

# **REPORT ON ENVIRONMENTAL IMPACT STUDY**

**FOR**

***„Construction of Cernavoda Aeolian Park”***  
**Cernavoda City, Saligny Commune, Mircea Voda Commune,  
Constanta County**

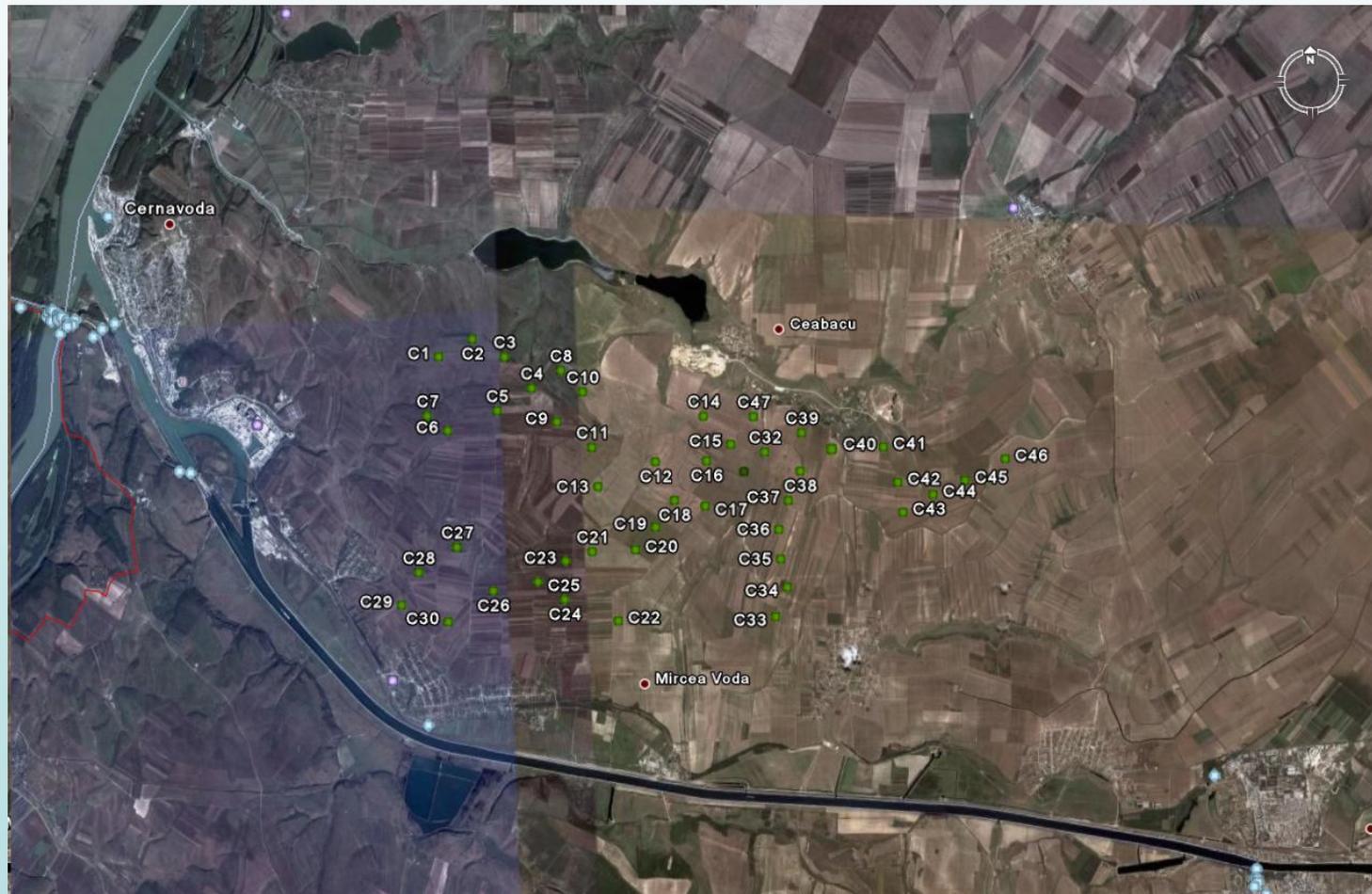
***Beneficiary: S.C. CERNAVODA POWER S.R.L.***

