



Vutcani Wind Farm, Romania

Non-Technical Summary

Date: July 2012

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# 1 INTRODUCTION

This Non-Technical Summary (NTS) provides a summary of the project description, the benefits of the project, the mitigation of potentially significant adverse environmental and social impacts which have informed the development of an Environmental and Social Action Plan (ESAP) and public consultation activities. Contact information for this project is provided below.

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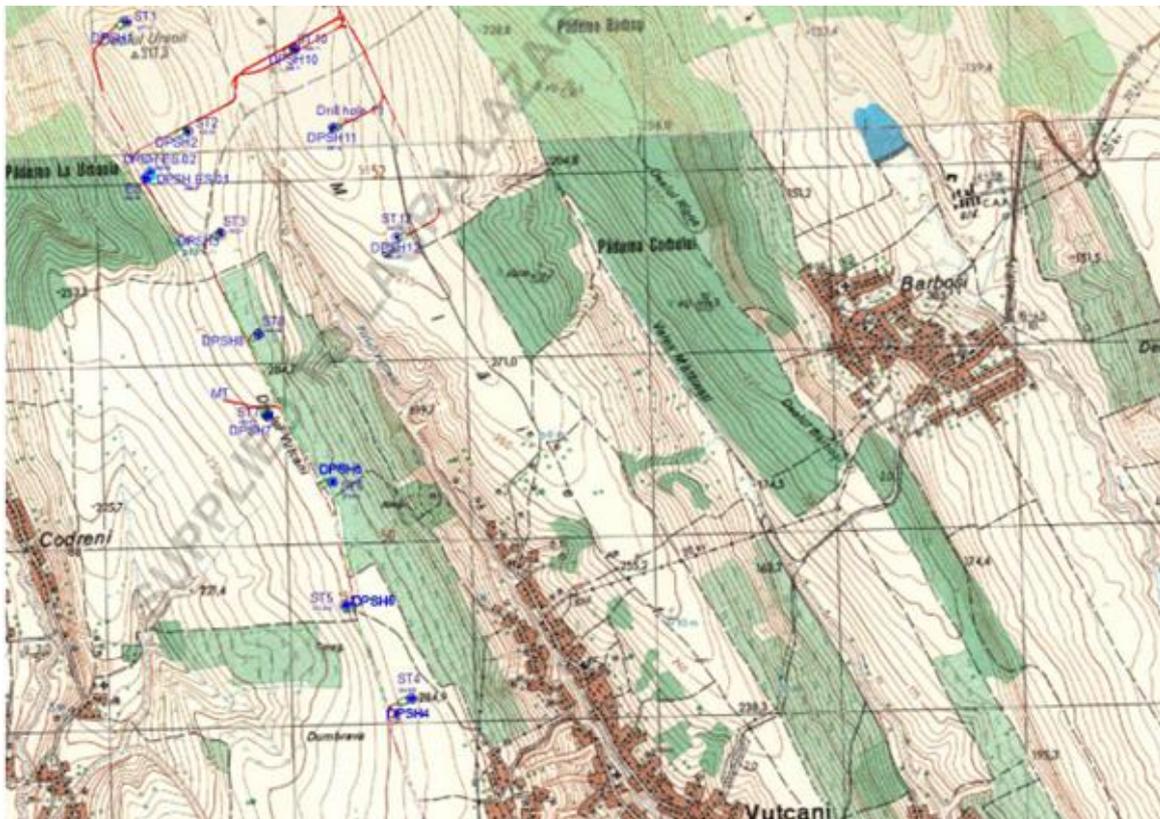
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The wind farm at Vutcani comprises 12 wind turbines (turbine model VESTAS V90 2.0MW), providing a total power of 24MW. Each wind turbine consists of a hollow steel tower with a generator nacelle which houses and protects the main components of the rotor blades, gear box, transformer and control systems. The turbines each have a total height of 150 m (comprising 105 m tower and 45 m rotor blade above the tower height). The turbines are connected via 20kV underground cables and junction stations which are connected to a transformer station within the wind farm that is in turn connected to the nearest E.ON Romania transformers

The total area occupied by the wind farm is 400 ha, of which approximately 18 ha will be dedicated to the wind turbines and a further 3 ha is used for vehicular access. The remaining land will be used for agricultural use. The land which was temporarily disturbed during the construction works has been restored. The proposed layout of the wind farm at Vutcani is shown on Figure 1.

