adhered to;
- Assisting the Contractor in finding environmentally responsible solutions to problems;
- Keeping accurate and detailed records of all activities on site;
- Keeping a register of complaints onsite and recording community comments and issues, and the actions taken in response to these complaints or working alongside the CLO to undertake these tasks;
- Ensuring that the required actions are undertaken to mitigate the impacts resulting from non-compliance;
- Reporting all incidences of non-compliance to the ECO and Contractor; and
- The ESO must submit regular written reports to the ECO, not less frequently than once a month, during the construction phase of the Albany WEF.

The ESO must have:

- The ability to manage public communication and complaints unless a suitably qualified CLO is appointed to undertake public liaison;
- The ability to think holistically about the structure, functioning and performance of environmental systems;
- The ESO must be fully conversant with the EIR, EMPR, EA, relevant environmental legislation and any other relevant documents relating to the Albany WEF; and
- The ESO and/or CLO must have received professional training, including training in the skills necessary to be able to amicably and diplomatically deal with the public as outlined in the first bullet point above.

The ECO should be in the position to determine whether or not the ESO has adequately demonstrated their capabilities to carry out the tasks at hand and in a professional manner. The ECO will therefore have the authority to instruct the Contractor to replace the ESO if, in the ECO's opinion, the appointed officer is not fulfilling their duties in terms of the requirements of the construction contract. Such instruction must be in writing and must clearly set out the reasons why a replacement is required and within what timeframe. The ECO must visit the development site and, in addition to the responsibilities listed in section 6.2.5 below, review the performance of the ESO and submit performance reviews to the Developer, as and when required.

6.2.5 Environmental Control Officer (ECO)

For the purpose of implementing the conditions contained herein, Albany Wind Power (Pty) Ltd must appoint an ECO for the contract. The ECO must be the responsible person for ensuring that the provisions of the EMPr as well as the EA are complied with during the construction phase. The ECO will be responsible for issuing instructions to the Contractor, where environmental considerations call for action to be taken. The ECO must submit regular written reports, at least once a month, to the Developer and, when required and/or requested, to the environmental authority (national DFFE). The ECO will be responsible for the monitoring, reviewing and verifying of compliance with the EMPr and conditions of the EA by the Contractor.

The ECO's duties in this regard will include, *inter alia*, the following:

- Confirming that all the EAs, licenses and permits required in terms of the applicable legislation have been obtained prior to construction commencing;
- Monitoring and verifying that the EMPr, EA and Contract are adhered to at all times and taking action if specifications are not followed;
- Monitoring and verifying that environmental impacts are kept to a minimum;
- Reviewing and approving construction Method Statements with input from the ESO and RE, where necessary, to ensure that the environmental specifications contained within this EMPr and the EA are adhered to;
- Inspecting the site and surrounding areas on a regular basis to monitor compliance with the EMPr, EA and Contract;
- Monitoring the undertaking by the Contractor of environmental awareness training for all personnel onsite;
- Ensuring that activities onsite comply with all relevant environmental legislation;
- Undertaking a continual internal review of the EMPr and submitting any changes to the Developer and the Competent Authority (national DFFE) for review and approval, as applicable;
- Checking the register of complaints, which should be kept onsite and maintained by the ESO and/or the CLO, and ensuring that the correct actions are/were taken in response to these complaints;
- Checking that the required actions are/were undertaken to mitigate the impacts resulting from non-compliance;
- Reporting all incidences of non-compliance to the Developer;
- If required by the EA, the ECO should submit compliance audit reports to the national DFFE, in accordance with the specifications of the EA. Such reports should be reviewed by Albany Wind Power (Pty) Ltd prior to their submission;
- Keeping a photographic record of progress onsite from an environmental perspective. This can be conducted in conjunction with the ESO, because the ESO will be the person that will be onsite at all times and can therefore take photographic records weekly. The ECO should ensure that the ESO understands the task at hand;
- Recommending additional environmental protection measures, where necessary; and
- Providing feedback on any environmental issues during the site meetings.

The ECO must have:

- A good working knowledge of all relevant environmental policies, legislation, guidelines and standards;
- The ability to conduct inspections and audits and to produce thorough, readable and informative reports;
- The ability to manage public communication and complaints;
- The ability to think holistically about the structure, functioning and performance of environmental systems; and
- Proven competence in the application of the following integrated environmental management tools:
 - Environmental Impact Assessment;
 - Environmental Management Plans/Programmes;

- Environmental auditing;
- Mitigation and optimisation of impacts;
- Monitoring and evaluation of impacts; and
- Environmental management systems.

The ECO must be fully conversant with the EIA Process, the Albany WEF Final EIR, EA (if/when issued), this EMPr and all relevant environmental legislation for the project. The Developer will have the authority to replace the ECO if, in their opinion, the appointed officer is not fulfilling their duties in terms of the requirements of the EMPr or this specification. Such instruction must be in writing and must be clearly set out with reasons why a replacement is required and within what timeframe.

6.3 COMPLIANCE MONITORING AND CORRECTIVE ACTION

Non-compliance with the conditions of the EMPr must be viewed as a breach of appointment Contract for which the construction Contractors will be held liable. The Contractor is deemed NOT to have complied with the EMPr if:

- There is evidence of contravention of the EMPr, its environmental specifications or the method statements developed by the Contractor within the boundaries of the construction site or areas of contractor responsibility;
- Construction related 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 ECO within a specific time; or
- The Contractor fails to respond adequately to complaints from the public or authorities.

The Developer and the construction contractors are liable for any construction rehabilitation costs associated with their non-compliance with this EMPr. This rehabilitation must be undertaken to the satisfaction of the ECO. The construction contractors will have the right to appeal any punitive action undertaken by the ECO or the Developer.

6.4 REPORTING AND REVIEW

The EMPr reporting and documentation requirements must be based on best practice principles, e.g. ISO 14001, which must take the following requirements into account:

- Documents associated with the EMPr must be reviewed regularly and updated by all environmental management parties;
- Audits of the environmental performance of the construction phase of the project will be undertaken on a monthly basis by accredited auditors in fulfilment of likely conditions of EA in this regard;
- The findings of external, internal and informal environmental reviews will be recorded and items requiring action will be identified from the recommendations made; and
- The construction contractors will be contractually obliged to fulfil any reasonable recommendations, and implementation of these actions will be assessed in the above audit.

Meetings, where required, should take place onsite. Internal auditing and reporting should be subject to external review by the ECO during the monthly compliance audits.

6.5 MONITORING

Construction activities have the potential to impact on a range of biophysical habitats as well as neighbouring communities. The monitoring programme which requires development by the Developer, ECO and Contractor should, *inter alia*, allow for analysis of:

1. Air quality (such as dust);
2. Hydrocarbon pollution;
3. Success of local labour employment;
4. Success of local procurement policies;
5. Ambient and workplace noise;
6. Health and safety incidents;
7. Success of traffic management measures; and
8. Contamination and soil erosion.

6.6 EMERGENCY PREPAREDNESS

The Contractor must develop environmental emergency response procedures to ensure that there are appropriate responses to unexpected or accidental actions or incidents which are likely to cause environmental impacts during the construction phase. Such activities include, *inter alia*:

- Accidental discharges to water and land;
- Accidental exposure of employees to hazardous substances;
- Accidental fires;
- Accidental spillage of hazardous substances;
- **Personnel exposed to Covid-19 positive individuals requiring quarantine;** or
- Specific environmental and ecosystem effects from accidental releases or incidents.

The Contractor and Subcontractors must comply with the emergency preparedness incident reporting requirements, which must be developed and in place prior to the commencement of the construction phase.

6.7 ENVIRONMENTAL INCIDENT MANAGEMENT

The construction contractors must adhere to the hazard and incident reporting protocols to be developed by the Contractor. A report must be completed for all incidents, and appropriate action taken, where necessary, to minimise any potential impacts. The national DFFE must be informed of any environmental incidents, in accordance with legislative requirements, should this be necessitated by a major environmental incident.

6.8 MANAGEMENT REVIEW

A formal management review should be conducted in which the internal audit reports, written by the ESO and based on frequent inspections and interactions with the ECO and review of the periodic reports, including audit reports by the independent external auditor - will be reviewed. The purpose of the review is to critically examine the effectiveness of the EMPr and its implementation and to decide on potential modifications to the EMPr as and when necessary. The process of management review will be to keep to the principle of continual improvement.

Management review should take place when the liaison committee, consisting of representatives from the Contractor, construction Subcontractors (as appropriate), ECO and other parties or I&APs deem them necessary or on a quarterly basis. The purpose of these quarterly meetings will be to review the progress of the Contractor in implementing and complying with their obligations in terms of this EMPr for the duration

of the project. Where necessary, management review will take place more frequently than the required quarterly meetings.

7 Reporting

7.1 METHOD STATEMENTS

Method Statements must be completed by the Contractor, an individual that is competent with the tasks to be undertaken, for each activity which requires a Method Statement as specified in the EMPr or as requested by the ECO. Each Method Statement must be submitted to the ECO and the Developer for approval. For the purposes of the environmental specification, a Method Statement is defined as:

"A written submission by the Contractor to the ECO setting out the plant, materials, labour and method the Contractor proposes to carry out an activity, in such detail that the ECO is enabled to assess whether the Contractor's proposal is in accordance with the EMPr and/or will produce results in accordance with EMPr."

The Method Statement must include details of the:

- Construction procedures;
- Materials and equipment to be used;
- Transportation of the equipment to- and from site;
- How the equipment and/or 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 and non-compliance with the specifications; and
- Any other information deemed necessary by the Engineer.

Method Statements can be for once-off tasks or a series of tasks which are often repeated. The risks are identified during the various work stages when a Method Statement is prepared. Steps taken to reduce the potential risk associated with these stages can then be determined. The sequential steps and actions to be followed by the persons carrying out the works are written down. This sequence of steps should include all environmental and safety aspects relevant to the task being executed.

As a minimum, the Contractor should produce the following method statements:

- Site Dust Management;
- Solid Waste Management;
- Hazardous Material Management;
- Hydrocarbon Management;
- Site Clearing and Topsoil Management;
- Fire Management;
- Noise Management;
- Concrete Mixing;
- Pollution Control;
- Site Access and Traffic Management; and
- Incident and Emergency Response Management.

The Method Statements should be submitted to the ECO and the Developer not less than twenty (20) days prior to the intended date of commencement of the activity, or as directed by the ECO. The Contractor must not commence an activity until all required Method Statements have been approved by the ECO and the Developer. The ECO should provide comment on the methodology and procedures proposed by the Contractor, but the ECO will not be responsible for the Contractor's chosen measures of impact mitigation

and emergency/disaster management systems. Approval of the Method Statements should not be withheld unreasonably.

All control measures detailed in the Method Statement must be the subject of "toolbox" talks prior to the initiation of works. By introducing or reaffirming these measures during the "toolbox" talk, everyone involved should have a clear understanding of the work to be carried out, as well as the safe work method sequences and equipment required.

An example of a Method Statement layout is provided in Appendix C.

7.2 GOOD HOUSEKEEPING

The Contractor must undertake "good housekeeping" practices during the construction phase. This will help avoid disputes on responsibility and allow for the smooth running of the contract. Good housekeeping extends beyond the wise practice of construction methods to include the care for and preservation of the environment within which the construction is situated.

7.3 RECORD KEEPING

The ECO must continuously monitor the Contractor's adherence to the approved impact prevention procedures and the ECO should issue the Contractor with a notice of non-compliance whenever transgressions are observed. The ECO should document the nature and magnitude of the non-compliance in a designated register, the actions taken to discontinue the non-compliance, the actions taken to mitigate its effects and the results of the actions. The non-compliance should be documented and reported to the Developer in the monthly reports. These reports must be made available to the national DFFE when requested.

7.4 DOCUMENT CONTROL

The Contractor is responsible for establishing a procedure for electronic document control. The document control procedure should comply with the following requirements:

- Documents must be identifiable by organisation, division, function, activity and contact person;
- Every document should identify the personnel and their position(s), who drafted and compiled the document(s), who reviewed and recommended approval, and who finally approved the document for distribution; and
- All documents should be dated, provided with a revision number and reference number, filed systematically, and retained for a five (5) year period.

The Contractor must ensure that documents are periodically reviewed and revised, where necessary, and that current versions are available at all locations where operations, essential to the functioning of the EMPR, are performed. All documents must be made available to the ECO and other independent external auditors.

8 Environmental Awareness

8.1 ENVIRONMENTAL TRAINING

The Contractors must ensure that their employees and any third party, who carries out all or part of the Contractors' obligations, is adequately trained regarding the implementation of the EMPr and the general environmental legal requirements and obligations.

Environment and health awareness training programmes should be targeted at three (3) distinct levels of employment, i.e. the executive, middle management and labour. Environmental awareness training programmes should contain the following information:

- The names, positions and responsibilities of personnel to be trained;
- The framework for appropriate training plans;
- The summarised content of each training course; and
- A schedule for the presentation of the training courses.

The ECO must ensure that records of all training interventions are kept in accordance with the record keeping and documentation control requirements as set out in this EMPr. The training records must verify each of the targeted personnel's training experience.

The Developer must ensure that adequate environmental training takes place. All employees must be given an induction presentation on environmental awareness and the content of the EMPr. The presentation should be conducted in the language of the employees to ensure it is understood. The environmental training must, as a minimum, include the following:

- The importance of conformance with all environmental policies;
- The environmental impacts, actual or potential, of their work activities;
- The environmental benefits of improved personal performance;
- Their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirement of the Agency's environmental management systems, including emergency preparedness and response requirements;
- The potential consequences of departure from specified operating procedures;
- The mitigation measures required to be implemented when carrying out their work activities;
- Environmental legal requirements and obligations;
- Details regarding floral and faunal SCC and protected species, and the procedures to be followed should these be encountered during the construction of construction camps;
- The importance of not littering;
- The importance of using supplied ablution facilities;
- 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; and the
- Details regarding archaeological and/or historical sites which could be unearthed during construction and the procedures to be followed should these be encountered.

Recommended Environmental Education Material is provided in Appendix A.

8.2 MONITORING OF ENVIRONMENTAL TRAINING

The Contractor must monitor the performance of construction workers to ensure that the points relayed during their induction have been properly understood and are being followed. If necessary, the ECO and/or

a translator should be called to the site to further explain aspects of environmental or social behaviour that are unclear. Toolbox talks are recommended.

