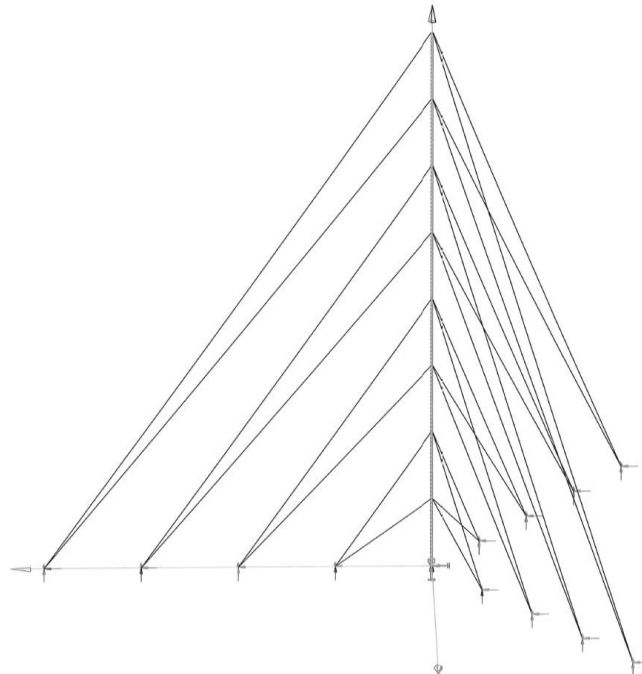


## SCOPING REPORT FOR THE CONSTRUCTION AND OPERATION OF THE GRUNAU WIND MAST NAMPOWER SITE 4 (//KARAS REGION)



**September 2020**

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**EXECUTE SUMMARY**

NamPower intends to construct and commission a wind resource measurement station utilising a 100 m high steel tower. The erection of the wind mast will require 1.5 ha to accommodate the guy wire anchors that hold the mast in position and for stability. The wind resource measurement station as a meteorological mast is required to enable development of a commercial wind farm in future. This project is not for power generation but only for data collection mast to aid in quantifying the wind resource in the area. The wind measurement period will be conducted for 3 years.

The proposed wind mast site is approximately 55 km north-east of Grunau; 34 km from the B1 along the D203 road on farm Dishon 365.

The construction phase is estimated to last between 10 and 20 days and operational phase will include quarterly access to the site for data collection and annual maintenance. Though the activities to be undertaken are not specifically listed in the Environmental Management Act (no 7 of 2007), this project does share elements with the following listed activities land use and transformation, resources removal including natural living resources, television and radio transmission masts and alternate energy programmes.

As per the Environmental Impact Assessment (EIA) Regulations, construction of the this nature and some of the operational activities NamPower will be undertaking require clearance from the Ministry of Environment and Tourism (MET). The purpose of this document therefore is, to provide an indication of the anticipated impacts as a result of the construction and operational activities that will take place at the envisaged Wind Mast site.

A signed land lease agreement between NamPower and the land owner is in place for the period of 3 years up to 2023. In addition Namibia Civil Aviation Authority was also notified.

**DETAILS OF PROJECT STAFF**

This scoping report was generated by staff permanently employed by NamPower within the Transmission Business Unit.

**Environmental Assessment Practitioner**

The Environmental Assessment Practitioner (EAP) for this site was Calvin Sisamu, a fulltime employee of NamPower for the past 4years and 7 months as a Senior Environmentalist. Calvin , has a Batchelor's Degree level in Environmental Engineering, National Diploma in Land Management and MPhil in Environmental Management. He has been working in the environmental field since 2005, including being a Research Technician at Gobabeb Training and Research Centre, Environmental Control Officer and Radiation Safety Officer for Reptile Uranium Namibia a uranium exploration company and Environmental Compliance Officer for Swakop Uranium (Husab Mine) in the Namib Desert. The EAP has no vested interest in the outcome of the process.

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## 1. INTRODUCTION

NamPower intends to construct and commission a wind resource measurement station utilising a 100 m high steel tower.

The wind resource measurement station is required to enable development of a commercial wind farm in future. It is important to state that this project to construct the wind mast is not for power generation purposes but a data collection mast to aid in quantifying the bankable wind resource in the area. The data for this environmental assessment was sourced from EIAs conducted in the area and was supplemented by a site visit in September 2019 and March 2020.

The purpose of this document therefore is, to provide an indication of the anticipated impacts as a result of the construction and operational activities that will take place at the envisaged Wind Mast site.



