

# **Proposed Wind Farms, Pester and Cernavoda, Dobrogea Region, Romania Non-Technical Summary of Environmental Impact Assessment**

EDP Renewables

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# 1 Introduction

NEO Energia, a subsidiary of EDP Renewables, Romania (known as EDPR), is constructing two wind farms in the Dobrogea area of Romania, approximately 33km and 45km respectively inland west of Constanta Black Sea port. The proposals (hereafter known as the “Projects”) comprise a 90MW wind farm near Pestera and a 138MW wind farm near Cernavoda.

The Projects have obtained the Romanian National planning, construction and environmental permits required and construction is currently underway. Construction of the wind farms is anticipated to be completed in the second half of 2010 with the sites being commissioned in September (Pestera) and December (Cernavoda) 2010 respectively.

This Non-Technical Summary presents the key information relating to the Projects to allow all stakeholders involved to understand the planned investments and their impacts on the sites and surrounding area. The information in this Non-Technical Summary is based on the results of Environmental Impact Assessment (EIA) studies as well as supplementary information related to landscape and ornithology issues prepared for the Projects.

EDP Renewables is a world leader in the renewable energy sector and is the world’s fourth largest wind energy company. The EDP Group is EDP Renewables’ major shareholder. The EDP Group is Portugal’s largest industrial group and one of Europe’s main energy companies. It is currently the Iberian Peninsula’s third largest energy operator, holding business interests in the generation, distribution and supply of electricity and gas in Portugal and in Spain. Besides its leadership position on the Iberian Peninsula, the EDP Group also holds a significant position in the Brazilian electricity sector.

## 1.1 LEGISLATIVE AND FUNDING FRAMEWORK

Due to their size and location the Projects were identified as requiring an Environmental Impact Assessment (EIA) in accordance with Romanian and EU legislation. An EIA was completed for each Project in 2008 as part of the environmental permit application process in accordance with Governmental Emergency Ordinance 195/2005, approved by Law 265/2006 Article 11.

The purpose of the EIA process is to identify any potential environmental issues associated with the developments, assess the significance of the impacts and, where appropriate, identify measures to avoid or reduce these effects.

The EIA for each of the sites was undertaken by Cabinet Expert Traian Petrescu. Construction Authorisations and Environmental Permits have been granted for both sites.

EDPR has approached the European Bank for Reconstruction and Development (EBRD) and the International Finance Corporation (IFC) for co-financing of the wind farms. The Projects have been classified as Category A projects and have been assessed in accordance with the EBRD Performance Requirements and IFC Performance Standards. This includes an assessment of disclosure and stakeholder engagement. A separate Stakeholder Engagement Plan will be implemented for the Projects.

This Non-Technical Summary describes the findings of the EIA, including the potential impacts on the environment and local inhabitants, and measures that have been implemented to eliminate, reduce or mitigate those impacts. These measures are detailed in an Environmental and Social Action Plan (ESAP), which will be implemented for the Projects.

A Stakeholder Engagement Plan (SEP) has been prepared which describes the key stakeholders and the information and communication plans intended in respect of the two wind farm developments and associated infrastructure. The SEP takes into account best international practice in relation to information disclosure and outlines the general engagement principles that EDPR will adopt and those which will be used for the current modernisation programme. The SEP will be reviewed and updated on a regular basis.

## 1.2 WHY ARE THE PROJECTS NEEDED?

The development of sustainable renewable energy sources to replace traditional fossil fuel based technologies is a priority at both at National and European policy levels. Energy generation from wind farms, in appropriate locations, is recognised as a sustainable alternative to fossil fuel power stations.

The energy generated by the Pestera and Cernavoda wind farm Projects will be delivered to the national grid and will help to meet national energy demand through the use of a renewable energy source.

## 2 Where will the Projects be Located?

The Project sites are located in the County of Constanta in the south-west region of Romania, approximately 33km (Pestera) and 45km (Cernavoda) respectively west of Constanta on the Black Sea coast. Both sites are located in rural areas and are more than 600m from the closest residential properties.

The distance between the Pestera and Cernavoda sites is approximately 7km at the nearest point and approximately 15km from the centre of each site. Figure 1 shows the approximate location of the Projects.



Figure 1 - Site Location Plan

(Source: Google Maps)

The site at Pestera is located approximately 2.5km south-west of Pestera town and 1km south of Ivrinezu Mic and to the south east of Rasova. The site is accessed via the DJ223b to the west and the DJ222 to the east. The eastern part of the site is located near the Ivrinezului Valley and the Movila Lui Lipan. The Danube to Black Sea Navigable Canal, a tributary of the River Danube is located approximately 2km to the north of the site, with the River Danube being approximately 10km to the west. The Pestera site is approximately 38km west of the Black Sea coast.

The site at Cernavoda is located approximately 1km south west of Tibrinu and approximately 4km east of the town of Cernavoda. Access to the site is via the DJ225 county road and then via the existing roads associated with general activities in the area.

To the north of the Cernavoda site are Lake Tibrinu (including a fish farm), the villages of Tibrinu and Gherghina and the boundary of the Cernavoda administrative area. The village of Stefan cel Mare is located to the east and to the west is the boundary of the settlement of Micea Voda. The areas of Faclia and the outskirts of Mircea Voda and Saligny are present to the south. The Danube to Black Sea Navigable Canal is located approximately 5km to the south of the site, and the River Danube itself is located approximately 8km to the west. The Cernavoda site is located approximately 50km east of the Black Sea coast.

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## 3 Description of the Projects

### 3.1 DESCRIPTION OF THE PROPOSED WIND FARMS

The proposed wind farm at Pestera will contain 30 wind turbines, providing a total installed capacity of 90MW. The wind farm at Cernavoda will comprise 46 wind turbines, providing a total installed capacity of 138MW. Some roads local to each site will be upgraded in order to accommodate heavy vehicle movements associated with transportation of the turbine components and underground and overhead powerlines will be constructed.

The layout of the wind farms has been designed to maximise energy generation. Construction of the Pestera site commenced in August 2009 and commissioning is programmed for September 2010. Construction of the Cernavoda wind farm commenced in October 2009 and is planned to be completed and commissioned in December 2010.

### 3.2 OVERVIEW OF CONSTRUCTION, OPERATION AND DECOMMISSIONING

Both the Cernavoda and Pestera sites will comprise the following elements, namely wind turbines, electricity substations, service roads and cables linking the wind turbines and the electricity substation connected to the national grid.

Each wind turbine consists of a hollow steel tower with a nacelle, that will house the generator, gearbox, transformers and control systems and to which the fibreglass rotor with three blades is attached. A diagram of a typical wind turbine is provided in Figure 2 below. The turbines used in each wind farm will be the VESTAS V90 3.0MW model.

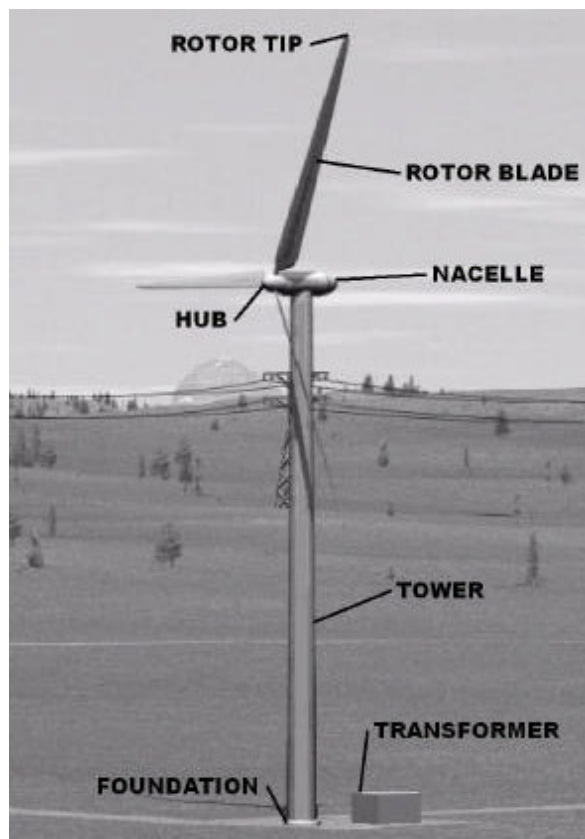


Figure 2 - Typical Components of a Wind Turbine

(Source: IFC Environmental Health and Safety Guidelines for Wind Energy)





The turbines will each have a total height of 150m (comprising 105m tower and 45m rotor blade above the tower height). The turbines will be linked through underground cables which will be connected to a transformer station within the wind farm. This transformer will be linked to the national grid via cables to an off-site electricity substation. A summary of the main features of the wind turbines is provided in Table 1 below.

<b>Turbine model</b>	VESTAS V90 3.0MW
<b>Rotation</b>	Clockwise
<b>Tower Diameter</b>	4.15m at the base 2.30m at the top
<b>Tower height</b>	105m
<b>Rotor diameter</b>	90m
<b>Total height</b>	150m
<b>Power output per turbine</b>	3MW turbines usually produce 6 – 8 GWh
<b>Distance between turbines</b>	Approx. 450m

Table 1 Summary of the Key Features of the Wind Turbine VESTAS V90 3.0MW

In order to reduce potential impacts during the construction phase, a Construction Environmental Management Plan (CEMP) will be produced. The CEMP will contain instructions and guidance on all aspects of the construction process and associated environmental control measures.

