

## SECTION B: ACTIVITY INFORMATION

### 1. Activity description

Describe the activity, which is being applied for in detail (A1):

InnoWind (Pty) Limited (a renewable energy company that is recognised as an international industry leader for having a well organised approach to the various aspects of developing large wind turbine installations), proposes to erect a temporary wind measurement mast and one wind turbine in Zone 14 of the Coega Industrial Development Zone (IDZ) and one measurement mast in the Pretoria Portland Cement (PPC) Property in the Nelson Mandela Bay Metropolitan Municipality (NMBMM) (see Appendix A and table 1 below) to gather wind speed data and correlate these measurements with other meteorological data in order to produce a final wind model of the above-mentioned farms in Nelson Mandela Bay Metropolitan Municipality (NMBMM) situated in the Eastern Cape Province of South Africa. A measurement campaign of at least 12 months in duration is necessary to ensure that a bankable wind resource study can be produced and will assist in evaluating whether it is feasible to erect wind turbines to produce electricity for supply to the National Grid.

Each wind measurement mast would be a three-sided steel lattice structure approximately 60m in height and 0.5m wide. The footprint of the measurement mast has a 56 metre radius (refer to Appendix C). In addition to a concrete foundation, the measurement mast would be anchored to the ground with approximately 15 guy cables on three sides (five per side) of the mast. The measurement masts would be required to comply with the colour and lighting specifications of the Civil Aviation Authority.

The proposed 60-meter mast is a highly versatile meteorological tower designed specifically for wind resource measurements. Galvanized steel tube construction makes the tower easy to transport to remote sites. Tower tube sections slide together, and then tilt up from the ground using a ginpole and winch. No cranes or concrete foundations are required for installation. The tower will be supported with aircraft cable guy wires and anchored with standard screw-in anchors (although depending on soil conditions, another type of anchor might be used).

In addition to the 60m wind measurement mast, one 2-3 MW power rating wind turbine will also be built. There are two alternatives for the site at which the wind turbine is to be built, both of which are within Zone 14 of the IDZ. The term wind energy describes the process by which wind turbines convert the kinetic energy in the wind into mechanical power and a generator can then be used to convert this mechanical power into electricity. Typical turbine subsystems include:-

- A rotor or blades – the portion of the wind turbine that collects energy from the wind and converts this wind energy into rotational shaft energy to turn the generator.
- A nacelle (enclosure) containing a drive train, usually including a gearbox (some turbines do not require a gearbox) and a generator which converts the turning motion of a wind turbine's blades (mechanical energy) into electricity.
- A tower (80m high), to support the rotor and drive train - the tower on which a wind turbine is mounted is not only a support structure, but it also raises the wind turbine so that its blades safely clear the ground and so can reach the stronger winds at higher elevations.
- Electronic equipment such as controls, electrical cables, ground support equipment, and interconnection equipment.

**Table 1: Coordinates of the proposed location of the 60m measurement mast and 3MW turbine**

SITE NAME	GPS Coordinates (DMS)	
	S	E
Coega met mast alternative 1 (preferred)	33°43'40.00"S	25°37'34.40"E
Coega met mast alternative 2	33°43'35.40"S	25°37'42.90"E
Coega turbine alternative 1 (preferred)	33°44'39.97"S	25°36'49.62"E
Coega turbine alternative 2	33°44'20.33"S	25°36'53.20"E

#### **Site Access:**

Existing access to the site exists in the form of gravel roads that lead to all site alternatives under consideration. The access roads that service the Grassridge substation and powerline servitudes that form the northern boundary of the Zone 14 site will be utilised for construction purposes. It is required that sections of these access roads will have to be re-gravelled and/or levelled to facilitate the installation of the crane and construction platform required for the erection of the single turbine. This will also serve to accommodate the low-bed trucks required to transport the turbine components to the site.

## 2. Alternatives

Describe alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

### 2(a) Site alternatives:

Describe site alternative 1 (**S1, Coega met mast preferred**), for the activity described above, or for any other activity alternative:

The site is located in degraded Bontveld vegetation close to Grassridge substation. There are few species of special concern and low diversity of plants in the region, with alien invasive plant species present.

Describe site alternative 2 (**S2, Coega met mast alternative**), if any, for the activity described above, or for any other activity alternative:

The site is located in degraded Bontveld vegetation close to Grassridge substation 200m north east of the preferred alternative. There are few species of special concern and low diversity of plants in the region, with alien invasive plant species present.