**Figure 1:** Proposed site indicating Wind Mast in the map in relation to the surrounding area and existing access track.

## 2. PROPOSED PROJECT ACTIVITIES

### (a) CONSTRUCTION PHASE

The Wind Resource Measurement Station will comprise of a lattice tower, stabilized by anchored guy-wires and mounted with the listed measurement sensors at heights. The lattice will be assembled and fitted with the sensor assemblies prior to erection. The data acquisition system, power supply and satellite communication module will be installed closer to the base of the lattice tower.

Civil works will be carried using standard digging equipment depending on the soil conditions at the site. Materials and equipment will be delivered to site using tri-axle heavy duty vehicles and stored at the site, where necessary. The base of the mast will be fenced, while the guy rope anchors won't be enclosed.

**Table 1:** Anticipated construction phase activities.

General Identifiers	Description
Location	<ul style="list-style-type: none"> <li>• Latitude: -27.365194</li> <li>• Longitude: 18.714496</li> </ul>
Site elevation	<ul style="list-style-type: none"> <li>• ±120 m</li> </ul>
Wind Mast Footprint ( Land Size)	<ul style="list-style-type: none"> <li>• 1.4 ha ( Mast and Guy wire anchors included)</li> </ul>
Type of Infrastructure	<ul style="list-style-type: none"> <li>• Electronic and mechanical sensors mounted on a steel tower with steel wire supports in concrete anchors.</li> </ul>
Duration of project	<ul style="list-style-type: none"> <li>• Site works and commissioning will be done within 20 Days.</li> </ul>
Estimate of Number of people to be involved.	<ul style="list-style-type: none"> <li>• Approximately 15 including NamPower and contractor employees.</li> </ul>
Activities to be carried out on site	<ul style="list-style-type: none"> <li>• Existing access track to be used.</li> <li>• Minor excavations for guy wire anchors.</li> <li>• Concrete pouring into excavations.</li> <li>• Assembly of the mast tower.</li> <li>• Installation of sensors.</li> <li>• Commissioning and testing of the measurement station.</li> </ul>

	<ul style="list-style-type: none"> <li>No crane shall be used for the erection of the tower.</li> </ul>
Needs and desirability of the project.	<ul style="list-style-type: none"> <li>The wind resource measurement station is required to enable development of a commercial wind farm.</li> </ul>
Site Rehabilitation	The site will be left tidy and area reinstated where necessary as per the Environmental Management Plan.

**Table 2 :** The main equipment to be installed for the wind resource measurement station is as follows:

<b>Offered Item</b>	<b>Purpose /</b>
Temperature Sensor: NRG 110S	<b>Ambient Temperature measurement</b> (at a height within 10 m of the primary anemometer and a back-up sensor at 2 m above ground level.)
Relative Humidity Sensor: RH5X	<b>Relative humidity measurement</b> (at a height within 10 m of the primary anemometer and a back-up sensor at 2 m above ground level.)
Anemometers: NRG Class I, incl. IEC 61400-12 Calibration	<b>Wind speed measurement (including wind gust)</b> at minimum 4 levels (i.e. 100 m (x2), 80 m, 60 m, 40 m) as per IEC 61400-12-1
Pyranometer: HUKSEFLUX SR11	<b>Global Horizontal Irradiance (GHI) measurement</b> (at a height of approximately 2 m above ground level)
Wind Vanes: NRG 200M, incl. IEC 61400-12 Calibration	<b>Wind direction measurement</b> (at minimum 3 levels at a height within 10 m of the primary anemometer (i.e. 90 m (x2), 70 m, 50 m) as per IEC 61400-12-1)
Barometric Pressure Sensor: NRG BP20	<b>Barometric pressure measurement</b> (at a height within 10 m of the primary anemometer and at a height of approximately 2 m above ground level)

Data Logger: NRG Symphonie PRO, with USB Cable and 2G SD Card	<b>Data acquisition and storage</b> (at the base of the mast tower)
Enclosure: NRG Symphonie Shelter Box	<b>Protection and security</b> (at the base of the mast tower)
Symphonie iPackACCESS \ BGAN M2M Satellite	<b>Data Transmission</b> (at the base of the mast tower)
Camera Surveillance System	<b>Visual Surveillance</b> (at the base of the mast tower)
Solar Module SD030	<b>Battery charging</b> (at the base of the mast tower)
Charging Regulator 12V	<b>Battery charging control</b> (at the base of the mast tower)
Batteries, 12 V 33Ah Sealed Lead Acid	<b>Electricity storage and supply</b> (at the base of the mast tower)

After the electro-mechanical assembly and the erection of the tower are complete, commissioning and testing of the Wind Resource Measurement Station will be conducted.