Existing roads in the vicinity of the sites will be improved to allow the transportation of the turbine components to each site. This is necessary due to the large size and weight of the turbine components that are to be transported. In addition, large cranes will be required for the installation process. Some new roads will be constructed within the wind farms to allow access to the turbines for construction and maintenance purposes. For the Pestera site, some improvement works to an existing bridge and surface water drain are required to allow access for construction traffic.

Following commissioning of the wind farms the majority of the land in the sites (except the working areas of the turbines, which represents about 1% of the area) will be returned to agricultural use and will be managed by individual farmers.

During operation, the wind farms will be monitored remotely using specialised telecommunications equipment and radio. The functions of the wind turbines will be monitored and controlled by various control units based on microprocessors. If during monitoring the level of noise emitted exceeds the noise limit set for the boundary of the site (of 45dBA) action will be taken to reduce the noise emitted by changing the rotational speed of the turbines according to the local wind conditions (a system known as Optispeed).

Access to the operational areas of the wind farm will be minimal and limited to authorised personnel only for the purposes of periodic maintenance and in the event of any incident or emergency.

The normal lifetime of the model of turbine to be used is 20 years. The wind farms will be decommissioned and the land restored to the original conditions without long-term environmental effects. Decommissioning will involve dismantling of the wind turbines, removal of the electricity substation and excavation of the cabling. Where practicable the components of the equipment will be re-used for future turbines or recycled to provide reusable material. Waste that cannot be reused or recycled will be disposed of to an appropriately licensed waste facility situated off-site. EDP has agreed contracts with local licensed waste contractors, Pestera WF and Cernavoda I-II WF, for the removal of waste materials from the respective sites.

The layout of both wind farms and the design and choice of turbines are based on the optimum performance in terms of energy generation. The layouts of the Projects are provided in Figures 3 and 4 below.

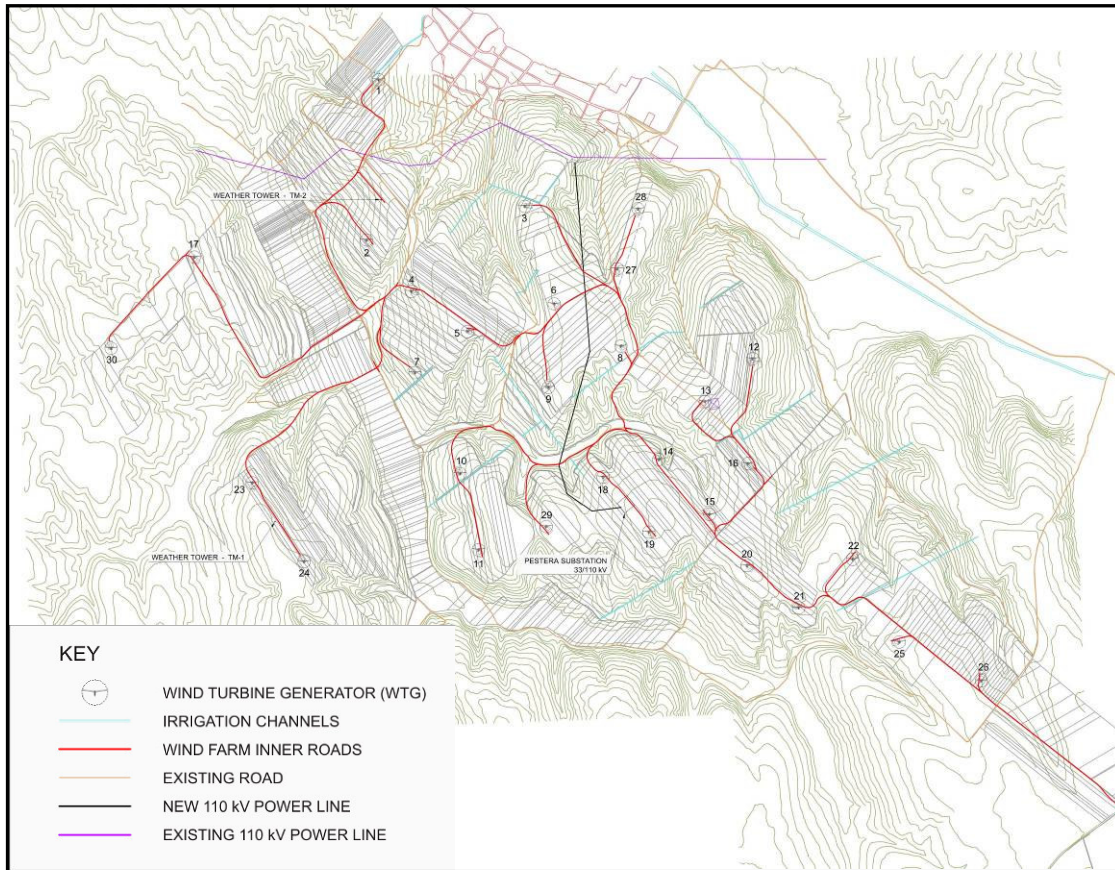


Figure 3 Proposed Layout Pesteria Wind Farm

(Source: provided by EDPR)

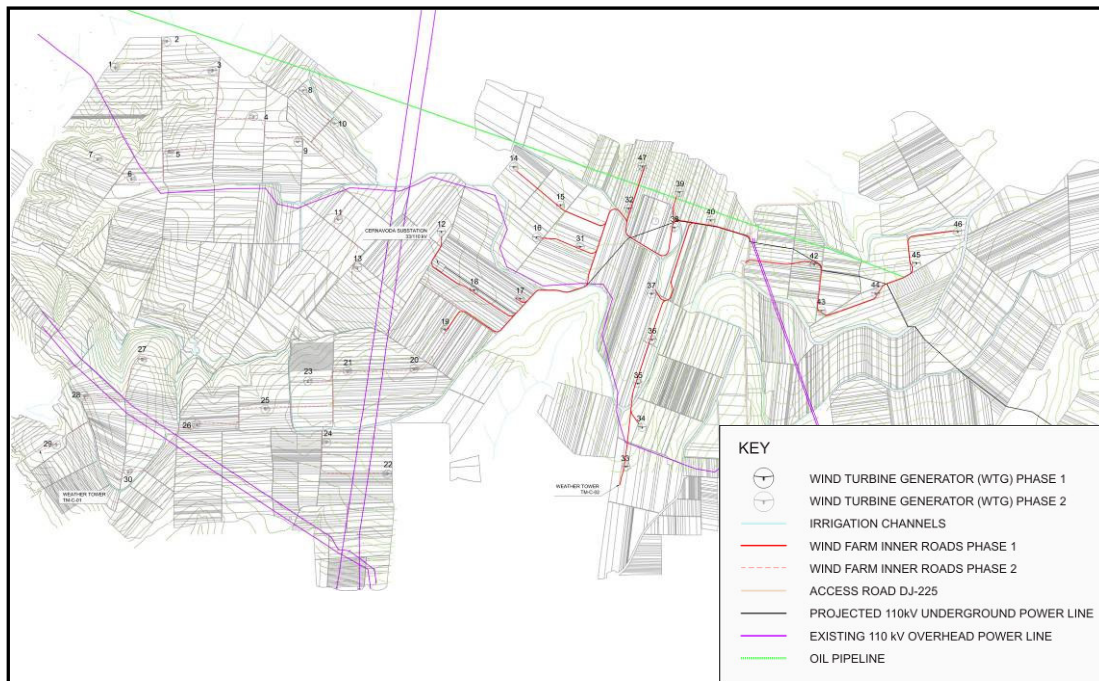


Figure 4 Proposed Layout Cernavoda Wind Farm

(Source: provided by EDPR)



### 3.3 SUMMARY OF THE PROJECT DEVELOPMENT PROCESS

The process involved in developing the Pestera and Cernavoda wind farm Projects is summarised below in order to provide an understanding of the steps that have been undertaken.

- **Planning and location** - The sites were selected based on a comprehensive wind survey programme to identify suitable locations for wind farm developments in the Dobrogea region. Preferred sites were chosen based on the findings of the survey, existing land use issues and the potential environmental impacts. Consultation was held with the City Halls regarding the layout and location of the Projects and Urban Certificates were issued by the City Halls indicating the legal status of the land, historical information relating to the sites and defining the permits and approvals required in order to obtain the Building Permits. The Urban Certificate for Pestera was issued in December 2007, followed by the Urban Certificate for Cernavoda in March 2008.
- **Environmental Agreement** – an EIA screening process was undertaken with the Environmental Protection Agency in Constanta. Due to the nature and size of the Projects, it was confirmed that EIA studies were required for each Project. Following public announcements in the media regarding the intended request for the Environmental Agreements, public debates on the EIA studies were held for each Project (in April and August 2008 for Pestera and Cernavoda respectively). The EIA Reports together with a Technical Memorandum and the Urban Certificate for each Project were submitted in order to obtain the Environmental Agreements. The Environmental Agreement for the Pestera Project was originally issued in June 2008 and a further agreement for an extended site (to include three additional turbines) was issued in October 2008. The Environmental Agreement for the Cernavoda project was issued in September 2008.
- **Construction permitting** – Following attainment of the required permits, in addition to the Environmental Agreements, the final Building Permits were issued for the Projects in December 2008.
- **Site preparation** –The preparatory works for each Project started in August 2009 (Pestera) and October 2009 (Cernavoda) respectively. These works included top soil stripping and localised vegetation clearance in the vicinity of the construction compounds, access roads and the turbine footprints.
- **Construction of supporting infrastructure and temporary facilities** – Upgrading of local roads and associated infrastructure is required to accommodate heavy goods vehicles which will transport the components of the wind turbines and also allow access to the site by construction vehicles. In addition, construction compound areas including areas for storage of construction materials and provision of welfare facilities for workers have been provided in accordance with the requirements of the Building Permits and the Environmental Agreements. During this and the subsequent construction stages an archaeological watching brief is to be provided by the Museum of Archaeology, who are kept informed of the progress of construction works and the schedule for reinstatement of excavated areas.