***Elaborated by: CABINET EXPERT MEDIU - PETRESCU TRAIAN***

## PROJECT DESCRIPTION

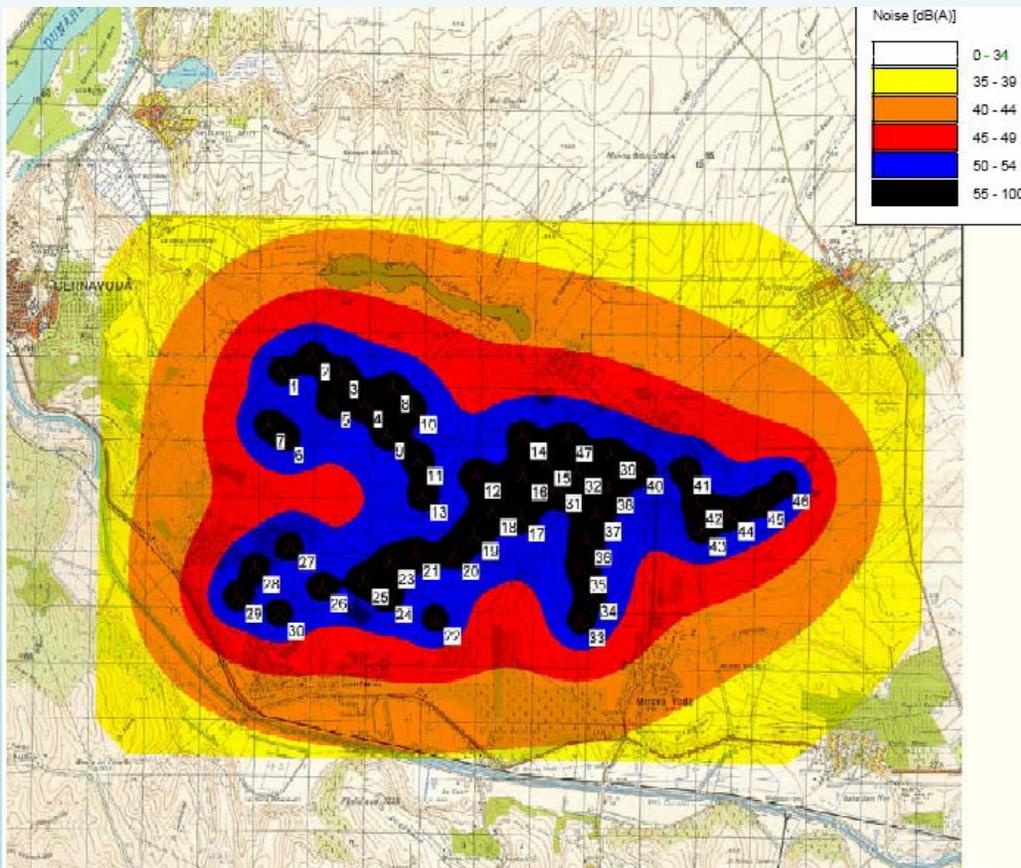
The proposed objective is a layout for an Aeolian park which will produce renewable energy. It will consist of 47 Aeolian wheels - VESTAS type V90 – each one having 3 MW with a total power of 141 MW including auxiliary installations.

The entire set up is located outside of Cernavoda city and outside of Mircea Voda and Saligny communes - Constanta County - on a piece of land having an extended surface of 2.888,35 ha, from which 22,65 ha will be taken from the agricultural circuit.



## NOISE EMISSIONS BY THE WHEELS

With the help of a simulation program, a diagram was generated regarding the noise emissions for the 47 Aeolian wheels. The WindPRO software version 2.5.7.83 Aug 2007 was used with model set to Danish 2007, for a wind speed of 6.0 – 8.0 m/s, with steps of 2.0 m/s, for VESTAS V 90 wheels which have a noise level of 0...109,4 dB(A). Wind speeds of 6 m/s for a tower height of 105,0 m and a wind speed of 8,0 m/s for a tower height of 105,0 m were considered, for the wind park setup at the location presented below.