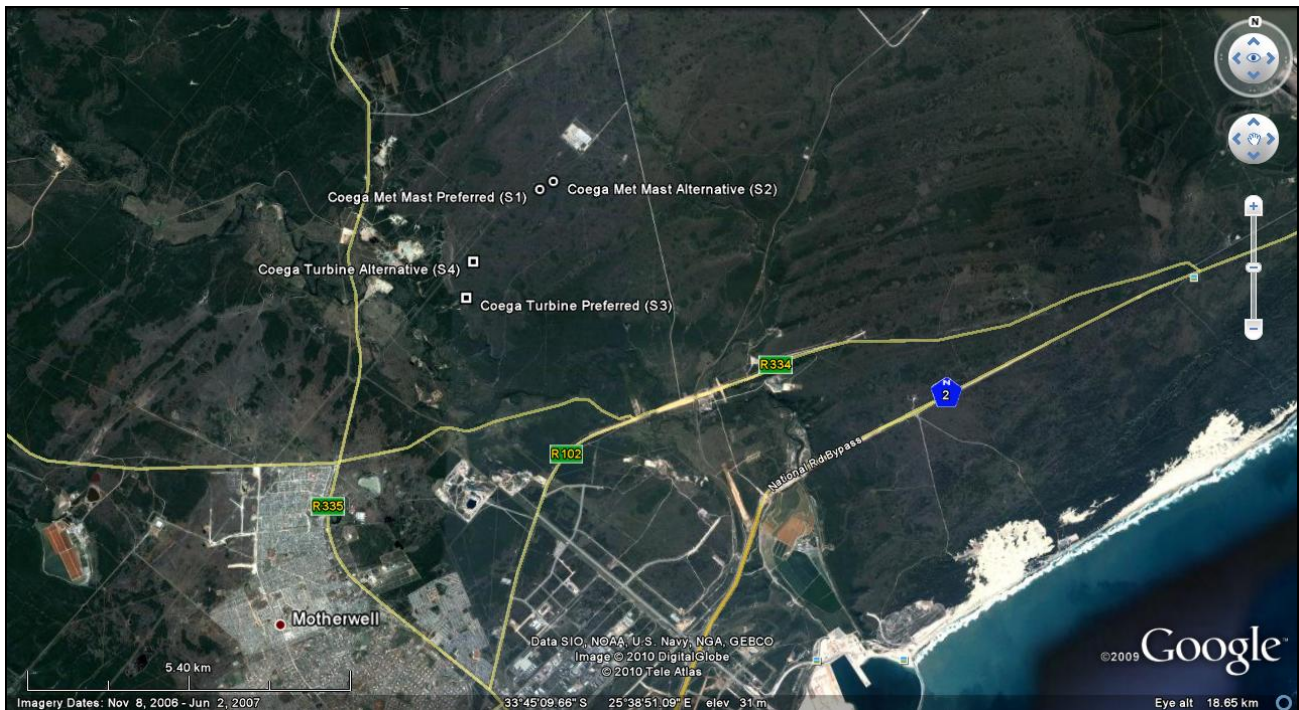
Describe site alternative 3 (**S3, Coega turbine preferred**), for the activity described above, or for any other activity alternative:

The site is located in degraded Bontveld comprising typical Bontveld species, few species of special concern with alien invasive plant species present.

Describe site alternative 4 (**S4, Coega turbine alternative**), if any, for the activity described above, or for any other activity alternative:

The site is located in degraded Bontveld comprising typical Bontveld species, few species of special concern with alien invasive plant species present. The alternative turbine site is 600m to the north east of the preferred alternative.

**Figure 1: Google Earth image of the mast and turbine site alternatives in Zone 14 of the Coega IDZ**



### (2)(b) Activity alternatives:

Describe activity alternative 2 (A2), if any, for any or all of the site alternatives as appropriate:

No activity alternatives are considered in this application as there are no feasible development alternative activities as the core business area of the project proponent, Innowind (Pty) Limited, is wind farm development for the generation of electricity. As such, the fundamental alternative of an activity other than the erection of a mast for wind measurement purposes, as well as the erection of a single wind turbine is not therefore considered further.

Describe activity alternative 2 (A2), if any, for any or all of the site alternatives as appropriate:

N/A

Describe activity alternative 2 (A2), if any, for any or all of the site alternatives as appropriate:

N/A



## 7. Waste, effluent, emission and noise management

### 7(a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?

<b>YES</b>	<input type="checkbox"/>
Once off – 18m <sup>3</sup>	<input type="checkbox"/>

If yes, what estimated quantity will be produced per month?

How will the construction solid waste be disposed of (describe)?

