

# Yarram Wind farm project

## Development Application

### Environmental Management Plan

#### *Purpose*

The Environmental Management Plan (EMP) will provide an operating framework for all of the described management measures for the project and will be prepared in accordance with our commitment to sound environmental management. The EMP ensures that the project complies with legislative procedures, policies and guidelines relevant to the project and is developed as part of Synergy Wind's commitment to Best Practice Environmental Management. The EMP will provide information on, and a structure for, the remaining key elements of an Environmental Management System (EMS) which are:

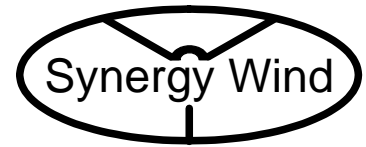
- **Implementation:**
  - Ensuring capability – allocation of resources; alignment and integration of the EMS with existing organisational elements; allocation of accountability and responsibility; education and motivation of the organisation; development of training and skills.
  - Elements of support – procedures for communication and reporting; operational control; emergency response and preparedness.
- **Measurement and evaluation:**
  - Measuring and monitoring (ongoing performance);
  - Corrective and preventive action;
- **Undertake review to ensure continual improvement.**

Table 1 through to Table 4 below describes a preliminary form of the final EMP for the project. The preliminary EMP will be further developed into a detailed EMP during the design phase of the project and will be finalised prior to commencement of the construction phase. The detailed EMP will incorporate any additional project conditions that may be identified during the assessment and approval process. The final detailed EMP will be developed in consultation with relevant stakeholders.

#### *Structure*

The EMP provides an operational structure and a list of specific actions in one document, which will enable the project to meet all of its objectives and targets for environmental management. The EMP is also a tool to be used for measuring compliance. The EMP allows for the allocation of responsibility for each of the specific actions to project personnel, a process for reporting of compliance and a timeframe for completion of each action. The EMP is a working manual that specifically provides:

- Information on the environmental responsibilities of Synergy Wind and their subcontractors
- A list of the procedures for environmental management of the project that Synergy Wind is committed to



- An outline of the regulatory framework under which the project will operate
- The monitoring and reporting arrangements
- Measures of effectiveness

The EMP is structured to provide a list of specific management measures, targets and responsibilities for each of the Design, Construction, Operational and Decommissioning phases of the project.

### **Responsibilities**

The actions and procedures outlined in the EMP specify steps that are to be followed to achieve an acceptable level of environmental performance which complies with all legislative and project specific requirements for the project, and which is in accordance with the principles of BPEM and Ecologically Sustainable Development (ESD). Synergy Wind and its nominated personnel or sub-contractors will be responsible for supervising and/or implementing all of the specific actions listed in the EMP and the procedures for:

- Environmental monitoring
- Environmental reporting
- Reviews and audits of the EMP
- Regular evaluation of any environmental impacts arising from the project and the overall and specific objectives and targets for environmental performance

### **Conclusion**

Application of the comprehensive Environmental Management Plan arrangements outlined above should ensure delivery of all environmental compliance issues relating to the proposal. The EMP will also allow for the timely involvement of the community and their regular input on all key aspects of the EMP. Development of effective mechanisms for engaging the community will be an ongoing aspect of the EMP.

**Table 1 Preliminary Environmental Management Plan (Design Phase)**

<p><b>Cultural Heritage</b></p>	<p>A survey has been undertaken by representatives of the local Koori community of the wind farm site to assess whether the potential exists for a significant cultural heritage impact.</p> <p>Development of a Cultural Heritage Management Plan, including protocols for construction contractors.</p> <p>Establishment of a formal mechanism for ongoing consultation with the relevant indigenous communities throughout the project especially those relating to the detailed on-surface and sub-surface archaeological investigations.</p> <p>Prior to disturbing an Aboriginal archaeological site, permission must be obtained from the relevant indigenous community.</p> <p>Prior to disturbing a site on the Heritage Inventory permission must be obtained, in the form of a 'Consent', from Heritage Victoria</p> <p>Ensure that locations of Aboriginal archaeological sites should not be disclosed to the public without prior permission from the relevant Koori community.</p>
---------------------------------	---