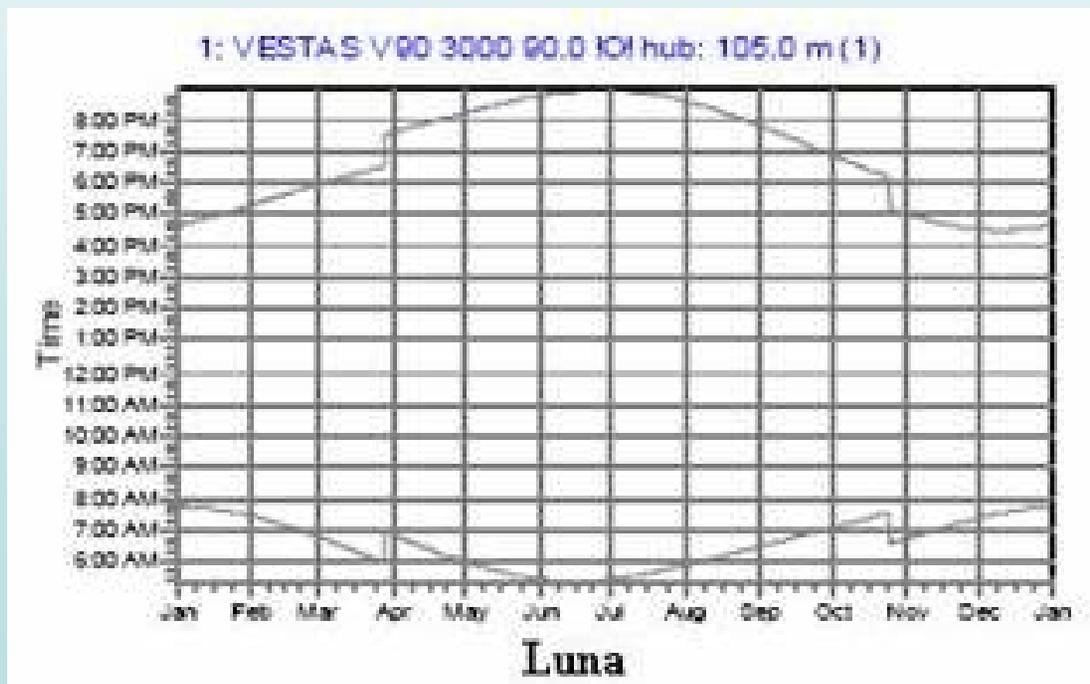
The Aeolian park layout will be located at a distance of 600 m from the Stefan cel Mare village houses, in conjunction with adherence to the admissible limits of noise level under 45 dB(A) in habituated areas.

For adherence to the admissible noise level, the minimum distance at which an Aeolian wheel can be located from a residential area is 500m.

## MAXIMUM SHADING EFFECT

The shading effect is not stipulated by legislature, but it has to be taken into account that Aeolian wheels, like any other high structures, cast a shadow over the neighboring areas during the periods of time when the sun is visible. It can be estimated with accuracy when and how long the wheel glimmer effect will occur. The contrary case can also be calculated – when constant wind and sunshine prevail – and the wind and the wheel rotor are following the sun with its movement direction.

Since the vicinity of the land on which the wheels are to be built is not populated this shading effect is negligible.



**The diagram shows that the shading effect in this specific case has a beneficiary effect during the summer time since the area is particularly arid.**

## ***Flora on the location***

The studied location consist of agricultural land, arable and/or grass land and land for special usage (e.g. private roads). Therefore flora in the location is generally represented by agricultural crops with periodic character and species of ruderal plants the development of which is temporary dim due to the pasturage areas.

In the pasturage area, the grassy vegetation is represented by Taxons, characterized by heights of between 20 – 30 cm, plasticity and adaptability to the environmental conditions, and capability of proliferation through seeds and vegetative organs – rhizomes, stools.

## ***Fauna on the location***

The fauna which characterizes the area of Cernavoda locale is represented by the following classes: mammals (field mouse, ground squirrel, hare, hedgehog), reptiles (grass lizard, land turtle), birds (starling, crow, sparrow, ring dove, daily rapacious birds which cover large surfaces during the nourishment process), insects (locusts, grasshoppers, crickets).



**The location on which the Aeolian wheels will be built does not touch any protected area, natural reservation or national park.**

The studied location is at an approximate distance of 4,8 km to “SPA - Dunare-Ostroave” and 5,7 km distance from “SCI – Canaralele Dunarii”. Distances from the Aeolian Park to the protected areas are large enough, so that the Aeolian wheels, through their assemblage and activity, will not affect the protected flora and fauna species in those areas.

# IMPACT ON THE SOIL AND SUBSOIL

## During the construction time

Regarding the impact which the studied activity could have on the soil and the subsoil, it should be remembered that the construction work will take place only during a limited period of time.