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- **Earthworks and construction of foundations** – Earthworks are currently being undertaken to excavate the concrete foundations for each of the wind turbines. The construction of foundations has commenced at each site. However, progress on these works was delayed during January/February 2010 due to extreme weather conditions.




- **Installation of services infrastructure** – Electrical cables will be installed in trenches below ground and the electrical transformer station will be constructed during this stage. In addition, overhead transmission lines will be constructed.
- **Transportation of components** – The majority of the wind turbine components (including the tower and rotor blades) will be transported directly from the equipment supplier, having been fabricated off-site. Due to the size of the components a detailed plan and programme has been developed to manage their transportation. The plan will include measures for liaison with the police, highway authorities and local communities among other parties, and adequate notice will be provided of any road closures required. In addition, specialised equipment is required to construct the wind turbines (such as cranes and other lifting equipment). Particular consideration will be given to any space constraints relating to turning of vehicles and the upgrading of the access roads will be in strict accordance with the requirements of the equipment loads.
- **Wind turbine assembly** – Assembly of the wind turbines requires specialised heavy lifting equipment and highly experienced staff. The assembly will be carefully executed with appropriate health and safety precautions and procedures documented and implemented.
- **Commissioning and Operation** – Following assembly, the Projects will undergo a series of technical and safety checks and tests to ensure that the installations are functioning properly. Commissioning of the Projects will include checks and audits by the City Halls and other authorities, including in respect of public health, safety and environmental matters. Environmental monitoring will be undertaken at the Projects for a minimum of one year following commissioning of the Projects, in accordance with the requirements of the Environmental Agreements.

### **3.3 TARGETS AND STANDARDS TO BE USED DURING OPERATION OF THE WIND FARMS**

The wind farms are designed to meet international standards and to comply with the requirements of Romanian legislation and EU directives. Specific standards which will be applied during operation of the wind farms are as follows:

- Noise levels emitted from each wind farm should not exceed those stated in STAS 10009/1988, and a noise target level of 45 dB(A) at the nearest residential property has been set for the Project.

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- Hazardous waste generated during operation will be managed in accordance with provisions of Decision 235/2007 regarding the management of used oils.

### 3.4 CONSIDERATION OF ALTERNATIVES

The sites were selected following completion of a comprehensive wind survey programme to identify suitable locations for wind farm developments in the Dobrogea region. The Dobrogea region was chosen as opposed to other regions of Romania as it is an area with high average annual wind speeds, as required for wind farm developments. A list of possible sites was prepared, and the preferred sites were then chosen. Part of the site selection process was to look at potential environmental impacts and existing land use issues. One site that was originally considered was rejected at an early stage due to it being located in an area which was likely to be protected in the future because of the ecology (specifically bird species) that it supports.

The layout of both wind farms and the design and choice of turbines are based on the optimum performance in terms of energy generation. In the case of Cernavoda a modification was required to the wind farm layout in order to avoid potential concerns relating to a nearby military communications facility.

No assessment of alternative technologies for the sites has been undertaken since the aim of the Projects was to use renewable sources of energy and to move away from conventional methods of energy generation. Other renewable technology options include solar, hydropower and biomass-fuelled generation. The sites are not suitable for these technologies. The land take of a solar farm would be significantly greater than a wind farm and it would not have been possible to return the land to agricultural use after construction. Hydropower is not a viable option as there are no water sources within the sites. In addition, there is no established suitable biomass supply chain in the region.

## 4 What is the Condition of the Existing Sites?

The Project sites are similar in nature and consist of generally flat, apparently un-irrigated, agricultural land (including arable and pasture) although the quality of the land is relatively poor and is not very profitable for agricultural purposes. Some of the land has not been cultivated. There are very few trees and no buildings on the sites (although construction of the projects has started), with no wetlands, significant watercourses or other notable features. Photographs of typical views of each site are provided in Figures 5 and 6 below.

The proposed Projects are not located within any protected area. Information received from the Societatea Ornitologica Romana (SOR) indicates that the Pestera site lies approximately 5km from the Aliman-Adamclisi Important Bird Area (IBA) and Special Protection Area (SPA), which is an area designated under the EU Habitats Directive. The Aliman-Adamclisi IBA and SPA contains a number of bird species that are classified as threatened in the European Union, in both the summer (breeding) and migration periods. Bird species reported to move through the IBA/SPA during spring and autumn migration include Levant sparrowhawk, Red-footed falcon, Collared pratincole, Pallid harrier, Montagu's harrier and Booted eagle.

SOR also report that the Cernavoda site lies 6.5km from the Dunare-Ostroave IBA and SPA (also known as the River Danube SPA). This site contains a number of bird species which are classified as threatened in an EU context, in both summer (breeding), winter, and migration seasons; the River Danube it is a major flyway during spring and autumn migration periods for such species as Osprey, Little tern, Pygmy cormorant, Ferruginous duck, White-tailed eagle and Glossy ibis.

In addition, SOR report that the Cernavoda site is located 10km and 14km away from the Allah Bair-Capidava IBA/SPA and Bratul Borcea IBA/SPA. Both of these sites are of value to birds in the summer (breeding) winter and migration periods, for example, the latter is reported to support the following birds during spring and autumn migration periods: Ferruginous duck, White stork, White-tailed eagle, Osprey, Pygmy cormorant, Glossy ibis and Little tern.

The Cernavoda site is also lies approximately 5.7km from the Canaralele Dunarii Site of Community Importance (SCI). This site supports a high diversity of protected habitats, as well as the Carsium



archaeological reserve, geological and palaeontological reserves; and sites important for mammals, amphibians, reptiles, fish, non-vertebrates, vertebrates as nominated in the EU Habitats Directive.

The Project sites have not been identified as being important for breeding, wintering or migratory birds, in as far as they have not been included within the boundaries of any IBA or SPA. However, a number of species which are protected under Annex 1 of the EU Birds Directive and under Romanian and International law have been recorded on or over-flying the site and occur in the general area. Several known migratory flyways for birds are located between the sites and the Black Sea to the west, including Via Pontica, one of the main bird flyways connecting Eastern Europe and eastern Africa.

Bird monitoring will be undertaken at each site during construction and operation as part of the environmental monitoring programme that has been devised for each Project.



Figure 5 - Typical View of the Pesteria Site

*(Source: Report on Environmental Impact Assessment for Wind Farm Pesteria, 2008, Cabinet Expert Mediu – Petrescu Traian)*

The area is identified as being stable in respect of seismic activity, and the Project sites are not vulnerable to landslides or flooding. There are no sewage networks present on either site. A number of irrigation channels cross the sites (see Figures 3 and 4) although there are no natural surface water features on the sites.

There are no known archaeological features within the sites and arrangements have been put in place to monitor any issues that may arise during construction (see Section 5 below).

The nearest dwelling to the Pesteria site is located in the Ivrinezu Mic village, approximately 700m north of the site. The nearest dwelling to the Cernavoda site is located in the Stefan cel Mare village, approximately 600m west of the site.

The sites are located at an altitude of approximately 300m above sea level. The geology comprises topsoil which overlies layers of loess and silt. Groundwater is understood to be present beneath the sites at between approximately 6 and 10m below ground level.



Figure 6 - Typical View of the Cernavoda Site

*(Source: Report on Environmental Impact Assessment for Wind Farm Cernavoda, 2008, Cabinet Expert Mediu – Petrescu Traian)*

## 5 What will the Environmental Impacts of the Projects be?

The potential environmental impacts of the Projects will be similar for each site and are discussed below for each stage of the works.

### 5.1 NOISE IMPACTS

The EIA Reports prepared include an assessment of the impact of noise during construction and operation. Noise during construction will include noise generated from the use of plant, such as bulldozers and cranes, and piling activities as well as transportation of materials by road.

The nearest residential properties are more than 600m from each Project site, therefore noise levels during construction activities on the site will not impact on local residents. Some residents may be affected by noise from the transportation of materials via heavy goods vehicles on local roads, however this impact will be temporary and short-term. The CEMP will include measures to minimise noise from construction activities and these will include the choice of construction equipment used, its maintenance and the hours when construction can be undertaken (08:00 – 17:00).

Modelling using a simulation program called WindPRO was completed during the EIA to predict the changes in noise levels which will occur during operation of the wind turbines. The results of the modelling are presented in the form of noise contour maps which predict the future noise levels at the site. The modelling results indicate that the noise level of 45dB(A) will be complied with at the nearest residential receptor. Therefore no noise impacts on local populations or communities are anticipated from operation of the wind farms.

The noise contour map generated for the Cernavoda site is provided below (see Figure 7).