**Table 1 Preliminary Environmental Management Plan (Design Phase)**

<p><b>Flora and Fauna</b></p>	<p>Ensure and sign-off that all generator final locations are in accordance with the Flora and Fauna requirements of the project Design Siting Criteria.</p> <p>Where there is to be any loss of native vegetation resulting from the project, an equivalent or larger area will be revegetated – with indigenous species – in accordance with Victoria's Biodiversity Strategy.</p> <p>The final routes selected for track and cabling layouts should avoid all areas of native vegetation where possible.</p> <p>Investigation of bat activity in the locality of the subject land</p>
<p><b>Transport</b></p>	<p>Design the alignment of access roads to follow the contours in order reduce the grades, restrict any earthwork and minimise the visual impact from existing viewing areas</p>
<p><b>Landscape Character</b></p>	<p>Ensure that all generator final locations are in accordance with the Visual Impact requirements of the Design Siting Criteria. These are to generally:</p> <ul style="list-style-type: none"> <li>• Respond to existing features in the natural and cultural landscapes</li> <li>• Maintain the character of significant local views</li> <li>• Avoid visual clutter</li> </ul>
<p><b>Noise</b></p>	<p>Confirm that the re-calculated noise level predictions (after the selection of the wind generator manufacturer and finalisation of the wind generator hub height) continue to comply with limits.</p> <p>Confirm that the re-calculated noise level predictions will still meet noise compliance levels for the project based on the final wind farm layout and the finally selected wind generators and additional monitoring at selected dwelling locations.</p>
<p><b>Safety</b></p>	<p>The construction site manager will prepare site management plans to include safety procedures and other requirements for compliance with PHL Occupational Health Safety and Welfare Policy and Guidelines.</p> <p>First aid facilities would be available on site and a designated officer / employee will be available at all times</p>
<p><b>Social/Community</b></p>	<p>Maintain an effective system for regular provision of information regarding the progress of the project to all stakeholders, particularly just prior to commencement of the construction phase (e.g. through community newsletters).</p> <p>Ensure that development of the final EMP has been undertaken in consultation with relevant stakeholders and has been reviewed by relevant stakeholders prior to its implementation.</p>
<p><b>Undermining of foundations</b></p>	<p>The stability of the foundation for each wind generator should be checked, where slopes exceed 15 degrees to the horizontal within the vicinity of a wind generator and are subject to surface foundation loading, groundwater saturation or loss of vegetation cover.</p>

**Table 2 Preliminary Environmental Management Plan (Construction Phase)**

<p><b>Cultural Heritage</b></p>	<p>Ensure ongoing consultation with relevant Koori communities throughout the project.</p> <p>A cultural monitor will be in attendance when earthworks are being prepared and also when being replaced after construction. Ensure that locations of Aboriginal archaeological sites should not be disclosed to the public without prior permission, via said monitor, from the relevant Koori community.</p>
<p><b>Flora and Fauna</b></p>	<p>Where areas of semi-native vegetation are to be affected during the construction phase or after, actions are to include:</p> <ul style="list-style-type: none"> <li>• Marking and protecting the boundaries of areas of native and semi-native vegetation</li> <li>• Properly managing surface erosion and drainage as described under <i>Hydrology, Hydrogeology and Waste Management</i></li> </ul> <p>Implementation of a revegetation strategy for each of the wind farm sites, to be implemented at completion of the construction phase, for all areas where vegetation clearing could not be avoided.</p> <p>Implementation of strategies for the minimisation of the spread of weeds.</p>
<p><b>Hydrology, Hydrogeology and Waste Management</b></p>	
	<ul style="list-style-type: none"> <li>• Confine all land disturbances to a minimum practical working area and to the vicinity of the construction site.</li> <li>• All areas of disturbance will be cleared and excavated as follows:             <ul style="list-style-type: none"> <li>○ Remove any covering vegetation along with the underlying topsoil and stockpile together.</li> <li>○ Excavate underlying subsoils and stockpile separate to the vegetation/topsoil stockpile, taking care to minimise mixing of different soil horizons.</li> <li>○ Stockpiles should be located away from drainage lines and stabilised as soon as possible.</li> </ul> </li> </ul>
<p><i>Erosion and sediment control</i></p>	<ul style="list-style-type: none"> <li>• A temporary soil bund may be created around the perimeter of the site or part of the site (using the excavated soil from generator foundations) to contain any contaminated storm water runoff or spillage of hazardous materials.</li> <li>• On steep lopes, temporary rock structures should be maintained in drainage lines upslope and downslope of the areas of disturbance to retard storm water flows.</li> <li>• Stockpiled soil will be reused to backfill excavations to the extent practical and surplus soil will be reused on site for contoured landscaping or similar. Exposed soil surfaces will be revegetated as soon as practicable.</li> </ul>