The impact of construction work and area improvement consists of – in principal – the total or temporary loss of the upper soils on some surfaces. Secondary effects are possible though dust sedimentation resulting from different excavation activities, construction and transportation on the soil surfaces.

At the time of the excavation, a part of the fertile ground will be removed and partially stock-piled, which means removal of a quantity of nutritive elements and removal from the natural circuit. Part of this soil will be reintegrated into this circuit, in proportion to the stored soil vegetal layer and will be used for the territories ecological restoration, including the soil cover, whenever possible.

We like to mention that the lost nutritive elements containing nitrogen, phosphor and potassium, as part of the excavated soil will not be completely lost. They will be kept in the vegetal soil deposits that will be used for further territory rejuvenation.

During construction work, the impact on the soil will be determined by:

- soil degradation as a consequence of outstanding particles sedimentation, which result during the excavation and construction process. This will affect the site's soil and probably that in the cushion area;
- cement dust, different metals, oils and lubricants – could contaminate the soil around the affected area and the soil along the access roads;

The impact of dust on the soil depends on some factors such as: closeness of major sources which produce dust and predominant wind direction.

## During the objective activity

After construction, the objective does not produce any pollution of the soil and subsoil.

## **IMPACT ON THE BIODIVERSITY**

### **During the construction work**

During the objective's construction, the impact on the local biodiversity will be induced especially by the necessary excavation work due to the construction of the towers foundations and access roads. Another impact could be dust produced by the construction work and noise generated by the use of machinery.

It is estimated that the effects on the flora and fauna species which are specific to the pasturage will be minimal considering that almost the entire location is represented by agro ecosystems. Additionally, after the wheels assemblage, the fertile soil will be brought back and reintegrated up to the tower base, the initial land usage reverting to what it was before except for the built up areas.

During the construction process a translocation by mammals and partially birds is anticipated from the project area, but in time, after the works closure and field restoration, it will be naturally repopulated. After the construction work is done, no more constructed surfaces besides the ones scheduled by the project will remain.

Due to the construction of the access roads a separation of the initial mammals habitats will result, but that does not represent a barrier which could stop the animal movement.

It should be mentioned that the majority of the effects on the local biodiversity have only temporary character and are reversible, taking place only during the construction time period.

## During the objective's activity

At about 1 km to the North of the Aeolian Park, a fish farm is located on private property, the “Tibrinului” slough. This distance is sufficient to protect the water birds living in the slough area. The location of the Aeolian park does not interfere with the routes of possible birds movement between “Tibrinului” slough and the humid areas from inside the “SPA Dunare-Ostroave”. The western area of “Tibrinului” slough is important from an ecological point of view, but it is not affected by the construction and activity of the studied Aeolian Park.

Likewise, regarding the seasonal bird migration at Dobruja bioregion level, the migration routes are not affected by the Aeolian park, therefore the risk of birds colliding with the wheel blades is negligible.