#### **(b) OPERATIONAL ACTIVITIES PHASE**

The following **operational activities** will be carried out on site and have also been considered for the purpose of this document:

- (a) Data collection and download.
- (b) Maintenance of the Wind Mast , NamPower will maintain the s Wind Mast Station to ensure its reliability of data collected.
- (c) General site inspection to be carried out by the technical and Safety ,Health , Environment and Wellness Departments in line with the Environmental Management Plan quarterly to annual basis.

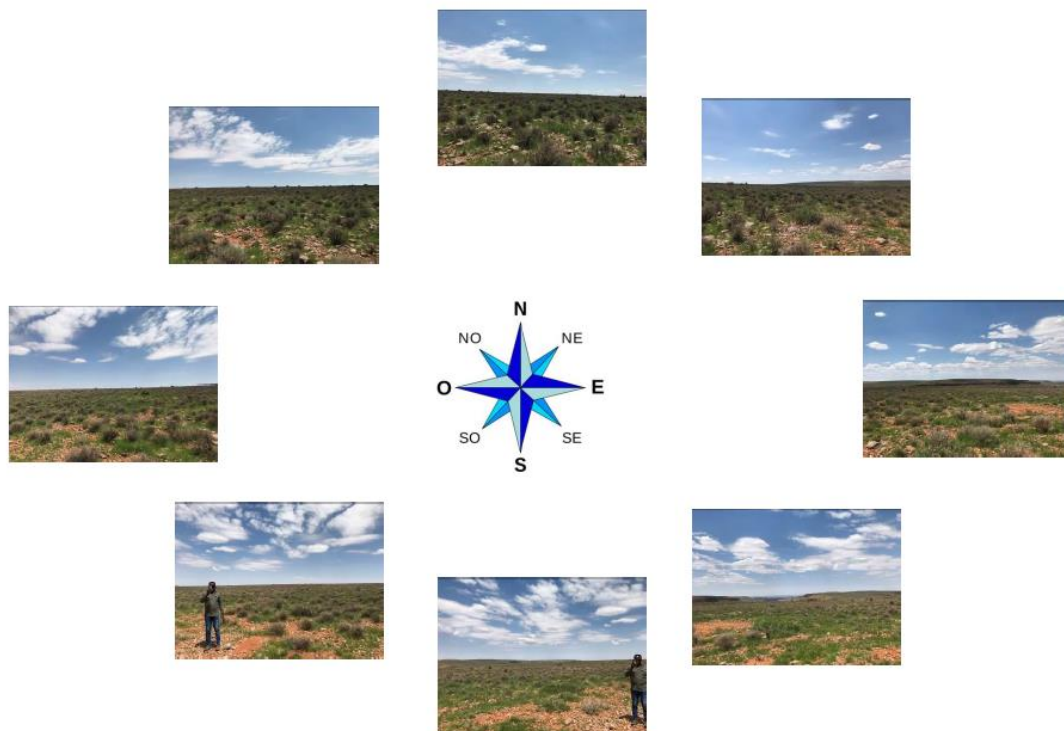
It is important to note that all environmental issues will be taken into account from the onset of the project to ensure environmental best practice is incorporated during the construction and operational phase.



### 3. SITE DESCRIPTION

The proposed wind mast site is approximately 55 km north-east of Grunau; 34 km from the B1 along the D203 road on farm Dishon 365. Farming activities are taking place on the farm and a lease agreement is in place between NamPower and the farm owner.

Grunau is a small settlement at the side of a rail track. The location of Grunau makes it a convenient and popular overnight location for travellers. It's also serves as a good springboard for visiting the Fish River Canyon.



**Figure 2** : Surrounding area of the proposed site.

#### 3.1 Existing Infrastructure in the area

Access is proposed be gained via the the B1 Road , along the D203 road and farm access track and there is a Telecom Microwave tower on the farm.



**Figure 3** : Existing tracks on the farm and Telecom Microwave Tower within farm Dishon 365 farm boundaries.

### 3.2 Soil and topography

The study area is undulating in nature. The potential soil impacts in the study area is that the soils in the area are susceptible to erosion and compaction, therefore the disturbance of the soil surface in the vicinity of the wind mast, must be minimised to prevent wind erosion.