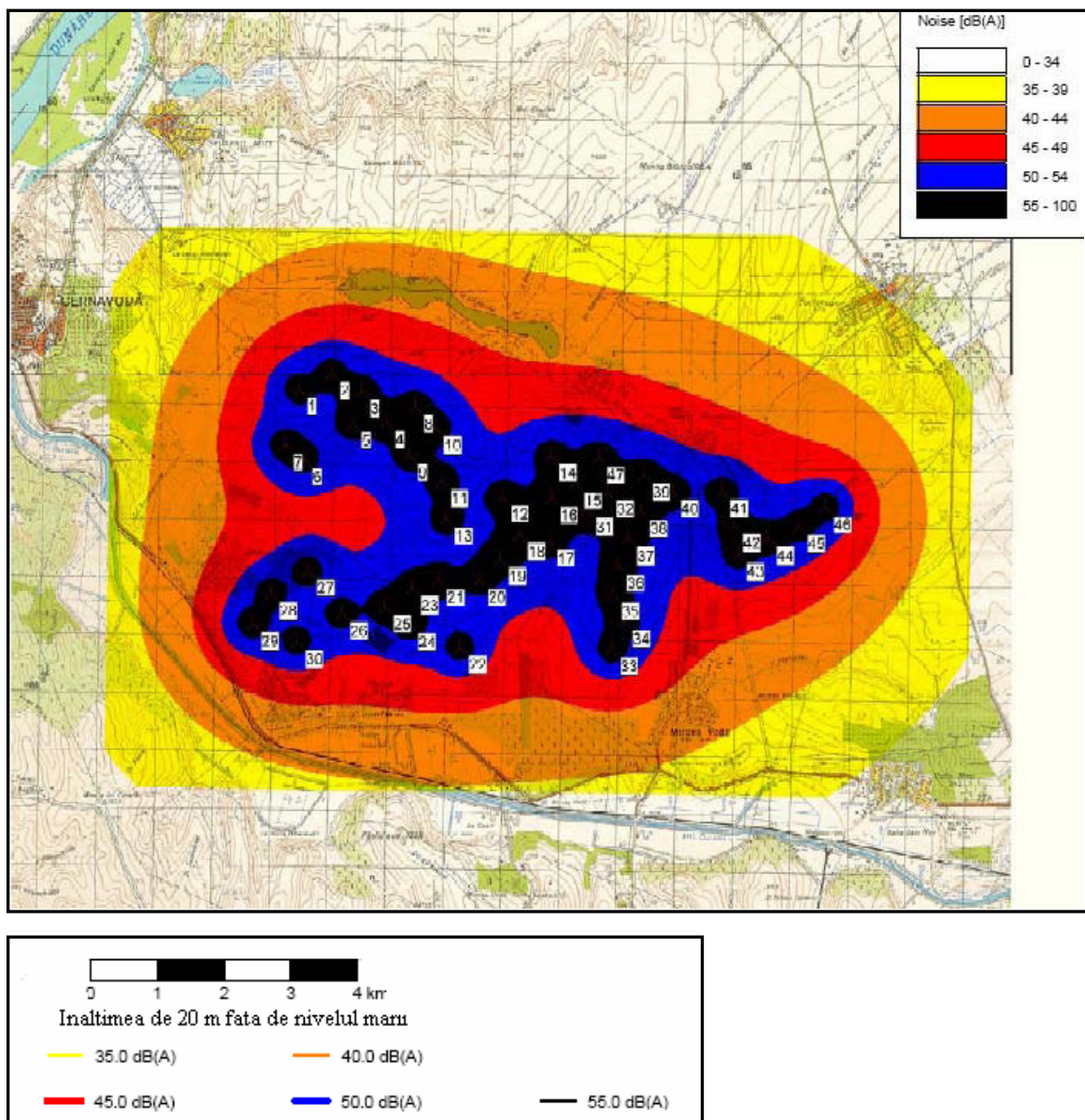


Figure 7 Noise Contour Map for Cernavoda Wind Farm

(Source: Report on Environmental Impact Assessment for Wind Farm Cernavoda, 2008, Cabinet Expert Mediu – Petrescu Traian)

## 5.2 ECOLOGICAL IMPACTS

The Project sites are not likely to support significant fauna or large numbers of fauna, other than avifauna, due to their lack of semi-natural habitats and their intensively managed homogenous status. There are no potential roosting sites for bats, nor is there foraging or commuting habitat for bats on either site. There are no waterbodies within proximity of the Pesteria site and the closest waterbodies to the Cernavoda site are the River Danube and Lake Tibrinu (which are located approximately 8km to the west and 1km north respectively).

The main African-Eurasian migratory flyways, including the flyway known as the Via Pontica, are located east of the Project sites, on the Black Sea coast, migratory birds are also likely to use the Danube Delta to the west of the Project sites. The Via Pontica is the main route used by many migratory birds, including raptors and waterfowl, when moving between central and Eastern Europe and Scandinavia, and the east coast of Africa (via Turkey, Syria, Lebanon, Israel and Egypt).

The sites are not located within any protected areas. The nearest protected areas to each site are as follows, additional protected areas are located beyond 10km from the sites:

- Aliman-Adamclisi Important Bird Area (IBA) and Special Protection Area (SPA) – approximately 5km from the Pestera site and 15km from the Cernavoda site; and
- Dunare-Ostroave IBA and SPA – approximately 6.5km from the Cernavoda site and 12km from the Pestera site.

Further information relating to protected areas within the surrounding area and the Via Pontica is provided in Section 5.3 below.

Species of raptors, waterfowl and waders listed in Annex I of the Birds Directive, for which the SPAs nearest to the Project sites are important are summarised in the table below:

Bird species	Latin Name	Aliman-Adamclisi SPA	Dunare-Ostroave SPA	IUCN Red List Status
Purple heron	<i>Ardea purpurea</i>	N/A	150-500 breeding pairs	Least Concern
Ferruginous duck	<i>Aythya nyroca</i>	N/A	50-70 pairs; 300-400 migrating	Near Threatened
Red-breasted goose	<i>Branta ruficollis</i>	N/A	120 wintering birds	Endangered
Red-footed falcon	<i>Falco vespertinus</i>	36-41 pairs; 200-400 migrating	18-21 breeding pairs	Near Threatened
Levant sparrowhawk	<i>Accipiter brevipes</i>	15-18 pairs; 30 migrating	N/A	Least Concern
White-tailed eagle	<i>Haliaeetus albicilla</i>	N/A	17 on migration	Least Concern
Imperial eagle	<i>Aquila heliaca</i>	1-2 breeding pairs	N/A	Vulnerable
Booted eagle	<i>Hieraeetus pennatus</i>	3-4 pairs; 15-20 migrating	N/A	Least Concern
Black kite	<i>Milvus migrans</i>	5-6 breeding pairs	3-4 breeding pairs	Least Concern
Long-legged buzzard	<i>Buteo rufinus</i>	35-40 breeding pairs		Least Concern
Osprey	<i>Pandion haliaetus</i>	N/A	20 on migration	Least Concern
Pallid harrier	<i>Circus macrourus</i>	9-10 breeding pairs	N/A	Near Threatened
Montagu's harrier	<i>Circus pygargus</i>	60-80 migrating	N/A	Least Concern
Hen harrier	<i>Circus cyaneus</i>	1-3 pairs; 120-130 migrating	N/A	Least Concern
Pygmy cormorant	<i>Phalacrocorax pygmaeus</i>	N/A	90-120 pairs; 240 wintering	Least Concern
Spoonbill	<i>Platalea leucopterus</i>	N/A	144-160 breeding pairs	Least Concern
Glossy ibis	<i>Plegadis falcinellus</i>	N/A	120-130 pairs; 230-400 migrating	Least Concern
Stone curlew	<i>Burhinus oedicephalus</i>	30-32 breeding pairs	N/A	Least Concern
Collared pratincole	<i>Glareola pratincola</i>	80-90 migrating	N/A	Least Concern

Table 2 Bird Species Present Within the Dunare-Ostroave and Aliman-Adamclisi SPAs

(Source: Societatea Ornitologica Romana, Birdlife International)



There will be some habitat disturbance and displacement of mammals and birds during construction of the proposed wind farms although these effects are anticipated to be mainly temporary and short-term. No potentially significant impacts are predicted upon floral species and habitats due to the lack of semi-natural habitats on the Project sites.

There are four key potential impacts associated with avifauna at the wind farms on the Project sites,

- Habitat loss;
- The barrier effect;
- Disturbance/ avoidance impacts: and
- Mortality associated with collision with turbines/ overhead powerlines;

Given the nature and size of the habitat to be lost (due to the turbine foundations and the access roads) and the amount of similar alternative habitat in the area, no significant impacts are predicted on avifauna with regards to habitat loss or on breeding birds.

Also, given their habitat, topography (on flat land) spacing between turbines and location between the significant flyways and away from designated sites no significant barrier effect is anticipated.

There is potential for local impacts due to mortality caused by collision for migrating birds and large flocking wintering birds and disturbance/avoidance during both construction and operation. The significance of this issue should be significantly minimised by the presence on site of an Independent Ornithological Expert (IOE) on the sites, The IOE will be responsible for undertaking surveys and monitoring bird movements in the immediate area and instigating appropriate mitigation measures as required. This could include reducing the speed of the turbines or, potentially, for the turbines to be temporarily turned off during bird migration periods, should it be required.

In addition, the marking of overhead powerlines with bird deflectors to increase visibility will also reduce the potential for bird strikes.