9 MANAGEMENT PLANS AND MONITORING RECOMMENDATIONS

The following management plans have been requested by the national DFFE in their approval of the Draft Scoping Report (10 September 2019):

- Alien Invasive Management Plan (Section 9.1);
- Plant Rescue and Protection Plan (Section 9.1);
- Avifauna Monitoring and Management Plan (Section 9.3);
- Re-vegetation and Habitat Rehabilitation Plan (Section 9.1);
- Open Space Management Plan (Section 9.2);
- Traffic Management Plan (Section 9.4 and Appendix G: Traffic and Transportation Management Plan);
- Transportation Plan (Section 9.4);
- Stormwater Management Plan (Section 9.5);
- Fire Management Plan (Section 9.7);
- Erosion Management Plan (Section 9.5);
- Monitoring System to detect any leakage or spillage of all hazardous substances (Section 9.6); and
- Measures to protect hydrological features (Section 9.2, Section 9.5 and Appendix G: Groundwater Investigation at the Proposed Albany WEF).

Please refer to Sections 9.1 to 9.7 and Appendix G for the preliminary management plans which should be updated once an EA has been received to include the relevant conditions of the EA and refined prior to the commencement of the construction of the Albany WEF.

9.1 SEARCH AND RESCUE, REHABILITATION AND ALIEN INVASION MANAGEMENT PLAN

The Search and Rescue, Rehabilitation and Alien Invasion Management Plan includes specialist input from Dr Greer Hawley and Dr Cherie-Lynn Mack (Management Plans, 2015).

9.1.1 Relevant Definitions

- **Composition** refers to the identity, and in some cases the abundance, of the species which occur in an assemblage.
- **Environmental Control Officer (ECO)** refers to independent Environmental Specialist(s) tasked with monitoring the environmental performance and compliance of Contractors involved in the construction of the Albany WEF.
- **Framework Species** typically refers to a tree, herb or liana species occurring in established natural vegetation, and which is structural in the vegetation complex.
- **Pioneer species** are typically r-selection species which colonise a disturbed habitat in the initial stages of restoration and they are typically a highly abundant, widespread species with high growth rates.
- **Re-vegetation** refers to the process of establishing vegetative cover, which is typically required in areas which need to be restored without the objective of reinstating a native ecosystem. In re-vegetation, any plant species would do (for instance, sowing a mixture of commercially available grasses on mine tailings for soil rehabilitation) although a commercial crop or timber producing trees are often used.
- **Replacement** refers to the establishment of a different type of vegetation on the degraded environment following the vegetation clearance associated with construction activities.
- **Restoration** is the process of reconstituting a degraded system to its original state.
- **Rehabilitation** is a general term which includes the replacement, restoration and re-vegetation, and is the process or programme implemented to achieve restoration or replacement.
- **Succession** is the directional development in the species composition of a community after disturbance, from the so-called pioneer stages to an end-state or climax that tends to persist.
- **Topsoil** refers to the top 100 mm of the soil which often includes organic material such as stem and leaf litter.
- **Weed** refers to an undesirable plant, typically an alien or non-native species, which exhibits robust growth and may provide competition for resources with the desired vegetation.

9.1.2 Vegetation Clearing Procedure

Vegetation clearance may only occur once the relevant permits have been secured.

A) Vegetation Clearing

The following activities must be undertaken prior to the commencement of the construction activities:

- All trees and identified plant Species of Conservation Concern (SCC) which need to be transplanted should be demarcated, using a suitable demarcation material which will not damage the trees and/or plant SCC.
- Herbaceous and geophytic plant species which need to be transplanted (bulbs and seedlings), slipped, or have their seed collected must be identified and marked.
- Obtain permits from the Eastern Cape provincial Department of Economic Development, Environmental Affairs and Tourism (DEDEAT) and the Department of Agriculture, Forestry and Fisheries (DAFF) for the transplantation, removal, damage or destruction of protected plant species.

- Establish a nursery within the site or make use of a suitable nursery in proximity to the site to ensure that the plants are stored in suitable potting bags or pots, watered as often as required, sheltered from the weather, etc.
- All geophytic (bulbous) plants and tree samplings, which are visible, should be removed from the construction footprint and stored in nursery conditions.
- Grass sods from a variety of naturally occurring grasses should be collected from the site and kept in nursery conditions. At least ten (10) sods or runners per species should be collected. Where possible, the grass should be mowed during seeding season and the seed should be collected and stored for reseeding.

The following activities must be undertaken during the construction activities:

- Ensure that the plants which are housed in the nursery are cared for by a suitably qualified/experienced individual.
- Any geophytic (bulbous) plants which are observed in the topsoil during vegetation clearance must be removed and stored in nursery conditions.

Please note: If any unusual plant species are encountered, the Contractor and/or the ECO should contact a suitably qualified specialist and provide photographic depictions of the unknown plant species for rapid species identification by the specialist.

B) Disposal of Vegetation Material

In sections where the site is covered by grasses, the grasses and topsoil should be removed, no disposal mechanism is required. However, where woody vegetation has been cleared, all material should be chipped, shredded and utilised on the site for mulching and composting during rehabilitation.

9.1.3 Search and Rescue Plan (Plant Stockpiling)

The plant Search and Rescue Plan aims to establish which plants should be harvested from the turbine laydown areas, access roads and associated WEF infrastructure, in order to:

- Collect important pioneer plants which can be transplanted, kept under nursery conditions and utilised for re-vegetation after construction as part of rehabilitation activities; and to
- Collect and transplant plant SCC which have a high conservation value or apply for destruction permits, where transplanting will not be possible.

A nursery should be established within the site, in an area where minimal construction disturbance will occur, or a suitable existing nursery in proximity to the site should be used. Please note that if the latter is chosen, all necessary permits and conditions must be in place to ensure that the plant species are suitably transported to the nursery. If the former is chosen, the following minimum requirements must be implemented during the operation of the nursery within the site:

- Establish a nursery within the site, in an area where minimal construction disturbance will occur.
- Bush clumps within the site could be utilised in the nursery because of the shelter and micro-climate which is provided by the bush clumps/vegetative cover.
- Make use of fencing of at least 1.2 m in height to fence-off the nursery for protection from livestock, which are likely to continue grazing within the site and surrounds. A gate should be constructed to ensure access to the nursery for the maintenance of the plants, as well as for vehicle access and deliveries.
- Where necessary, equip the nursery with a water tank for irrigation purposes.
- Install hose-lines in the nursery, if required.

- Procured plants should be transported with care to ensure that they arrive at the nursery in a condition which is suitable for successful growth.
- All harvested seeds and seedlings, as well as plants removed for transplanting, are the responsibility of the Contractor and must be kept under approved nursery conditions. Additional measures and/or remedial action should be taken if the nursery is not functioning successfully under the approved nursery conditions.
- Plants which are to be stored in containers in the nursery should be planted in two (2) parts of topsoil which has been excavated from the site (to emulate site conditions) and one (1) part of compost (produced from mulching the cleared vegetation).
- Ensure that the nursery is properly equipped with the necessary implements, containers, fertilisers and other equipment required to function efficiently.
- All plants must be fully maintained by staff from the date of receipt until rehabilitation has concluded. This includes watering, weeding, fertilising, etc. as required.
- All plants must be protected against wind, frost and direct sunlight, until such time as they are fully acclimatised. If necessary, shade net or a shade house should be installed for this purpose.
- Plants which are held in the nursery for more than one (1) year, must be replanted into larger containers. Any plants which outgrow their current containers must be replanted in larger containers when required.
- The Contractor will be held liable for the replacement of plants lost due to negligence or mismanagement.

9.1.4 Rehabilitation Plan

Rehabilitation of disturbed and heavily impacted environments is closely linked to ecological successional theory (van Ardel & Aronson, 2005). Succession can be described as a change of species, or patterns of species abundance, over time. Directional, continuous and sequential patterns of colonisation by various species are indicators of successional stages of an environment.

The first sequence of succession (after a disturbance) is the initial colonisation of an area of fast-growing, aggressive *pioneering* species, which are often short-lived, perennial species and grasses. These plant species are responsible for changing soil properties and creating micro-niches for further colonisation.

The initial sequence of pioneer species is followed by early and late successional species migrating into the area, resulting in a *climax community*.

The “4 R” Approach should be employed for the rehabilitation of the disturbed environment. This includes:

- Restoration;
- Rehabilitation;
- Replacement/re-vegetation; and
- Reservation/conservation.

Ensure that these activities start with soil stabilisation and soil preparation or remediation. Soil remediation includes activities to improve soil stabilisation, soil structure and soil fertility.

The success of rehabilitating the community/population within a designated area is dependent on the satisfactory establishment of the chosen plant species. To ensure that the process is optimised, the correct plant species in the correct densities and combinations should be utilised. Monitoring of the rehabilitation process is imperative to ensure that aggressive plant species and herbivores are controlled, and slopes/banks remain stable.

The general aim of a rehabilitation programme is to recreate a natural ecosystem. The rehabilitation will therefore be outlined in three (3) phases, which are required, namely:

- I. Take measures to stabilise the soil and remedy the soil, when required, through the monitoring and management of the soil composition, pH levels, nutrients, etc.;
- II. Re-vegetate disturbed areas using appropriate natural successional species;
- III. Monitor and manage the success of the rehabilitation by controlling aggressive indigenous plants, removing alien invasive plant species as soon as they are observed, and maintaining the re-vegetated areas to ensure the successful establishment of these re-vegetated areas.

A) Soil Stabilisation and Remediation

Topsoil, which is removed during construction, must be utilised in the nursery and stored on site for rehabilitation and re-vegetation. Once construction is complete, the topsoil must be spread over the disturbed site and covered with mulch. Where necessary, the soil must be stabilised using suitable materials, such as netting or geotextiles. The plant material (grasses and herbs), which has been removed from the site, should be mixed into the topsoil to supplement the organic nutrient content of the soil. No further soil conditioning in terms of fertilising is deemed necessary at this stage.

B) Re-vegetation Procedure

The species which are to be used for re-vegetation should be based on the ability of the species to:

- Successfully grow from the indigenous seeds, sods and/or slips which have been collected from the site; and
- All Red Listed species, SCC and protected species which have been removed from the site.

The Table below consists of the steps which should be followed during out-planting for the re-vegetation procedure.

<u>Plot preparation</u>	<p>The plots should be prepared as follows:</p> <ul style="list-style-type: none">• Prior to rehabilitation of the site, all remnants of foreign debris should be removed from the site.• Compacted soil should be ripped to a depth of more than 250 mm.• The final prepared surface should not be smooth but furrowed to follow the natural contours of the land.• All plots must be covered with topsoil. Topsoil should be manually spread evenly over the surface. Topsoil must be spread to the original depth and deeper where sufficient topsoil is available.• All the plots should be mulched. The vegetation stripped, chipped and stockpiled during site preparation must be spread in a single layer across the plots as mulch.• All plots should be treated with nitrogen-fixing bacteria which is important for legumes, <i>Trichoderma sp.</i> and mycorrhizal products as a natural form of soil remediation.
<u>Plant Preparation</u>	<p>Plants should undergo a period of 'hardening-off' during which they have been exposed to full, direct sunlight and been under a reduced watering regime. The individual plants destined for each plot should be grouped into plot-specific, marked baskets or containers, before they leave the nursery. Each plant should be labelled with an aluminium label, giving species code, and a specific numeral identifying the plot. Before out-planting commences, the equipment necessary for the proper handling and placing of all required materials must be on hand, in good condition and to acceptable approved standards.</p> <p><u>Shrubs and trees</u></p> <ul style="list-style-type: none">• Planting should preferably be done during the rainy season (summer).• Unless otherwise specified by the ECO, excavate square holes of approximately 800 mm x 800 mm x 800 mm for trees and approximately 500 mm x 500 mm x 500 mm for shrubs.

	<ul style="list-style-type: none"> ● Backfill planting holes with excavated material/approved topsoil, thoroughly mixed with weed-free manure or compost (per volume, approximately one quarter of the plant hole), one cup of 2:3:2 fertiliser and an approved ant and termite poison (if required). ● As much of the soil from container plants as possible must be retained around the roots of the plant during planting. ● The soil must cover all the roots and be gently pressed down to a level equal to that of the surrounding <i>in situ</i> material. ● After planting, each plant must be well watered and additional soils should be added once the soil has settled, if necessary. ● Add mulch to the surface area of the bermed basin in order to sustain soil moisture ● Stake all trees using at least three (3) weather resistant wooden or steel stakes anchored firmly into the ground. Two (2) of the three (3) stakes should be located on the windward side of the plant. Galvanised wire binding, 3 mm thick, covered with a 20 mm diameter plastic hosepipe must be tied tightly to the stakes, half- to two thirds the height of the tree above the ground and looped around the trunk of the tree. ● Place stakes at least 500 mm apart and away from the stem and roots of the tree, so as not to damage the tree or its roots. ● Thoroughly water plants as required until the plants are able to survive independently, i.e. until they are able to survive when receiving water from rainfall only. ● A raised circular 200 mm high subsoil berm placed 500 mm (shrubs) to 750 mm (trees) from the plant stem must be provided for the watering. Do not simply leave the excavated plant hole partially backfilled for this purpose, the berm must be raised above the natural soil level. ● Water aloes and bulbs once directly after transplanting to settle the soil. ● Remove stakes and wire binds over time as required, as plants become established.
Grassing using sods	<ul style="list-style-type: none"> ● “Sodding” is defined as the laying of grass sods. ● Sodding may be done at any time of the year. ● The soil should be uniformly wet to a depth of at least 150 mm before grass sods are planted. ● Protect sods against drying out by keeping them moist from the time of harvesting until final placement. ● Rake or spike the plot area to create a loose surface to a depth of approximately 100 mm. ● Lay two (2) rows of sods in a straight line or following a contour, starting at the bottom of a slope, where possible. ● Place the next two (2) rows of sods in the same direction, 5 m away, until the full area is covered with rows of sods. ● Tightly push sods together, taking care not to stretch or overlap sods. ● Where a good fit cannot be obtained, the intervening spaces should be filled with parts of sods or topsoil. ● After planting, water sods to prevent drying out. ● Irrigate as required until the grass is able to survive independently, i.e. until it is able to survive when receiving water from rainfall only.
Grassing using runners	<ul style="list-style-type: none"> ● Plant grass runners evenly by hand or by mechanical means at a rate of at least 400 runners per hectare (i.e. at 250 mm centres). ● Only use fresh runners, avoiding grass runners which have dried out. ● Rake or spike the area to create a loose surface to a depth of approximately 100 mm. ● The soil should be uniformly wet to a depth of at least 150 mm before planting of grass runners. ● After planting, the runners must be given copious amounts of water and, when sufficiently dry, must be rolled with a light agricultural roller and re-watered. ● Irrigate as required until the grass is able to survive independently, i.e. until it is able to survive when receiving water from rainfall only.
Grassing using seeds	<ul style="list-style-type: none"> ● All seed should be collected from the site during vegetation clearing or from the neighbouring veld. ● Seeding must be done during the summer months, when the germination rate is better. ● The soil should be loose and uniformly wet to a depth specified by the ECO, before any seeding commences. ● Halve the seed and fertiliser mixture as specified and apply evenly in two (2) successive applications perpendicular to each other.