The footprint of the construction area must be kept small as much as possible and existing access road are to be utilised at all times to avoid off road tracks. The project footprint area should not be cleared entirely and the guy wire anchors must be placed in such a way that surface disturbance is minimised and the site should be rehabilitated after the construction phase.

### 3.3 Biodiversity

Grunau area falls within Succulent Karoo Biomes Environmentally sensitive sites include, but are not limited to: areas with high conservation value due to the presence of important plant specimens, pristine habitats and high biodiversity. To minimise impacts precaution must be taken and only existing track must be utilised.

### **3.4 Climate**

The Grünau area has a typical semi-desert climate and the average annual rainfall ranges between 100 and 200 mm and Most of the rain occurs during the months of February and March. Temperature During the hot summer months (October - March) temperatures can rise up to 40°C during the day and cools down to about 30 C at night. During the short winters, temperatures can go down below zero at night.

The footprint of the construction area must be kept small as possible to minimise surface distance. The bigger the disturbed area the more dust can be generated onsite due to loose soil or surface. Wind speed during construction must be monitored onsite, to ensure that during high wind no work activities should be conducted on site for personnel safety reasons and environmental factors such dust.

### **3.5 Visual resource**

The natural landscape , when viewed from the perspective of a tourist, can be associated with a serene sense of place. The proposed Wind mast will change the visual environment given the height of the Wind Mast tower at 100m and the aviation warning light may cause some disturbance at night. The distance from the proposed to the main road and undulating nature of the surrounding area might mitigate visual impacts to some extent. Therefore the visual impact is largely dependent on the sensitivity of the views and related perspective of visual receptors. The weather conditions in the area also might play a role in reducing the visual impact of the tower.

### **3.6 Archeology**

Archaeological sites provide a snapshot of the past with regards to the way humans lived and interacted with their environments. Archaeological objects include material remains resulting from human activity which are older than 50 years and which are in a state of disuse, such as tools, artefacts, human and hominoid remains and artificial features and structures. Therefore chance finds procedures should be implemented in case of any chance find as no artefacts where recorded as part of the site visit.

### **3.7 Socio-Economic Environment**

Economic activities in the Grunau area is mainly small-stock farming and the population of Grunau settlement is estimated to be 521 persons. . The proposed site is approximately 55km from Grunau and it is farmland. Social issues should be adequately managed to ensure that the project is implemented successfully and local people should be considered for unskilled jobs as part of the project.

#### 4. PROJECT RATIONAL AND ALTERNATIVES

The Environmental Management Act no 7 of 2007, requires that alternatives for each proposed project needs to be evaluated in order to provide assurance that the decision to develop made by the proponent was carefully considered. Alternative sites were considered . The no build option has implications on the ability of Namibia to diversify its electricity generation base and capacity and may hinder the country from embarking on wind generation projects. The true extent of this hindrance can only be determined once the full potential for wind generation in Namibia is understood.

#### 5. LEGAL REQUIREMENTS

All actions going forward should take cognisance of the relevant laws in order to ensure that the project remains within the scope of the law. The following legislation applies as it pertains to the rezoning of any property within Namibia:

The *table 1* provides a summary of the main pieces of national legal requirements which needs to be taken into consideration when the impacts of this proposed project is evaluated and the Environmental Management Plan is developed.

**Table 4: Legislation applicable to the proposed development .**

<i>Legislation:</i>	<i>Section applicable:</i>	<i>Implications:</i>
Environmental Management Act no 7 of 2007	<ul style="list-style-type: none"> <li>• Section 3</li> <li>• Section 27</li> <li>• Section 33 onwards</li> <li>• Section 57</li> </ul>	<ul style="list-style-type: none"> <li>• All activities performed should be in line with the following principles: <ul style="list-style-type: none"> <li>○ Interested and affected parties should have an opportunity to participate in decision making</li> <li>○ Listed activities should be subject to an EIA</li> <li>○ Polluter should pay for rehabilitation</li> <li>○ Pollution should be minimised</li> </ul> </li> <li>• Environmental assessments should be carried out for listed activities. The proposed activity can be classified under the following range of activities: <ul style="list-style-type: none"> <li>○ Land use and transformation</li> </ul> </li> </ul>