All solid construction waste will be stored in suitable containers in designated areas and will be removed from the sites and disposed of at the nearest registered waste disposal site.

Where will the construction solid waste be disposed of (describe)?

Construction solid waste will be disposed of at the nearest registered waste disposal site within the Nelson Mandela Metropolitan Bay Municipality.

Will the activity produce solid waste during its operational phase?

<input type="checkbox"/>	<b>NO</b>
	m <sup>3</sup>

If yes, what estimated quantity will be produced per month?

How will the solid waste be disposed of (describe)?

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, the application should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?

<input type="checkbox"/>	<b>NO</b>
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If yes, inform the competent authority and request a change to an application for scoping and EIA.

Is the activity that is being applied for a solid waste handling or treatment facility?

<input type="checkbox"/>	<b>NO</b>
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If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Describe the measures, if any, that will be taken to ensure the optimal reuse or recycling of materials:

Has a specialist been consulted to assist with the completion of this section?

<input type="checkbox"/>	<b>NO</b>
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If YES, please complete:

Name of the specialist:

Qualification(s) of the specialist:

Postal address:

Postal code:

Telephone:

E-mail:

Cell:

Fax:

Are any further specialist studies recommended by the specialist?

<input type="checkbox"/>	YES	<input type="checkbox"/>	NO
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If YES, specify:

If YES, is such a report(s) attached?

<input type="checkbox"/>	YES	<input type="checkbox"/>	NO
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Signature of specialist: \_\_\_\_\_

Date: \_\_\_\_\_

### 7(b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

<input type="checkbox"/>	<b>NO</b>
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If yes, what estimated quantity will be produced per month?

	m <sup>3</sup>
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Will the activity produce any effluent that will be treated and/or disposed of on site?

<input type="checkbox"/>	<b>NO</b>
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If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Will the activity produce effluent that will be treated and/or disposed of at another facility?

<input type="checkbox"/>	<b>NO</b>
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If yes, provide the particulars of the facility:

Facility name:

Contact person:

Postal address:

Postal code:

Telephone:

E-mail:

Cell:

Fax:

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

Has a specialist been consulted to assist with the completion of this section?

<input type="checkbox"/>	<b>NO</b>
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If YES, please complete:

Name of the specialist: \_\_\_\_\_

Qualification(s) of the specialist: \_\_\_\_\_

Postal address: \_\_\_\_\_

Postal code: \_\_\_\_\_

Telephone: \_\_\_\_\_

E-mail: \_\_\_\_\_

Are any further specialist studies recommended by the specialist? 

YES	NO
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If YES, specify: \_\_\_\_\_

If YES, is such a report(s) attached? 

YES	NO
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Signature of specialist: \_\_\_\_\_ Date: \_\_\_\_\_

### 7(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere? 

	<b>NO</b>
YES	NO

If yes, is it controlled by any legislation of any sphere of government? 

YES	NO
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If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the emissions in terms of type and concentration: \_\_\_\_\_

Has a specialist been consulted to assist with the completion of this section? 

	<b>NO</b>
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If YES, please complete:

Name of the specialist: \_\_\_\_\_

Qualification(s) of the specialist: \_\_\_\_\_

Postal address: \_\_\_\_\_

Postal code: \_\_\_\_\_

Telephone: \_\_\_\_\_ Cell: \_\_\_\_\_

E-mail: \_\_\_\_\_ Fax: \_\_\_\_\_

Are any further specialist studies recommended by the specialist? 

YES	NO
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If YES, specify: \_\_\_\_\_

If YES, is such a report(s) attached? 

YES	NO
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Signature of specialist: \_\_\_\_\_ Date: \_\_\_\_\_

### 7(d) Generation of noise

Will the activity generate noise? 

<b>YES</b>	
	NO

If yes, is it controlled by any legislation of any sphere of government? 

YES	NO
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If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the noise in terms of type and level:

Wind turbines create two different types of noise; mechanical noise and aerodynamic sounds. The mechanical sounds are made by the interaction of the turbine components whilst the aerodynamic sounds are produced by the air flow over the turbine blades. The impacts of the turbine sound depend on the topography, distance to settlements and vegetation as well as the existing ambient noise among other things. The industry standard noise buffer surrounding wind turbines is 500m, beyond which they tend to equal the ambient noise of the surrounding area. There are no identified sensitive noise receptors within 500m of the preferred and alternative turbine sites and has not therefore been subject to specialist assessment.

Has a specialist been consulted to assist with the completion of this section? 