**Table 2 Preliminary Environmental Management Plan (Construction Phase)**

	<ul style="list-style-type: none"> <li>• Erosion and sediment control at the mobile Concrete Batching Plants will be operated in accordance with the guidelines for environmental management described in the EPA Publication "Environmental Guidelines for the Concrete Batching Industry".</li> </ul>
<p><i>Dust control</i></p>	<ul style="list-style-type: none"> <li>• Use back-mounted water sprays and water trucks to reduce dust generation from access roads during construction, construction areas, soil stockpiles and any other exposed areas.</li> <li>• Stabilise disturbed areas as soon as practicable after the completion of construction activities.</li> <li>• Use of temporary dust screens and/or wind fences where necessary and appropriate, particularly around soil stockpiles and newly rehabilitated areas.</li> <li>• Construction site activities will be modified during unfavourable wind conditions.</li> <li>• Dust control at the mobile Concrete Batching Plants will be operated in accordance with the guidelines for environmental management described in the EPA Publication "Environmental Guidelines for the Concrete Batching Industry".</li> <li>• Bunding and drainage controls should be employed around any sites where excavation of contaminated soils is required.</li> <li>• All contaminated soils that are excavated should be separately and securely stockpiled on site and disposed of by a licensed contractor as soon as practicable.</li> <li>• Appropriate environmental protection, health and safety procedures will be employed in areas of soil contamination, in accordance with EPA regulations or good practice for management of contaminated sites.</li> </ul>
<p><i>Pollution of surface waters</i></p>	<ul style="list-style-type: none"> <li>• Sediment control facilities will be installed on drainage lines which drain away from all disturbed areas.</li> <li>• Clean stormwater will be diverted away from the wind generator construction sites by construction of diversion banks and interception drains.</li> <li>• If dewatering of excavated areas is required at the site, water will be pumped from the excavation so that the pump inlet and outlet is maintained above the bottom of the trench so as to minimise turbidity.</li> <li>• If possible, any pumped water will be used for watering or dust suppression, or directed onto vegetated areas to allow removal of suspended solids or to sediment control devices. If not possible, pumped water should be discharged through sediment pollution control devices on existing drainage lines.</li> <li>• Sediment run-off control structures will be designed and installed so that they are able to handle a one-in-two year storm event. Where a permanent sediment control structure is required, the structure will be able to handle a one-in-fifty year storm event.</li> </ul>

**Table 2 Preliminary Environmental Management Plan (Construction Phase)**

	<ul style="list-style-type: none"> <li>• Surface water control at the mobile Concrete Batching Plants will be operated in accordance with the guidelines for environmental management described in the EPA Publication "Environmental Guidelines for the Concrete Batching Industry".</li> </ul>
<i>Hazardous materials contra, and handling</i>	<ul style="list-style-type: none"> <li>• All hazardous materials (oils, fuels and chemicals) which are required to be located at a construction site will be stored on a concrete or other impervious base and surrounded by a bund which can contain 110% of the volume of all stored substances. The bund will be checked regularly for cracks or leaks.</li> <li>• Sewage, sullage and other wastewater generated at the construction sites (other than stormwater runoff) will be collected and transported for treatment at a facility (such as a municipal wastewater treatment plant) of adequate capacity and licensed to handle such wastes.</li> <li>• Contamination booms and absorption materials (as appropriate) will be maintained on site to contain and recover any inadvertent spillage of fuels or chemicals.</li> <li>• Any spillage of hazardous materials will be contained and cleaned up immediately and disposed of appropriately by a licensed contractor. Any contaminated soil arising from incidents during construction will be removed for treatment and/or disposal at an appropriate facility.</li> <li>• Hazardous materials control at the mobile Concrete Batching Plants will be operated in accordance with the guidelines for environmental management described in the EPA Publication "Environmental Guidelines for the Concrete Batching Industry".</li> </ul>
<i>Access tracks</i>	<ul style="list-style-type: none"> <li>• Access tracks and roads will be constructed with limestone and compacted.</li> <li>• Vegetation will be carefully and selectively pushed aside from along access tracks and will not be stripped.</li> </ul>
<b>Karst areas</b>	Undertake detailed site investigation to define the likely extent of cavity problems during construction and to avoid and minimise subsequent stability problems.
<b>Noise</b>	<p>Ensure that all equipment and vehicles used for construction are fitted with appropriate noise control measures.</p> <p>Restrict construction work to the operating hours of 7am to 6pm Monday to Friday and 7 am to 1 pm on Saturdays where noise control is an issue.</p>
<b>Social/Community</b>	<p>Inclusion of construction site control measures to mitigate potential impact to community amenity. These are described under Noise, Visual and Dust.</p> <p>Access to the generator sites will be restricted to the access tracks and generator land only to ensure that privacy of neighbouring properties is maintained.</p>