Due to the lack of suitable breeding and foraging habitat and the location and spacing of the turbines (as discussed above) the Project Sites are not predicted to have potential for a significant effect on the qualifying species or integrity of any of the Natura 2000 sites in the area.

To aid this avoidance, there will be bright flashing lights on the top of each turbine to increase visibility at night (primarily for aircraft), and therefore promote avoidance and reduce mortality.

During periods when there is a higher density of birds in the vicinity of the turbines (such as bird migratory periods) the speed of the turbines will be reduced or they will be turned off temporarily as instructed by the IOE, based on an agreed protocol and detailed shut-down procedure prepared in accordance with EBRD and IFC standards.

The required mitigation will be informed by detailed monitoring which will be implemented during operation of the wind farm sites in accordance with the sites' environmental agreements and international best practice and this will be implemented by the IOE.

### **5.3 NATURA 2000 SITES, PROTECTED AREAS AND FLYWAYS**

There are a number of Natura 2000 sites (SPAs and SCIs) and other protected areas (such as IBAs) in the area surrounding the wind farm sites. These include four SPAs and IBAs, which are designated to protect bird populations, within 15km of each site. These SPAs and IBAs are important for various wintering bird species and provide feeding and roosting areas for a range of species.

The closest designated sites to the proposed wind farms at Pestera and Cernavoda (Aliman-Adamclisi IBA and SPA and Dunare-Ostroave IBA and SPA) are described below and shown on Figures 8 and 9. Other designated sites which are located within 15km of the proposed wind farms include:

- Bratul Borcea SPA and IBA – located approximately 14km west of the Cernavoda site; and
- Allah Bair-Capidava SPA and IBA – located approximately 10km north of the Cernavoda site.



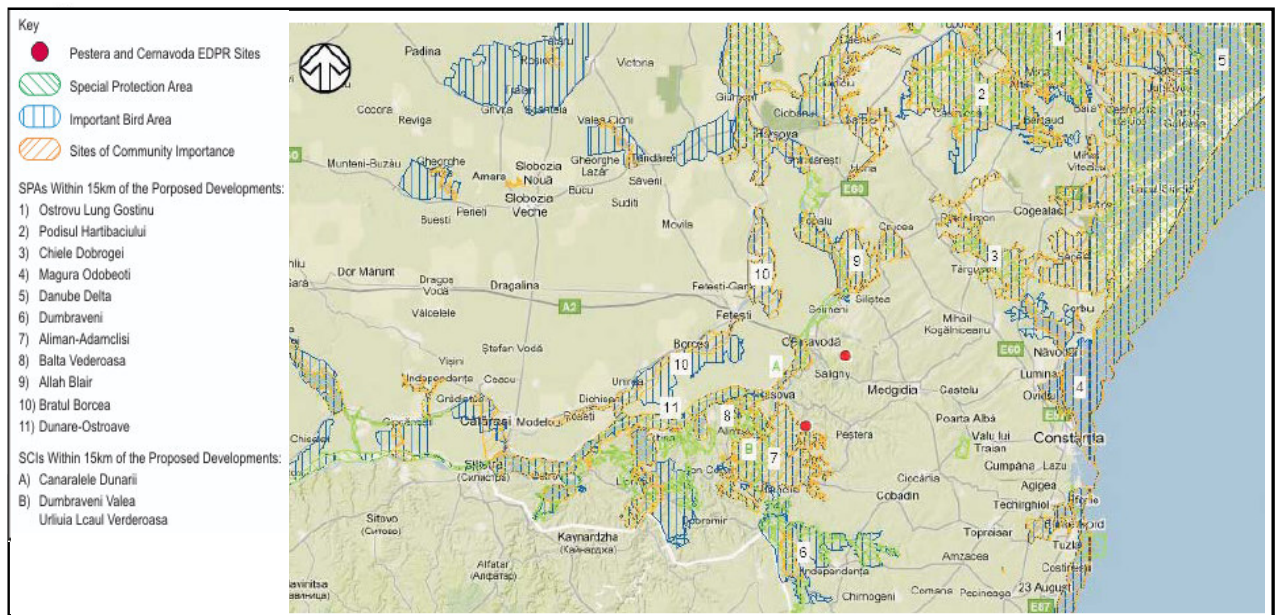


Figure 8 Locations of Special Protection Areas, Sites of Community Importance and Important Bird Areas Near the Sites  
(Sources: Birdlife International, Natura 2000)

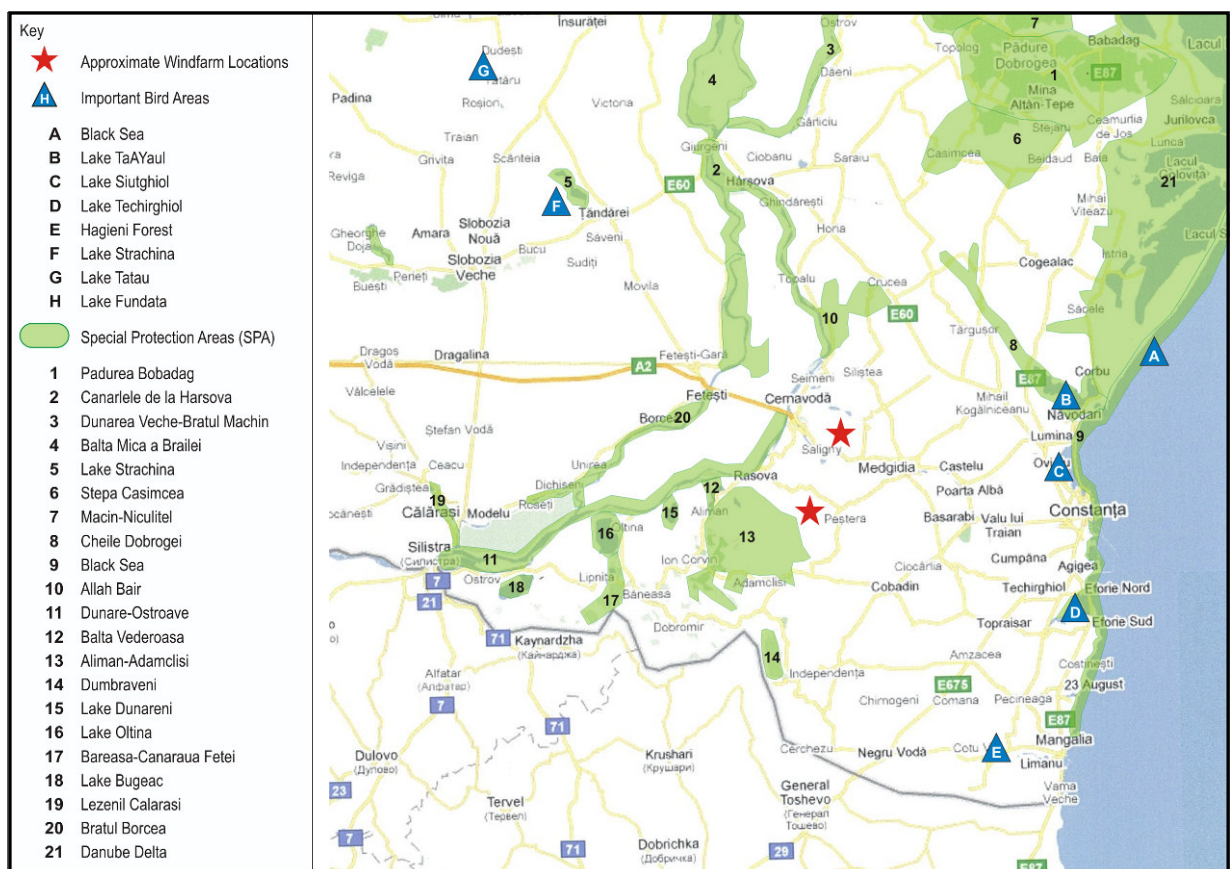


Figure 9 Locations of Special Protection Areas and Important Bird Areas Near the Sites  
(Sources: Birdlife International, Natura 2000)





The Pestera site lies approximately 5km from the Aliman-Adamclisi IBA and SPA. The Aliman-Adamclisi IBA (RO128) occupies 19,849 hectares (ha) and comprises non-irrigated arable land, natural grasslands, broad-leaved forest, pasture and agricultural land with significant areas of natural vegetation. It qualifies as an IBA mainly under category C6 (species threatened at the European Union level); essentially this means that this IBA is one of the ten most important sites in Romania for certain species, which are all considered threatened in the European Union, these include species such as the black kite, stone curlew and nightjar.

The Cernavoda site lies approximately 6.5km from the Dunare-Ostroave IBA and SPA and approximately 5.7km from the Canaralele Dunarii SCI. The Dunare-Ostroave SPA (RO0032) (also known as the River Danube SPA) occupies an area of 19,468ha and qualifies as an SPA because it supports certain defined bird species.

The Canaralele Dunarii SCI (ROSCI0022) covers a total area of 26,064ha and extends across three counties: Calarasi, Constanta and Lalomita. It supports a high diversity of protected habitats, as well as the Carsium archaeological reserve, geological and palaeontological reserves; and sites important for mammals, amphibians, reptiles, fish, non-vertebrates, vertebrates as nominated in the Habitats Directive.