The Project has already obtained Construction Authorisations and environmental permits (in line with Romanian legal requirements). The construction phase is now complete and the wind farm is operational.

Figure 1 – Layout of Vutcani Wind Farm



## 2 SETTING AND LOCATION OF WIND FARM

The Vutcani wind farm is located within the Dumbrava area, and is approximately 1 km west of the town of Vutcani and 3.5 km north-east of Rosiesti village. Approximately 2 km to the north of the Site is Albesti commune. These localities are rural in character and are situated along water courses, roads and farmland.

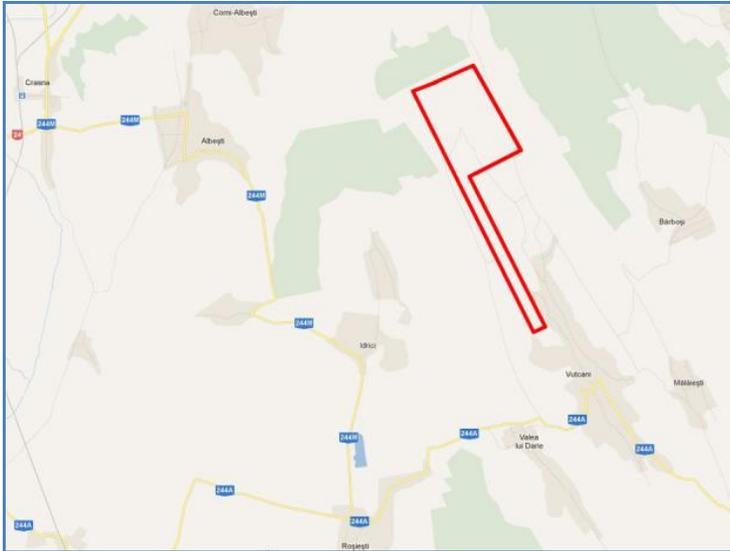


Figure 2 – Location of the Vutcani Wind Farm

The Site covers an area of approximately 18 ha and is privately owned. The land has limited agricultural value and is used for crop production, including wheat. General views of the Site are presented in Figures 3 & 4. Within the Site there are no forested areas or rare/sensitive plant species. Water resources are limited, with no irrigation systems in place; however, approximately 1.5 km east of the Site is the Idrici river, which flows in to the Elan (this riverbed is dry during summer months). The Site is located approximately 9 km south of Lake Manjesti

Access to the Site is via the DJ224b (asphalt) and links with DN28b between Lasi-Barlad and Vutcani. The road which enters Vutcani is unpaved.

There are three protected areas within 20 km of the Vutcani wind farm (see Figure 5 below), one relating specifically to birds, designated under the Birds Directive, and the other two designated under the terms of the Habitats Directive. The designated sites are as follows:

- Horga - Zorleni (Site Code ROSPA0119) - located approximately 20 km south of the wind farm;
- Pădurea Dobrina – Huși (Site Code ROSCI0335) - located approximately 5 km north of the wind farm; and
- Râul Prut (Site Code ROSCI0213) - located approximately 20 km to the east of the wind farm.



Figures 3 & 4 – General views of Vutcani site

The Horga-Zorleni Special Protection Area (SPA) is protected for its importance for birds and supports species such as tawny pipit, lesser spotted eagle, European nightjar and white stork. The main characteristics of the area include areas of extensive cereal cultures and broad-leaved woodland. The Padurea Dobrina – Husi Site of Community Importance (SCI) is an area which is protected for its important habitats and is covered in broad-leaved deciduous woodland which support species such as the grey wolf. Raul Prut SCI supports species such as otter, mouse-eared bat and European ground squirrel.

