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# ENVIRONMENTAL MANAGEMENT PLAN (EMP)

For the alternative energy development based on wind electricity generation activities of the Diaz Wind Park



Version – June 2018

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## TABLE OF CONTENT

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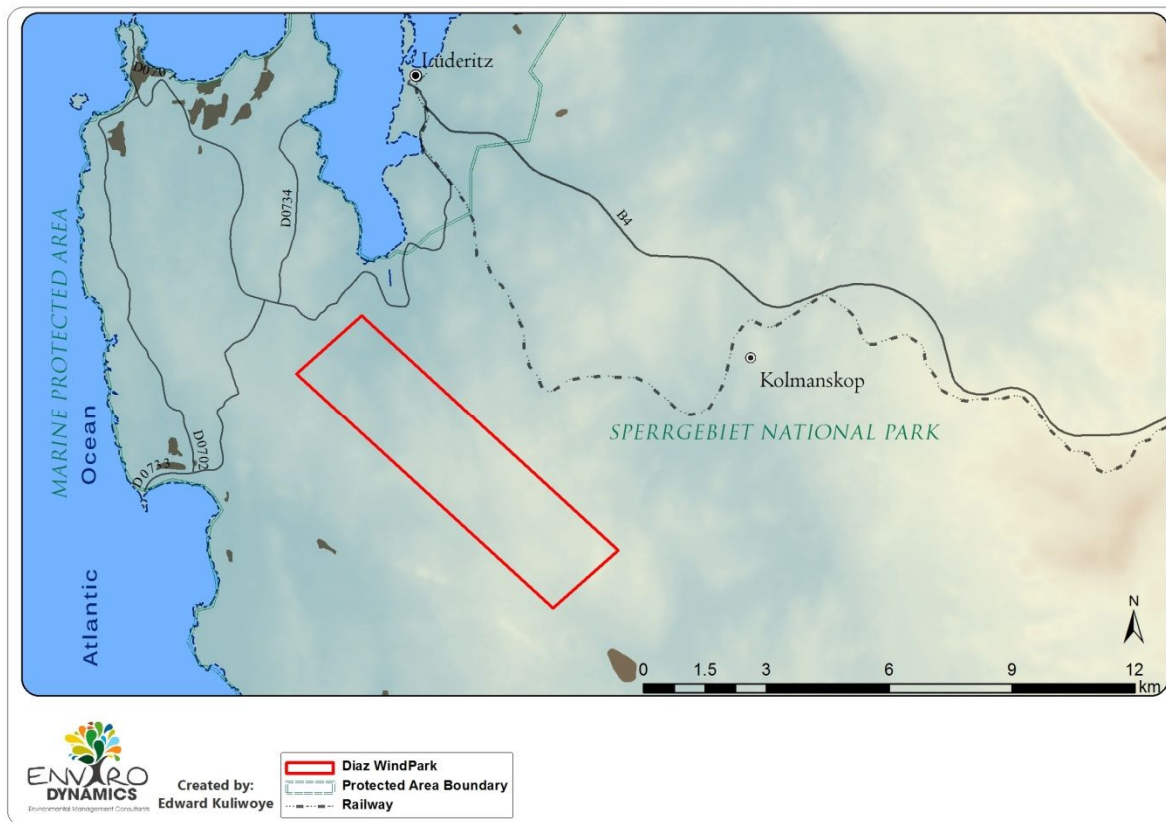
TABLE OF CONTENT .....	2
1 INTRODUCTION .....	4
2 PROJECT INFORMATION .....	5
3 ENVIRONMENT FEATURES .....	6
4 CUMULATIVE IMPACTS REVIEW.....	8
5 ENVIRONMENTAL MANAGEMENT REQUIREMENTS.....	11
6 MANAGEMENT ACTIONS .....	14
7 REFERENCES .....	39
APPENDIX A Vegetation Management Plan .....	1
APPENDIX B Tsau//Khaeb (Sperrgebiet) National Park Management Plan .....	1
APPENDIX C Example of Environmental Penalty System .....	1



# 1 INTRODUCTION

The project will consist of 11 to 16 units of wind turbines distributed in the central section of the project area

Figure 1: Project area



The project is located to the south-east of the town of Lüderitz in the Sperrgebiet diamond protection area and Tsau//Khaeb (Sperrgebiet) National Park (see Figure 1).

The site is situated about 12km south of Lüderitz and about 8km south of the airport. The size of the overall site is approximately 15.99km<sup>2</sup> (see Figure 3).

*The content of this Environmental Management Plan takes precedence over the Specialist Reports of the EIA Report.*

*This document is governed by the Diaz Wind Park EIA Report and Sperrgebiet National Park Management Plan.*

## 2 PROJECT INFORMATION

Key characteristics of the existing and proposed alternative energy development based on wind electricity generation activities of the Diaz Wind Park are summarized in the following Table.

Table 1 Project description

Element	Description
Proponent	Diaz Wind Power (Pty) Ltd
Life of project	
Construction	18 months
Operational	22 years
Project location	South-east of the town of Lüderitz in the Sperrgebiet diamond protection area and Tsau//Khaeb (Sperrgebiet) National Park
Total land area of site	15.99 km <sup>2</sup>
Land use zoning	Tsau//Khaeb (Sperrgebiet) National Park IUCN II status with restricted access.
Status	
Wind Turbines	11 to 16 units of wind turbines with a total output of up to 44 MW
Waste disposal	Storm water and oily water drains installed at all new installations. Drains discharge into the oily water separator. A waste disposal company collects all waste water and/or sludge and clean the pits and dispose of the waste at the Walvis Bay Municipality's hazardous disposal site
Expected disturbance	The total area cleared at each WTG will therefore be 2650m <sup>2</sup> . For the internal roads a minimum area of 3,5ha will have to be cleared. For the substation and support facility will require an area of about 100m by 100m. This will require that an area of 1ha must be cleared. <i>In total an estimated 10ha must be cleared for the project activities.</i>

### 3 ENVIRONMENT FEATURES

The following key features show the vulnerability of this environment:

Table 2 Environmental features

Element	Description	Impact expected
Geology	Soils are susceptible to erosion and very shallow. Alternative foundation techniques required to avoid blasting.	Physical disturbance of soil during transport and construction activities. Shallow Gneiss will hamper foundation construction. Proliferation of tracks. Erosion of structures
Hydrology	The sandy inlays will act as very effective traps for any surface transport of contaminants such as service fluids.	Sand inlays will act as traps for contaminants
Critical Habitat	The Lüderitz Peninsula dwarf-shrublands and Lüderitz Plains dwarf-shrublands are categorised as Critical Habitats according to IFC PS6.17 criteria.	The project will contribute to the reduction of a critical habitat in the Lüderitz Plains (0.06km <sup>2</sup> ) and Lüderitz Peninsula (0.04km <sup>2</sup> ) dwarf-shrublands by 0.1km <sup>2</sup> . This contribution is considered small in scale and therefore not detrimental to the habitat.
Vegetation	The Lüderitz Peninsula dwarf-shrubland is extremely sensitive and limited. Therefore any form of development in this habitat should be avoided. The Lüderitz Plain dwarf-shrubland is sensitive. The site activities should be managed through a Vegetation Management Plan, which forms an integral part of the Environmental Management Plan (see Appendix A).	Physical destruction of vegetation by construction activities and new roads <u>A Critical Habitat Study has been completed to Comply with IFC Standard 6.</u>