The Danube Delta SPA/IBA, located approximately 57km north-east of the Cernavoda site and approximately 62km north-east of the Pestera site, is by far the most important within Romania, and in Europe. Measuring 51.5 km<sup>2</sup> this SPA/IBA occupies an area similar in size to all of the other SPAs in Dobrogea combined.

The contribution both the Danube Delta and Black Sea protected areas make to the Via Pontica (the main bird flyway between Eastern Europe and the east coast of Africa) is also significant. Information contained within Anon (2008), and reproduced in Table 3.4 illustrates that the Danube Delta supports between 470,000 – 950,000 migratory waterfowl, and the Black Sea between 110,000 – 250,000 migratory waterfowl annually. These figures refer to the number of waterfowl that stop to feed at these sites during migration; additional waterfowl may fly over the sites without stopping, and of course birds of prey and passerines, not included in these figures, may also stop to feed and/or fly over these sites. Although these considerable numbers of bird movements are focussed within the Danube Delta and along the western Black Sea coasts, some migratory movements also occur north and south along the River Danube, located approximately 50 km to the west. Although the Via Pontica bird movements will occur along a broad front which may encompass all of the wind farm sites listed in Table 3.3, it is likely to be focussed on coastlines, steppes and major rivers rather than flat agricultural planes.

According to the SOR there are also significant movements of birds from the Black Sea coast moving west to the River Danube, particularly in freezing weather, and back again to the Black Sea in warmer conditions. Such movements include those made by the red-breasted goose, a globally threatened species, almost the entire global population of which over winters near the Black Sea.

No significant adverse impacts are predicted on the qualifying species or integrity of protected areas from the proposed wind farms on the Project sites, although, in accordance with the sites environmental agreements and international best practise, further monitoring will be undertaken during construction and operation in respect of bird activity on each proposed site.

## **5.4 LANDSCAPE AND VISUAL IMPACTS**

The landscape is reviewed in terms of its character (identifying and assessing the landscape characteristics, quality and condition of the area) and visibility (the potential areas within which the wind turbines may be visible, the perception of viewers and visually sensitive receptors).

The introduction of wind turbines and ancillary infrastructure will have an impact on the existing landscape character of both sites. This will be a more significant effect close to the site (e.g. 500m to 1km away) but as distance from the site is increased, the effect would be reduced. This impact would last for the operational period of the wind farm and would be reversed on decommissioning.

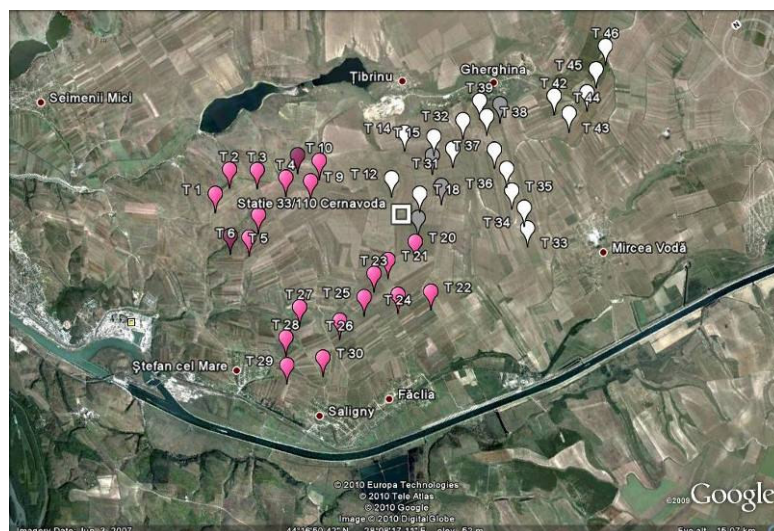


Figure 10 Aerial Photograph showing Turbine Locations at Cernavoda  
(Source: Photomontages prepared for EDPR)

There is very little tree cover within the area of either site, and due to the nature of wind turbines there is little mitigation possible to reduce the visual impacts of the turbines. However, the open character of the wind farms and their general uniformity of colour and design (including sky-coloured design to reduce impact on sky-line views) enables the developments to relate well to the receiving landscape character of each site (which are currently open and expansive). The proposed wind farms will not adversely impact upon the local landscape character or the diversity of the landscape character beyond the local context.

In terms of visual amenity, there is the potential for wind turbines to be seen some considerable distance away, which would include the coastal settlement of Constanta. However, the topography will limit views towards the sites to within a much more localised area.

The locations of the wind turbines are approximately 700m (Pestera) and 600m (Cernavoda) of various small settlements. This results in some visual impact to nearby residential receptors within a few kilometres of the site. At greater distances, the impact of the turbines on visual amenity reduces to negligible or no effect. Potential views from residential areas near the two sites include the following settlements:

- Cernavoda – Saligny, Tibrinu, Gherghina, Mircea Voda, Stefan cel Mare and Facila (see Figure 10 above); and
- Pestera – Ivrinezu Mic and Ivrinezu Mare (see Figure 11 below).

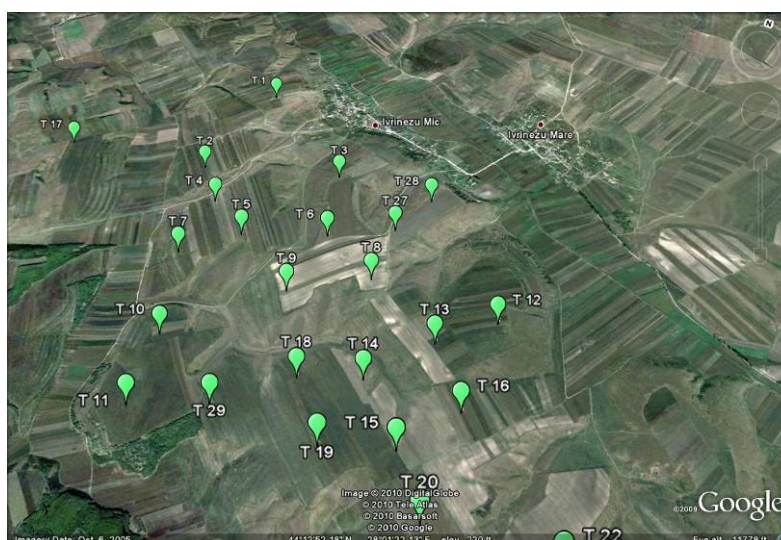


Figure 11 Aerial Photo showing Turbine Locations at Pestera  
(Source: Photomontages prepared for EDPR)



The overhead powerlines which will be constructed on the site and between the site and the Mircea Voda North substation (3km and 4km respectively) will pass over open countryside away from residential properties. Consequently the impact of the powerlines on visual amenity will be minimal.

The landscape in the area of the Cernavoda site contains electricity pylons which can be seen on the skyline of some views. The main residential areas identified above follow the banks of the River Danube Navigation Canal and are at a lower level than the surrounding hills on which the turbines are located. In addition, the residential and built up areas in this area contain many trees and blocks of vegetation in contrast to the extensive, open plains above them. This vegetation, along with the topography, helps to limit views of the turbines from these residential areas. Views from Tibrinu, Gherghina and Mircea Voda may also be screened by vegetation and the local topography. However, as shown in Figure 12 below, even with the turbines in operation, the openness of the existing landscape character is not greatly compromised.

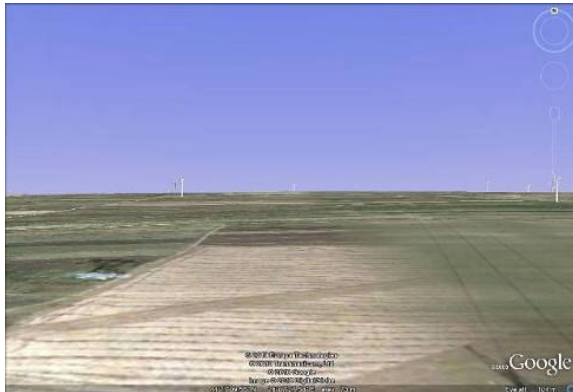


Figure 12 Cernavoda site, view looking north



Figure 13 Pestera site, view looking towards Ivrinezu Mic village

*(Source: Photomontages prepared for EDPR)*

Although the Ivrinezu Mic village is located at a lower topographical level than the surrounding hills, its proximity to the Pestera site and local topography means that views towards the nearest turbines will be possible (see Figure 13 above). However, due to the orientation of many houses to the wind turbines, many views will be oblique views only, with many views blocked by local topography, vegetation or intervening built form. The colour and orientation of the turbines will help to limit their visual impact on the skyline.

Views from users of the road network local to each site will be transient views, with many views being only glimpsed or oblique views of the turbines. Due to the orientation of some of the houses to the wind turbines, many views will be oblique views only and/ or blocked by topography, vegetation or intervening built form.

There appear to be limited opportunities for tourist or public views of either site due to the limited number of access routes or tourist attractions in the area. This reduces the number of potentially sensitive visual receptors in the vicinity, which are generally limited to nearby residential settlements.

The red lights on top of the turbines should be as dim as possible to limit visual intrusion into the night-time scene whilst maintaining their warning function for birds.


There will be no significant effects on landscape designations and limited visual impacts on surrounding residential receptors, all of which will be localised.

## 5.5 CULTURAL HERITAGE IMPACTS

There are no known cultural heritage features within the sites. The sites are undeveloped and have previously been used for agricultural purposes.