	<ul style="list-style-type: none"> The seeded area must be raked over after seed application and well-watered. Irrigate as required until the grass is able to survive independently, i.e. until it is able to survive when receiving water from rainfall only.
Maintenance	<ul style="list-style-type: none"> Cordon-off areas which are under rehabilitation as temporary no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced-off to prevent vehicular, pedestrian and livestock access. Delay the re-introduction of livestock to all rehabilitated areas until an acceptable level of re-vegetation has been reached. Fencing may be used, or the area may be covered by suitable branches. Re-vegetation should be the same as the vegetation type which previously existed, unless otherwise indicated in the Contract or specified by the ECO. Water all transplanted, planted and grassed areas as specified. Watering must commence and continue immediately after the seeds have germinated and growth begins. Mow lawns regularly to a height of 50 mm above ground level. This promotes adequate coverage. Mowing of veld grass is to take place once a year after the grass has shed its seed and not before the grass has fully grown - fire breaks are important. Check all plants for pests and diseases on a regular basis and treat the plants, when required, using approved methods and products as per the manufacturers' specifications. Control weeds by means of extraction, cutting or other approved methods. In planted areas which have failed to establish, replace plants with the same species as originally specified. The same species must be used unless otherwise specified by the ECO. A minimum grass cover of approximately 80% is required. Individual plants must be strong and healthy growers by the end of the maintenance period. Acceptable cover, in the case of sodding, is attaining 100% cover by the specified vegetation.

C) Rehabilitation Monitoring

It is recommended that the success of the rehabilitation is monitored from the commencement date of rehabilitation activities, which should be recorded in the Environmental File, and for a period of twelve (12) months after the rehabilitation procedure has been completed. Should any issues arise, which are not resolved through the implementation of the recommended measures, a suitably qualified horticulturist or botanist should be contacted to provide further rehabilitation/remedial measures.

The ECO should monitor the rehabilitation process and record the progress in the monthly audit reports using photographic evidence. This should include monitoring:

- Establishment success (presence, percentage cover or absence) of plant cover per plot; and
- Water used for irrigation.

Monitoring must be undertaken once a month for the first three (3) months and then quarterly thereafter for twelve (12) months or until rehabilitation has been deemed successful. Rehabilitation will be deemed successful once primary grass cover has been established, and there is no further requirement for frequent monitoring and management of the growth of alien species.

9.1.5 Alien Plant Species Management

The Ecological Specialists describe the current state of the proposed Albany WEF site vegetation as follows:

"Suurberg Quartzite Fynbos was observed in the eastern portion of the proposed site, consisting of a mosaic of alien invasive stands, rocky outcrops with bush clumps and fynbos vegetation. The fynbos vegetation found in this area were characterised by species such as Erica spp, Leucodendron salignum, Elytropappus rhinocerotis and Themeda triandra. Oldenburgia grandis

was abundant in the rocky areas and tree species, such as *Cussonia spicata* and *Rhus spp*, were also found. The area was generally in low to moderate condition, with several SCC present, rocky outcrops, a relatively large area of alien vegetation cover and disturbed areas. A portion of this vegetation, near the valleys, is highly invaded by *Acacia mearnsii*, which have formed large stands that resemble a forest with little understory.

Grahamstown Grassland Thicket within the proposed site, consisted of fragmented thicket vegetation, which included tree species such as *Scotia afra*, *Portulacaria afra* and SCC such as *Sideroxylon inerme*, as well as grassland vegetation and rocky outcrops which harboured succulent species, such as *Carpobrotus edulis*, *Crassula spp* and *Euphorbia spp*. This vegetation within the study area of the proposed development varied from degraded to good condition, with a number of SCC occurring in the good areas and a large cover of alien invasive species in the degraded areas.

The higher elevation areas of this vegetation were mostly in good condition and included rocky outcrops. Whilst the sloped and riparian sections of the Grassland Thicket consisted of thicket vegetation. Steep areas are unlikely to be impacted by the proposed turbines and turbine infrastructure. The lower valley river bottoms of this vegetation (flatter areas) were degraded and had high alien invasion.

A small section of Bhisho Thornveld was observed within the proposed site. This vegetation type was characterised by a combination of grass and an herbaceous layer, which included tree species such as *Acacia Karoo*, *Grewia occentalis* and *Searsia longispina*. The Bhisho Thornveld was relatively degraded and contained few SCC." - Albany Wind Energy Facility & Grid Infrastructure: Ecological Assessment Report, February 2020.

Based on the current condition of the vegetation within the proposed Albany WEF site, it is important to manage alien plant species during the phases of the Albany WEF development.

A) Potential Alien Invasive Plant Species on the Albany WEF Site

The Ecological Specialist identified numerous alien plants within the proposed site, especially *Acacia spp*, where they have formed closed canopies and dense stands. In addition to the alien invasive plant species identified within the Albany WEF site, other alien plant species were found to occur in various vegetation types. The Table below consists of alien invasive species which have been identified within the proposed Albany WEF site as well as the management requirements in terms of the National Environmental Management: Biodiversity Act (NEM:BA) (Act No. 10 of 2004) Alien and Invasive Species Regulations (2014).

SPECIES & COMMON NAME	PHOTOGRAPH Source: www.environment.co.za/weeds-invaders-alien-vegetation	NEM:BA CATEGORY	LEGISLATIVE REQUIREMENTS
<i>Echinopsis spachiana</i> (Torch cactus)		1b	<u>Category 1b Listed Invasive Species (Regulation 3):</u> 1) Category 1b Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of the Act as species which must be controlled. 2) A person in control of a Category 1b Listed Invasive Species must control the listed invasive species in compliance with sections 75(1), (2) and (3) of the Act. 3) If an Invasive Species Management Programme has been developed in terms of section 75(4) of the

SPECIES & COMMON NAME	PHOTOGRAPH <i>Source:</i> www.environment.co.za/weeds-invaders-alien-vegetation	NEM:BA CATEGORY	LEGISLATIVE REQUIREMENTS
<i>Opuntia ficus-indica</i> (Sweet prickly pear)		1b	Act, a person must control the listed invasive species in accordance with such programme. 4) A person contemplated in sub-regulation (2) (point 2 above) must allow an authorised official from the Department to enter onto the land to monitor, assist with or implement the control of the listed invasive species, or compliance with the Invasive Species Management Programme contemplated in section 75(4) of the Act.
<i>Acacia cyclops</i> (Red Eye)		1b	
<i>Cirsium vulgare</i> (Scotch thistle)		1b	
<i>Acacia saligna</i> (Port Jackson Willow)		1b	

SPECIES & COMMON NAME	PHOTOGRAPH <i>Source:</i> www.environment.co.za/weeds-invaders-alien-vegetation	NEM:BA CATEGORY	LEGISLATIVE REQUIREMENTS
<i>Acacia mearnsii</i> (Black wattle)		2	<p><u>Category 2 Listed Invasive Species (Regulation 4):</u></p> <p>1) Category 2 Listed Invasive Species are those species listed by notice in terms of section 70(1)(a) of the Act as species which require a permit to carry out a restricted activity within an area specified in the Notice or an area specified in the permit, as the case may be.</p> <p>2) Unless otherwise indicated in the Notice, no person may carry out a restricted activity in respect of a Category 2 Listed Invasive Species without a permit.</p> <p>3) A landowner on whose land a Category 2 Listed Invasive Species occurs or person in possession of a permit, must ensure that the specimens of the species do not spread outside of the land or the area specified in the Notice or permit.</p> <p>4) If an Invasive Species Management Programme has been developed in terms of section 75(4) of the Act, a person must control the listed invasive species in accordance with such programme.</p> <p>5) Unless otherwise specified in the Notice, any species listed as a Category 2 Listed Invasive Species that occurs outside the specified area contemplated in sub-regulation (1), must, for purposes of these regulations, be considered to be a Category 1b Listed Invasive Species and must be managed according to Regulation 3.</p> <p>6) Notwithstanding the specific exemptions relating to existing plantations in respect of Listed Invasive Plant Species published in Government Gazette No. 37886, Notice 599 of 1 August 2014 (as amended), any person or organ of state must ensure that the specimens of such Listed Invasive Plant Species do not spread outside of the land over which they have control.</p>
<i>Pinus spp</i>		Varies depending on which species occur.	-

B) Working for Water (WfW) Methods to Control Invasive Alien Plants

The following methods for the control of invasive alien plants are deemed acceptable, in accordance with the Working for Water (WfW) programme which was launched in 1995 and initially administered by the Department of Water Affairs and Forestry (DWAF) and now it is administered by the national Department of Environment, Forestry and Fisheries (DFFE). These include:

- **Mechanical methods** of invasive alien plant removal, such as tree felling, removing or burning.
- **Chemical methods** of invasive alien plant removal through the careful use of environmentally safe herbicides in accordance with the manufacturers' instructions.

- **Biological control** using species-specific insects and/or diseases from the alien plant's country of origin, this method should only be used with extreme caution. Biological control is not a feasible option for the Albany WEF site and is therefore not recommended.
- **Integrated control** which consists of a combination of at least two (2) of these methods.

The WfW programme aims to improve the integrity of natural resources by:

- Preventing new and emerging invasive alien plant problems;
- Reducing the impact of existing priority invasive alien plants; and
- Enhancing capacity and commitment to solve invasive alien plant problems.

C) Recommended Guidelines for the Removal and Control of Invasive Alien Plants within the Albany WEF Development Site

Please note: The Developer and/or Contractor will not be responsible for the removal of all the current alien invasive plants which occur within the affected properties but the Contractor will be responsible for using suitable methods to remove the alien invasive plants from the proposed Albany WEF development footprint and controlling alien invasive plant growth within the areas which have been disturbed by the construction activities.

The following general requirements are recommended for the removal of invasive alien plants within the site:

- All staff involved in the removal and management of invasive alien plants must receive suitable training prior to the removal of plants and tree cutting.
- Large trees should be cut with chainsaws or axes and the open stems should be poisoned to ensure that the plant dies and does not re-sprout.
- All cuttings and vegetative material should be removed from the site and disposed of at a suitably registered waste disposal site.
- Cleared sites should receive follow up inspections, as frequently as required, to remove upcoming seedlings.
- In areas in which large-scale alien plant removal has been conducted, measures to stabilise the soil from wind and water erosion must be taken. Soils can be mulched and planted with indigenous pioneer species.
- Continued monitoring throughout the life of the project will be required as the risk of alien plant species invasion is never eliminated.

The following mechanical methods for alien plant removal are recommended:

- Hand-pulling seedlings and/or young plants by gripping them low down with a gloved hand and pull the plant out. Ensure that the roots are removed from the soil and that the plant does not break-off above the root.
- Ringbark trees by removing bark from the bottom of the stem up to a height of between 0.75 and 1 m. Hatchets or bush-knives may be used for debarking.
- Cut stump treatment can be used by cutting stems as low as practical as stipulated on the herbicide label. Chemical herbicides are applied in diesel or water as recommended. Applications in diesel should be to the whole stump and exposed roots and in water to the cut area as recommended on the label.

The appointed ECO should monitor the mechanical methods used for the removal of invasive alien plants and provide additional recommendations if and/or when required.

Chemical methods for alien plant removal are also a feasible method which can be used within the Albany

WEF site to control alien invasive plants. The Contractor should submit a Method Statement, containing the details of the chosen environmentally safe herbicide(s) and the method(s) of application, to the ECO for approval prior to the use of chemical methods for alien plant removal. Once the Method Statement has been approved, the ECO should monitor the removal of the alien plants and ensure that it is being undertaken in accordance with the approved Method Statement.

9.2 OPEN SPACE MANAGEMENT PLAN

All mitigation measures relating to vegetation clearance in this EMPr as well as all recommendations in the management plans in Section 9.1, Section 9.5 and Section 9.8 are applicable to the management of open space areas. Please note that “*open space*”, in terms of the Albany WEF site, includes areas directly adjacent to constructed and upgraded roads, the turbine footprints and the associated infrastructure.

9.2.1 Management of Potential Issues

The following potential issues should be addressed (if they arise) by the Contractor and to the satisfaction of the ECO:

- The construction (and operation where necessary) of the Albany WEF must be confined to the approved development footprint.
- Open space areas should be kept as contiguous blocks of vegetation as far as possible and no additional barriers, except for approved roads and fences, should be constructed to avoid impeding faunal movement.
- Vehicles must remain within the approved roads and no off-road driving should be permitted without prior consent from the ECO.
- Alien plants and weeds should be removed from the open space areas and these areas should be monitored for the regrowth of such plants.
- Only indigenous species from a list approved by the ECO may be used for any rehabilitation work in open space areas.
- No waste should be disposed of in open space areas, including but not restricted to cigarette butts and uneaten foodstuffs (i.e. fruit cores and peels) which could attract scavengers. It is recommended that receptacles be placed strategically to minimise this, especially during the construction phase.
- No material stockpiling should occur within open space areas without approval from the ECO.
- A plant Search and Rescue operation must be undertaken by a qualified botanist/horticulturalist prior to construction commencing and SCC identified within the development footprints must be transplanted in accordance with the Search and Rescue Plan. The Search and Rescue Plan must be updated with input from the qualified botanist/horticulturist prior its implementation.
- Vegetation cleared from development footprints must not be piled onto adjacent intact vegetation outside of the designated footprint, not even for temporary storage.
- The collection of indigenous plants from the site must not be allowed, unless the individual(s) are authorised to do so.
- Employees should undergo environmental awareness training and be sensitized to the need to avoid disturbance to the indigenous vegetation outside the approved development footprints.
- Rehabilitation guidelines for the development must prioritise the use of indigenous grass, tree and shrub species for the soil stabilisation landscaping of the development site once construction has been completed, if required.

The ECO should report on the condition of the open space areas and keep photographic records during the construction phase of the Albany WEF.

9.2.2 Protection of Watercourses and Wetlands

All relevant water use authorisations in terms of the National Water Act (NWA) (Act No. 36 of 1998 and subsequent amendments) must be obtained from the Department of Water and Sanitation (DWS) prior to the commencement of the construction of the Albany WEF. All recommendations and conditions of approval must be incorporated into the EMPr and relevant management plans. The ECO should audit the Contractor’s compliance with the DWS recommendations and conditions during the construction phase.