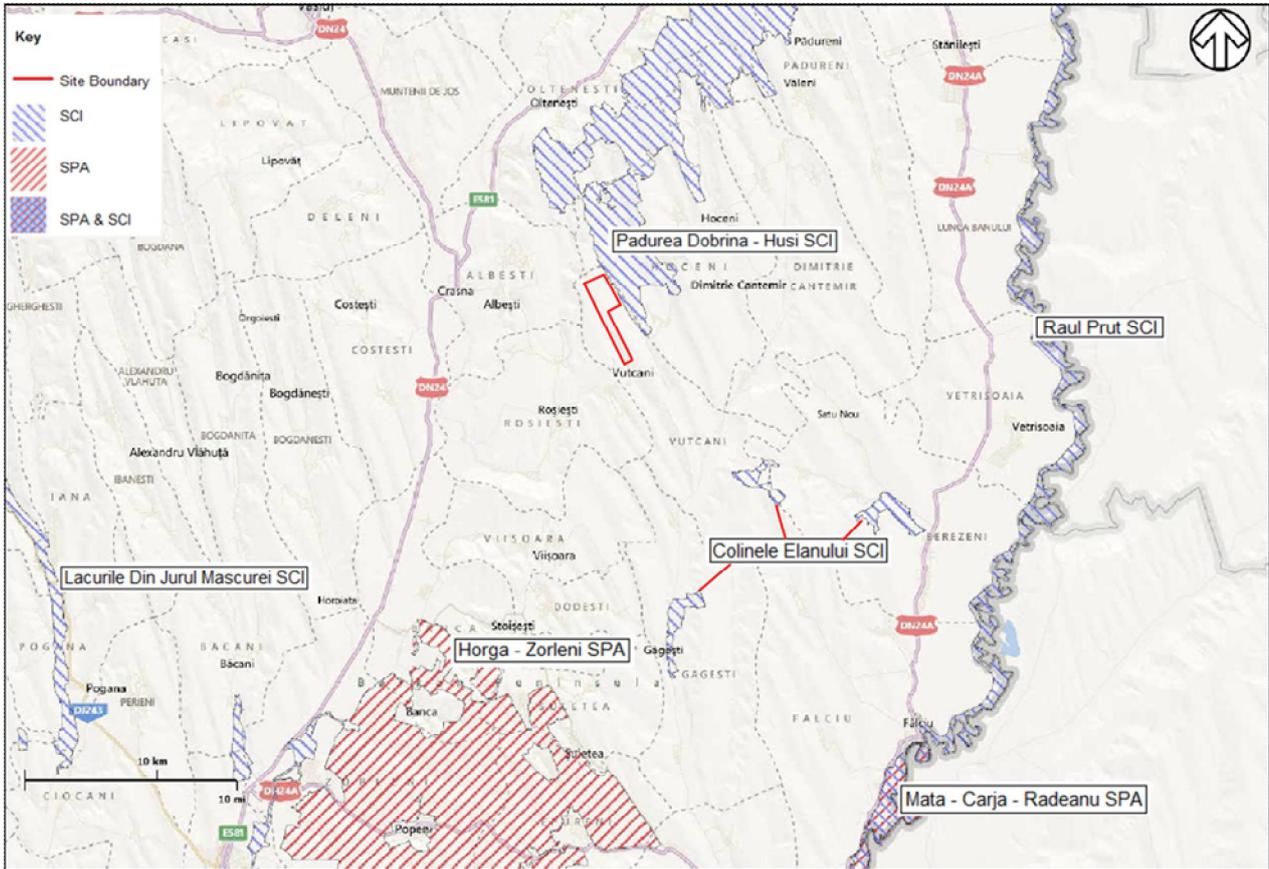


Figure 5 – Natura 2000 Sites near Vutcani Wind Farm

The Vutcani wind farm is not located within the boundary of any protected areas, including Natura 2000 sites such as SPAs, SCIs or International Bird Areas (IBAs).