The known archaeological heritage in the general area includes: the ruins of the ancient city of Axiopolie (situated around 4km from Cernavoda city), Sofia Hill, neighbouring Cernavoda harbour, historical buildings inside Cernavoda city, the "Angel Saligny" bridge at the entrance to Cernavoda city and some ruins dating from the First World War which are located approximately 4km from Cernavoda.





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As a precaution an archaeological surveillance contract is in place with the Museum of Archaeology to provide support during the construction works on each site in the event that archaeological remains are found during excavations for the foundations of the turbines and underground cabling. Contractors involved in construction works at the site have been advised of the archaeological surveillance contract and will contact the Museum of Archaeology when the potential for archaeological remains or features to be present is identified.

## **5.6 IMPACTS ON GROUND CONDITIONS AND WATER QUALITY**

No significant environmental impacts on ground conditions and water resources are anticipated as a result of the proposed wind farms. Some localised, temporary impacts may occur during the construction phase although various control measures will put in place to minimise the risk of accidental spillage or release of hazardous materials during construction activities. Waste materials generated during construction, including hazardous waste, will be transported by a certified waste carrier and disposed of to an appropriately licensed waste facility located off-site. EDP has agreed contracts with local licensed waste contractors, Pestera WF and Cernavoda I-II WF, for the removal of waste materials from the respective sites.

## **5.7 IMPACT ON LOCAL ROADS AND INFRASTRUCTURE**

5.7.1 Although the wind turbines are constructed from several components, many of the sections are very large, heavy and difficult to transport on local roads. Therefore, it will be necessary to improve some roads in the area to accommodate the large vehicles that will be used. In order to reduce disruption to local residents, the timing of the lorry movements will also be carefully controlled. Meetings will be held with the local community regarding the timing of the movements of special loads and the routes to be used, as well as traffic safety measures that will be taken during transportation of the turbine components and heavy machinery in particular.

## **5.8 AIR QUALITY**

5.8.1 The nearest houses are located more than 600m from both sites and therefore, it is considered unlikely that dust from construction activities the sites will cause a problem. However, the CEMP will include measures to prevent dust generation, including the use of water bowsters to reduce dust arising from access roads. There will also be increased vehicle emissions in the area associated with the movement of construction vehicles. However, these emissions will have a minimal impact and will be temporary in nature. Water used to dampen down areas within the site will be obtained from external sources. The amount of water which will be used for this purpose is anticipated to be small and will dissipate through natural process (including infiltration or evaporation) with no significant impact on the sites or the surrounding areas

## **5.9 COMMUNITY AND EMPLOYMENT**

The land required for the Cernavoda and Pestera wind farms has been purchased from individual land owners by EDPR and the areas outside the operational footprints will be given to local residents for continued agricultural use. No compulsory purchase was required for the developments and there will be no loss of livelihood or attendant economic losses associated with the developments.

In addition, the land was formerly (and will partially continue to be) used for agricultural activities and no residential properties were located on the areas to be occupied by either wind farm. Therefore, no involuntary resettlement was associated with either land purchase.

There will also be no detrimental impacts on local shops, businesses or facilities as a result of either development. In addition, local employment opportunities will be created during the construction phases for unskilled labour.



## 5.10 ELECTROMAGNETIC RADIATION

Electricity generators are a source of electromagnetic radiation which can potentially have a negative influence on living organisms, although the levels of radiation which will be generated from the wind farms are low. The electromagnetic radiation from the turbines is generated at hub height and radiation from transformers / substations is generated at ground level. Radiation is considered to decrease with distance from the source and since the nearest residential properties are more than 600m from the perimeter of the wind farms no significant impacts will occur.

## 5.11 SHADOW FLICKER

Shadow flicker refers to the effect of the blades of the turbines rotating with high frequency and can cause disturbance to humans. The distance of the wind farms from the nearest residential properties is more than 600m which is recognised to be the maximum area over which shadow flicker is experienced. Therefore, it is considered that shadow flicker will not be a significant issue for these sites.

## 5.12 IMPACTS DURING DECOMMISSIONING

No significant environmental effects are anticipated during decommissioning of the wind farms. All equipment will be dismantled and the land will be restored to the original conditions. Where practicable wind turbine components will be reused or recycled.

## 5.13 POTENTIAL CUMULATIVE IMPACTS

The favourable wind conditions found in the Dobrogea region of Romania have resulted in a significant number of wind farm developers considering locating facilities in the area (see Figure 14 below).

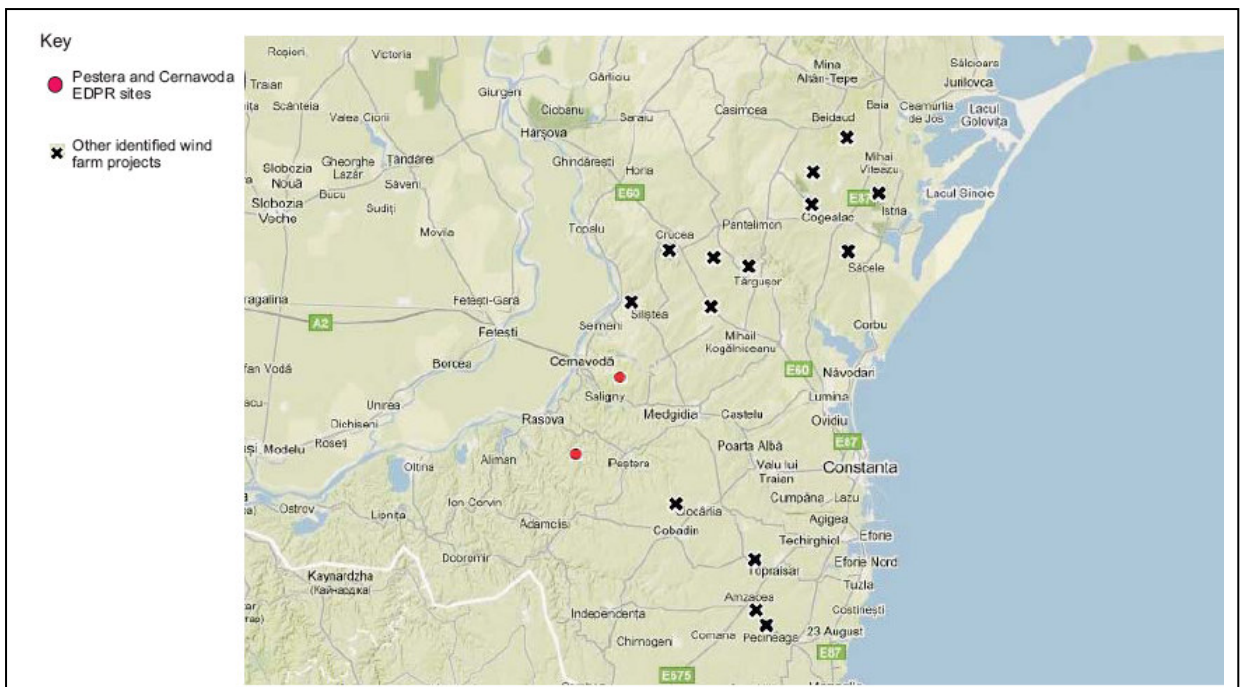


Figure 14 Location of Identified Wind Farms in the Area (indicative locations),

(Source: Pestera and Cernavoda City Halls, EPA website)

A cumulative impact assessment has been undertaken which considers those wind farm proposals in the vicinity of the Cernavoda and Pestera sites which are considered to be within the zone of influence of the two subject sites. In accordance with best practice guidance, the assessment of cumulative effects should only



consider those areas where there is the potential for the cumulative effect of a proposal, which taken with other existing or proposed projects, might add to a significant cumulative effect from a natural heritage perspective. The zone of influence of the Cernavoda and Pestera projects has been identified through consideration of the likely spatial extent of the potential environmental effects arising from these wind farm developments in respect of ecological effects (specifically avifauna and bats), landscape and visual impacts and noise impacts. Although the zone of influence varies between environmental topics, given the nature of the surrounding area (including the habitat types, topography, land uses and the location of Natura 2000 sites and known flyways used by birds) the anticipated zone of influence associated with the potential effects has been identified as being approximately 10 – 15km from each site.

The nearest known locations of other wind farms existing or proposed in the local area comprise:

- A wind turbine project located approximately 5-6 km south from Pestera village and approximately 10-11km from the Pestera wind farm site (environmental agreement obtained, building permit not obtained to date); and
- Two approved wind farms in the vicinity of Galbiori (approximately 18km from the Cernavoda site and approximately 30km from the Pestera site respectively) and Crucea (approximately 26km from the Cernavoda site and approximately 38km from the Pestera site respectively), to the north of the project sites.

The first project identified above is not located within any protected area and is at least 10km from any Natura 2000 site or IBA. The latter (two approved) wind farms to the north of the Project sites are close to the Allah Bair SPA and IBA. In addition, the Bratul Borcea SPA and IBA is located to the west of these proposed developments.

Therefore, based on the anticipated zone of influence for the Cernavoda and Pestera projects (approximately 10 – 15km from each site) only the first of the proposed wind farms listed above has been considered in respect of the potential for cumulative environmental impacts associated with the Cernavoda and Pestera wind farms. It should be noted that, based on available information, a building permit for this wind farm has not been obtained to date.