Fauna	<p>The new north-western boundaries of the site interfere significantly with the coastal flight paths. Other concerns raised are the potential impact on the Ludwig's Bustard.</p> <p>The brown hyena's IUCN classification status was increased from Lower Risk – least concern to Lower Risk – Near threatened in 2000. The effect of WTG noise on the movement and territoriality of the Brown Heyna is not clear.</p>	<p>Disturbance through noise, movement and temporary occupation of an otherwise undisturbed habitat</p> <p>Habitat loss, including foraging, roosting and breeding habitat of the area occupied by the completed structure.</p> <p>Collision of priority species, including globally threatened birds and/or migrating birds with wind turbine blades.</p> <p><u>A Longitudinal bird impact study is being conducted during 2018.</u></p> <p>Disturbance of brown hyenas.</p> <p>Effects of construction/maintenance operations on territory boundary north and east of the proposed wind farm area (habitat fragmentation).</p> <p>Effects of construction/maintenance operations on denning behaviour.</p> <p>Disturbance and/or mortality of brown hyenas through increased traffic.</p>
Archaeology	The study area is considered to have both historic and prehistoric archaeological significance as a landscape, not individual sites.	Visual degradation / landscape disturbance
Visual sensitivity	The view around Second Lagoon point that shows a medium sensitivity to any identified visual impact.	

The Environmental Management Plan aims to provide a high level management tool for the overall environmental management of the project in principle as well as direct mitigation measures related to the impacts expected.

## 4 CUMULATIVE IMPACTS REVIEW

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The accumulation of impacts from the project specifically centres around the impacts expected on birds, the Brown Hyena, and vegetation in the Lüderitz Peninsula Scrubland zone.

The cumulative effects are clearly concentrating in the north-western extension of the project site.

The only means by which the cumulative impacts can be managed is by avoidance.

The sensitivity of the entire site necessitates direct intervention in the control of access of the site for the various activities that will take place during planning, construction, and operations.

The access management intervention can be classified as follows:



Table 3: Environmental Management Intervention Zones

Access Zone	Environmental Management Intervention	Boundary Positions
Zone 1	No-go Zone: The area is not accessible for any personnel or outsiders under any circumstance. No roads and activities are allowed in this zone. No WGTs will be allowed in Zone 1.	26 43' 57.792" S; 15 9' 07.560" E 26 43' 11.676" S; 15 9' 57.456" E 26 41' 53.475" S; 15 8' 31.650" E 26 42' 39.001" S; 15 7' 40.023" E
Zone 2	Vegetation Protection Zone: Very limited access is allowed only for authorized personnel (approved daily in writing) and no access for outsiders. Access will be authorized by request only on a daily basis, under the control of the Site Environment Officer. This zone may only accommodate minimum new roads, internal power lines and demarcated WTG work space. Clearing of any vegetation will only be allowed during construction under the control of the Vegetation Management Plan.	26 44' 2.253" S; 15 10' 52.517" E 26 44' 00.842" S; 15 9' 57.962" E 26 44' 24.746" S; 15 9' 35.688" E 26 43' 57.792" S; 15 9' 07.560" E 26 43' 11.676" S; 15 9' 57.456" E
Zone 3	Limited Access Zone: Free access is allowed to all personnel only on existing roads and demarcated WTG work space. This zone may accommodate support infrastructure such as the substation, and office/storage facility. Clearing of any vegetation will only be allowed during construction under the control of the Vegetation Management Plan.	26 45' 44.449" S; 15 11' 2.869" E 26 44' 58.929" S; 15 11' 54.513" E 26 44' 02.253" S; 15 10' 52.517" E 26 44' 00.842" S; 15 09' 57.962" E 26 44' 24.746" S; 15 09' 35.688" E

Figure 2 shows the position of each Environmental Management Intervention Zone. The use of Zone 1 is not allowed.

The position in a National Park, sensitivity of the site and the required management system for both the Vegetation Management Plan and the Environmental Management Intervention Zones necessitates that the client appoint a person on site that will fulfil the role of *Site Environment Officer* either on a permanent basis or as a function to one of the site personnel.



Figure 2: Environmental Management Zones of the Site

## 5 ENVIRONMENTAL MANAGEMENT REQUIREMENTS

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In order to assure that the project is sustainable and environmentally beneficial the following requirements will have to be satisfied:

### 5.1 Adhering to the existing conservation framework.

The project falls in the IUCN II category and triggers the IFC Standard 6 (sect.16 to 20 – Critical Habitat, Legally Protected and Internationally Recognised Area). Therefore a Critical Habitat Study was conducted and forms part of the EIA/EMP.

The project must be developed and regulated in the context of the Tsau//Khaeb (Sperrgebiet) National Park Management Plan and park regulations.

All activities of the development must be managed within the boundaries and requirements set in the Tsau//Khaeb (Sperrgebiet) National Park Management Plan, which will take precedence over all other environmental and other management requirements.

The project planning, implementation and operation must be done in consultation with and approval of the relevant assigned representatives of the Directorate of Parks of the Ministry of Environment and Tourism.

### 5.2 Implementation and monitoring of the entire Environmental Management Plan

The environmental management plan must be applied a contractual agreement between the developer and the Ministry of Environment and Tourism. Strict adherence to the EMP is essential in view of the conservation framework which the project is executed in. The EMP will incorporate the following essential components:

- The recommended mitigation measures as listed in the Impact Assessment.
- The Critical Habitat Study, Vegetation Management Plan and its requirements.
- The Environmental Management Intervention Zones and its constraints.
- The long term avian and Brown Hyena monitoring requirements as set out in the EMP.

### 5.3 Management and auditing capacity requirements.

In order to be able to adhere to the above mentioned requirements the following capacity and system must be put into place:

- Appoint a Site Environment Officer (SEO) to coordinate and monitor the adherence to the Tsau//Khaeb (Sperrgebiet) National Park Management Plan and the Environmental Management Plan, as well as the external environmental audit process. This position will be:
  - Either a full time appointment, especially during construction, or assigned as a role to a permanent site employee.
  - Responsible for the coordination of and liaison with the MET work group.
  - Responsible for the management of access requirements of the various Environmental Management Intervention Zones.
  - Responsible for the coordination of the long term avian (including bats) and Brown Hyena monitoring requirements.
  - Responsible for the coordination of the Vegetation Management Plan
  - Responsible for the implementation of the EMP in the SNPMP framework.
  - Responsible for the coordination and reporting of the external environmental audit system.
- Establish an Environmental Working Group with the relevant stakeholders in the Ministry of Environment and Tourism as well as NamPower, which will actively review and approve project activities in terms of adherence of the Tsau//Khaeb (Sperrgebiet) National Park Management Plan and the Environmental Management Plan, as well as the external environmental audits.
- Implement an external environmental audit system on a quarterly basis during construction and on an annual basis during the operation of the Wind Park. This must be used to verify the effectiveness of the EPM and implement adjustments if required.

### 5.4 Environmental Penalty System

The SEO must be responsible to manage an Environmental Penalty System as a deterrent to contravene the EMP by the various construction, operation and maintenance operators throughout the entire life-cycle of the project. The system must incorporate the following guidelines:

The Operator shall comply with the environmental specifications and requirements as described in the EMP on an ongoing basis and any failure on his part to do so will entitle the SEO to impose a penalty.