The site is of limited importance for bird species, being more than 20 km from any protected areas for birds and not located on any known bird migration routes.

# 3 DESCRIPTION OF THE WIND FARM

## 3.1 DESCRIPTION OF EQUIPMENT AND INFRASTRUCTURE

EDP Renewables are using and installing wind turbine model V90 supplied by Vestas of Denmark for the production of clean electricity by converting wind energy. These wind turbines have a capacity of 2.0MW and the maximum height of the turbine including the rotor blade is 150 m. The type of turbine installed is shown in Figure 6 below:

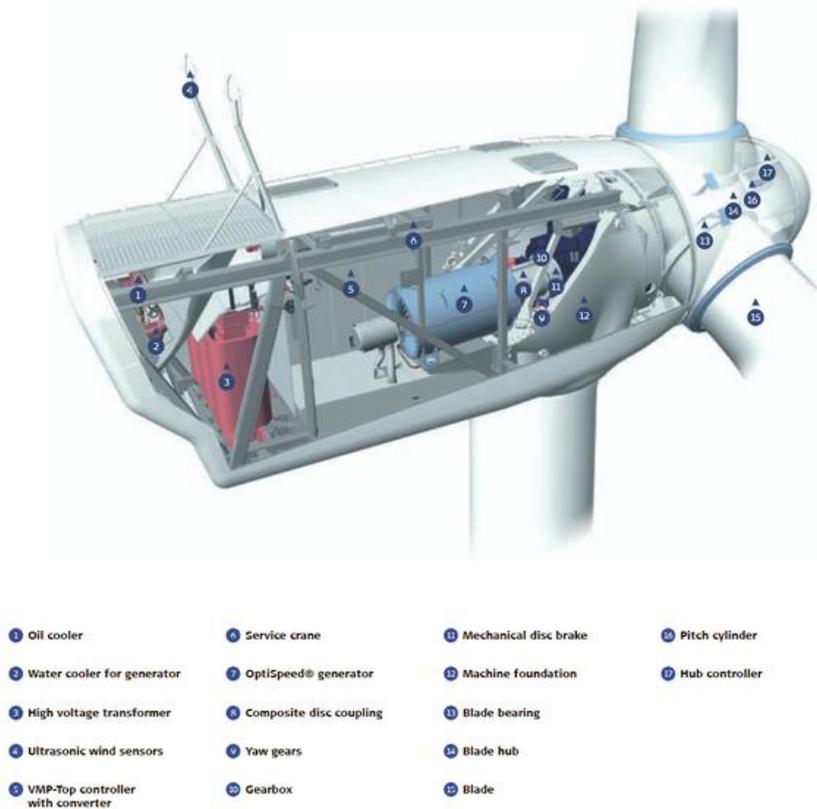


Figure 6 – Vestas V90 Turbine



Figure 7: Control building at Wind Farm site.

The other infrastructure associated with the wind turbines includes a transmission substation, overhead cables, underground cables, switchboards and a control building (Figure 7).

There are underground cables connecting the turbines to the transmission station and overhead cables which follow a line south-west from the station and connect the site with the national grid.

Access roads have also been constructed as part of the wind farm and these are also available for use by local residents and those who lease the land within the area of the site for agricultural purposes.

# 4 ENVIRONMENTAL, HEALTH, SAFETY AND SOCIAL REVIEW OF PROJECT

## 4.1 SCOPE OF WORK

The Environmental and Social Due Diligence (ESDD) audit was carried out during May and June 2012 and comprised analysis of the Environmental, Health and Safety and Social (EHSS) impacts and benefits of the project. Where necessary, mitigation measures have been proposed and used to develop an Environmental and Social Action Plan (ESAP).