<i>Legislation:</i>	<i>Section applicable:</i>	<i>Implications:</i>
		<ul style="list-style-type: none"> <li>• These sections details the process to be followed in order to obtain a clearance certificate</li> <li>• All existing listed activities must obtain a clearance certificate within one year of the law coming into affect (February 2013). Therefore, all existing activities which can be considered a listed activity should apply for clearance.</li> </ul>
EMA Regulations GN 28-30 (GG 4878) (February 2012)	<ul style="list-style-type: none"> <li>• Listed activity: 5.1</li> <li>• 6 – 9; 13; 15; 21 -24</li> </ul>	<ul style="list-style-type: none"> <li>• This activity can be considered a rezoning of property from Undetermined to civic</li> <li>• These sections details the process to be followed in terms of producing an Environmental Assessment, and this process should be adhered to during the generation of information for this document</li> </ul>
Civil Aviation Act 6 of 2016	<ul style="list-style-type: none"> <li>• 55(c)</li> </ul>	<ul style="list-style-type: none"> <li>• Regulations relating to Safety and Security.</li> </ul>
Labour Act no 11 of 2007	<ul style="list-style-type: none"> <li>• Section 3</li> <li>• Section 4</li> <li>• Section 9</li> <li>• Section 39 - 42</li> </ul>	<ul style="list-style-type: none"> <li>• Children under the age of 16 may not be employed</li> <li>• Forced labour may not be used during any construction activities</li> <li>• Basic conditions of employment, as stipulated by the law, must be met</li> <li>• The employer shall ensure the health and safety of all employees and non-employees on site. Employees must fulfil their duties in order to ensure their own health and safety and that of other employees and persons. Employees may leave the work site if reasonable measures to protect their health are not taken.</li> </ul>
Water Act no 54 of 1956	<ul style="list-style-type: none"> <li>• Section 21 and 22</li> <li>• Section 23</li> </ul>	<ul style="list-style-type: none"> <li>• Conditions in terms of the disposal and management of effluent are to be adhered to</li> <li>• Any person causing pollution to a water source shall be guilty of an offence</li> </ul>

<i>Legislation:</i>	<i>Section applicable:</i>	<i>Implications:</i>
Soil Conservation Act no 76 of 1969	<ul style="list-style-type: none"> <li>• Section 4</li> </ul>	<ul style="list-style-type: none"> <li>• Institutions may be ordered by the relevant Minister to construct soil conservation works when and where necessary.</li> </ul>
Public Health Act no 36 of 1919	<ul style="list-style-type: none"> <li>• Section 122</li> </ul>	<ul style="list-style-type: none"> <li>• It is an offence to cause any form of a nuisance</li> </ul>
Water Resources Management Act no 24 of 2004	<ul style="list-style-type: none"> <li>• Section 56</li> </ul>	<ul style="list-style-type: none"> <li>• No discharge of effluent may take place without a permit <ul style="list-style-type: none"> <li>○ Effluent is defined under this Act as any liquid discharge that occurs as a result of domestic, commercial, industrial or agricultural activities</li> </ul> </li> </ul>
Fertilizer, farm feeds, agricultural remedies and stock remedies act 36 of 1947	<ul style="list-style-type: none"> <li>• Section 9 and 18</li> </ul>	<ul style="list-style-type: none"> <li>• To regulate or prohibit the importation, sale, acquisition, disposal or use of fertilisers, farm feeds, agricultural remedies and stock remedies.</li> </ul>
National Heritage Act 27 of 2004	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• All archaeological and paleontological objects belongs to the State.</li> </ul>
Forestry Act 12 of 2001	<ul style="list-style-type: none"> <li>• Section 22:</li> </ul>	<ul style="list-style-type: none"> <li>• A person must have the authority in terms of this Act, except for surveyed erven as defined in section 1 of the Local Authorities Act, to cut, destroy or remove: <ul style="list-style-type: none"> <li>• i) vegetation which is on a sand dune, drifting sand or on any gully unless the reason for doing so is done for the purpose of stabilizing the sand or gully; or</li> <li>• ii) any living tree, bush or shrub growing within a hundred meters of a river, stream or water course.</li> </ul> </li> </ul>

## 6. PUBLIC CONSULTATION

Following the identification of site, the following stakeholders were identified, notified and consulted:

- Namibian Civil Aviation Authority
- Land Owner ( Lease agreement was signed between the proponent and the farm owner) .

Copies of the communication documentation between the proponent and the relevant stakeholders are contained in the appendixes . It is the responsibility of NamPower to work closely with the stakeholders throughout the construction and operation to minimise any impacts and manage cordial relations with stakeholders.