In the event of non-compliance the following recommended process shall be followed:

- The SEO shall issue a notice of non-compliance to the Operator, stating the nature and magnitude of the contravention.
- The Operator shall act to correct the non-conformance within 24 hours of receipt of the notice, or within a period that may be specified within the notice.
- The Operator shall provide the SEO with a written statement describing the actions to be taken to discontinue the non-conformance, the actions taken to mitigate its effects and the expected results of the actions. A copy shall be provided to the MET Parks Officer.
- In the case of the Operator failing to remedy the situation within the predetermined timeframe, the SEO shall impose a monetary penalty based on the conditions of contract.
- In the case of the Operator being unable to remedy the situation due to permanent environmental damage already incurred, the SEO shall impose a monetary penalty based on the conditions of contract.
- In the case of non-compliance giving rise to physical environmental damage or destruction, the SEO shall be entitled to undertake or to cause to be undertaken such remedial works as may be required to make good such damage and to recover from the Operator the full costs incurred in doing so.
- In the event of a dispute, difference of opinion etc, between any parties in regard to or arising out of interpretation of the conditions of the EMP, disagreement regarding the implementation or method of implementation of conditions of the EMP etc., any party shall be entitled to require that the issue be referred to independent specialists for determination.
- The SEO shall at all times have the right to stop work and/or certain activities on site in the case of EMP non-compliance or failure to implement remediation measures.

A list of appropriate penalties based on the content of the EMP must be developed by the SEO in conjunction with the Environmental Working Group (EWG) before the project implementation starts and revised annually by the EWG. Appendix C provides an example of an Environmental Penalty System.

A record of all penalties given and adhered to must form part of the Environmental Penalty System. This record must be reviewed at a quarterly SEO-EWG meeting. Repeat offenders will receive an increased penalty or will be ordered from the site if the quarterly meeting deem this necessary.

## 6 MANAGEMENT ACTIONS

### 6.1 Planning Phase

Responsibility: Diaz Wind Power (Pty) Ltd shall consider these aspects in conjunction with the SEO and EWG.

ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/PARTNERSHIP
ADMINISTRATIVE, LEGAL AND POLICY REQUIREMENTS	To fulfil the legal requirements in constructing and operating the proposed Wind Park.	<ul style="list-style-type: none"> <li>Diaz Wind Power (Pty) Ltd must obtain permission from the Electricity Control board (ECB) in order to operate, distribute and market any electricity generated from the project.</li> <li>Diaz Wind Power is further obliged in terms of Section 22 of the Electricity Act 2 of 2007 to obtain a preliminary license from the Minister to build and complete any structure which would be involved in the production of electricity, including the construction of wind turbines and equipment.</li> <li>The ECB will inform Diaz Wind Power of the conditions and requirements imposed by the Minister in granting a preliminary license. The license is valid only for the period referred to on the license or any extension granted by the Minister in terms of Section 22(4) of the Electricity Act 2 of 2007.</li> <li>Diaz Wind Power must apply for a collection/rescue/relocation permit at MET in order to rescue or relocated identified plant species. The forms can be obtained from Mr T. Uahengo in the permit office at the Ministry of Environment and Tourism, Windhoek. A period of three months should be allowed for obtaining this permit. Species and approximate numbers/quantities involved will</li> </ul>	<p>ECB</p> <p>Diaz Wind Power</p> <p>Ministry of Mines and Energy</p> <p>Ministry of Environment and Tourism (MET)</p> <p>As per legal and policy framework.</p>

ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/PARTNERSHIP
		need to be specified. (r.T. Uahengo <a href="mailto:tuahengo@met.na">tuahengo@met.na</a> Tel. +264 61 284 2111	
<b>BIODIVERSITY MANAGEMENT SYSTEM</b>	<p>To optimise the site in terms of avoidance of sensitive habitats</p> <p>Compliance with IUCN II and IFC Standard 6 (sect. 16 to 20).</p>	<ul style="list-style-type: none"> <li>Clearly indicate the different access management zones in the final lay out design for the Wind Park (Refer to Figure 1)</li> </ul> <p><b>ZONE 1: No-go Zone:</b> The area is not accessible for any personnel or outsiders under any circumstance. No roads and activities are allowed in this zone. No Wind Turbine Generators (WTG) will be allowed in Zone 1. (Coordinates for boundaries of zone: 26 43' 57.792" S; 15 9' 07.560" E; 26 43' 11.676" S; 15 9' 57.456" E; 26 41' 53.475" S; 15 8' 31.650" E; 26 42' 39.001" S; 15 7' 40.023" E)</p> <p><b>ZONE 2: Vegetation Protection Zone:</b> Very limited access is allowed only for authorized personnel (approved daily in writing) and no access for outsiders. Access will be authorized by request only on a daily basis, under the control of the Site Environment Officer (SEO). This zone may only accommodate minimum new roads, internal power lines and demarcated WTG work space. Clearing of any vegetation will only be allowed during construction under the control of the Vegetation Management Plan (Coordinates for boundaries of zone: 26 44' 2.253" S; 15 10' 52.517" E; 26 44' 00.842" S; 15 9' 57.962" E; 26 44' 24.746" S, 15 9' 35.688" E; 26 43' 57.792" S; 15 9' 07.560" E; 26 43' 11.676" S; 15 9' 57.456" E)</p> <p><b>ZONE 3: Limited Access Zone:</b> Free access is allowed to all personnel only on existing roads and demarcated WTG work space. This zone may accommodate support infrastructure such as the substation, and office/storage facility. Clearing of any</p>	<p>Engineer</p> <p>Diaz Wind Power</p> <p>SEO</p> <p>Once off.</p> <p>Monitor enforcement weekly</p> <p>Monitor vehicle movement continuously</p>

ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/PARTNERSHIP
		<p>vegetation will only be allowed during construction under the control of the Vegetation Management Plan (Coordinates for boundaries of zone: 26 45' 44.449" S; 15 11' 2.869" E; 26 44' 58.929" S; 15 11' 54.513" E; 26 44' 02.253" S; 15 10' 52.517" E; 26 44' 00.842" S; 15 09' 57.962" E; 26 44' 24.746" S; 15 09' 35.688" E)</p> <ul style="list-style-type: none"> <li>In the final design of individual turbine placement Wind turbines 1-3 need to be moved south-east into Zone 2 if possible (see Figure 1). Alternatively the WTGs 1 and 3 will be allowed in the Zone 1 at their current positions provided that written proof is given to the EWG and SEO that they will not disturb Brown Hyena activities of sensitive vegetation.</li> <li>Uncontrolled vehicle activity is of major concern. Careful pre-planning of construction activities must be done to identify where infrastructure will be absolutely necessary for both construction and maintenance, overlapping these in a single infrastructure corridor (roads, electricity).</li> <li>These infrastructure corridors must be clearly marked prior to construction activities beginning, together with designated turning points and construction clearance areas. Turning points for heavy vehicles must be designated and adhered to. The area used must be constrained as far as possible.</li> </ul>	
<b>PLANT COLLECTION AND RELOCATION OF PLANTS OF CONSERVATION CONCERN</b>	To rescue and remove all plants of conservation concern	<ul style="list-style-type: none"> <li>Discuss and identify a set of relocation sites in conjunction and approval of MET and provide a budget and resources for maintaining the relocation areas until the relocation is deemed successful and approved by MET.</li> </ul>	NBRI Diaz Wind Farm  <b>As per the vegetation management plan</b>



ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/PARTNERSHIP
		<ul style="list-style-type: none"> <li>• Identify plants that are candidates for rescue and removal or relocation. Consult with NBRI as to whether any of the plants must be brought to the National Botanic Garden.</li> <li>• Take care to make these arrangements well in advance so that NBRI staff can schedule and plan for any needed plant relocation. (Contact: Ben Strohbach 061 202 2017) via the specialist coordinator for the Vegetation Management Plan. Please contact the specialist coordinator of the Vegetation Management Plan, Colleen Manheimer (Tel. + 264 61 233614, Fax + 264 61 233727).</li> <li>• Lift the plants as soon as possible, once it is certain that an area is to be compromised, to prevent their destruction. (i.e. within access areas)</li> <li>• Lifting and relocation of the plants must be supervised, by a knowledgeable person, such as an environmental rehabilitation practitioner, a botanist or a horticulturist with some expertise in this field. The plants need to be directly transferred to a damaged area or stored in suitable conditions as required depending on the species involved, until they are relocated.</li> <li>• Plants may only be stored for periods of less than three weeks.</li> <li>• The following must be recorded for each plant/species (other parameters might need to be recorded depending on the species involved, but that would have to be decided once the species are known for certain): <ul style="list-style-type: none"> <li>○ Reason for relocation</li> </ul> </li> </ul>	<p>Plan at least four weeks ahead and monitor implementation daily</p> <p>Keep planning and monitoring records</p>

ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/PARTNERSHIP
		<ul style="list-style-type: none"> <li>○ Date lifted and exact method used to remove, store and relocate the plants.</li> <li>○ Period of storage.</li> <li>○ Date replanted and method of replanting if applicable.</li> <li>○ Watering regime if applicable.</li> <li>○ Monitoring method if applicable.</li> </ul> <ul style="list-style-type: none"> <li>• In the case of relocation on-site, plant survival will be assessed for several years each growing season when others of this species in the area are found to have come into flower or leaf. Monitoring method to be determined by rehabilitation practitioner involved.</li> <li>• Information on the entire procedure must be published or made available online so as to contribute to future rescue/relocation attempts in the Tsau//Khaeb (Sperrgebiet) National Park/southern Namib.</li> </ul>	
CONSERVATION OF IMPORTANT ARCHAEOLOGICAL SITES	To optimise the site in terms of avoidance of important archaeological sites.	<ul style="list-style-type: none"> <li>• Demarcate the access zones and align individual turbines in order to avoid the sensitive archaeological sites. Reconsider the placement of wind turbines, 10, 16, 21 and 22.</li> </ul>	Engineer, Diaz Wind Power , SEO <b>Periodic monitoring</b>
CIVIL AVIATION	To adhere to civil aviation safety regulations	<ul style="list-style-type: none"> <li>• Apply for approval of each wind turbine at the Directorate of Civil Aviation in terms of physical features and electro-magnetic interference.</li> </ul>	Diaz Wind Power <b>Record keeping of approvals</b>
IMPORTANT AVIAN FLIGHT CORRIDORS	To optimise the site in terms of avoidance of important avian flight corridors	<ul style="list-style-type: none"> <li>• Demarcate ZONE 1 in order to avoid the important avian flight corridors.</li> </ul>	<b>Engineer, Diaz Wind Power, SEO, external specialist</b>

ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/PARTNERSHIP
		<ul style="list-style-type: none"> <li>Prescribe underground cabling between each turbine and the site substation to eliminate cumulative collision impacts</li> <li>Implement a bird (including bats) strike monitoring system by recording all bird strikes and that is reviewed at each meeting of the EWG with the SEO on a quarterly basis. Make the data available to MET and NamPower for further scientific investigation.</li> </ul>	See management plan of longitudinal bird impact assessment.
TSAU//KHAEB (SPERRGEBIET) NATIONAL PARK	To ensure that access is permitted to work in a restricted area	<ul style="list-style-type: none"> <li>Diaz Wind Power must obtain the relevant permits from the NamDeb Diamond Corporation in order to gain access into the area for construction purposes.</li> <li>Diaz Wind power must consult with the Ministry of Mines and Energy, who may impose additional requirements and conditions before granting the client permits to investigate, construct and operate the site.</li> </ul>	NamDeb Ministry of Mines and Energy Diaz Wind Power As Required
DESIGN OF WIND TURBINES	To minimise the eroding effect of wind –driven sand	<ul style="list-style-type: none"> <li>Design engineers must consider some form of protective cladding on the WTG towers (i.e. rubber or another energy absorbing material).</li> </ul>	Engineer, Diaz Wind Power Periodical design review
VISUAL IMPACT	To minimise the visual impact of the wind turbines.	<ul style="list-style-type: none"> <li>Design Engineers must consider the material for the turbines and turbine blades in an appropriate colour to blend it with the surroundings.</li> <li>Use bird-friendly turbine lighting</li> <li>Eliminate or minimise additional light sources, e.g. at site substation</li> <li>Prescribe underground cabling between each turbine and the site substation to minimise visual impact</li> </ul>	Engineer Diaz Wind Power Periodical design review

ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/PARTNERSHIP
POVERTY ALLEVIATION AND GENDER EQUALITY	<p>To ensure that the project renders the maximum level of poverty alleviation possible, and to promote gender equality in economic opportunities.</p> <p>Optimise local service and contractor procurement.</p> <p>Optimise expenditure to local companies.</p>	<ul style="list-style-type: none"> <li>• During drafting of tender documents, the consultant shall include provisions designed to maximise the use of local labour. All unskilled labour shall be sourced from local communities, i.e. Luderitz. Specific recruitment procedures shall be discussed with the Karas Regional Council and spelled out.</li> <li>• Diaz Wind Power shall ensure that local firms enjoy preference during tender adjudication.</li> <li>• Diaz Wind Power shall consider how to structure the various components of the projects so as to optimise benefits to local contractors and SMEs.</li> </ul>	<p>Diaz Wind Power</p> <p>Labour consultant</p> <p>Karas Regional Council</p> <p>Criteria design</p> <p>Tender / Bid review</p>

Figure 2: Different access management zones within the project area

## 6.2 Construction Phase

Responsibility: Diaz Wind Power (Pty) Ltd shall consider these aspects in conjunction with the SEO and contractors.

ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/PARTNERSHIP
ENVIRONMENTAL MANAGEMENT	To ensure adherence to the EMP	<ul style="list-style-type: none"> <li>Diaz Wind Power shall appoint a Site Environment Officer (SEO) to coordinate and monitor the adherence to the Tsau//Khaeb (Sperrgebiet) National Park Management Plan and this Environmental Management Plan (EMP), as well as the external environmental audit process.</li> <li>The SEO will establish a working group with the relevant stakeholders in the Ministry of Environment and Tourism to actively review and approve project activities in terms of adherence to the Tsau//Khaeb (Sperrgebiet) National Park Management Plan and the Environmental Management Plan, as well as the external environmental audits.</li> <li>The SEO is responsible for the coordination of and liaison with the MET work group.</li> </ul>	SEO, MET Scope of responsibility Quarterly performance review
		<ul style="list-style-type: none"> <li>All management and development decisions and activities shall be based on the principle of Sustainability and on the Precautionary and Polluter Pays Principles (See Tsau//Khaeb (Sperrgebiet) National Park Management Plan).</li> <li>Implement an external environmental audit system on a quarterly basis during construction and on an annual basis during the operation of the Wind Park. This shall be used to verify the effectiveness of the EPM and implement adjustments if required</li> </ul>	Diaz Wind Farm, SEO, MET See section 5.3

ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/PARTNERSHIP
Accommodation and personnel management	To ensure that the impact of personnel is minimised	<ul style="list-style-type: none"> <li>No personnel shall be accommodated on site, except for security guards.</li> <li>No permanent accommodation facilities shall be allowed on site.</li> </ul>	Diaz Wind Farm, SEO, MET  Periodical review
Employee Awareness Raising	To ensure that the entire construction workforce is aware of the provisions of this EMP and the reasons for enforcing them.	<ul style="list-style-type: none"> <li>All staff shall receive an induction course prior to commencing work. The SEO shall discuss the EMP and Code of Conduct (CoC) with all employees and make sure that all understand the contents and importance thereof.</li> <li>The employees shall be explained why this EMP is being enforced, i.e. the need to protect the environment.</li> <li>Constant reinforcement is crucial.</li> <li>New employees who join the project later shall receive an induction course before they commence with work.</li> <li>Acknowledgement of attending the induction course and understanding the contents of it shall be signed off and the attendance register kept on record.</li> <li>Personnel performance appraisal shall include environmental compliance issues.</li> </ul>	SEO  Induction and reinforcement plan and records
HEALTH,SAFETY AND SECURITY	<p>To aim for zero incidents and accidents on the construction site.</p> <p>To ensure there are emergency response procedures in place in case of incidents and accidents.</p>	<ul style="list-style-type: none"> <li>MET team shall be allowed to do site inspections any time.</li> <li>Some parts of the project could however pose a safety risk to the MET staff if they do not inform the site supervisor before hand of their intention to visit the site.</li> <li>The site supervisor shall therefore be contacted before the intended visit so that he/she can inform the MET staff of the necessary safety requirements before entering the site.</li> </ul>	MET, SEO, Contractor  SHE management Plan and procedures.  Approvals and periodical review records

ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/PARTNERSHIP
	<p>To ensure security measures are in place to protect property and life for the duration of the contract.</p>	<ul style="list-style-type: none"> <li>• MET shall also be made aware of the fact that they will be required to wear the necessary PPE's (Personal Protective Equipment) on site.</li> <li>• The Contractor shall ensure the least potential safety hazards during construction. The Contractor's plan to achieve this shall be discussed at the project initiation meeting.</li> <li>• The Contractor shall liaise with the Traffic Authorities for their approval in this regard.</li> <li>• Proper traffic and safety warning signs shall be placed at the construction site to the satisfaction of the Engineer and the Roads Authority.</li> <li>• The Contractor shall adhere to the regulations pertaining to Health and Safety of the Labour Act, including the provision of protective clothing, failing which the Contract may be ended with immediate effect.</li> <li>• The contractor shall enforce relevant Health and Safety Regulations for these specific activities.</li> <li>• Provide an AIDS awareness programme to all staff.</li> <li>• Make sure that all staff are equipped and know how to use safety and personal protective equipment (PPE). This includes goggles, ear plugs, dust masks, steel-toed shoes, gloves, overalls, etc.</li> <li>• Staff will be trained in the appropriate use of PPE and the potential consequences if it is not used.</li> <li>• The use of PPE shall be enforced.</li> <li>• Signage indicating the use of PPE will be erected at appropriate locations.</li> </ul>	


ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/PARTNERSHIP
		<ul style="list-style-type: none"> <li>• Hazard identification signage shall be erected at appropriate locations.</li> <li>• Keep a comprehensive first aid kit at construction points.</li> <li>• All items for treatment as specified in the material safety data sheets for hazardous materials shall be available in the first aid kit.</li> <li>• Ensure that all staff knows where the first aid kits are located and who is trained in first aid.</li> <li>• At least one person must be available on site that is trained in first aid.</li> <li>• All injuries and near miss incidents will be reported to the ER and recorded in a Health and Safety rapport to be submitted to Diaz Wind Farm on a monthly basis. Measures to prevent recurrence shall be implemented and included in the monthly report.</li> <li>• Establish an emergency rescue system for evacuation of serious injured people.</li> <li>• Emergency procedures for accidents shall be communicated to all employees.</li> <li>• Emergency facilities are available at Lüderitz (police, fire brigade, and hospitals). Emergency telephone numbers shall be prominently displayed in the site office as well as on the outside of the site office.</li> <li>• Contact details of the resident engineer and the second in charge must be forwarded in writing to the Lüderitz Town Council</li> <li>• The Lüderitz fire brigade shall be informed in a case of fire as soon as possible. Do not wait until the fire is out of control.</li> </ul>	



ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/PARTNERSHIP
		<ul style="list-style-type: none"> <li>• No alcohol/drugs are allowed on site and anyone found to be under the influence of alcohol/drugs will be disciplined.</li> <li>• All drivers must adhere to traffic regulations at all times. No speeding shall be allowed.</li> <li>• All vehicles shall use the 4 wheel drive mode only on site.</li> <li>• The speed limited at the construction site will be 30km per hour.</li> <li>• No driving shall be allowed after 18h00.</li> <li>• Make sure all drivers/operators have licenses for the vehicles/equipment they are driving. Copies of these records must be kept on file and must be accessible for inspection.</li> <li>• Fire extinguishers shall be readily available at the construction site office. Staff members from the construction team must be designated and trained to handle emergency situations such as fires, and trained to handle the necessary emergency equipment.</li> <li>• Emergency procedures shall be in place for incidents and accidents on site and staff trained in these procedures.</li> <li>• Indiscriminate walking outside the construction zones shall be avoided. The maximum area to be used for construction should be demarcated.</li> <li>• It is important that the necessary precautions be taken to protect property against theft.</li> <li>• Nobody shall carry any firearm, or store it in his vehicle or at the construction site.</li> <li>• Dangerous areas shall be clearly marked and access to these areas controlled or restricted.</li> </ul>	

ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/PARTNERSHIP
		<ul style="list-style-type: none"> <li>• All visitors shall report to the site office before entering the construction site. No visitors shall be allowed on site without the permission of the site engineer.</li> <li>• Train people who handle fuels in the correct procedure / technique to transfer fuels.</li> <li>• Make sure all vehicles are roadworthy. Repair faulty brakes, exhausts etc. immediately.</li> <li>• Good driving and adherence to safety rules will result in a minimum number of road and workplace accidents.</li> <li>• Fire extinguishers shall be available at all high risk areas. Staff shall be trained to handle such equipment.</li> <li>• Cooking places shall be located at a safe distance from fuel / explosives storage areas and vehicle parking sites.</li> <li>• No fires shall be lit on the construction site.</li> <li>• Smoking is prohibited in areas where it is a fire hazard, e.g. fuel storage areas, workshops, etc.</li> </ul>	
<p>CONSERVATION OF THE NATURAL AND HISTORICAL ENVIRONMENT</p>	<p>To minimise damage to soil, vegetation, habitat and heritage resources during the construction phase.</p>	<ul style="list-style-type: none"> <li>• At the outset of construction ZONE 1: NO GO AREA shall be clearly demarcated and fenced off.</li> <li>• At the outset of construction (and during construction as may be applicable), the SEO and the contractor shall visit all areas to be disturbed, including the access road and other areas to be disturbed. Work shall be carefully planned before entering the worksite to keep the total footprint of the operations: <ul style="list-style-type: none"> <li>○ At the substation and support facility to 100m by 100m,</li> <li>○ at each WTG worksite to 50m x 50m with a 3m x 50m crane</li> </ul> </li> </ul>	<p>SEO, NBRI, MET, SKEP</p> <p>Activity planning approval and review of plan.</p> <p>See Vegetation Management Plan (review and monitoring)</p> <p>See section 5.3</p> <p>Audit and review periods</p>

ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/PARTNERSHIP
		<p>erection section along the access road and</p> <ul style="list-style-type: none"> <li>○ at access roads to 4.5m wide with inside turning radius of 30m and 8m wide bends.</li> <li>• Access and parking at work sites shall be planned and organized in order to facilitate the work intended at each site while prevented the creation of new tracks around work sites.</li> <li>• Areas to be disturbed shall be clearly demarcated with small pole markers, and no land outside these areas shall be disturbed or used for construction activities. The pole markers shall remain in place during the operation of the project and shall be removed during decommissioning.</li> <li>• A Botanist or rehabilitation specialist in conjunction with the SEO and NBRI shall be responsible for the plant relocation (Refer to Appendix A for a list of plants that need to be rescued).</li> <li>• In the case of relocation on-site, plant survival shall be assessed for several years each growing season when others of this species in the area are found to have come into flower or leaf. Monitoring method to be determined by rehabilitation practitioner involved.</li> <li>• Record all succulent species in order to contribute to a national succulent atlas.</li> <li>• Information on the entire procedure shall be published or made available online so as to contribute to future rescue/relocation attempts in the Tsau//Khaeb (Sperrgebiet) National Park/southern Namib.</li> <li>• Fixed point photography, initiated prior to construction activities, shall be extensively utilized in ZONE 1 and ZONE 2</li> </ul>	

ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/PARTNERSHIP
		<ul style="list-style-type: none"> <li>• Consult the SEO before any new areas are disturbed which have not yet been visited.</li> <li>• No off-road driving shall be allowed.</li> <li>• All vehicles must stay strictly in the one track made – be careful to drive carefully in this track and not to deviate from it.</li> <li>• No plants shall be removed in the project area by any member of the construction team, including sub-contractors.</li> <li>• Note that the collection of animals, plants and minerals is prohibited in all Namibian National Parks</li> <li>• If any Namaqua chameleons are encountered during construction activities, it needs to be carefully removed and relocated to an undisturbed area in the Park.</li> </ul> <div data-bbox="936 820 1368 1066" style="text-align: center;">  </div> <ul style="list-style-type: none"> <li>• No animal shall be killed, chased, baited or harassed, and no eggs shall be removed from a bird's nest, nor may the nest be tampered with or damaged.</li> <li>• Any staff members caught in such an activity shall be handed over to the authorities and shall be dismissed from the contract.</li> <li>• Avoid small mammal / reptile and bird nesting. Do not hurt, kill, or unnecessarily disturb birds or animals.</li> </ul>	

ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/PARTNERSHIP
		<ul style="list-style-type: none"> <li>No wood shall be collected from the construction area. The Contractor must provide either meals or cooking gas for the workforce to cook their own meals (during lunch hours).</li> <li>Under the Heritage Act of 2004, it is illegal to remove a fossil without the consent of the National Heritage Council of Namibia. Should any new finds come to light at any stage during the construction phase, the site shall be demarcated to prevent damage and shall immediately be reported to the National Heritage Council. (Contact: Karl Aribeb 061 244 375 )</li> <li>Do not disrupt any of the important archaeological sites, these shall be clearly demarcated. Contractors shall be aware of the specific sites.</li> <li>Any transgressions of Park rules shall immediately be communicated to the SEO who will take the necessary action.</li> </ul>	
ROAD MAKING AND DRIVING	<p>To ensure the making of roads are kept to a minimum, so as to avoid unnecessary damage to the fragile desert plains.</p> <p>To ensure that track discipline is maintained at all times by the entire construction team.</p> <p>To minimise amount of dust generated</p>	<ul style="list-style-type: none"> <li>Construct road layers only if essential.</li> <li>Do not make new roads when the quality of existing roads deteriorates. Repair or upgrade existing roads.</li> <li>Road construction methods shall ensure good road surfaces to preclude vehicles driving off road to find smoother surfaces with less corrugations or potholes.</li> <li>Do regular road maintenance to ensure good road surfaces.</li> <li>Prevent cutting of corners. Demarcate areas that are prone to corner cutting so that this is avoided.</li> </ul>	<p>SEO, Contractor</p> <p>Planning and design review at each step of approval.</p> <p>Continuous monitoring and review</p>

ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/PARTNERSHIP
		<ul style="list-style-type: none"> <li>• Activities causing dust shall be limited along access roads by keeping to the driving speed (30km/hr) on all tracks in the project area.</li> <li>• As far as possible existing tracks within the present servitude shall be utilized for both construction and maintenance. These shall be clearly indicated, together with designated turning points.</li> <li>• Particularly Zone 2 and 3 indicated in Figure 2 the area used shall be constrained as far as possible and clearly indicated. The choice shall not be left to the individual.</li> <li>• Vehicles driving along the Project Area shall engage four wheel drive to prevent spinning and consequent impacts on fragile desert surfaces.</li> <li>• Large vehicles shall have right of way and light vehicles shall leave the road (at the designated areas) to allow for an oncoming heavy vehicle to pass.</li> <li>• In order to promote visibility and communication between drivers (and prevent accidents with consequent environmental impacts) vehicles shall always be driven with their lights on and indicators shall be used as normal on the Project Area.</li> <li>• Markers shall be used to delineate the chosen access tracks into the construction area.</li> <li>• Erect signage at the access points to warn motorists about construction activities and heavy vehicle movement where appropriate.</li> <li>• Only use designated turning circle areas. Use 3-point turns and not U-turns.</li> </ul>	

ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/PARTNERSHIP
		<ul style="list-style-type: none"> <li>• Prevent shortcuts between roads.</li> <li>• Tyre pressures should be as low as possible to reduce impacts.</li> <li>• All material for road or site construction to be brought in from outside of Park area and to be approved by the SEO.</li> <li>• Drivers shall keep their headlights on when driving on gravel roads.</li> <li>• Put a dust suppressant on the road, with regular re-sprays scheduled when the existing coat is no longer efficient. (Contact details for agent: tel: +27 11 618 3860; fax: +27 11 614 0021; email: <a href="mailto:grant@monitorspray.co.za">grant@monitorspray.co.za</a>)</li> <li>• Roads no longer in use shall be rehabilitated. (See Rehabilitation section)</li> </ul>	
<p>WASTE MANAGEMENT AND WATER RESOURCE MANAGEMENT</p>	<p>To avoid potential surface and groundwater pollution.</p> <p>To ensure that sound waste management practices are adhered to during construction.</p>	<ul style="list-style-type: none"> <li>• The Contractor shall submit a waste management plan, including how it is intended to dispose of hazardous and general waste, as described hereunder. This plan shall be reviewed and approved by the SEO</li> <li>• All sewerage waste shall be removed regularly and disposed of at a sewerage treatment facility (i.e. not to be disposed of anywhere at the construction site).</li> <li>• Make sure that portable chemical toilets to be are in good working order and that they are clean.</li> <li>• All waste (including domestic and construction waste) produced daily shall be taken out as the team leaves the park.</li> <li>• No waste shall be buried.</li> <li>• All recyclable waste shall be taken to a recycling depot.</li> </ul>	<p>SEO</p> <p>Management plan approval and periodic monitoring and review</p> <p>Design planning and review.</p>

ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/PARTNERSHIP
		<ul style="list-style-type: none"> <li>• Adequate separate containers for hazardous and domestic waste shall be provided on site. They shall be clearly marked.</li> <li>• The workforce shall be sensitised to dispose of waste in a responsible manner and not to litter.</li> <li>• The construction area shall be kept free of waste at all times. All construction sites shall be cleaned on a daily basis before leaving the construction site.</li> <li>• Provide sufficient waste bins at work sites. Make sure that all waste is removed from work and campsites.</li> <li>• Refuse bins must be stable, i.e. cannot be tipped by animals, and have scavenger and baboon proof lids.</li> <li>• Make sure that the bins are covered so that plastic bags, paper etc are not blown away.</li> <li>• Make sure that the bins are regularly emptied and the waste taken to an appropriate waste dumpsite (i.e. Lüderitz for general waste and WESCO Salvage to be contacted to remove hazardous waste).</li> <li>• No waste shall remain on site after completion of the project.</li> <li>• Servicing of vehicles in the field or at the construction site is not permitted.</li> <li>• Drip trays shall be available for all vehicles that are intended to be used during construction. These trays shall be placed underneath each vehicle while the vehicles are parked. The drip trays shall be cleaned every morning and the spillage handled as hazardous waste.</li> </ul>	



ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/PARTNERSHIP
		<ul style="list-style-type: none"> <li>• Accidental spills shall be cleaned immediately. The contaminated soil shall be treated as hazardous waste.</li> <li>• In the event of an hazardous spill:</li> <li>• Immediately implement actions to stop or reduce the spill.</li> <li>• Contain the spill.</li> <li>• Arrange implementation of the necessary cleanup procedures.</li> <li>• Collect contaminated soil, water and other materials and store it in an appropriate container for later disposal at the Walvis Bay hazardous waste disposal site.</li> <li>• All spills shall be reported and a "spills register" kept.</li> <li>• A hazardous material spill kit shall be available at the construction site and there shall be at least one person with appropriate authority who is trained in hazmat response.</li> <li>• Refuelling vehicles shall be equipped with specific vehicle spill kits. Drivers shall be trained in relevant spill response procedures.</li> <li>• Explosives shall be stored according to the prescribed regulations.</li> <li>• Designated areas for the storage of potentially hazardous material shall be lined with concrete. The bunded area shall be of adequate capacity to contain 1,5 times the volume of the hazardous material to be stored in the bunded area.</li> <li>• Hazardous substances shall be stored in a well contained area.</li> <li>• Corrosive, explosive, toxic, and flammable material shall be stored in separated areas.</li> <li>• All hazardous materials shall be stored in separate containers (concrete liner, container, or metal or plastic drip tray) and stored</li> </ul>	

ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/PARTNERSHIP
		<p>for transport and disposal at an approved waste disposal site or for collection by an oil recycling company such as WESCO Salvage (this company collects significant quantities of oil from central locations throughout the country).</p> <ul style="list-style-type: none"> <li>The nearest Hazardous waste disposal site is in Walvis Bay but WESCO Salvage removes hazardous waste from Lüderitz and shall be contacted to remove all hazardous waste. No hazardous waste shall be burned.</li> <li>Fuel tanks on site shall be properly banded. The volume of the banded area shall be sufficient to hold 1.5 times the capacity of the storage tanks. The floor of the banded area shall be concrete and the sides high enough to achieve the 1.5 times holding capacity.</li> <li>Foam fire extinguishers shall be in close proximity to fuel kept on site. There shall be trained personnel to handle this equipment. At least two extinguishers shall be placed at every fuel storage area.</li> <li>The contractor shall utilise water only as specified in the approved water abstraction plan for the project.</li> <li>Water shall be used sparingly and all faulty and leaking taps, toilets and pipes shall be immediately repaired.</li> </ul>	
Borrow material and borrow pits	Use of soil and rock from the site for construction purposes	<ul style="list-style-type: none"> <li>Only materials from commercial borrow-pits shall be used for construction. No soils on site shall be used for construction except for material excavated for foundations, and compaction of in-situ material for roads.</li> </ul>	<p>SEO, Contractor</p> <p>Record management and review</p>
REHABILITATION	Re establishment of pre-disturbance form and ecological	<ul style="list-style-type: none"> <li>Rehabilitation should be done in the following manner: <ul style="list-style-type: none"> <li>Compacted areas such as where tracks crossed gravel plains</li> </ul> </li> </ul>	DIAZ wind farm SEO

ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/PARTNERSHIP
	function (soil crusts, plants and animal burrows)	<p>shall be ripped by using picks and rakes, avoiding parallel furrows that will promote erosion.</p> <ul style="list-style-type: none"> <li>○ Ripping shall occur to full rooting depth. On gravel plains a depth of about 50 mm should be adequate as this will break down the compaction without loosening too much of the soil.</li> <li>○ The disturbed area shall be remodelled to, as far as possible, resemble previous conditions and fit in with the adjacent landscape</li> <li>○ Soil and gravel shall be raked from adjacent areas to try and recreate the same texture and look as surrounding areas. Stones shall be redistributed with rakes so that the surface texture resembles the surroundings.</li> <li>○ Where applicable, surfaces shall be swept using brooms to fill in the spaces between the stones with the fine sand and to remove visible borders and edges.</li> <li>○ To promote re-establishment of surface crusts on the gravel plains or in areas of powder sand, a fine spray shall be sprayed over the swept soil to simulate rain.</li> <li>○ In order to prevent re-disturbance of rehabilitated tracks, physical barricades (e.g. rocks or sign boards) shall be implemented as an interim deterrent. All district personnel will be allowed to use the existing access/servitude roads. Any temporary roads (i.e. turning points for heavy vehicles) will be closed and rehabilitated.</li> </ul>	Design of rehabilitation and review. Audit rehabilitation Apply Vegetation Management Plan
ZONE 2 and 3	To protect sensitive habitats	<ul style="list-style-type: none"> <li>• New impacts to these habitats shall be avoided at all costs. Where not possible, follow mitigation recommendations as described for the rehabilitation of existing tracks.</li> </ul>	DIAZ wind farm, SEO, contractor Exclusion planning, weekly monitoring, monthly review and

ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/PARTNERSHIP
		<ul style="list-style-type: none"> <li>Project workers shall be informed of the sensitive aspects of these habitats to avoid aimless wandering around on these sites. With the extended nature of this project even the impact of human footprints over a long period of time can have a significant impact on sensitive habitats.</li> </ul>	<p>immediate rectification. Audit as per section 5.3</p>
REHABILITATION	To rehabilitate the site office, work sites, servitude areas, tracks and other areas disturbed during construction as close to their original state as reasonably possible.	<ul style="list-style-type: none"> <li>All equipment, waste, temporary structures, stockpiles etc shall be removed from the work sites.</li> <li>Final payment shall not be issued unless the environmental consultant is satisfied with the obligations listed under this section ("rehabilitation").</li> <li>Main contractor shall be held responsible for all unnecessary damage due to non-compliance, whether caused by his/her company or by subcontractors.</li> </ul>	<p>DIAZ wind farm SEO</p> <p>Design of rehabilitation and review. Audit rehabilitation Apply Vegetation Management Plan</p>
REHABILITATION MONITORING	To ensure successful rehabilitation	<ul style="list-style-type: none"> <li>During the first month of rehabilitation, monitoring is very crucial and it is recommended that the SEO visit all rehabilitated sites at least twice a week. During this visit, the SEO shall check for any signs of erosion and check the progress on re-establishing the surface crust. Any indications of unsuccessful rehabilitation shall require that the rehabilitation process to be repeated again and at this point it shall be necessary to gain the expertise of a desert rehabilitation specialist.</li> <li>The SEO shall oversee the project and implement management and monitoring recommendations.</li> <li>Workers shall be familiarized with the management recommendations and contractually bound to its stipulations.</li> </ul>	<p>DIAZ wind farm SEO</p> <p>Design of rehabilitation and review. Audit rehabilitation Apply Vegetation Management Plan</p>

ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/PARTNERSHIP
		<ul style="list-style-type: none"> <li>The SEO shall conduct regular site inspections and submit reports in this regard to the NEM.</li> </ul>	

### 6.3 Operation and Maintenance Phase

Responsibility: Diaz Wind Power (Pty) Ltd shall consider these aspects in conjunction with the SEO and EWG.

ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/ PARTNERSHIPS
CONTINUITY OF SOCIAL AND ENVIRONMENTAL MANAGEMENT	To ensure continuity of environmental and social management actions once the Windfarm is operational.	<ul style="list-style-type: none"> <li>Implement an external environmental audit system on an annual basis during the operation of the Wind Park. This shall be used to verify the effectiveness of the EPM and implement adjustments if required.</li> <li>The SEO shall provide Diaz Wind Park staff with appropriate guidelines for environmental management during operation of the Wind farm, including: <ul style="list-style-type: none"> <li>All relevant provisions contained in the "construction" EMP such as keeping a complaints register, sound disposal of hazardous and general waste, track discipline, health and safety precautions, etc.</li> <li>Keeping a complaint register.</li> <li>The SEO shall design a record system for environmental, health and safety incidents and accidents along this pipeline.</li> </ul> </li> </ul>	SEO, Diaz Wind Farm  Periodic review

ASPECT	OBJECTIVE	MANAGEMENT AND MONITORING MEASURES	RESPONSIBILITY/ PARTNERSHIPS
CONTINUOUS MONITORING	Successful relocation and rehabilitation of vegetation.	<ul style="list-style-type: none"> <li>In the case of relocation on-site, plant survival shall be assessed for several years each growing season when others of this species in the area are found to have come into flower or leaf.</li> <li>Monitoring of the success of relocation and rehabilitation shall be done every 6 months.</li> <li>Information on the entire procedure shall be published or made available online so as to contribute to future rescue/relocation attempts in the Tsau//Khaeb (Sperrgebiet) National Park/southern Namib.</li> </ul>	DIAZ wind farm SEO Design of rehabilitation and review. Audit rehabilitation Apply Vegetation Management Plan
	To determine the long term effect of noise of turbines on Brown Hyena community.	<ul style="list-style-type: none"> <li>Monitoring of operation of Wind Farm (especially noise) on the movement of Brown Hyeana</li> </ul>	SEO Specialist access and research support plan Monitoring review.

## 6.4 Decommissioning Phase

Responsibility: Diaz Wind Power (Pty) Ltd shall consider these aspects in conjunction with the SEO and EWG.

COMPONENT	TARGET	MANAGEMENT/MONITORING MEASURES	RESPONSIBILITY/ PARTNERSHIPS

DECOMMISSIONING	To ensure that the project does not have cumulative negative effects after completion of the pipeline.	<ul style="list-style-type: none"> <li>• No waste may remain on site after completion of the project.</li> <li>• Eradication of all exotic or invasive plant shall be conducted before decommissioning.</li> <li>• All labourers working on the final stages of the construction shall be notified at least 30 days before completion of the project. This will ensure proper socio-economic decision-making on the part of the labourers.</li> <li>• All areas used during the construction and operation (haul roads, site offices, etc) shall be cleared and inspected for decommissioning approval by the EWG. Before approval, the contractor shall still be liable for any costs to ensure proper decommissioning.</li> </ul>	<p>DIAZ wind farm</p> <p>SEO</p> <p>Engineer and contractor.</p> <p>Design of rehabilitation and review. Audit rehabilitation Apply Vegetation Management Plan</p> <p>MET to review and approve final decommissioning results</p>
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## 7 REFERENCES

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MET, 2008. Draft Management & Development Plan for the Tsau//Khaeb (Sperrgebiet) National Park.

APPENDIX A    Vegetation Management Plan

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APPENDIX B Tsau//Khaeb (Sperrgebiet) National Park  
Management Plan

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## APPENDIX C Example of Environmental Penalty System

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*This is only an example and must be reviewed and compiled for site conditions by the SEO and the Environmental Working Group.*

### 1. Fines and penalties

The following fines and penalties are in place for transgressions listed below. It shall be issued after the non-compliance procedure has been duly followed. The SEO shall be the judge as to what constitutes a transgression in terms of this document.

#### FINES

Fines shall be issued per incident at the discretion of the SEO. Such fines shall be issued in addition to any remedial costs incurred as a result of non-compliance with the ESMP. The SEO shall inform the Operator of the contravention and the amount of the fine, and shall deduct the amount from monies due under the Contract.

Fines for the activities detailed below, shall be imposed by the SEO on the Operator and/or his Subcontractors:

Any person, vehicle, equipment, etc. related to the Operator's operations within the designated boundaries of a "no-go" area.	N\$2,000
Any person guilty of reckless driving on and in the vicinity of the site, including excessive speeds.	N\$2,000
Any vehicle driven and items or materials parked or stored outside the demarcated boundaries of the construction site.	N\$2,000
Person repeatedly caught trespassing outside the demarcated construction area.	N\$1,000
Persistent and un-repaired spilling of hazardous materials and materials causing pollution.	N\$3,000
Persistent littering on site.	N\$500

Individuals repeatedly not making use of the designated toilet facilities.	N\$200
Disposal of waste in a manner other than what was agreed upon on site or the prescribed method in the waste management plan section.	N\$5,000
Deliberate non-compliance with PUMA Energy Walvis Bay Terminal Safety Policy	N\$2,000

For each subsequent similar offence the fine may, at the discretion of the SEO, be doubled in value to a maximum value of N\$10,000.

## PENALTIES

Where the Operator inflicts non-repairable damage upon the environment or fails to comply with any of the environmental specifications, he shall be liable to pay a penalty fine over and above any other contractual consequence.

The Operator is deemed NOT to have complied with this Specification if:

- within the boundaries of the site, site extensions and haul/ access roads there is evidence of contravention of the Specification;
- environmental damage due to negligence;
- Safety of Operator personnel and public being compromised due to negligence;
- the Operator fails to comply with corrective or other instructions issued by the Engineer within a specific time;
- the Operator fails to respond adequately to complaints from the public; and
- Payment of any fines in terms of the contract shall not absolve the offender from being liable from prosecution in terms of any law.

The SEO shall be responsible for a Report on the non-repairable damage and / or non-compliance with visual and other evidence as well as issuing the penalty to the Operator with the report attached. A copy shall be handed to the Environmental Working Group.

The following penalties are suggested for transgressions:

<i>Oil spills:</i>	A penalty equivalent in value to the cost of clean-up operation plus N\$1,000.
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<i>Damage to sensitive environment:</i>	A penalty equivalent in value to the cost of restoration operation plus 20%.
<i>Impact on birds:</i>	A penalty to a maximum of N\$2,000 for damages to any natural occurring birds.
<i>Accident due to safety negligence:</i>	A penalty to a maximum of N\$50,000 for injuries to personnel or public.