A visit was made by the project audit team to view the site and the surrounding areas. Where possible, the project audit team also met with stakeholders and further stakeholder activities were undertaken during the course of the project to inform the development of a Stakeholder Engagement Plan (SEP).

## 4.2 SITE OBSERVATIONS

The 12 2MW wind turbines associated with the Vutcani Wind Farm have already been constructed and are currently operational. Figure 8 shows a view from the base of turbine 7 looking north-west.

The only building on the site is the operational sub-station located in the western area of the site. The connection to the E.ON Romania grid is achieved via an electricity sub-station of 20/110kV.

Figure 8 – View from base of turbine 7



The local topography around the Vutcani wind farm is composed of a series of hills and valleys which are mostly orientated north-south, with vast tracts of land which is under agricultural production (typically arable farming). Belts of mature trees, where present, typically follow watercourses and lower slopes of the valleys helping to break up the vast, open landscape

The nearest settlements to the site are Vutcani, Codreni in the west and Barbosi in the east, all of which are more than 500 m from the nearest turbine. Figure 9 below provides a view looking north-west from Vutcani village.

Land between the turbines is leased for agricultural use by local residents on a 1-3 year basis. Access to

the turbines and the agricultural plots is via a network of internal site roads.

## 4.3 EIA REVIEW AND GAP ANALYSIS

The EIA for the project was reviewed against Romanian legislation, EU Directives and EBRD guidelines to consider potential impacts associated with the proposed development and identified data gaps. Where necessary, additional information was obtained through a site visit, stakeholder consultations and desk based research to enable potential impacts to be considered in further detail. Additional monitoring was recommended to enable the development of appropriate mitigation measures, if deemed necessary.

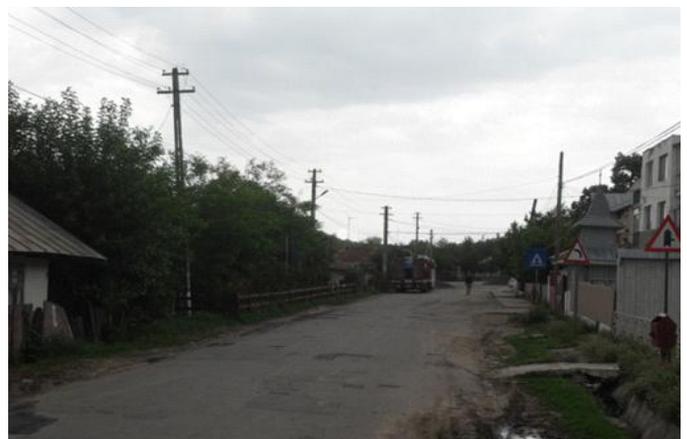


Figure 9 – View towards wind farm from Vutcani village

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## 5 PLANNING AND ENVIRONMENTAL IMPACTS

Overall this project should have positive socio-economic impacts from the generation of clean wind power energy. The key benefit of this project is the use of reliable renewable wind power technology which will achieve significant greenhouse gas emissions (GHG) savings as opposed to the use of conventional power generation plant using fossil fuels, as well providing jobs to the local community and generating revenue for the local budget.

From a review of the available information and following stakeholder consultations no agricultural use and no persons or businesses have been or will be displaced as a result of the proposed wind farm scheme.

The key findings in terms of impacts and mitigation measures are summarised below:

### 5.1 ECOLOGY

The key potential impacts upon biodiversity as a result from the wind farm development have been identified, including the potential impacts to resident and migratory bird species.

It is considered that the habitat within the Vutcani wind farm site is generally of limited ecological importance due to the type of species present or other factors. The site is located on an open and windy hillside predominantly covered in arable crops (see Figure 10). The construction of the wind turbines is likely to have led to very small amounts of habitat loss, and given the large amount of similar habitat both within the site and in the local area this impact will have been negligible. Furthermore, specially designed nest boxes for birds will be installed in appropriate locations on the poles along the overhead power line grid connection of the wind farm.