The following general guidelines should be implemented to mitigate potential adverse impacts on surface water resources and associated riparian vegetation and habitats:

- Buffers of 32 m should be placed around watercourses and wetlands. These buffered areas should not contain structures or impermeable surfaces, except for the construction and upgrade of approved roads, road crossing structures and cabling.
- Stormwater management features must be suitably designed and constructed to maintain stormwater flow to acceptable levels and minimise the risk of erosion and scouring.
- No stormwater runoff should be discharged directly into the watercourses, where it could cause increased erosion.
- Alien invasive plants and weeds within the watercourse and wetland 32 m buffers and which form part of the Albany WEF development footprint should be removed and regrowth should be monitored/controlled.

The ECO should report on the condition of the surface water within the development site and keep photographic records during the construction phase of the Albany WEF.

9.3 AVIFAUNAL MONITORING AND MANAGEMENT PLAN

The Avifaunal Monitoring and Management Plan is based on the recommendations of Mr Jon Smallie and Mr Luke Strugnell, the avifaunal specialists, as contained in the Albany WEF Avifaunal Assessment Report (Wildskies Ecological Services, January 2020).

9.4 TRAFFIC AND TRANSPORTATION MANAGEMENT PLAN

9.4.1 General Traffic Standards

The following general traffic standards must be adhered to during the phases of the Albany WEF development:

- All drivers of vehicles which enter the site must comply with the site rules and regulations.
- Rotational lights must be operational and mounted on the most visible point of the vehicle.
- All traffic signage and/or flagmen instructions must be adhered to.
- All road traffic should keep to designated, approved, access routes and should not cause unnecessary damage to vegetation or features within the site.
- Only authorised vehicles should be permitted on the haulage roads.
- Construction vehicles and/or plant must not drive through any watercourses or wetlands.
- All conditions and recommendations stipulated in the Traffic and Transportation Management Plan (attached as Appendix G) must be adhered to during all relevant phases of the development.

Please refer to Appendix G for the Traffic and Transportation Management Plan for the Albany WEF which has been prepared by Emonti Consulting Engineers cc (March 2020).

9.5 STORMWATER MANAGEMENT, EROSION AND SEDIMENT CONTROL PLAN

This plan aims to:

- Provide appropriate guidelines for the conservation of soil to reduce the risk of erosion and sedimentation.
- Provide appropriate plans for the management of stormwater runoff.
- Minimise the potential for sediment loss.
- Minimise the risk of contamination of stormwater.
- Provide corrective measures to be implemented if erosion increases as a result of construction activities.

9.5.1 General Performance Criteria

The following general performance criteria will be applicable to the Albany WEF site:

- Minimal soil erosion as a result of construction activities.
- Implementing reasonable and practical measures to manage and mitigate the impacts which could result in increased soil erosion during the construction phase.
- Minimal to no contaminants present within the site, including sediments and litter, which could result in adverse environmental impacts to surface water resources due to construction activities, including vehicle movements and spoil placement.
- Where applicable, the capture, containment and treatment of groundwater which has been collected in excavations as a result of construction activities.

9.5.2 Stormwater Management, Erosion and Sediment Control

In addition to the sections below, the Department of Water and Forestry Stormwater Management G1 Best Practice Guideline (2006) must be adhered to.

A) Planning

- The clearing of the development footprint must be planned prior to clearing and construction activities to ensure that clearing is undertaken in a controlled manner.
- The Contractor and all personnel must be made aware of site-specific stormwater management measures, erosion and sediment control measures, and the implementation and maintenance which is required.
- The risks associated with the management of stormwater, sedimentation and erosion must be identified and the mitigation measures stipulated in the approved EMPr must be implemented.
- The following factors must be considered when determining erosion and sediment control, as well as the effectiveness of the recommended measures:
 - Local climatic condition and seasonal variations;
 - The soil types present on site and the condition of the soils;
 - The surface water resources which are present within the site; and
 - Local drainage, including temporary and overland flow paths.

B) Recommended Actions

- All mitigation measures stipulated in the approved EMPr and the conditions of the EA relating to stormwater management, sedimentation and erosion must be implemented (see Section 9.5.3).

- Sediment controls, such as basins or catch drains, should be designed to provide adequate bunding of spoil placement areas to prevent surface runoff entering nearby stormwater drains and watercourses without treatment, where required. These should be implemented according to ECO's recommendations.
- Disturbances to the Albany WEF site due to clearing must be limited to the approved development footprint(s). This should be achieved through the demarcation of the development footprint(s) prior to the commencement of vegetation clearance and construction activities.
- All restricted and/or "no-go" areas should be demarcated prior to the commencement of construction activities.
- Erosion and sediment control measures should be both reasonable and practical. These measures must consider the receiving environment, water quality objectives, quality and quantity of water, location and accessibility, and other necessary factors.
- The Contractor must submit a detailed Method Statement(s) to the ECO for approval prior to the commencement of construction activities. This Method Statement should include, but not be limited to, the planned stormwater management measures, sediment control measures, and erosion management and corrective measures (should erosion occur as a result of construction activities). This Method Statement(s) must align with the mitigation measures stipulated in the approved EMPR and the conditions of the EA.
- The ECO should monitor the site for erosion or increased erosion due to construction activities and recommend suitable corrective measures to the Contractor. Corrective action must be taken at the first signs of erosion or increased erosion (in areas which were eroded prior to the commencement of the construction activities).
- Construction activities within a watercourse or wetland, such as roads or cabling, must only take place once the necessary approvals and/or authorisations have been received. All relevant conditions, such as those in the EA, EMPR and Water Use Approval(s), must be adhered to during construction within a watercourse or wetland. A Method Statement should be submitted to the ECO for approval prior to the commencement of such activities. The ECO should monitor the construction within these sensitive areas and report on the Contractor's compliance with the relevant conditions and Method Statement(s) in the monthly ECO audit reports.
- All watercourse protection controls must be implemented and functional prior to the commencement of construction activities within watercourses and/or wetlands.
- Vehicles must remain within the approved roads and adhere to all traffic rules.
- Where applicable, uncontaminated sediment removed from erosion and sediment control devices should be stockpiled in a suitable and approved location for reuse in areas which require landscaping, or the sediment should be removed from the site and disposed of at a suitably registered facility.
- Access roads should be graded to a crossfall which allows water to naturally drain into the surrounding environment without slowing or cut-off berthing across the roads. The effectiveness of the road drainage systems should be monitored and, should the current drainage systems not be sufficient or effective, additional drainage measures should be recommended by the ECO.
- In areas where the water table is high, the excavation areas should be dewatered. Should this be required, a Method Statement detailing the proposed dewatering process should be submitted to the ECO for approval prior to dewatering taking place.

C) Monitoring

The stormwater management as well as erosion and sediment control measures within the Albany WEF site should be monitored, and additional measures should be put in place if/when necessary.

- The monitoring of the management of stormwater and erosion control should be undertaken using an environmental inspection checklist, which contains all the required conditions, recommendations and mitigation measures.
- All drainage facilities and systems should be inspected regularly and maintained whenever required.
- Should circumstances arise which result in the current drainage facilities and/or systems being inadequate, further measures should be implemented to ensure the adequate functioning of drainage facilities and/or systems.

D) Reporting

- The monitoring of the management of stormwater and erosion control should be undertaken using an environmental inspection checklist, which contains all the required conditions, recommendations and mitigation measures, on a weekly basis.
- Any complaints and/or incidents relating to stormwater management, erosion and sediment control must be reported to the ESO and the ECO.
- The ECO will be responsible for notifying the Contractor and the Developer of any complaints and/or incidents relating to stormwater management, erosion and sediment control.
- The ECO should investigate all incidents and report the findings to the Contractor and the Developer in an Environmental Incident Report.

9.5.3 Recommended Mitigation Measures

- Stormwater should be managed using suitable structures such as swales, gabions and rock rip-wrap so that any runoff from the development site is attenuated prior to discharge. Silt and sedimentation should be kept to a minimum, using the above-mentioned structures. Ensure that the structures do not create any form of erosion.
- Natural runoff must be diverted to stormwater drains, where these are available.
- Stormwater structures must be located at least 32m away from identified drainage lines.
- This Stormwater Management Plan must be updated prior to commencement of construction to include measures for maximum water seepage at the source of water flow, mitigation measures for water pollution, wastewater management and the management of surface erosion e.g. by considering the applicability of contouring, etc.
- Stormwater management features must be suitably designed and constructed to maintain stormwater flow to acceptable levels and minimise the risk of erosion and scouring.
- No stormwater runoff should be discharged directly into the watercourses, where it could cause increased erosion.

Please note that this Stormwater Management Plan must be updated prior to the commencement of construction. In addition to the recommendations listed above, it should include detailed design drawings of the proposed structures for watercourse crossings for approved roads and cables.

9.6 STORAGE AND HANDLING OF HAZARDOUS SUBSTANCES

All necessary equipment to handle hazardous substances must be available on the Albany WEF site. Personnel responsible for the handling of hazardous substances must be suitably trained. The Developer's Site Supervisor or the Contractor should submit a Method Statement, detailing the storage and handling of hazardous substances, to the ECO for approval. In addition, the Method Statement should include a list of all potentially hazardous substances within the Albany WEF site.

9.6.1 Legislation, Policy and Guidelines

The storage and handling of hazardous substance must be in accordance with the relevant legislation, policy and guidelines. This should include, but not be limited to, the following:

- Occupational Health and Safety Act (Act No. 85 of 1993),
- National Environmental Management: Waste Management Act (Act No. 59 of 2008),
- Hazardous Substances Act (Act No. 15 of 1973, as amended), and
- South African National Standards (SANS).

9.6.2 Responsibility

The Developer's Site Supervisor and/or the Contractor must be responsible for overseeing the storage and handling of hazardous substances in accordance with this plan and all relevant legislation. Should the Developer's Site Supervisor and/or the Contractor appoint a designated individual to undertake the tasks on their behalf, the designated individual (the Developer's Site Supervisor or the Contractor) will be responsible for the following:

- Assessing the hazardous properties and disposal requirements of the materials used on the Albany WEF site.
- Monitoring the use and management of the inventory.
- Advising and assisting the personnel with the correct handling and storage of hazardous substances.
- Updating the chemical register when new chemicals are brought to the site.
- Preparing and maintaining the Material Safety Data Sheets (MSDSs).
- Maintaining a register of the consumption of oil, diesel, etc. and maintaining a spill register.

9.6.3 Registers

The Developer's Site Supervisor or the designated individual will be responsible for compiling and maintaining the chemical register, MSDSs and spill register.

The following should be included in the chemical register:

- Name and description of the substance,
- Supplier name and details,
- Quantity,
- MSDS,
- Validity of the MSDS,
- Storage location and storage requirements,
- Method of disposal,
- Emergency equipment (firefighting equipment, first aid kits, emergency contact details, etc.)

9.6.4 Management of Hazardous Substances

The mitigation measures stipulated in the Albany WEF EMPR must be implemented to manage hazardous substances, reduce the risk of accidental spillages and treat accidental spills.

- The transportation and handling of hazardous substances must comply with the provisions of the Hazardous Substances Act (Act No.187 of 1993) and associated regulations as well as SABS 0228 and SABS 0229.
- The Contractor must also comply with all other applicable regional and local legislation as well as regulations regarding the transport, use and disposal of hazardous substances. Hazardous chemical substances (as defined in the Regulations for Hazardous Chemical Substances) used during construction must be stored in secondary containers. The relevant MSDS should be available onsite.
- Procedures detailed in the MSDSs must be followed in the event of an emergency.
- The Contractor and/or the Developer's Site Supervisor should be responsible for the training and education of all personnel onsite that will be handling hazardous materials about their proper use, handling and disposal.
- If potentially hazardous substances are to be stored or used onsite, the Contractor and/or the Developer's Site Supervisor must submit a Method Statement to the ECO detailing the substances/materials to be used, together with the transport, storage, handling and disposal procedures for the substances.
- Used oil should be stored at a central location onsite prior to removal offsite for disposal at an approved disposal site.
- Old oil filters and oil, petrol and diesel-soaked material must be treated as hazardous waste. The Contractor should remove all oil, petrol, and diesel-soaked sand immediately and should dispose of it as hazardous waste or treat it onsite with material which breaks-down or encapsulates such spillages, as approved by the ECO.
- The storage of fuels and hazardous materials must be located away from sensitive water resources.
- All hazardous substances (e.g. diesel, oil drums, etc.) must be stored in a bunded area.
- The recommendations of the Stormwater Management Plan must be implemented during construction.
- All construction materials including fuels and oil should be stored in demarcated areas which are contained within berms/bunds. Washing and cleaning of equipment should also be done in berms or bunds, in order to trap any cement and prevent excessive soil erosion.
- All necessary approvals with respect to fuel storage and dispensing must be obtained from the appropriate authorities. Symbolic safety signs depicting "No Smoking" and "Danger", conforming to the requirement of SABS 1186, must be prominently displayed in and around the fuel storage area. There must be adequate firefighting equipment at the fuel storage area.
- The Contractor and/or the Developer's Site Supervisor must ensure that all liquid fuels and oils are stored in tanks with lids, which are always kept firmly shut and under lock and key. The capacity of the tank should be clearly displayed, and the product contained within the tank clearly identified using the emergency information system detailed in SABS 0232 Part 1. The capacity of fuel storage tanks should not exceed 9 000 litres and must be kept on site only for as long as fuel is needed for construction activities, on completion of which they must be removed.
- Fuel storage tanks onsite should not be linked or joined via any pipe work but should remain as separate entities. The tanks must be situated on a smooth impermeable base with a bund. The volume inside the bund should be 110% of the total capacity of the largest storage tank. The base may be constructed of concrete, or of plastic sheeting with impermeable joints with a layer of sand over to prevent perishing. The impermeable lining should extend to the crest of the bund. The floor of the bund should be sloped to enable any spilled fuel and/or fuel-contaminated water to be

removed. Appropriate material, approved by the ECO that absorbs/breaks-down or encapsulates minor hydrocarbon spillage and which is effective in water, should be installed in the sump.