	<b>NO</b>
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If YES, please complete:

Name of the specialist: \_\_\_\_\_

Qualification(s) of the specialist: \_\_\_\_\_

Postal address: \_\_\_\_\_

Postal code: \_\_\_\_\_

Telephone: \_\_\_\_\_ Cell: \_\_\_\_\_

E-mail: \_\_\_\_\_ Fax: \_\_\_\_\_

Are any further specialist studies recommended by the specialist? 

YES	NO
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If YES, specify: \_\_\_\_\_

If YES, is such a report(s) attached? 

YES	NO
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Signature of specialist: \_\_\_\_\_ Date: \_\_\_\_\_

## 8. Water use

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es)

the activity will not use water

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

Does the activity require a water use permit from the Department of Water Affairs and Forestry?

NO

If yes, please submit the necessary application to the Department of Water Affairs and Forestry and attach proof thereof to this application if it has been submitted.

## 9. Energy efficiency

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

The met masts will utilise solar panels where possible to power the data recording devices. Turbine tower components are cast off site thereby reducing the energy inputs associated with having to construct these components on site.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

N/A

## 10. Site or route plan

### A site plan has been attached as Appendix A.

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document. The site or route plans must indicate the following:

- 10(a) The scale of the plan which must be at least a scale of 1:500;
- 10(b) the property boundaries and numbers of all the properties within 50m of the site;
- 10(c) the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
- 10(d) the exact position of each element of the application as well as any other structures on the site;
- 10(e) the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
- 10(f) all trees and shrubs taller than 1.8m;
- 10(g) walls and fencing including details of the height and construction material;
- 10(h) servitudes indicating the purpose of the servitude;
- 10(i) sensitive environmental elements within 100m of the site or sites including (but not limited thereto):
  - rivers;
  - the 1:100 year flood line (where available or where it is required by DWAF);
  - ridges;
  - cultural and historical features;
  - areas with indigenous vegetation (even if it is degraded or invested with alien species);
- 10(j) for gentle slopes the 1m contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
- 10(k) the positions from where photographs of the site were taken.

## 11. Site photographs

### A selection of photographs illustrating the sites are attached as Appendix B.

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this form. It should be supplemented with additional photographs of relevant features on the site, if applicable.

## 12. Facility illustration

### An illustration of what the proposed 60m wind measurement mast and photographs of the type of proposed wind turbine, are attached as Appendix C.

A detailed illustration of the activity must be provided at a scale of 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

### 13. Activity motivation

#### 13(a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?  
 What is the expected yearly income that will be generated by or as a result of the activity?  
 Will the activity contribute to service infrastructure or is it a public amenity?  
 How many new employment opportunities will be created in the development phase of the activity?  
 What is the expected value of the employment opportunities during the development phase?  
 What percentage of this will accrue to previously disadvantaged individuals?  
 How many permanent new employment opportunities will be created during the operational phase of the activity?  
 What is the expected current value of the employment opportunities during the first 10 years?  
 What percentage of this will accrue to previously disadvantaged individuals?

	R30 000 000
	R2-3 000 000
	<b>NO</b>
	5
	R 85 000
	60%
	2
	R 2 600 000
	60%

#### 13(b) Need and desirability of the activity

Motivate and explain the need and desirability of the activity (including demand for the activity):

International legislative instruments such as the 1992 United Nations Framework Convention on Climate Change (FCCC) and the Kyoto Protocol (2002), aim to, “*achieve....stabilisation of greenhouse gas concentrations in the atmosphere at concentrations at a level that would prevent dangerous anthropogenic interference with the climate system*”, and to thereby prevent human-induced climate change by reducing the production of greenhouse gases defined as, “*those gaseous constituents of the atmosphere both natural and anthropogenic, that absorb and re-emit infrared radiation*”. Therefore, the reduction of green house gases by providing alternatives to fossil fuel - derived electricity will assist South Africa to begin demonstrating its commitment to meeting international obligations.