## 7. IMPACT ASSESSMENT AND PRIORITISATION

During the preconstruction and construction phases, it does offer direct and indirect employment opportunities in the receiving communities. However, minor negative impacts in the form of visual intrusion, loss of biodiversity ,dust and noise pollution especially during the preconstruction, construction, operation and rehabilitation phases.

The construction phase will take up to 20 Days . As per standard practice, it is expected that the existing access roads will be used.

**Table 5** : below provides a list of the anticipated aspects and impacts for this project during construction and operation as well as the type of impacts, duration of these impacts and extent of the listed impacts.

Aspect	Impacts	Type of impact	Duration	Extent
Construction Phase				
Increased vehicle movement and off tract	<ul style="list-style-type: none"> <li>• Soil surface disturbance and visual integrity of the area</li> <li>• Disturbance of animals and vegetation</li> </ul>	Negative	Long term	Local
Habitat fragmentation	<ul style="list-style-type: none"> <li>• Animal movement may be restricted</li> </ul>	Negative	Long-term	Local

Aspect	Impacts	Type of impact	Duration	Extent
Ecological and biodiversity loss	<ul style="list-style-type: none"> <li>Loss of biodiversity.</li> </ul>	Negative	Long term	Local
Waste generation	<ul style="list-style-type: none"> <li>Increased amount of general and hazardous waste to be managed by NamPower.</li> <li>Potential visual impacts as a result of littering and windblown material</li> </ul>	Negative	Short term	Local
Dust	<ul style="list-style-type: none"> <li>Increased nuisance and health impacts as a result of dust.</li> </ul>	Negative	Short term	Local
Noise pollution	<ul style="list-style-type: none"> <li>Low noise levels</li> </ul>	Negative	Short term	Local
Health and safety	<ul style="list-style-type: none"> <li>Injuries to employees</li> </ul>	Negative	Short term	Local
Periodic short term influx of people	<ul style="list-style-type: none"> <li>Inflow of money to the area</li> </ul>	Positive	Short term	Local
Periodic and short term influx of People				
Periodic and short term influx of	<ul style="list-style-type: none"> <li>Increased poaching</li> </ul>	Negative	Short/Long term	Local



Aspect	Impacts	Type of impact	Duration	Extent
people in the area	<ul style="list-style-type: none"> <li>Possible HIV/AIDS infections</li> </ul>			
<i>Operational Phase</i>				
Interference with air traffic	<ul style="list-style-type: none"> <li>Airplane collisions with the tower</li> </ul>	Negative	Long term	National
Generation of credible national and commercial weather data	<ul style="list-style-type: none"> <li>Potential of identifying opportunities for wind resource</li> </ul>	Positive	Long term	National
Bird collisions with guy ropes	<ul style="list-style-type: none"> <li>Loss of biodiversity</li> </ul>	Negative	Long term	Local
Waste generation	<ul style="list-style-type: none"> <li>Waste to be managed by NamPower throughout phases.</li> </ul>	Negative	Short term	Local
Creation of jobs	<ul style="list-style-type: none"> <li>Maintenance of Wind mast equipment.</li> </ul>	Positive	Long/short term	Local
Inflow of investment	<ul style="list-style-type: none"> <li>Growth in the economy of Grunau If data to be collected is bankable</li> </ul>	Positive	Long term	Regional/National
	<ul style="list-style-type: none"> <li>Diversify farmer source of</li> </ul>	Positive	Long-term	Local

Aspect	Impacts	Type of impact	Duration	Extent
	income (lease agreement).			

## 8. MANAGEMENT AND MITIGATION

The mitigation measures for the impacts listed above have been discussed in detail in the Environmental Management Plan for this project.

## 9. TERMS OF REFERENCE-DETAILED ASSESSMENT

Based on the impacts identified in this document, it is the opinion of the author that a detailed impact assessment is not required for this project. Changes to the environment and impacts will be minimal and fleeting in nature and therefore do not warrant the expense of further assessments.

Therefore, detailed assessments have not been planned for this specific development at this present time, but if required by the relevant authorities it is recommended that the recommended specialist assessments be carried out for technical purposes only.

Based on the findings stated previously, current conditions on site and the size of the project, no other specialist input is deemed necessary for this project.

## 10. CONCLUSION

Based on the evidence produced during the scoping process, it is very unlikely that this project will have significant adverse impacts on the environment. NamPower is confident that this high level scoping report and Environmental Management Plan for the Wind Mast meets the requirements of the Environmental Management Act and will enable the Ministry of Environment and Tourism to make an informed decision on the acceptability of the proposed Wind Mast at the proposed site.