A small number of bird species were observed at the site of the wind farm in May 2012. These included three species of conservation importance which are listed in Annex 1 of the European Birds Directive, and eight species which are of significance due to their unfavourable conservation status within Europe. Most birds were displaying and feeding at the site and were considered to be using the site as a breeding area.

The area covered by the wind farm is unsuitable for bats due to a number of factors, these include being located on an open and windy hillside, an absence of trees or hedgerows within the Site and minimal vegetation features. Bats tend to avoid open windy areas (except when migrating) and areas with a lack of linear features which they use for navigation across the landscape. Although some suitable habitat for foraging and roosting bats is present (woodland and scrub habitat) this is not within the Site and it is likely that any bat activity will be restricted to or near these areas.

There is potential for local impacts due to mortality caused by collision for migrating birds, and large flocking wintering birds and bats; and disturbance/avoidance during operation. The significance of this issue should be minimised by the presence on site of an Independent Ornithological Expert (IOE), who will be responsible for monitoring bird movements in the area of the wind farm and applying appropriate mitigation measures as required, including reducing the speed of the turbines or, potentially, for the turbines to be temporarily turned off during bird migration periods (which often coincide with bat migration periods), should it be required. The IOE should be present during the spring and autumn migration periods and during the winter. In addition, the marking of overhead powerlines with bird deflectors to increase visibility will also reduce the potential for bird strikes.

The monitoring programme will be undertaken for the first 12 months of operation of the wind farm. The programme will help to inform the actual impacts of the wind farms on birds and bats and will be used to manage the operation of the wind turbines at certain times of the year. Furthermore, a Collision Risk Assessment will be completed within two

Figure 10 – General view of Vutcani site and surrounding area



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years of the Vutcani wind farm becoming operational, which will be used to further define site specific mitigation measures if appropriate.

## 5.2 LANDSCAPE AND VISUAL

The general topography in the area of the Vutcani site comprises of a series of hills and valleys which are mostly orientated north-south, with large areas of land of agricultural land (typically arable farming). Belts of mature trees, where present, typically follow watercourses and lower slopes of the valleys helping to break up the vast, open landscape. Agricultural fields and paddocks adjacent to the villages of Vutcani and Codreni are much smaller, more irregular and typically enclosed by woodland copses, tree-lined hedgerows and mature belts of trees to create a more enclosed character around the main settlement areas, in contrast to much wider landscape. Figures 10 & 12 below, present general views of the local landscape.



Figures 11 & 12 – General views of the landscape in the vicinity of the Vutcani site

The nearest residential properties to the site are located more than 500 m from the nearest turbine. Due to the orientation of some of the houses to the wind turbines, some properties will have oblique views only and/or blocked by topography, vegetation or intervening built form. Even so, there will be many open views of the wind turbines, which will be seen as slim silhouettes on the skyline.

The introduction of wind turbines would therefore have an impact on the existing landscape character of the site and surrounding visual amenity. This impact would last for the operational period of the wind farm and be reversed on decommissioning, although during operation, any impacts would be more significant to receptors within approximately 2-4 km of the site. As the distance from the site is increased, the effect of the Vutcani wind farm on visual amenity would be reduced.

## 5.3 NOISE & VIBRATION

Given the limited noise associated with operation of the wind farm and the distances to the nearest residential areas, noise and vibration impacts are considered unlikely to be a significant concern.

## 5.4 WASTE MANAGEMENT

Waste materials generated as part of the project are likely to be minimal. Any wastes generated by routine maintenance activities are removed from site by the contractor and disposed of in an appropriate manner in accordance with applicable legislation. It has been recommended a waste management strategy is developed to ensure the disposal of any hazardous substances in accordance with Romanian Legislation.