In addition to the above, one of the main goals of the White Paper on the Energy Policy for South Africa (Energy White Paper) is to create energy security by diversifying energy supply and energy carriers. Currently, much of South Africa's energy is derived from extremely expensive imported fuels and coal-powered energy generation, which could be threatened by the climate change response measures of developed countries. The White Paper points out that, South Africa has abundant energy sources and it stresses that, “*all possible energy carriers should be tapped to ensure economic growth and development*”. Many of the sectors contributing to the Gross Domestic Product (GDP) are practically driven by these energy carriers. The position of the Energy White Paper on renewable energy is based on the integrated resource planning principle of, “*ensuring that an equitable level of national resources is invested in renewable technologies, given their potential and compared to investments in other energy supply options*”, and this has subsequently been elaborated by the White Paper on Renewable Energy Policy for the Republic of South Africa (Renewable Energy White Paper) which pledges, “*Government Support for the development, demonstration and implementation of renewable energy sources for both small and large scale applications*”. It sets out the policy principles, goals and objectives to achieve, “*An energy economy in which modern renewable energy increases its share of energy consumed and provides affordable access to energy throughout South Africa, thus contributing to sustainable development and environmental conservation*”. The Department of Minerals and Energy (DME) (now the Department of Energy) embarked on an Integrated Energy Plan (IEP) to develop the renewable energy resources, while taking safety, health and the environment into consideration. The government set a target of, “*10 000 GWh (0.8MTOE) renewable energy contribution to final energy consumption by 2013, to be produced mainly from biomass, wind, solar and small-scale hydro*”.

South Africa has also often experienced major power shortages largely as a result of demand outstripping supply. This, in many cases, has resulted in financial losses (many of the sectors contributing to the GDP are practically driven by electricity) and impacted on quality of life (hospitals and schools were among the affected, jobs were lost etc). The national power utility, Eskom, has indicated that South Africa is not past this crisis and that the possibility of further power cuts remains. With local generation, the networks can be freed up to supply power to other areas and the local community will have a much better chance of more consistent supply.

The erection of the proposed wind monitoring masts and wind turbine for trial and demonstration purposes is one of the first steps in establishing a full wind energy facility. The data collected from this wind monitoring campaign will be useful for improved weather predictions and future activities in the region. If it is brought into operation the wind energy facility would contribute to the percentage of energy from renewable resources in South Africa and would assist in reaching the target of 4% set in the White Paper on Renewable Energy in addition to contributing towards demand for electricity meeting supply.

Indicate any benefits that the activity will have for society in general:

Whilst the single turbine will not nominally contribute to society in general, if a bankable feasibility study is successful (i.e. wind resource availability is high), then energy from the renewable resource would be beneficial to society. Wind energy is clean and as such could supply energy (i.e. contribute to supply meeting demand) without adding green house gas emissions into the atmosphere, thereby avoiding contribution to climate change which has the potential to affect quality of life through increased frequency of extreme weather events such as droughts and floods.

Indicate any benefits that the activity will have for the local communities where the activity will be located:

The establishment of the wind measurement masts and single turbine would not create many jobs (only 5 during the developmental phase and 2 permanent jobs during the operational phase), should the bankable study prove successful, then establishment of a wind generating facility will generate some construction and operations jobs. The local community would benefit from prioritised appointment and they would be the first recipients of the electricity generated by the wind generating facility as these facilities are often designed and operated in such a manner that if there is a shortage, the nearest load is the first to be served before the electricity can flow onto other areas.

#### 14. Applicable legislation, policies and/or guidelines

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline:	Administering authority:	Date:
<b>LEGISLATION</b>		
The Constitution Act (Act No 108 of 1996)	Constitution Assembly	1996
National Environmental Management Act (Act No 107 of 1998)	Department of Environmental Affairs and Tourism	1998
National Water Act (Act No 36 of 1998)	Department of Environmental Affairs and Tourism	1998
Aviation Act (Act No 74 of 1962) as amended	Department of Environmental Affairs and Tourism	1962
Occupational Health and Safety Act (Act No 85 of 1993)	Department of Environmental Affairs and Tourism	1993
National Heritage Resources Act (Act No 25 of 1999)	Department of Environmental Affairs and Tourism	1999
National Environmental Management: Biodiveristy Act (Act No 10 of 2004 )	Department of Environmental Affairs and Tourism	2004
National Environmental Management: Waste Act (Act No 59 of 2009)	Department of Environmental Affairs and Tourism	2009
Eastern Cape Nature Conservation Act (No. 10 of 1987)	Eastern Cape	1987
Eastern Cape Nature and Environmental Conservation Ordinance (No. 19 of 1974)	Eastern Cape	1974
Land use Planning Ordinance (No. 15 of 1985)		1985
Environment Conservation Act (No 73 of 1989) (ECA) Noise Control Regulations		1989
<b>POLICIES</b>		
Eastern Cape Provincial Spatial Development Framework	Eastern Cape Provincial Government	
DEAT General Guideline to Environmental Impact Assessment Regulations	Department of Environmental Affairs and Tourism	
DEAT Guide to Public Participation	Department of Environmental Affairs and Tourism	
DEAT Guide to Assessment of Alternatives and Impacts	Department of Environmental Affairs and Tourism	