The key cumulative effects that can be associated with wind farm developments are summarised below, these are considered further in the Supplementary Information Report:

- Ecological receptors – potential for mortality due to direct collisions with or pressure changes due to turbines, disruption to migratory routes and flight pathways and barrier effects reducing available flying space;
- Landscape and visual impacts – significant change in the landscape character of the area; and
- Noise impacts – significant increase in noise levels with resultant disturbance to noise-sensitive ecological species.

The main potential concern in respect of cumulative effects arising from the proposed wind farms at Pestera and Cernavoda together with other wind farm located approximately 10 – 15km from each site is related to ecological impacts.

There are three key potential cumulative impacts associated with the wind farm projects to be considered. Direct habitat loss, is not considered a cumulative impact as it tends to be limited given the relatively small footprint of the turbines themselves:

- Direct mortality associated with collision with and proximity to turbines/ overhead powerlines;
- Disturbance / avoidance impacts; and
- The 'barrier effect'.

The locations of the proposed wind farms have been selected to minimise impacts on migrating birds and known flight routes, such as Via Pontica, and there are no designated areas close to the sites, the nearest being approximately 5km from the Pestera site and 6.5km from the Cernavoda site.

The Pestera and Cernavoda wind farm sites are both located on flat intensively managed agricultural land, without waterbodies, woodland or scrubland and therefore they are unlikely to attract birds in significant



numbers. Therefore, the contribution the sites would make to potential bird collision figures is unlikely to be significant.

Given the significant distance between the Pestera and Cernavoda sites and the nearest other proposed wind farm in the zone of influence (10-11km), the proposed spacing of the turbines (450m), the open topography and the lack of semi-natural habitats on the project sites, it is considered unlikely that the sites would contribute towards and significant cumulative disturbance effect.

In addition, given the spacing between the Pestera and Cernavoda wind farms and the nearest other proposed wind farm in the zone of influence (approximately 10 - 11km from the Pestera site) and that most modern wind farms consist of large turbines, with a typical spacing of 450 metres or more, it is unlikely that a significant 'barrier effect will occur. Due to their location and the lack of semi-natural habitats on the Pestera and Cernavoda sites it is predicted that these developments would not contribute towards any significant cumulative barrier effect.

Should further wind farm developments be proposed in the vicinity of the Cernavoda and Pestera sites, consideration should be given by the city Halls, Environmental Protection Agency and the developer of the future sites to further assessment of potential cumulative impacts on ecology.

Potential cumulative impacts on the local landscape character and visual amenity of an area are dependent on the topography of the area, the sensitivity of the existing landscape and the presence of visual receptors. In relation to wind farms, the movement of the operational turbines can be considered a significant impact, but this is also a matter of perception as it dependent on people's personal opinion. In addition, wind farms are also often located in remote rural areas away from major population centres, although their setting, often on high ground, can increase their visibility.

In the case of the Cernavoda and Pestera, the nearest proposed wind farms at present are a considerable distance away at approximately 10-11km, however, should future development be proposed closer to the sites, then the potential for cumulative landscape impacts should be considered.

The distance between the proposed wind farm sites and the nearest designated areas is more than 5km and therefore no cumulative noise impact on these protected areas is anticipated. However, each proposed development requires a specific assessment of the potential for cumulative noise impacts to occur, taking into account the existing and known wind farms and any other proposed developments within the range of noise impact.

## 6 What Measures will be Taken to Minimise Adverse Effects and Enhance the Positive Effects of the Projects?

The main measure which has been taken to reduce the potential for significant environmental effects associated with the proposed wind farms is to select sites which are located away from residential areas and designated ecological protection areas (including known bird migratory routes).

During construction appropriate control measures will be implemented to reduce effects on soil and groundwater quality, noise emissions and dust generation. In addition, where possible existing roads will be used (and upgraded as necessary) for the transportation of equipment associated with the wind farms.

Local residents should be employed for non-specialist construction jobs where possible to provide a positive contribution to the local economy. The land will be returned to agricultural use during operation of the wind farms, thus continuing to provide an income for farmers.

The wind farms will provide a source of renewable energy which will contribute to satisfying the national energy demand whilst minimising effects on the environment. Some residual effects area anticipated in terms of fauna and these effects will be informed by the results of ongoing bird monitoring. The results of the environmental monitoring completed prior to, during and after construction will be submitted to the Environmental Protection Agency (EPA).



During operation, in addition to measures to increase visibility, the wind farms will be monitored remotely using specialised telecommunications equipment and radio. As indicated above, a system called Optispeed will be implemented at the wind farms. If during monitoring the level of noise emitted exceeds the noise limit set for the boundary of the site (of 45dBA) the Optispeed system will reduce the noise emitted by changing the rotational speed of the turbines according to the local wind conditions.

There will be bright flashing lights on the top of each turbine to increase visibility at night (primarily for aircraft), and therefore promote avoidance and reduce mortality.

EDP will also appoint an independent ornithological Expert (IOE) to cover both the Pestera and Cernavoda sites. The IOE will be responsible for undertaking surveys and monitoring bird movements in the immediate area and instigating appropriate mitigation measures as required.

During periods when there is a higher density of birds in the vicinity of the turbines (such as bird migratory periods) the speed of the turbines will be reduced or they will be turned off temporarily as instructed by the IOE, based on an agreed protocol and detailed shut-down procedure prepared in accordance with EBRD and IFC standards.

In addition, the marking of overhead powerlines with bird deflectors to increase visibility will also reduce the potential for bird strikes.

The proposed mitigation measures are incorporated into the Environmental and Social Action Plan (ESAP), discussed below, which will be implemented for the Pestera and Cernavoda wind farms.

## 7 Action Plans and Management Systems

### 7.1 SITE MANAGEMENT

An operational management plan will be developed and implemented for the management of each site. The plans will detail procedures for security, health and safety, environmental management and emergency procedures for the sites.

### 7.2 ENVIRONMENTAL AND SOCIAL ACTION PLAN (ESAP)

An ESAP has been prepared for the Projects which sets out the mitigation measures and actions to address the social and environmental issues and opportunities associated with the Pestera and Cernavoda wind farm projects. The ESAP has been prepared to ensure that all stages of the Projects (including construction, operation and decommissioning) are undertaken in accordance with the requirements of applicable legislation, EBRD Performance Requirements / IFC Performance Standards and good international industry practice.

Some of the key measures detailed within the ESAP include:

- Site-specific monitoring for birds during construction and operation;
- Noise monitoring at the site perimeters during operation;
- Continuation of the EIA study during the construction works and for at least one year following commissioning for the quantification of the impact on flora, habitats and avifauna, as stipulated in the Environmental Permit;
- Implementation of a management system to address the environmental and health and safety issues related to the Project during operation, including environmental audits, review of monitoring data and implementation of corrective actions as appropriate;
- Development and implementation of the Stakeholder Engagement Plan (SEP) which has been prepared for the Projects; and
- Reporting on environmental matters associated with the Projects and compliance with the ESAP.



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### 7.3 WHAT MONITORING IS REQUIRED?

The main mitigation measures which have been integrated within the Projects in order to minimise their potential environmental and social effects are discussed in Sections 5 and 6 above.

The monitoring requirements related to the Projects are detailed within Environmental Monitoring Programmes which will be implemented at the sites. These programmes include monitoring relating to avifauna (raptor species) prior to, during and after construction and monitoring of general construction activities (such as waste management, topsoil removal, excavations, restoration etc.). The Environmental Monitoring Programmes will be implemented during construction.

The perimeter of the wind farms will be monitored continuously to identify any incidents that might influence the local population, fauna or flora and these will be reported immediately so that appropriate corrective and preventive measures can be taken.

During operation the wind farms will be monitored remotely using specialised telecommunications equipment and radio and the functions of the wind turbines will be monitored and controlled by various control units based on microprocessors.

If during monitoring the level of noise emitted exceeds the 45 dB(A) noise standard at the site perimeter action will be taken to reduce the noise emitted by changing the rotational speed to alter the pitch of the noise from the turbines according to the local wind conditions (via the Optispeed System).

As required in the environmental permit issued by the EPA in Constanta and in accordance with best international practice, a video surveillance system with data registration for monitoring birds will be installed at both sites. The system will be utilised for the operational life of the sites and will be utilised by IOE to implement mitigation measures as appropriate.

Measures which could be taken to minimise or reduce the effects in the event of adverse results from the avifauna monitoring include switching off the turbines, or reducing the number of turbines that are operational at any one time during sensitive times for bird migration and bats and altering the rotating speed of the turbine blades.

The proposed mitigation measures and monitoring programmes will be incorporated into the ESAP which will be implemented for each wind farm.

## 8 Summary of Stakeholder Engagement

In accordance with the requirements of National legislation public announcements were made in the media regarding the request for the Environmental Agreement, the commencement of the EIA studies and regarding the issue of the Environmental Agreement and Public Debates were held.

A Stakeholder Engagement Plan (SEP) has been prepared which describes the key stakeholders and the information and communications plans relating to the wind farms. The SEP will be reviewed periodically during implementation of the Projects and will be updated as necessary.



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## 9 Access to the Information

Further information, including copies of the EIA Reports and other documents, can be accessed via the following websites:

<http://www.edprenovaveis.com/>

<http://www.mediu-constantia.ro/pdf/PAG%20WEB%20EIA%202008.pdf>

EDP Renewables will implement a Grievance Mechanism to respond to any comments, concerns or complaints from affected communities and stakeholders.

In the event of any concerns or comments please contact:

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