- The tanks and bunded areas should be covered by a roofed structure, taken offsite to a disposal site approved by the ECO and the material, which absorbs/breaks-down or encapsulates minor hydrocarbon spillages, should be replenished.
- Adequate precautions should be provided to prevent spillage during the filling of any tank and during the dispensing of the contents. The dispensing mechanism for the fuel storage tanks should be stored in a waterproof container when not in use.
- As part of the required site layout for the construction camp, a plan must be submitted to the ECO detailing the design, location and construction of the fuel storage area as well as for the filling and dispensing from storage tanks and for the type of absorbing/breaking-down or encapsulating material to be used.
- Where reasonable and practical, the plant should be refuelled at a designated re-fuelling area/depot or at a workshop as applicable. If this is not reasonable or practical, then the surface under the refuelling area must be protected and appropriately bunded against pollution to the reasonable satisfaction of the ECO prior to any refuelling activities.
- If fuel is dispensed from 200 litre drums, the proper dispensing equipment must be used, and the drum should not be tipped in order to dispense fuel. The Contractor should ensure that the appropriate firefighting equipment is present during refuelling operations.
- The Contractor must ensure that there is always a supply of absorbent material readily available to absorb/breakdown or, where possible, be designed to encapsulate minor hydrocarbon spillages. The quantities of such materials should be able to handle a minimum of 200 ℥ of hydrocarbon liquid spill. Prior to any refuelling or maintenance activities, the ECO must approve this material.
- Used oil should be stored at a central location onsite prior to removal offsite for disposal at an approved disposal site.
- Old oil filters and oil, petrol and diesel-soaked material must be treated as hazardous waste. The Contractor should remove all oil, petrol, and diesel-soaked sand immediately and should dispose of it as hazardous waste or treat it onsite with material which breaks-down or encapsulates such spillages, as approved by the ECO.

9.7 FIRE MANAGEMENT PLAN

9.7.1 Background

According to the Albany WEF EIR:

"The Sarah Baartman DM has a District Fire Co-ordinator in its employment which acts as Chief Fire Coordinator. The DM is providing continuous support and capacity to LMs to deal with the fighting of fires, including Hazardous Chemical spillages. In addition, training of Municipal fire officers, on both firefighting and the handling of Hazardous Material Spillage is a priority of the DM in this field. The DM has further ensured that all fire fighting vehicles in the district are being standardised throughout its area (Sarah Baartman DM IDP, 2015/16 Review).

The Makana Local Municipality (LM) has a 24-hour fulltime fire service with Chief Fire Officer appointed as manager fire services. In addition to the corporate agreement with Sarah Baartman DM to perform the function on agency base, the Municipality has cooperative agreements with all the other local municipalities in the district. Partnerships have been established with Provincial Government, District and Non-governmental organisations with a responsibility or capacity to render disaster management services. In terms of the Makana LM Disaster Management Plan the risk assessment revealed that the Municipality is prone to tornadoes, floods, fires (veld and forest fires), epidemics and accidents."

The Albany WEF development must comply with the relevant sections of the following legislation, guidelines and policies with regards to fire management:

- National Veld and Forest Fire Act (Act No. 101 of 1998),
- Disaster Management Act (Act No. 57 of 2002, as amended),
- Fire Brigade Services Act (Act No. 99 of 1987, as amended),
- Local Government: Municipal Structures Act (Act No. 117 of 1998),
- Occupational Health and Safety Act (Act No. 85 of 1993),
- Municipal By-Laws, and the relevant
- South African National Standards (SANS).

9.7.2 Recommended Mitigation Measures

The following mitigation measures, as stipulated in the EMPr, should be implemented to reduce the risk of accidental fires and in response to accidental fires on the Albany WEF site:

- A representative of the Albany WEF should register as a member of the fire protection association in the area.
- Suitable firebreaks should be established at the Albany WEF site and all practical measures should be taken to ensure that firebreaks are prepared and maintained in accordance with the specifications in Sections 12 to 14 of the National Veld and Forest Fire Act.
- Appropriate firefighting equipment and protective clothing must always be available on the Albany WEF site. Personnel should receive basic firefighting training, which includes guidelines for extinguishing fires and the correct method to use firefighting equipment.
- The Contractor must take all the necessary precautions to ensure that fires are not started as a result of site activities.
- No open fires must be permitted on the site.
- Smoking must not be permitted in areas where there is a fire hazard. Such areas include the workshop and fuel storage areas and any areas where vegetation or other material is such as to support the rapid spreading of an initial flame.

- The Contractor should appoint a Fire Officer who will be responsible for ensuring immediate and appropriate actions in the event of a fire and will ensure that employees are aware of the procedures to be followed. The Contractor must forward the name and contact details of the Fire Officer to the ECO for approval within seven (7) days of being on site.
- The Contractor must ensure that basic firefighting equipment is always available onsite. This should include at least rubber beaters, when working in urban open spaces and natural areas, and at least one (1) fire extinguisher of the appropriate type when welding or other “hot” activities are undertaken.
- The Contractor will be liable for any expenses incurred by any organisations called to assist with fighting fires which resulted due to their activities or the activities of their personnel, and for any cost relating to the rehabilitation of burnt areas, or consequential damages.
- Emergency procedures, including the names and contact details of responsible personnel and emergency services must be made available to all staff and should be clearly displayed at relevant locations at the site. The Contractor should advise the ECO of any emergencies onsite, together with a record of action taken, within 24 hours of the emergency occurring.
- The Contractor must submit a Method Statement which covers the procedures for emergencies, such as fire and accidental leaks and spillages.
- The Contractor should advise the relevant authority of a fire as soon as one (1) starts. It is crucial that this is done before the fire is out of control.
- The Contractor must ensure that all employees are aware of the procedures to be followed in the event of a fire.

In preparation for temporary site closure, the following should apply:

- The Contractor must ensure that fire extinguishers are serviced and accessible.
- Emergency and contact numbers are available and displayed.
- There is adequate ventilation in enclosed spaces.
- Ensure that the site safety checks have been carried out in accordance with the Occupational Health and Safety Act (Act No. 85 of 1993) prior to site closure.
- Fire hazards have been identified and the local authority notified of any potential threats e.g. large brush stockpiles, fuels etc.

9.7.3 Emergency Contact Signage

Emergency contact details should be displayed at visible locations at the Albany WEF site, these should include:

EMERGENCY SERVICE	CONTACT DETAILS
Makana Local Municipality	Tel.: +27 (0)46 622 4444 Toll free: +27 (0)80 111 4444
Sarah Baartman District Municipal Disaster Management Centre	Tel.: +27 (0)41 508 7048 Toll free: +27 (0)80 022 2238
Sarah Baartman East Fire Protection Association – Willem Breytenbach (FPA Manager)	Mobile: +27 (0)83 945 1545
Sarah Baartman East Fire Protection Association – Mervyn Sauls (Fire Protection Officer)	Mobile: +27 (0)79 440 4112
Ambulance Services	10177
South African Police Services	10111
Public Emergency Centre	112

10 CLOSURE PLANNING

The Contractor must clear and clean the site and ensure that all equipment and residual materials, not forming part of the permanent works, are removed from site before issuing the completion certificate or as otherwise agreed.

10.1 POST-CONSTRUCTION AUDIT

A post-construction audit must be carried out and submitted to the national DFFE at the expense of the Developer. Objectives should be to audit compliances with the key components of the EMPr, to identify main areas requiring attention and recommend priority actions. The post-construction audit must be submitted to the national DFFE within three (3) months of completion of the development and prior to the operational phase.

Results of the audits should inform changes required to the specifications of the EMPr or additional specifications to deal with any environmental issues which arise on site and have not been dealt with in the current document.

10.2 GENERAL REVIEW OF EMPr

The EMPr will be reviewed by the ECO on an on-going basis. Based on observations during site inspections and issues raised at site meetings, the ECO will determine whether any procedures require modification to improve the efficiency and applicability of the EMPr on site.

Any such changes or updates will be registered in the ECO's record, as well as being included as an annexure to this document. Annexures of this nature must be distributed to all relevant parties.

11 CONCLUSIONS

All foreseeable actions and potential mitigations and/or management actions have been (to date) and should be contained in this document. The EMPr should be seen as a day-to-day management document. The EMPr sets out the environmental and social standards, which are required to minimise the negative impacts and maximise the positive benefits of the Albany WEF development. The EMPr could therefore change daily, and, if managed correctly, lead to successful phases of development.

All attempts should be made to have this EMPr available, as part of any tender documentation, so that the Contractors are made aware of the potential cost and timing implications needed to fulfil the implementation of this EMPr, thus adequately costing for these.

APPENDIX A

PROPOSED ENVIRONMENTAL EDUCATION COURSE OUTLINE



www.webweaver.nu/clipart/environmental.shtml

Reasons why should we look after the environment

-  We have a right to a clean environment
-  A clean environment is essential to healthy living
-  All our basic needs come from the environment
-  A contract has been signed – development vs the environment
-  Penalties / fines could be issued

How to look after the environment

-  Report issues
-  Teamwork
-  Follow the set rules and guidelines (EA, EMPr, Method statements etc.)
-  Conserve, reuse and recycle

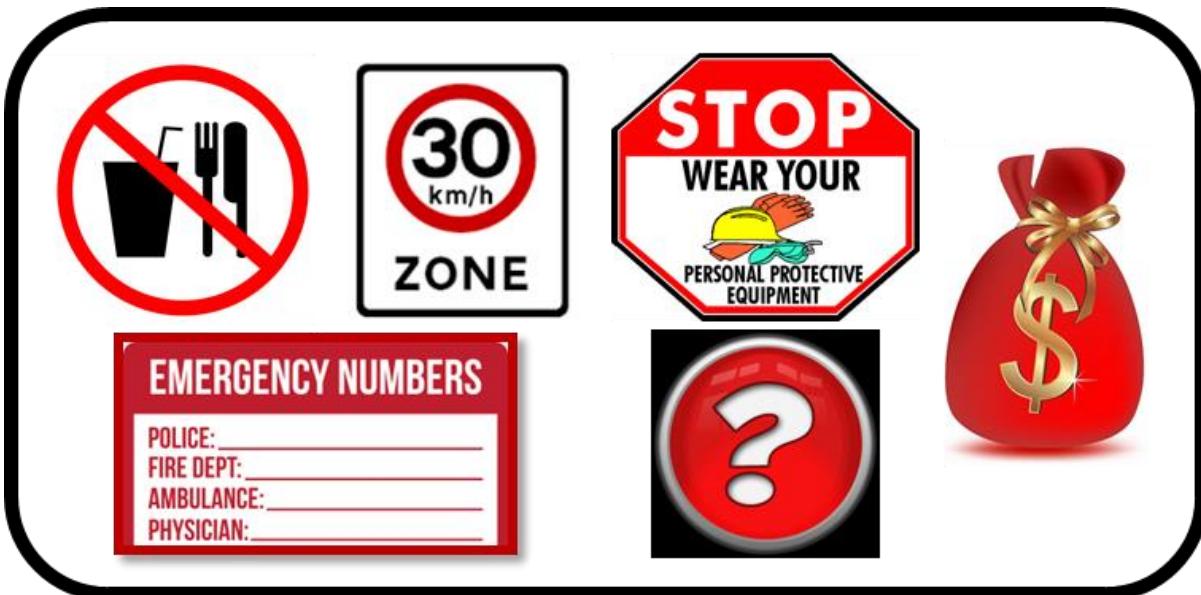
Tips and Guidelines

-  Workers and equipment should not be allowed outside demarcated areas
-  No swimming or polluting of water bodies allowed
-  No damage / disturbance to vegetation or water bodies without consent / permits
-  No disturbance allowed in no-go areas
-  No hunting of animals
-  Report all fires
-  No burning or burying of waste
-  No smoking near hazardous materials
-  Training on fire fighting equipment
-  Hazardous materials to be stored in designated and bunded areas
-  Spill kits and drip trays a must
-  Report all spills
-  Control dust and Noise
-  Maintain construction vehicles
-  Availability and maintenance of sanitation facilities



Tips and Guidelines

- Only eat in designated areas
- Do not litter
- Vehicles to remain on approved tracks and adhere to speed limit
- Ensure emergency phone numbers are available
- Ensure PPE is worn
- Report fires, leaks and injuries
- Ask if unsure



APPENDIX B

COPY OF THE ENVIRONMENTAL AUTHORISATION (ONCE RECEIVED)

APPENDIX C

EXAMPLE OF A METHOD STATEMENT

METHOD STATEMENT

CONTRACT:..... DATE:.....

PROPOSED ACTIVITY (give title of Method Statement and reference number from the EMPR):
WHAT WORK IS TO BE UNDERTAKEN (give a brief description of the works):
WHERE ARE THE WORKS TO BE UNDERTAKEN (where possible, provide an annotated plan and a full description of the extent of the works):
START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:Start Date:
End Date:
HOW ARE THE WORKS TO BE UNDERTAKEN (provide as much detail as possible, including annotated sketches and plans where possible):
*** Note: Please attach additional pages should you require more space.**

DECLARATIONS

1) ENVIRONMENTAL CONTROL OFFICER (ECO)

The work described in this Method Statement, if carried out according to the methodology described, is satisfactorily mitigated to prevent avoidable environmental harm:

(Signed)

(Print name)

Dated: _____

2) PERSON UNDERTAKING THE WORKS

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to other signatories and that the ECO will audit my compliance with the contents of this Method Statement

(Signed)

(Print name)

Dated: _____

APPENDIX E

Curriculum Vitae (CVs) of the environmental team, including the EAP:

- Dr Alan Carter (EAP)
- Ms Caroline Evans
- Ms Rosalie Evans

ALAN ROBERT CARTER***Curriculum Vitae*****CONTACT DETAILS**

Name of Company Coastal and Environmental Services (Pty) Ltd. t/a CES

Designation East London Branch – Executive

Profession Executive

Years with firm 18 (Eighteen) Years

E-mail a.carter@cesnet.co.za

Office number +27 (0) 43 – 7267809 / 8313

Nationality South African

Professional Affiliations SACNASP: South African Council for Natural Scientific Profession

EAPSA: Environmental Assessment Practitioners Southern Africa

IWMSA: Institute Waste Management Southern Africa

TSBPA: Texas State Board of Public Accountancy (USA)

Key areas of expertise

- Marine Ecology
- Environmental and coastal management
- Waste management
- Financial accounting and project feasibility studies
- Environmental management systems, auditing and due-diligence

PROFILE**Dr Alan Carter**

Alan has extensive training and experience in both financial accounting and environmental science disciplines with international accounting firms in South Africa and the USA. He is a member of the American Institute of Certified Public Accountants (licensed in Texas) and holds a PhD in Plant Sciences. He is also a certified ISO14001 EMS auditor with the American National Standards Institute. Alan has been responsible for leading and managing numerous and varied consulting projects over the past 25 years.