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## 5.5 CUMULATIVE EFFECTS

An assessment has been undertaken of the potential cumulative ecological, landscape and visual effects from the Vutcani wind farm together with other wind farms in the area. The nearest other operational wind farm is at Muntenii de Jos approximately 16 km north of Vutcani commune.

As there are currently no other operational wind farms associated with the area surrounding the Vutcani site, potential cumulative effects on birds are not considered to be significant. The other wind farms are at least 5 km from the Vutcani site and therefore the effect of disturbance and barrier effects for birds is expected to be negligible, and potential cumulative effects on bats are not considered to be a significant issue.

The mitigation and monitoring measures implemented will assist in confirming that there are no significant cumulative effects on birds.

The local topography limits views towards the site and views over distances of approximately 5 km are limited by intervening topography, vegetation and built form. Therefore cumulative landscape and visual effects are not considered to be an issue.

## 5.6 DECOMMISSIONING

A decommissioning plan will be prepared to ensure potential impacts associated with the removal of the turbines and associated infrastructure at the end of their operational life are adequately considered.

## 5.7 OTHER ENVIRONMENTAL DISCIPLINES

Based on the available information no significant environmental impacts or cumulative effects are considered likely on the following environmental topics and as such no mitigation measures have been proposed in relation to these:

- ground conditions and water resources;
- air quality;
- cultural heritage;
- electromagnetic interference;
- access; and
- shadow flicker.

# 6 GREENHOUSE GAS ASSESSMENT

An estimate of greenhouse gas savings potential for this project has been calculated using EBRD's Greenhouse Gas Assessment Methodology, where renewable energy power generation projects are assumed to displace the emissions associated with the national average grid electricity generation.

Based on 12 2MW wind turbines in constant use with a possible annual generation of 56,000KWh, the Vutcani wind farm will provide CO<sub>2</sub> emissions savings in the order of 30.96 kt CO<sub>2</sub>-e/yr.

The above total does not take into account emissions associated with the construction phase and other life cycle impacts, and that wind turbines will not be in constant operation throughout a year.

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## 7 ENVIRONMENTAL AND SOCIAL ACTION PLAN

An Environmental and Social Action Plan (ESAP) has been developed to set out specific environmental and social actions required to minimise impacts associated with the wind farm scheme. It is a 'live' document and will be updated on a regular basis.

The key considerations relevant to the wind farm include the following:

- Prepare and submit reports on status of ESAP implementation and environmental, health, safety and social performance, including resolution of grievances associated with the project;
- Develop and implement an Environmental Management System (EMS);
- Implement a monitoring programme to assess the impacts to birds and bats that may be occurring during the operational phase of the wind farm;
- Develop comprehensive waste management plans;
- Undertake a health and safety risk assessment of all staff job functions and activities and implement health and safety action plan covering control measures and work instructions as required; and
- Develop and implement a decommissioning plan that includes a plan for minimising impacts during decommissioning.

## 8 STAKEHOLDER ENGAGEMENT PLAN (SEP)

A SEP has been developed with the objective of identifying key stakeholders and ensuring that, where relevant, they are informed in a timely manner of the potential impacts of the project. The plan also identifies a formal grievance mechanism to be used by stakeholders for dealing with complaints, concerns, queries and comments. It will be reviewed and updated on a regular basis. If activities change or new activities relating to stakeholder engagement commence, the SEP will be brought up to date. The SEP will also be reviewed periodically during project implementation and updated as necessary. The SEP includes the following:

- Public consultations and information disclosure requirements;
- Identification of stakeholders and other affected parties;
- Overview of previous engagement activities;
- Stakeholder engagement programme including methods of engagement and resources; and
- A grievance mechanism.

Stakeholders could be individuals and organisations that may be directly or indirectly affected by the project either in a positive or negative way, who wish to express their views. The definition applied to identify the key stakeholders is:

***'any stakeholders with significant influence on or significantly impacted by, the work and where these interests and influence must be recognised if the work is to be successful'.***