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**BIO THERM WIND ENERGY FACILITY  
BETWEEN UITKYK AND EXCELSIOR NEAR  
SWELLENDAM IN THE WESTERN CAPE  
PROVINCE**

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**ENVIRONMENTAL MANAGEMENT  
PROGRAMME: APPENDIX M  
DECOMMISSIONING AND CLOSURE PLAN**

**Prepared for**

Excelsior Wind Energy Facility (Pty) Ltd  
Building 1, Ground Floor,  
Leslie Ave, Sandton

**Prepared by**

UNIT 10, BLOCK 2  
5 WOODLANDS DRIVE OFFICE PARK,  
CORNER WOODLANDS DRIVE & WESTERN  
SERVICE ROAD, WOODMEAD, GAUTENG  
PO BOX 148, SUNNINGHILL, 2157  
TEL: +27 (0)11 656 3237  
FAX: +27 (0)86 684 0547  
E-MAIL: [INFO@SAVANNAHSA.COM](mailto:INFO@SAVANNAHSA.COM)  
[WWW.SAVANNAHSA.COM](http://WWW.SAVANNAHSA.COM)



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## **DECOMMISSIONING AND CLOSURE PLAN**

### **1. PURPOSE**

The purpose of the Decommissioning and Closure Plan is to give details as to the process to be followed when the Excelsior Wind Energy Facility is decommissioned. The Decommissioning and Closure Plan should be read in conjunction with the EMPr for the facility. The general specifications of the EMPr Chapter 7 (Construction) and Chapter 8 (Rehabilitation) are also relevant and must be adhered to during decommissioning of the facility.

### **2. PROJECT-SPECIFIC DETAILS**

The Excelsior facility is expected to be commissioned in 2018 and is expected to be operational for at least 20 years, where after it could be decommissioned or its lifespan extended depending on the power generation requirements at the time.

Equipment associated with this facility would only be decommissioned once it has reached the end of its economic life. It is most likely that decommissioning activities of the infrastructure of the facility would comprise the disassembly and removal of the turbine infrastructure from the site.

#### **2.1. Activities Associated with Decommissioning**

<b>Activity</b>	<b>Detailed description</b>
Site preparation	» Site preparation activities similar to those undertaken in the construction phase will be required during the decommissioning phase. This will include confirming the integrity of site access to the site in order to accommodate the required equipment (e.g. lay down areas and decommissioning camp) and the mobilisation of decommissioning equipment.
Disassemble and remove existing components	» The components would be disassembled, and reused and recycled (where possible), or disposed of in accordance with regulatory requirements.

Road traffic will temporarily increase due to the movement of decommissioning crews and equipment. There may be an increase in particulate matter (dust) in adjacent areas during the decommissioning phase. Additionally, there will be emissions from the diesel engines of construction machinery and equipment which may cause odour disturbance and localized impacts to air quality. Decommissioning activities may lead to temporary elevated noise levels from heavy machinery and an increase in trips to the project location.

The relevant mitigation measures contained under the construction section of the EMPPr should be applied during decommissioning.

### **3. PRINCIPLES FOR DECOMMISSIONING AND CLOSURE**

In decommissioning the facility, the proponent must ensure that:

- » All sites not already vegetated are vegetated as soon as possible after decommissioning is completed with species appropriate to the area (where the impacted area is an indigenous vegetation area - otherwise this is not applicable).
- » Any fauna encountered during decommissioning are removed to safety by a suitably qualified person.
- » All structures, foundations and sealed areas are demolished, removed and waste material which cannot be recycled disposed of at an appropriately licensed waste disposal site or as required by the relevant legislation.
- » All access/service roads not required to be retained by landowners are closed and fully rehabilitated.
- » Soil erosion and sedimentation control measures, as well as other mitigation measures used during construction will be re-implemented during the decommissioning phase and maintained until the site is stabilized.
- » All vehicles adhere to low speed limits (i.e. 30km/h max) on the site, to reduce risk of faunal collisions as well as reduce dust.
- » All disturbed areas are compacted, sloped and contoured to ensure drainage and runoff and to minimise the risk of erosion.
- » All rehabilitated areas are monitored for erosion until the site is stabilized.
- » Components of the facility are removed from the site and recycled or disposed of appropriately.
- » Retrenchments should comply with South African Labour legislation of the day.
- » Decommissioning and site restoration activities should be undertaken with the input of the landowner(s).
- » The process for notification of decommissioning activities will be the same as the process for notification of construction activities. Decommissioning activities may require the notification of stakeholders given the potential for increased noise and traffic volumes at the project location.

#### **3.1. Disposal of Materials**

Most of the materials used can be recycled. The majority of the glass and semiconductor materials can be recovered and re-used or recycled. Recyclable materials must be transported off-site by truck and managed at appropriate facilities in accordance with relevant waste management regulations. No waste materials may be left on-site.

All other structures and/or components must be appropriately disposed of at an appropriately licensed waste disposal site by a licensed contractor.

### **3.2. Dismantling of Wind Turbine Infrastructure**

#### Wind turbines

- » Disconnect all above ground wirings, cables and electrical interconnections.
- » Access roads to turbines may be widened temporarily to sufficient width to accommodate movement of appropriately sized cranes or other machinery required for the disassembly and removal of the turbines.
- » High value components will be stripped. The remaining material will be reduced to shippable dimensions and transported off site for proper disposal. Control cabinets, electronic components, and internal cables will be removed.
- » The blades, hub and nacelle will be lowered to ground for disassembly. The tower sections will be lowered to the ground where they will be further disassembled into transportable sections.
- » The blades, hub, nacelle, and tower sections will either be transported whole for reconditioning and reuse or dissembled into salvageable, recyclable, or disposable components.
- » The area will be thoroughly cleaned of all debris.

#### Foundations

- » Topsoil will be removed from an area surrounding the foundation and stored for later replacement. Turbine foundations will be excavated to a depth sufficient to remove all anchor bolts, rebar, conduits, cable, and concrete.
- » After removal of all noted foundation materials, the hole will be filled with clean sub-grade material of quality comparable to the immediate surrounding area.
- » The sub-grade material will be compacted to a density similar to surrounding sub-grade material. All unexcavated areas compacted by equipment used in decommissioning shall be decompacted in a manner to adequately restore the topsoil and sub-grade material to the proper density consistent and compatible with the surrounding area. The area will be thoroughly cleaned and all debris removed, and re-seeded.

#### Transformers & Inverters

- » Disconnect and remove all electrical equipment.
- » Remove electrical components and transport off-site to appropriate facility.
- » Oil filled electrical equipment must be de-polluted, decommissioned and the constituent elements recovered for further re-recycling and reuse. Oil should be disposed of at a hazardous waste facility

#### Other infrastructure

- » Consult with landowner(s) to determine if access roads should be left in place for their continued use. If not required, roads should be decommissioned, ripped and revegetated.
- » Removal of fencing.
- » Underground electrical lines running between inverters and the substation will be removed.
- » All foundation materials will be removed from the site via truck and managed at appropriate facilities

### **3.4 Land Use**

Based on the zoning and current land use, it is assumed that the probable future use of the project location after decommissioning will be farming land. However, this will be confirmed prior to decommissioning to ensure that restoring the land to its current land use remains the most appropriate option.