ALAN ROBERT CARTER

Curriculum Vitae

EMPLOYMENT
EXPERIENCE

- October 2013 – Present: Executive (EOH Coastal & Environmental Services, East London, South Africa)
- January 2002 – September 2013: Director (Coastal & Environmental Services, East London, South Africa)
- January 1999 – December 2001: Manager (Arthur Andersen LLP, Public Accounting Firm, Chicago, Illinois USA)
- December 1996 – December 1998: Senior Accountant/Auditor (Ernst & Young LLP, Public Accounting Firm, Austin, Texas, USA).)
- January 1994 – December 1996: Senior Accountant/Auditor (Ernst & Young, Charteris & Barnes, Chartered Accountants, East London, South Africa)
- July 1991 – December 1994: Associate Consultant (Coastal & Environmental Services, East London, South Africa)
- March 1989 – June 1990: Data Investigator (London Stock Exchange, London, England, United Kingdom)

ACADEMIC
QUALIFICATIONS

- Ph.D. Plant Science (Marine) Rhodes University 1987
- B. Compt. Hons. Accounting Science University of South Africa 1997
- B. Com. Financial Accounting Rhodes University 1995
- B.Sc. Hons. Plant Science Rhodes University 1983
- B.Sc. Plant Science & Zoology Rhodes University 1982

CONTINUING
PROFESSIONAL
DEVELOPMENT

- Environmental Management Systems Lead Auditor Training Course - American National Standards Institute and British Standards Institute (2000)
- ISO 14001:2015 Implementing Changes - British Standards Institute (2015)
- Numerous other workshops and training courses

ALAN ROBERT CARTER
Curriculum Vitae**PROFESSIONAL
EXPERIENCE****Environmental Impact Assessment, Feasibility and Pre-feasibility Assessments:-**

- Managed numerous projects and prepared environmental impact assessment (EIA) reports in terms of relevant EIA legislation and regulations for development proposals including: Infrastructure projects: bulk water and waste water, roads, electrical, mining, ports, aquaculture, renewable energy (solar and wind), industrial processes, housing developments, golf estates and resorts, etc. (2002 – present).
- Projects have also included preparation of applications in terms of other statutory requirements, such as water-use and mining licence /permit applications.
- Managed projects to develop pre-feasibility and feasibility assessments for various projects, including various tourism developments, infrastructure projects, etc.
- Managed project for the East London Industrial Development Zone (ELIDZ) to develop a Conceptual Framework for a Mariculture Zone within the ELIDZ (2009).
- Managed pre-feasibility study to establish a Mariculture Zone within the Coega Industrial Development Zone (2014).
- Assisted City of Johannesburg in the process to proclaim four nature reserves in terms of relevant legislation (2015-2016).
- Acted as Environmental Control Officer (ECO) for numerous projects including solar and wind farms, roads, industrial processes, etc.

Strategic Environmental Assessment:-

- Managed Strategic Environmental Assessment (SEA) project toward the development of a Biofuel Industry in the Eastern Cape Province of South Africa (2014-2016)
- Managed Strategic Environmental Assessment (SEA) projects for two South African ports (2006 – 2007).
- Managed Strategic Environmental Assessment (SEA) projects for five (5) local municipalities in the Eastern Cape as part of the municipal Spatial Development Framework plans (2004 – 2005).
- Involved in the financial assessment of various land-use options and carbon credit potential as part of a larger Strategic Environmental Assessment (SEA) for assessing forestry potential in Water Catchment Area 12 in the Eastern Cape of South Africa (2006).

Climate change, emissions trading and renewable energy:-

- Provided specialist peer review services for National Department of Environmental Affairs relating to climate change impact assessments for large infrastructure projects (2017-2018).
- Conducted climate change impact assessment for a proposed coal-fired power station in Africa (2017-2018).

ALAN ROBERT CARTER
Curriculum Vitae

- Participated in the development of a web-based Monitoring & Evaluation (M&E) system for climate change Mitigation and Adaptation in South Africa for National Department of Environmental Affairs (DEA) (2015-2016).
- Managed project to develop a Climate Change Strategy for Buffalo City Metro Municipality (2013).
- Managed projects to develop climate change strategies for two district municipalities in the Eastern Cape Province (2011).
- Conducted specialist carbon stock and greenhouse gas emissions impact and life cycle assessment as part of the Environmental, Social and Health Impact Assessment for a proposed sugarcane to ethanol project in Sierra Leone (2009 - 2010) and a proposed Jatropha bio-diesel project in Mozambique (2009 - 2010).
- Managed project to develop the Eastern Cape Province Climate Change Strategy (2010).
- Managed project to develop a Transnet National Ports Authority Climate Change Risk Strategy (2009)
- Participated in a project to develop a Renewable Energy roadmap for the East London Industrial Development Zone (ELIDZ) (2013).
- Participated in a project for the East London Industrial Development Zone (ELIDZ) and Eastern Cape Government to prepare a Renewable Energy Strategy (2009).
- Contributed to the development of Arthur Andersen LLP's International Climate Change and Emissions Trading Services (2001).
- Conducted carbon credit (Clean Development Mechanism - CDM) feasibility assessment for a variety of renewable energy projects ranging from biogas to solar PV.
- Participated in the preparation of CDM applications for two solar PV projects in the Eastern Cape.

Waste Management:

- Managed project to develop Integrated Waste Management Plans for six local municipalities on behalf of the Sarah Baartman District Municipality in the Eastern Cape Province (2016).
- Managed project to develop Integrated Waste Management Plans for four local municipalities on behalf of Alfred Nzo District Municipality in the Eastern Cape Province (2015).
- Managed project to develop Integrated Waste Management Plans for eight local municipalities on behalf of Chris Hani District Municipality in the Eastern Cape Province (2011).
- Managed a project to develop a zero-waste strategy for a community development in the Eastern Cape Province (2010).
- Managed waste management status quo analysis for a District Municipality in the Eastern Cape Province (2003).
- For three consecutive years, managed elements of the evaluation of the environmental financial reserves of the three largest solid waste companies (Waste Management, Inc., Republic Services, Inc., Allied Waste, Inc.) and number of smaller waste companies in the USA as part of the annual financial audit process for SEC reporting purposes. Ensured compliance with RCRA and

ALAN ROBERT CARTER

Curriculum Vitae

ENVIRONMENTAL AND SOCIAL ADVISORY SERVICES

CERCLA environmental regulations.

- Managed elements of the evaluation of the environmental financial reserves of the largest hazardous waste company in the USA (Safety-Kleen, Inc.), as part of the audit process for SEC reporting purposes. Ensured compliance with RCRA and CERCLA environmental regulations.

Environmental Due Diligence and Business Risk:-

- Conducted environmental due diligence projects on behalf of the German Development Bank for a forestry pulp and paper operation in Swaziland (2010) and for a large diversified South African agricultural/agro-processing company (2011)
- Managed project for the Transnet National Ports Authority to identify the environmental risks and liabilities associated with the operations of the Port of Durban as part of a broader National initiative to assess business and financial risks relating to environmental management (2006).
- Managed project to determine the financial feasibility of various proposed tourism developments for the Kouga Development Agency in the Eastern Cape Province (2006)
- Contributed significantly to a study to determine the financial and environmental feasibility of three proposed tourism development projects at Coffee Bay on the Wild Coast (2004).
- Conducted sustainability and cost/benefit analysis of various waste water treatment options (including a marine pipeline at Hood Point) for the West Bank of East London (2004).
- Conducted analysis of permit fees and application processing costs for off-road vehicle use on the South African coastline for the Department of Environmental Affairs and Tourism, Marine & Coastal Management (2003).
- Involved in the determination of the historical cost element of environmental remediation insurance claims for a number of multinational companies, including Dow Chemicals, Inc. and International Paper, Inc.
- Evaluated the environmental budgeting process of the US Army and provided best practice guidance for improving the process.

Policy and Guidelines:-

- Development of Administration / Application Fee Structure for the Reclamation of Land, Coastal Use Permits, Coastal Waters
- Discharge Permits, Dumping Of Waste at Sea, Off-Road Vehicle Regulations Promulgated in Terms of the National Environmental Management Act: Integrated Coastal Management Act (Act No. 24 Of 2008) (2017).
- Managed project to develop an Estuarine Management Plan for the Buffalo River Estuary for the National Department of Environmental Affairs (2017).
- Managed project to develop a Coastal Management Programme for Amathole District Municipality, Eastern Cape (2015 – 2016).
- Managed project to develop a sustainability diagnostic report as part of the development of the Eastern Cape Development Plan and Vision 2030 (2013).
- Managed project for the Department of Environmental Affairs and Tourism, Marine & Coastal Management to determine the cost implications associated

ALAN ROBERT CARTER

Curriculum Vitae

with the implementation of the Integrated Coastal Management Act (2007).

- Managed project to develop a Conservation Plan and Municipal Open Space System (MOSS) for Buffalo City Municipality (2007)
- Managed project to develop a Sanitation Policy and Strategy for Buffalo City Municipality, Eastern Cape (2004 – 2006).
- Managed project to develop an Integrated Environmental Management Plan and Integrated Coastal Zone Management Plan for Buffalo City Municipality, Eastern Cape (2004 – 2005).
- Managed projects to develop and implement an Environmental Management System (EMS) for the Chris Hani and Joe Gqabi (formerly Ukhahlamba) District Municipalities in the Eastern Cape generally in line with ISO14001 EMS standards (2004 – 2005).
- Managed project to develop a State of the Environment Report and Environmental Implementation Plans for Amathole, Chris Hani, OR Tambo and Joe Gqabi District Municipalities in the Eastern Cape Province (2005 – 2010).
- Conducted analysis of permit fees and application processing costs for off-road vehicle use on the South African coastline for the Department of Environmental Affairs and Tourism, Marine & Coastal Management (2003).

Environmental auditing and compliance:-

- Conducted environmental legal compliance audit for various large Transnet Freight Rail facilities (2018).
- Managed projects to develop Environmental & Social Management Systems (ESMS) in line with IFC Performance Standards for three (3) wind farms in South Africa (2015-2018).
- Managed project to develop an Environmental & Social Management System (ESMS) in line with IFC Performance Standards for a telecoms company in Zimbabwe on behalf of the German Development Bank (2013)
- Participated in numerous ISO14001 Environmental Management System (EMS) audits for large South African corporations including SAPPi, BHP Billiton, SAB Miller, Western Platinum Refinery, Dorbyl Group and others (2002 – present).
- Reviewed the SHE data reporting system of International Paper, Inc. (IP) for three successive years as part of the verification of the IP SHE Annual Report, which included environmental assessments of 12 IP pulp and paper mills located throughout the USA.
- Conducted Environmental Management System (EMS) reviews for a number of large US corporations, including Gulfstream Aerospace Corporation

Public financial accounting:-

- While with Ernst & Young LLP, (USA), functioned as lead financial auditor for various public and private companies, mostly in the technology business segment of up to \$200 million in annual sales. Client experience included assistance in a \$100 million debt offering, a \$100 million IPO and SEC annual and quarterly reporting requirements.
- Completed three years of articles (training contract) in fulfilment of the certification requirements of the South African Institute of Chartered

ALAN ROBERT CARTER
Curriculum Vitae

Accountants which included auditing, accounting and preparation of tax returns for many small to medium sized commercial entities.

Refereed Publications:-

- Carter, A.R. 1985. Reproductive morphology and phenology, and culture studies of *Gelidium pristoides* (Rhodophyta) from Port Alfred in South Africa. *Botanica Marina* 28: 303-311.
- Carter, A.R. 1993. Chromosome observations relating to bispore production in *Gelidium pristoides* (Gelidiales, Rhodophyta). *Botanica Marina* 36: 253-256.
- Carter, A.R. and R.J. Anderson. 1985. Regrowth after experimental harvesting of the agarophyte *Gelidium pristoides* (Gelidiales: Rhodophyta) in the eastern Cape Province. *South African Journal of Marine Science* 3: 111-118.
- Carter, A.R. and R.J. Anderson. 1986. Seasonal growth and agar contents in *Gelidium pristoides* (Gelidiales, Rhodophyta) from Port Alfred, South Africa. *Botanica Marina* 29: 117-123.
- Carter, A.R. and R.H. Simons. 1987. Regrowth and production capacity of *Gelidium pristoides* (Gelidiales, Rhodophyta) under various harvesting regimes at Port Alfred, South Africa. *Botanica Marina* 30: 227-231.
- Carter, A.R. and R.J. Anderson. 1991. Biological and physical factors controlling the spatial distribution of the intertidal alga *Gelidium pristoides* in the eastern Cape Province, South Africa. *Journal of the Marine Biological Association of the United Kingdom* 71: 555-568.

Published reports:-

- Water Research Commission. 2006. Profiling Estuary Management in Integrated Development Planning in South Africa with Particular Reference to the Eastern Cape. Project No. K5/1485.
- Turpie J., N. Sihlophe, A. Carter, T. Maswime and S. Hosking. 2006. Maximising the socio-economic benefits of estuaries through integrated planning and management: A rationale and protocol for incorporating and enhancing estuary values in planning and management. Un-published Water Research Commission Report No. K5/1485

Conference Proceedings:-

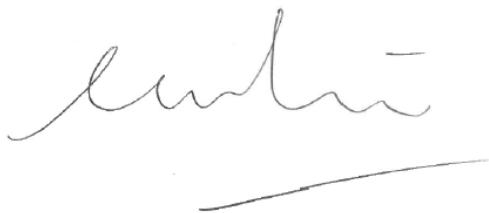
- Carter, A.R. 2002. Climate change and emission inventories in South Africa. Invited plenary paper at the 5th International System Auditors Convention, Pretoria. Held under the auspices of the South African Auditor & Training Certification Association Conference (SAATCA).
- Carter, A.R. 2003. Accounting for environmental closure costs and remediation liabilities in the South African mining industry. Proceedings of the Mining and Sustainable Development Conference. Chamber of Mines of South Africa, Vol. 2: 6B1-5
- Carter, A.R. and S. Fergus. 2004. Sustainability analysis of wastewater treatment options on the West Bank of East London, Buffalo City. Proceedings of the Annual National Conference of the International Association for Impact

ALAN ROBERT CARTER
Curriculum Vitae

- Assessment, South African Affiliate: Pages 295-301.
- Carter, A., L. Greyling, M. Parramon and K. Whittington-Jones. 2007. A methodology for assessing the risk of incurring environmental costs associated with port activities. Proceedings of the 1st Global Conference of the Environmental Management Accounting Network.
 - Hawley, GL, McMaster AR and Carter AR. 2009, Carbon, carbon stock and life-cycle assessment in assessing cumulative climate change impacts in the environmental impact process. Proceedings of the Annual National Conference of the International Association for Impact Assessment, South African Affiliate.
 - Hawley, GL, McMaster AR and Carter AR. 2010. The Environmental and Social Impact Assessment and associated issues and challenges. African, Caribbean and Pacific Group of States (ACP), Science and Technology Programme, Sustainable Crop Biofuels in Africa.
 - Carter, A.R. 2011. A case study in the use of Life Cycle Assessment (LCA) in the assessment of greenhouse gas impacts and emissions in biofuel projects. 2nd Environmental Management Accounting Network- Africa Conference on Sustainability Accounting for Emerging Economies. Abstracts: Pages 69-70.