**Table 2 Preliminary Environmental Management Plan (Construction Phase)**

<p><b>Traffic</b></p>	<p>Installation of mobile concrete batch plants at Devon North to reduce truck traffic using the road network during the concrete pours.</p> <p>Extended articulated truck loads will operate on the road network with an Over Dimensional Load Permit and with an escort vehicle. The trucks delivering the raw material to sites will be restricted during the hours in which school buses are collecting or dropping off children on Bolgers Road.</p> <p>At sites where provision needs to be made for vehicles to pass a truck waiting to turn into the access roads some widening of the pavement and sealing the shoulders may be required</p>
<p><b>Visual Impact</b></p>	<p>Screen planting in sightlines of direct neighbours has been undertaken and will continue, effectively blocking views, while revegetation in prominent locations (e.g. along ridgelines) will, over time, have a gradual softening effect on views.</p>

**Table 3 Preliminary Environmental Management Plan (Operation Phase)**

<p><b>Cultural Heritage</b></p>	<p>Prior to disturbing an Aboriginal archaeological site, permission must be obtained from the relevant indigenous community, via consultation with the Koori cultural monitor who was present during construction.</p> <p>Prior to disturbing a site on the Heritage Inventory permission must be obtained in the form of a Consent from Heritage Victoria.</p> <p>Ensure that locations of Aboriginal archaeological sites should not be disclosed to the public without prior permission from the relevant Koori community.</p>
<p><b>Flora and Fauna</b></p>	<p>Where areas of semi-native vegetation are to be affected during the construction phase or after, actions are to include:</p> <ul style="list-style-type: none"> <li>• Marking and protecting the boundaries of areas of native and semi-native vegetation</li> <li>• Properly managing surface erosion and drainage as described under Hydrology, Hydrogeology and Waste Management.</li> </ul>
<p><b>Noise</b></p>	<p>Undertake noise level measurements with wind generators operating at a range of wind speeds, at residences within and adjoining the wind generator sites and compare them with agreed compliance levels.</p> <p>Collect noise level measurements at the same noise sensitive locations at which background noise measurements were undertaken. The operational levels should be compared with the original background levels to determine compliance.</p>

**Table 4 Preliminary Environmental Management Plan (Decommissioning Phase)**

<b>Social/Community</b>	Access to the generator sites will be restricted to the access tracks and generator land only, to ensure that privacy of neighbouring properties is maintained
<b>Decommissioning</b>	<ul style="list-style-type: none"> <li>• Wind generators will be removed from the site after their designated lifetime (at least 25 years). The blades, nacelle and towers will be dismantled and loaded onto trucks for removal from site.</li> <li>• If the wind farm is to continue to operate, the wind generators will be replaced with a modern equivalent.</li> <li>• If the wind farm is no longer required for electricity-generation purposes:             <ul style="list-style-type: none"> <li>- Foundations would be cut-off below ground level and covered over and the switchyards would be dismantled and removed;</li> <li>- The cables and tracks would generally be left in place.</li> <li>- Construction traffic would be managed in a similar manner to that described under Traffic.</li> <li>- Revegetation of foundation sites according to landholder wishes (i.e. pasture or indigenous vegetation)</li> </ul> </li> </ul>