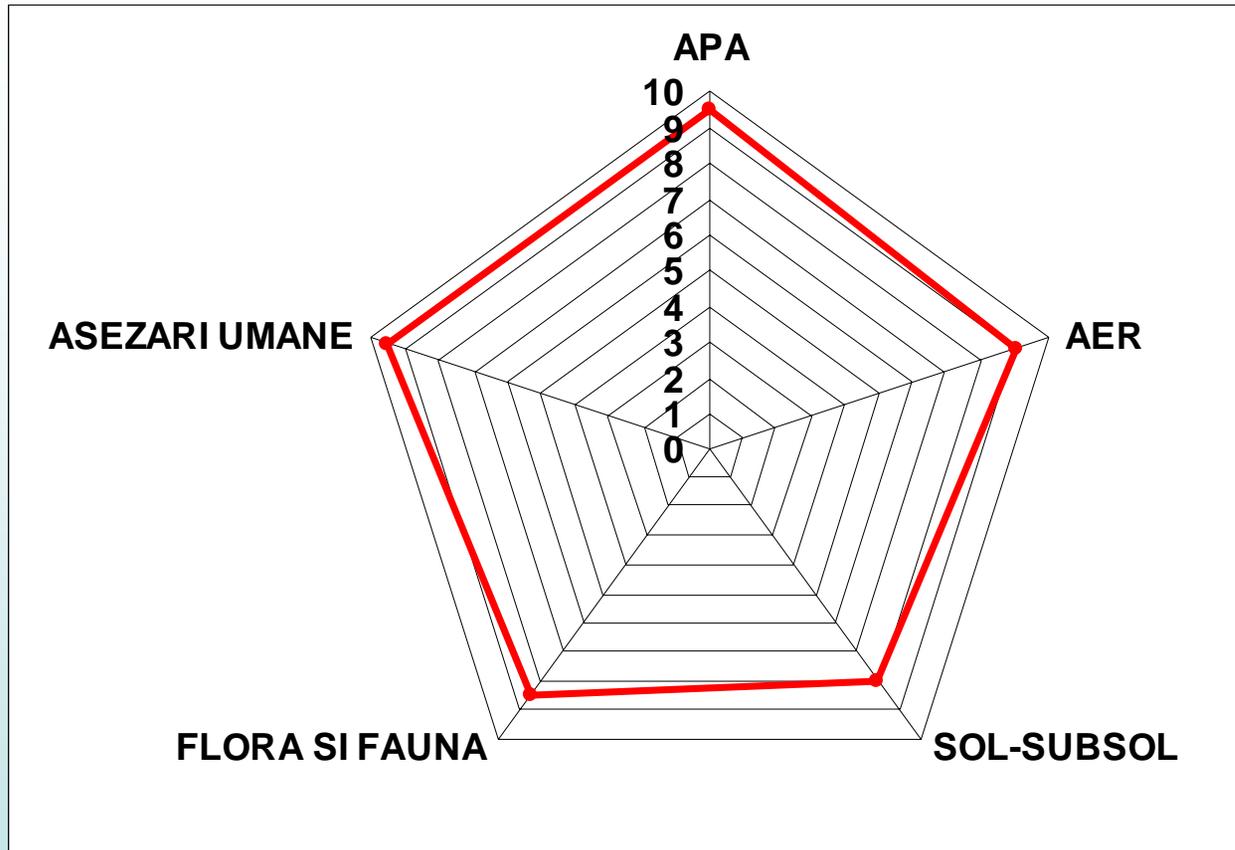
Measured linear distances from the Aeolian Park site to the most important points of interest from a biogeographical point of view are more than 33 km until Black Sea and 6 km until the Danube.

The distance to the nearest rural house which belongs to Stefan cel Mare locale is approximately 600 m linear distance.

The local biodiversity will not suffer any major changes because the built-up area will be a very small part ( 0,78%) in relation to the entire surface studied.

During research conducted by ornithologist teams in the Netherlands and Spain, it was concluded that it is important that **Aeolian wheels should be constructed in close proximity to populated areas including access roads and transformer stations, so that birds habitat is affected as little as possible.** In case of Aeolian farms that are located in uninhabited areas, changes in bird behavior can result. **Birds change their behavior when approaching human habitations**, generally their conduct is more vigilant and most of them use these areas for transit only. To many of them **populated areas are not suitable for nesting.**

## PREDICTED IMPACT ON THE ENVIRONMENT



Calculation establishing „The global pollution coefficient” - IPG leads to the following value: **IPG = 1,26**.

In conformity with the “Quality index” for IPG = 1,26 it is determined that, by the projected objective, **the environment governs the admissible limits to the human activity.**

## **RECOMMENDATIONS**

1. The blade tops of the Aeolians are to be painted in fluorescent colors in order to prevent impact of birds.
2. The towers will be fitted with red blinking lights, with a long period of time between two lightings.
3. Waste waters resulting from construction activities in the surrounding natural spaces are to be contained. Ecological toilets will be provided for workers.
4. In case of accidents by spills of waste water, oils or fuels from machinery used in the construction process, the collaboration with companies specialized in de-pollution is recommended.
5. It is forbidden to store materials or park vehicles on grass plots, except the ones needed for building-yard organization.
6. The affected areas have to be refurbished with fertile soil, starting from 0,5 m distance from the tower bases, so that all the affected land will be re-integrated into the agricultural circuit, besides the one used for the project.
7. The turbines layout will be made in such a way, that at the perimeter limit noise and vibration levels are kept inside the required limits established by the effective standards.
8. The fire prevention activities should be sustained by adequate measures, in conformity with active legislation and manufacturer recommendations.

**The elaborator recommends to the environmental authority the issuance of an Environmental Agreement. The „*Construction of Cernavoda Aeolian Park*” Cernavoda City, Saligny Commune, Mircea Voda Commune, Constanta County, objectives impacts are well within admissible limits.**