CERTIFICATION

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes me, my qualifications, and my experience. I understand that any wilful misstatement described herein may lead to my disqualification or dismissal, if engaged.



Alan Robert Carter

Date: 22 January 2020

CAROLINE ANN EVANS***Curriculum Vitae*****CONTACT DETAILS**

Name of Company	CES – Environmental and Social Advisory Services
Designation	Grahamstown Branch
Profession	Senior Environmental Consultant
Years with firm	6 Years
E-mail	c.evans@cesnet.co.za
Office number	+27 (0)46 622 2364
Nationality	South African
Professional Body	SACNASP, South African Council for Natural Scientific Profession, Professional 2017 (Pending) IAIA
Key areas of expertise	<ul style="list-style-type: none">➤ Project Management➤ Renewable Energy➤ Wetland Assessment

PROFILE**Ms Caroline Evans**

Ms Caroline Evans is a Senior Environmental Consultant based in the Grahamstown branch. She holds a BSc degree in Zoology and Environmental Science (with distinction) and a BSc Honours degree in Environmental Science (with distinction), both from Rhodes University. Caroline has completed accredited courses in environmental impact assessments and wetland assessments.

Caroline's primary focuses include Project Management, the general Environmental Impact Assessment Process, Visual Impact Assessments and Wetland Impact Assessments. Examples of fields in which Caroline was the project manager and lead report writer include Wind Energy Facilities and the associated infrastructure (including powerlines), Solar PV, Waste Water Treatment Works, Housing Developments and Agricultural Developments. Her experience with wind energy facilities and associated infrastructure includes the project management and report writing for the Umsobomvu WEF, Dassiesridge WEF, Scarlet Ibis WEF, Albany WEF, Waaihoek WEF and the Great Kei WEF.

Caroline is well versed in South African policy and legislation relating to development, particularly in the Eastern Cape Province. In addition, Caroline's project management experience has helped her gain knowledge and experience in the technical and financial management and coordination of large specialist teams, competent authority and stakeholder engagement, and client liaison.

CAROLINE ANN EVANS
Curriculum Vitae**EMPLOYMENT
EXPERIENCE**

EOH Coastal & Environmental Services, Senior Environmental Consultant
August 2016 - present
• Project Management
• Renewable Energy Consultant
• Wetland Specialist

EOH Coastal & Environmental Services, Environmental Consultant
November 2013 – July 2016

Rhodes University, Department of Environmental Science, Graduate Assistant
January 2010 – January 2012

**ACADEMIC
QUALIFICATIONS**

Rhodes University, Eastern Cape, South Africa
B.Sc. Honours Environmental Science (with distinction)
2011

Rhodes University, Eastern Cape, South Africa
B.Sc. Zoology & Environmental Science (with distinction)
2007-2010

COURSES

- Rhodes University, Eastern Cape
“Tools for Wetland Assessment” 2010. (with distinction)
- Rhodes University, Eastern Cape
“Urban Ecology” 2010. (with distinction)
- Rhodes University, Eastern Cape
“Post Graduate Statistics” 2010. (with distinction)
- Rhodes University, Eastern Cape
“Environmental Impact Assessment” 2013. (with distinction)

**CONSULTING
EXPERIENCE****ENVIRONMENTAL IMPACT ASSESSMENTS:**

- Project: Albany Wind Energy Facility (Grahamstown, EC)
Role: Project Manager and Report Production
- Project: Umsobomvu Wind Energy Facility (Middelburg, EC / Noupoort, NC)
Role: Project Manager and Report Production
- Project: Waainek Wind Energy Facility Post-Construction Bird and Bat Monitoring (Grahamstown, EC)
Role: Project Manager and Report Production
- Project: Dassiesridge Wind Energy Facility (Uitenhage, EC)
Role: Project Manager and Report Production

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Curriculum Vitae

- Project: Waaihoek Wind Energy Facility (Utrecht, KZN)
Role: Project Manager and Report Production
- Project: Waaihoek Wind Energy Facility (Utrecht, KZN)
Role: Project Manager and Report Production
- Project: Great Kei Wind Energy Facility (Komga, EC)
Role: Assistant Project Manager and Report Production
- Project: Doorndraai Citrus Plantation (Cookhouse, EC)
Role: Project Manager and Report Production
- Project: Fishwater Flats WWTW Biogas (Port Elizabeth, EC)
Role: Report Production
- Project: Olivewood Golf and Residential Estate (Chintsa, EC)
Role: Report Production

BASIC ASSESSMENTS:

- Project: Albany Powerline (Grahamstown, EC)
Role: Project Manager and Report Production
- Project: Scarlet Ibis Wind Energy Facility (NMBM, EC)
Role: Project Manager and Report Production
- Project: Grey Jade Waterfall Feedlot Biogas (Berlin, EC)
Role: Project Manager and Report Production
- Project: Black Lite Solar 5MW PV (Berlin, EC)
Role: Project Manager and Report Production
- Project: Sitrusrand Kirkwood Citrus (Kirkwood, EC)
Role: Project Manager
- Project: Kareekrans Middleton Pivot (Middleton, EC)
Role: Project Manager
- Project: Uitsig Boerdery Kirkwood Citrus (Kirkwood, EC)
Role: Project Manager

OTHER REPORTS:

- Project: Eastern Cape Biofuels Strategic Environmental Assessment (EC)
Role: Report Production
- Project: Coega Industrial Development Zone (EC)
Role: Report Production
- Project: Umsobomvu WEF EA Amendments (EC & NC)
Role: Project Manager and Report Production

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Curriculum Vitae

- Project: Dassiesridge WEF EA Amendments (EC)
Role: Project Manager and Report Production
- Project: Great Kei WEF EA Amendments (EC)
Role: Project Manager and Report Production
- Project: Ukomoleza WEF EA Amendments (EC)
Role: Project Manager and Report Production
- Project: Motherwell WEF EA Amendments (EC)
Role: Project Manager and Report Production
- Project: Golden Valley II WEF EA Amendments (EC)
Role: Project Manager and Report Production
- Project: Peddie WEF and PV EA Amendments (EC)
Role: Project Manager and Report Production
- Project: Nqamakwe WEF and PV EA Amendments (EC)
Role: Project Manager and Report Production
- Project: Thomas River Renewable Energy Facility EA Amendments (EC)
Role: Project Manager and Report Production
- Project: Qunu WEF and PV EA Amendments (EC)
Role: Project Manager and Report Production

SPECIALIST REPORTS:

- Project: Umsobomvu Wind Energy Facility (Middelburg, EC / Noupoort, NC)
Role: Visual Impact Assessment
- Project: Dassiesridge Wind Energy Facility (Uitenhage, EC)
Role: Visual Impact Assessment
- Project: Great Kei Wind Energy Facility (Komga, EC)
Role: Visual Impact Assessment
- Project: Waaihoek Wind Energy Facility (Utrecht, KZN)
Role: Visual Impact Assessment & Wetland Impact Assessment
- Project: Olivewood Golf and Residential Estate (Chintsa, EC)
Role: Visual Impact Assessment
- Project: Oyster Bay Wind Energy Facility (Oyster Bay, EC)
Role: Wetland Impact Assessment

CAROLINE ANN EVANS
Curriculum Vitae**CERTIFICATION**

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes me, my qualifications, and my experience. I understand that any wilful misstatement described herein may lead to my disqualification or dismissal, if engaged.



CAROLINE ANN EVANS

Date: June 2019

ROSALIE ANN EVANS

Curriculum Vitae

CONTACT DETAILS

Legal Name of Company	Coastal and Environmental Services (Pty) Ltd
Trading Name of Company	CES
Designation	Port Elizabeth Branch
Profession	Senior Environmental Consultant
Years with firm	Six (6) Years
E-mail	r.evans@cesnet.co.za
Office number	+27 (0)41 393 0700 +27 (0)41 045 0494
Nationality	South African
Professional Body	International Association for Impact Assessment (IAIA) Member No. 5809 Land Rehabilitation Society of Southern Africa (LaRSSA) Member No. 52119
Key areas of expertise	<ul style="list-style-type: none">➤ Basic Assessments & Environmental Impact Assessments➤ GIS Mapping➤ Project Management➤ Public Participation Process➤ NEMA Section 24 (G) Applications➤ MPRDA Section 53 Applications➤ Agriculture & Soils Assessments

PROFILE

Ms Rosalie Evans

Rosalie is a Senior Environmental Consultant with six (6) years' experience and she is based in the Port Elizabeth branch. She holds a BA degree in Social Dynamics with majors in Geography and Psychology as well as a BA Honours degree in Geography and Environmental Studies, both from Stellenbosch University. Rosalie's honours dissertation analysed the role of small grains in soil carbon sequestration in the agricultural sector of the Western Cape.

Rosalie completed the Introduction to Environmental Impact Assessment Procedure Short Course by Coastal & Environmental Services and the Department of Environmental Science Rhodes University as well as the Estuary Management Short Course by Nelson Mandela University (NMU). In addition, Rosalie is a member of the Land Rehabilitation Society of Southern Africa (LaRSSA) and a member of the International Association for Impact Assessment (IAIA).

Her main focuses include the general Environmental Impact Assessment (EIA) process, project management, the Public Participation Process, NEMA Section 24 (G) Applications and associated reports, GIS Mapping, and Agriculture and Soils Assessments.

ROSALIE ANN EVANS**Curriculum Vitae****EMPLOYMENT****EXPERIENCE****Senior Environmental Consultant, CES***1 August 2018 - present**Project Management, Report Reviewing, GIS Mapping, BA and EIA Report Writing, NEMA Section 24 (G) Applications, Sub-consultant Management, MPRDA Section 53 Applications, Specialist Report Writing, & Part 2 Amendments.***Environmental Consultant, CES***1 August 2014 – 31 July 2018**GIS Mapping, BA and EIA Report Writing, NEMA Section 24 (G) Applications, MPRDA Section 53 Applications, Specialist Report Writing, Water Use Licensing Process & Public Participation Process.***Online Tutor (2nd year Geography, GGH2602), University of South Africa (UNISA)***1 August 2014 – present**Responding to/resolving e-tutor group student queries, maintaining the myUnisa GGH2602 e-tutor module site & preparing online activities for GGH2602.***Geography Junior Lecturer (1st year Geography, GGH1501), University of South Africa (UNISA)***1 June 2013 – 31 July 2014**Marking undergraduate and post-graduate assignments and examinations, responding to/resolving student queries and maintaining the myUnisa GGH1501 module site, assisting with writing study material for GGH1501 & Assisting with setting up assignments for GGH1501.***ACADEMIC****QUALIFICATIONS****Stellenbosch University, Stellenbosch***BA Honours in Geography & Environmental Studies
2012***Stellenbosch University, Stellenbosch***BA in Social Dynamics (Geography & Psychology)
2011***COURSES**

1. Coastal & Environmental Services and the Department of Environmental Science Rhodes University, Grahamstown.
"Introduction to Environmental Impact Assessment Procedure Short Course." 2016.
2. Nelson Mandela Metropolitan University, Port Elizabeth.
"Estuary Management Short Course." 2016.

**CONSULTING
EXPERIENCE**

1. Potsdam Housing Development EIA, Potsdam, EC. 2016.
DEDEAT Application & DEDEAT Scoping Report.
2. Waaihoek Wind Energy Facility EIA, Utrecht, KZN. 2015/2016.
Amended DEFF Applications (WEF & Powerline), Amended DEFF Powerline Environmental Impact Report, Appeals Process Public Participation Process & Tourism Assessment Report.
3. National Route N2 Bypass Road EIA, King William's Town, EC. 2016.
DEFF Application & DEFF Scoping Report
4. Umsobomvu Wind Energy Facility EIA, Middelburg, EC / Noupoort, NC. 2015.
Assisting DEFF Environmental Impact Report, Visual Assessment Report & DMR Section 53 Application.
5. Matatiele to KZN Border Road Upgrade & Borrow Pits BA, Matatiele, EC. 2016.
Baseline Sensitivity Report, DEFF Application, DEFF Basic Assessment Report, Environmental Management Programme, Public Participation Process, DMR Application, DMR Scoping Report & PPP on the Environmental Authorisation.
6. Upington SEZ & PV Solar EIA, Upington, NC. 2017.
Assisting DEFF Scoping Report & Tourism Assessment Report.
7. Molteno Sewer & Sewage Pump Stations BA, Molteno, EC. 2015/2016.
Project Management, DEDEAT Application, DEDEAT Basic Assessment Report, Environmental Management Programme, DWS Water Use Applications, Public Participation Process, Rehabilitation, Erosion Management & Alien Invasive Management Plan & PPP on the Environmental Authorisation.

ROSALIE ANN EVANS

Curriculum Vitae



8. Green River to Zwelitsha and the new Breidbach Interchange Road Upgrade BA, King William's Town, EC. 2016.
Baseline Sensitivity Report, DEFF Application, DEFF Basic Assessment Report, Environmental Management Programme, DWS Water Use Applications, Public Participation Process & PPP on the Environmental Authorisation.
9. Olivewood Golf & Country Estate BA, Chintsa, EC. 2015/2016.
DEDEAT Basic Assessment Report & Public Participation Process.
10. Lizmore to Heidelberg Road Upgrade & Borrow Pits BA, Heidelberg, WC. 2017.
Baseline Sensitivity Report, DEFF Application, DEFF Basic Assessment Report, Environmental Management Programme, DMR Regulation 2.2 Maps & Specialist Mapping.
11. Phase 4 Housing Development BA, East London, EC. 2016.
Assisting DEDEAT Basic Assessment Report.
12. Dassiesridge Wind Energy Facility EIA, Uitenhage, EC. 2015.
DMR Section 53 Application & Visual Assessment Report.
13. Lusikisiki Regional Water Supply Scheme EIA: Zalu Dam, Lusikisiki, EC. 2015.
Visual Assessment Report & Environmental Management Programme.
14. Tyityaba Game Reserve Conservation Management Plan, Komga, EC. 2016.
Assisting Conservation Management Plan.
15. Port St Johns Beach Infrastructure EIA, Port St Johns, EC. 2017.
Estuarine Assessment Report.
16. Scarlet Ibis Wind Energy Facility BA, Motherwell, EC. 2017.
Agriculture & Soils Assessment Report, DMR Section 53 Application, DMR Regulation 2.2 Map, Public Participation Process Material, Biophysical Mapping & PPP on the Environmental Authorisation.
17. Albany Wind Energy Facility EIA, Grahamstown, EC. 2018/2019/2020.
Agriculture & Soils Assessment Report, DMR Regulation 2.2 Map, Updating Ecological Assessment Report, Assisting DEFF Scoping Report, Biophysical Mapping & Public Participation Process Material.
18. Bodeux Fuel Station EMPr, East London, EC. 2015.
Assisting Environmental Management Programme.
19. Specialist Input for the Route Location of possible Bypasses at Butterworth on National Route N2 Section 17 and 18, Butterworth, EC. 2016.
Project Management & Biophysical Mapping.
20. Specialist Input for the Route Location of possible Bypasses at Dutywa on National Route N2 Section 17 and 18, Dutywa, EC. 2016.
Project Management & Biophysical Mapping.
21. Eastern Cape Biodiversity Conservation Strategy and Action Plan, EC. 2016.
Assisting Mapping Specialist Data.
22. Gonubie Boardwalk NEMA Section 24G Application, Gonubie, EC. 2014.
Assisting NEMA Section 24G Application.
23. Great Kei Wind Energy Facility Section 53 Application, Komga, EC. 2015.
DMR Section 53 Application.
24. Environmental Screening for a Pumped Storage Scheme, Hogsback, EC. 2016.
Biophysical Mapping.
25. Ndlambe Bulk Water Supply Project BA, Ndlambe Municipality, EC. 2016/2017.
Route Assessment & DWS Consultation & DWS Water Use Applications.
26. Justin Le Roux NEMA Section 24G Application, EC. 2017.
NEMA Section 24G Application, Basic Assessment Report (for rectification), Environmental Management Programme & Public Participation Process Material.

ROSALIE ANN EVANS

Curriculum Vitae

27. Thriftwood NEMA Section 24G Application, EC. 2017.
Project Management & Biophysical Mapping.
28. Kurlandbrik Mine Social and Labour Plan, WC. 2017.
Updated Social & Labour Plan.
29. Brickvest NEMA Section 24G Application, EC. 2017.
Project Management, Biophysical Mapping, Public Participation Process Material, NEMA Section 24G Application, DWS Water Use Applications & DWS Risk Assessment.
30. Wells Estate Social Housing Development BA, Port Elizabeth, EC. 2017.
Project Management, DEDEAT Basic Assessment Report, Environmental Management Programme & ELC Meeting Presentation.
31. St Christopher's Private School BA, Port Elizabeth, EC. 2017.
Project Management, DEDEAT Application, Biophysical Mapping & DEDEAT Basic Assessment Report.
32. Pofadder Prospecting Right, NC. 2017.
Biophysical Mapping.
33. Kenmare Moma Titanium Minerals Mine ESIA, Mozambique. 2018.
Biophysical Mapping, Assisting Estuarine Assessment Report, Assisting PPP Posters & Presentation.
34. Toliar Sand Heavy Minerals Mine ESHIA, Madagascar. 2017.
PPP Presentation & Posters & Infrastructure Mapping.
35. Subdivision & Mixed-Use Development on Erf 1 Parsonslei EIA, EC. 2017.
Project Management, DEDEAT Scoping Report & Public Participation Process.
36. Bayview Wind Farm EIA, near Port Elizabeth, EC. 2017.
Agriculture & Soils Assessment Report, Biophysical Mapping, Public Participation Process Material, Chapters of the DEFF Scoping Report, Chapters of the DEFF Environmental Impact Report, Environmental Management Programme & PPP on the Environmental Authorisation.
37. General Motors NEMA Section 24G, EC. 2017.
Project Management, NEMA Section 24G Application, Public Participation Process Material, Biophysical Mapping, DWS Water Use Applications & DWS Risk Assessment.
38. Grahamstown to Fish River Pass: Phase 2 Road Upgrade ECO, EC. 2017-2019.
Project Management & Review of Monthly Audit Reports.
39. Joubert Dorndraai Citrus Farm EIA, EC. 2018.
DEDEAT Application, Public Participation Process Material, DEDEAT Scoping Report & Biophysical Mapping.
40. Part 2 Amendment of the Makana Residential Development EA, Grahamstown, EC. 2018.
DEDEAT Application for Amendment of Environmental Authorisation, Part 2 Amendment Report, Public Participation Process Material & PPP on the Amended Environmental Authorisation.
41. Roode Heuwel Prospecting Right, Garies, NC. 2018.
Biophysical Mapping.
42. Citrus Development Section 24(G), Cookhouse, EC. 2018.
DEDEAT Basic Assessment Report (for rectification), Environmental Management Programme, Public Participation Process & Biophysical Mapping.
43. Phase 1 & Phase 2 West End Student Residence Development BA, Port Elizabeth, EC. 2018.
Project Management, Public Participation Process Material, Biophysical Mapping, DEDEAT Basic Assessment Report, Environmental Management Programme & PPP on the Environmental Authorisation.
44. Phase 3 & Phase 4 West End Student Residence Development BA, Port Elizabeth, EC. 2018.

ROSALIE ANN EVANS

Curriculum Vitae



Project Management, Public Participation Process Material, Biophysical Mapping, DEDEAT Basic Assessment Report, Environmental Management Programme & PPP on the Environmental Authorisation.

45. Central Balama Graphite Mine ESIA, Balama, Mozambique. 2018.
Land & Natural Resource Use Report.
46. Waainek Post-Construction Bird and Bat Monitoring, Grahamstown, EC. 2018.
Assisting Bat Data Analysis.
47. Victoria Drive ECO, Port Elizabeth, EC. 2019.
Review of Monthly Audit Reports & Quarterly Report Review.
48. Part 2 Amendment of the Umsobomvu Wind Energy Facility Environmental Authorisation, Middelburg, EC/Noupoort, NC. 2019.
DEFF Application for Part 2 Amendment, Part 2 Amendment Report, Public Participation Material, DEA Environmental Impact Report for the Umsobomvu I WEF, DEFF Environmental Impact Report for the Coleskop WEF, DEFF Environmental Impact Report for the Eskom Infrastructure MTS, Agriculture & Soils Assessment Report for the Umsobomvu I WEF, Agriculture & Soils Assessment Report for the Coleskop WEF, Agriculture & Soils Assessment Report for the Eskom MTS, Agriculture & Soils Opinion Letter & Biophysical Mapping.
49. The Refurbishment of the Kwanobuhle Wastewater Treatment Plant ECO, Nelson Mandela Bay Municipality, EC. 2019.
Review of Monthly Audit Reports.
50. Fishwater Flats Wastewater Treatment Works ECO, Nelson Mandela Bay Municipality, EC. 2019.
Review of Monthly Audit Reports.
51. Residential Development on a Portion of Erf 1226 in Fairview ECO, Port Elizabeth, EC. 2019.
Review of Monthly Audit Reports.
52. Eskom Substation and Powerlines EIA, Heidelberg, GP. 2019.
Visual Assessment Report.
53. Impofu Wind Farms (North, East and West) Section 53 Applications, Oyster Bay, EC. 2019.
Project Management & Three (3) Separate DMR Section 53 Applications.
54. Coleskop Infrastructure Development BA, Middelburg, EC / Noupoort, NC. 2019.
Project Management, DEFF Application, DEFF Basic Assessment Report, DEFF Environmental Management Programme Template (March 2019) & Public Participation Process Material.
55. Umsobomvu Infrastructure Development BA, Middelburg, EC / Noupoort, NC. 2019.
Project Management, DEFF Application, DEFF Basic Assessment Report, DEFF Environmental Management Programme Template (March 2019) & Public Participation Process Material.
56. Khayamnandi Extension on Erven 114, 609, 590 and 24337 ECO, Bethelsdorp, EC. 2019.
Review of Monthly Audit Reports & Quarterly Report Review.
57. Development of Agricultural Lands Section 24(G), Cookhouse, EC. 2019.
Section 24(G) Application and Reporting, Environmental Management Programme, Public Participation Process & Biophysical Mapping.
58. Development of Agricultural Lands Section 24(G), Klipfontein, EC. 2019.
Section 24(G) Application and Reporting, Environmental Management Programme, Public Participation Process & Biophysical Mapping.
59. Development of Citrus and Associated Infrastructure on Nomzamo Farm EIA, Kirkwood, EC. 2019.
Project Management, Specialist Coordination & the review of the Application.

ROSALIE ANN EVANS
Curriculum Vitae

60. Development of Citrus and Associated Infrastructure on Siyahluma Farm EIA, Addo, EC. 2019.
Project Management, Specialist Coordination & the review of the Application.
61. Development of 19.8 ha of Citrus BA, Kirkwood, EC. 2019.
Project Management, DEDEAT Application, DEDEAT Basic Assessment Report, Environmental Management Programme & Public Participation Process.
62. Development of a Facility for the Recycling & Smelter of Non-ferrous Metals in the Coega SEZ, Port Elizabeth, EC. 2019.
Project Management & Specialist Coordination.
63. Water Use for 7 Wind Farms, EC & NC. 2019.
Project Management & DWS Liaison.
64. Part 2 Amendment of the Ukomoleza Wind Energy Facility EA, Uitenhage, EC. 2019.
Biophysical Mapping.
65. Part 2 Amendment of the Motherwell Wind Energy Facility EA, Uitenhage, EC. 2019.
Biophysical Mapping.
66. Part 2 Amendment of the Dassiesridge Wind Energy Facility EA, Uitenhage, EC. 2019.
Biophysical Mapping & Assisting Part 2 Amendment of the EA Report Writing.
67. Part 2 Amendment of the Great Kei Wind Energy Facility EA, Komga, EC. 2019.
Biophysical Mapping & Assisting Part 2 Amendment of the EA Report Writing.
68. Driftsands Sewer Collector Augmentation (Phase II) ECO, Port Elizabeth, EC. 2019.
Review of Monthly Audit Reports.
69. Dwarsleegte Farm Citrus Development BA, Kirkwood, EC. 2019.
Report Review.
70. Kenton-on-Sea Private Jetty BA, Kenton-on-Sea, EC. 2020.
Project Management & Report Review.
71. Albany Overhead Line & Associated Grid Infrastructure BA, Makhanda, EC. 2020.
DEFF Basic Assessment Report, Appendix 1 and Appendix 2 Generic Environmental Management Programmes & Biophysical Mapping.
72. Amended Bayview Wind Farm EIA, near Port Elizabeth, EC. 2020.
Project Management, Amended Public Participation Process Material, Amended DEFF Environmental Impact Report & Amended Environmental Management Programme.

CERTIFICATION

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes me, my qualifications, and my experience. I understand that any wilful misstatement described herein may lead to my disqualification or dismissal, if engaged.

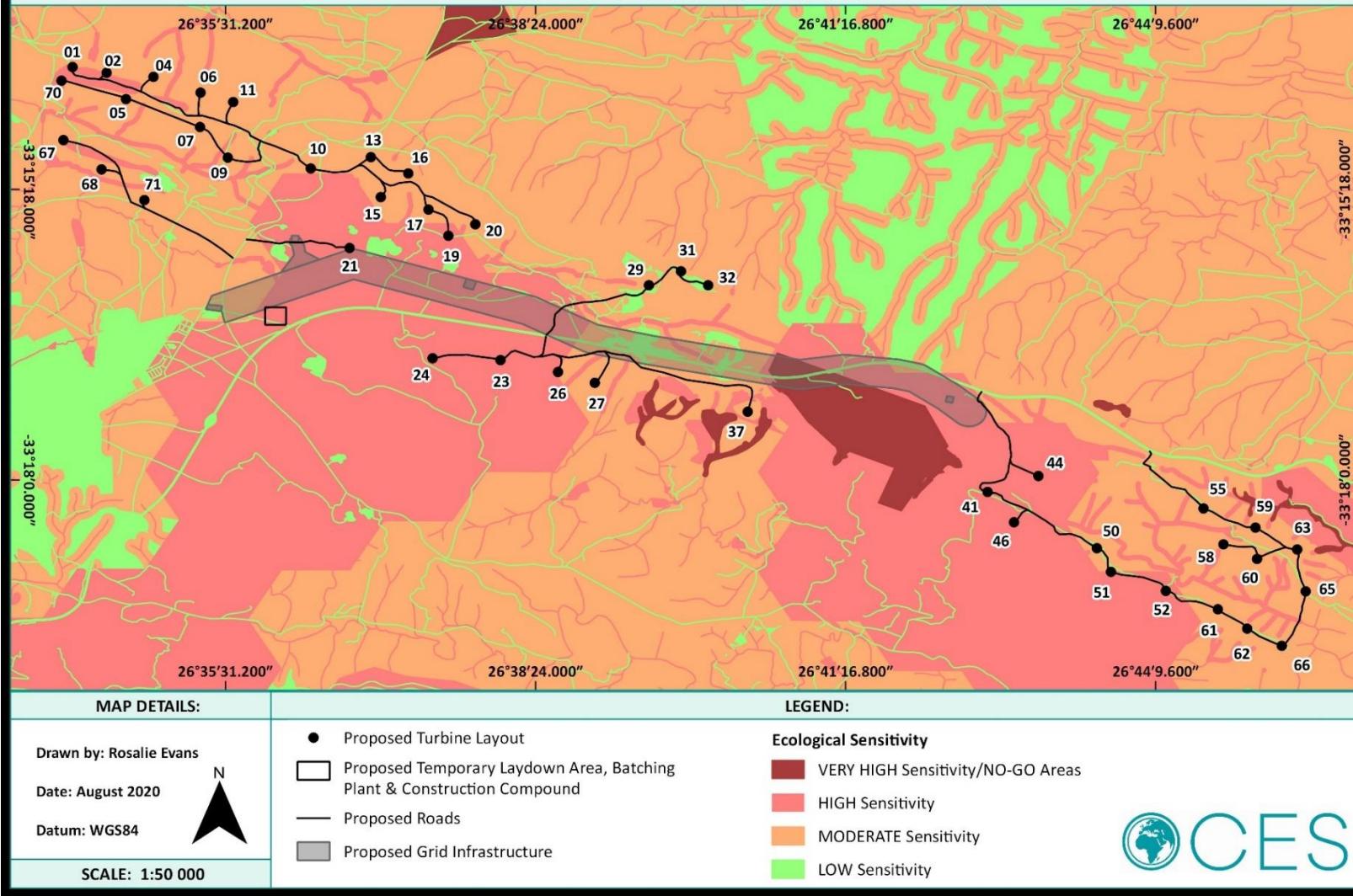
ROSLIE ANN EVANS

Date: June 2020

APPENDIX F

PROJECT NAME: PROPOSED ALBANY WIND ENERGY FACILITY AND ASSOCIATED GRID INFRASTRUCTURE NEAR MAKHANDA (GRAHAMSTOWN), EASTERN CAPE PROVINCE

MAP TITLE: COMBINED ECOLOGICAL SENSITIVITY MAP



APPENDIX G

- Traffic and Transportation Management Plan (Emonti Consulting Engineers cc, March 2020)
- Groundwater Investigation at the Proposed Albany Wind Energy Farm near Grahamstown, Eastern Cape (SRK Consulting, November 2019)