



ENVIRONMENTAL IMPACT ASSESSMENT

Issue:

Informational Report

Project:

Wind Farm with an installed capacity of 44MW at the Location 'Polemistis' in the Municipalities of Komotini & Arriane, Municipal Units of Komotini & Organi, Regional Unit of Rhodope, Eastern Macedonia and Thrace Region, Greece

Developer of the Project	
	WPD AIOLIKI ENERGEIA 1 Single Member P.C.
DocuSigned by: Aris Liaskos Managing Director wpd Hellas onshore 7E09386B9CF746B...	
Environmental Consultant of EIA	
	D. Argyropoulos Environmental Consultants S.A.



INTRODUCTION

This Environmental Impact Assessment (EIA) has been prepared in accordance with the provisions of Chapter A of Law 4014/2011, as amended by Law 4685/2020 and in force. In particular, this EIA was prepared in accordance with the specifications of Annex 2 "Basic Specifications of Environmental Impact Studies for projects and activities" and Annex 4.10 "Group 10 "Renewable Energy Sources" of Ministerial Decision 170225/2014 (Government Gazette 135/B/27.01. 2014) concerning Environmental Impact Studies for projects and activities of category A, while the Special Ecological Assessment Study included in this EIA was prepared in accordance with the specifications of Annex 3.2 "Specifications of the Special Ecological Assessment Study (SEA)" of the aforementioned Ministerial Decision.

The title of the project, which is the subject of this Environmental Impact Assessment is:

" Wind Farm with an installed capacity of 44MW at the Location 'Polemistis' in the Municipalities of Komotini & Arriane, Municipal Units of Komotini & Organi, Regional Unit of Rhodope, Eastern Macedonia and Thrace Region."

It is a Wind Farm at the location 'Polemistis', which is developed in 1 polygon and includes a total of 11 Wind Turbines, each with a capacity of 4.0 MW, which are developed along ridges. The total installed capacity of the Wind Power Plant is 44 MW.

The installation of this Wind Farm is located in the northern part of the Region of Eastern Macedonia, specifically on the Greek-Bulgarian border. The study area of the proposed project also falls within an area of Bulgaria, which is a protected area of the Natura 2000 network called 'Rodopi - Iztochni (SCI)' with the code BG0001032.

According to the above and based on the national legislation (i.e. Greece), the project is treated as a cross-border project and Article 8 of EIA 1649/45/2014 applies.

In the context of the application of this legislation, this summary document has been prepared which contains parts of the initial environmental impact assessment of the project under consideration. This issue contains the summary description of the Wind Farm under consideration (Chapter 1), the potential impacts and the measures proposed to address the potential impacts (Chapter 2) of the Wind Farm under consideration that may arise, from its installation, in relation to the protected site of the Natura 2000 Network named "Rodopi - Iztochni (SCI)" with the code BG0001032. In addition, it also contains parts of the Special Ecological Assessment Study and some maps, which depict the project under consideration.

The Greek licensing authority has notified this document to the country directly concerned, namely Bulgaria, for the information of the competent local environmental authorities.

The contact details of the company developing this project are:

COMPANY: WPD AIOLIKI ENERGEIA 1 Single Member P.C.

- Address: 3 Penteli Avenue , Vrilissia, Attica
- Postal Code: 15235 , Athens
- Phone Contact: 210 1993553
- Email: m.diamantopoulos@wpd-hellas.gr
- Contact person: M. Diamantopoulos

The contact details of the company that conducted the Environmental Impact Assessment for this specific project are:

COMPANY: D – Argyropoulos Environmental Consultants S.A.

- Address: 2 Tinos , Cholargos, Attica
 - Postal Code: 15562, Athens
 - Phone Contact: 210 6540188
 - Website: <http://www.d-argyropoulos.gr/>
 - Email: info@d-argyropoulos.gr & dargy@otenet.gr
 - Contact person: Demetrios Argyropoulos
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CHAPTER 1: INFORMATION ABOUT THE PROPOSED PROJECT

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1. INFORMATION ABOUT THE PROPOSED PROJECT

1.1. BRIEF PROJECT SUMMARY

The project title is:

" Wind Farm with an installed capacity of 44MW at the Location 'Polemistis' in the Municipalities of Komotini & Arriane, Municipal Units of Komotini & Organi, Regional Unit of Rhodope, Eastern Macedonia and Thrace Region."

The project concerns a Wind farm at the location "Polemistis," which is being developed in a polygon and includes a total of 11 wind turbines, each of them with a capacity of 4.0 MW, which are developed along the ridgelines. The total installed Power capacity of the Wind farm is 44 MW. Infrastructure works of the Wind Farm include the opening of new access roads to the Wind farm, with lengths of 7.22 km and 3.96 km, the improvement of existing road infrastructure, as well as the installation of the MV network for the connection of the Wind farm to the existing High Voltage Substation (for PV connection) PV/150kV "Flambouro."



Picture 1-1: Location of the Project

The project site is depicted in the above image as well as in the Orientation Map of this study. The location of the Wind Farm installation is situated in the Local Community of Kalchas in the Municipal Unit of Komotini, within the Municipality of Komotini. A small portion of the installation polygon of

the Wind Farm falls within the Local Community of Organis, in the Municipal Unit of Organis, within the Municipality of Arriane, in the Regional Unit of Rhodope, Eastern Macedonia and Thrace Region.

The proposed electricity generation installation will have a total installed and rated capacity of 44 MW and will include eleven (11) VESTAS V-150 wind turbines, with a nominal power of 4.0 MW each, located in forested areas primarily near the Greek-Bulgarian border, 8.1 kilometers north of the settlement of Drymi.

Each wind turbine consists of a metallic tower with a height of 125 meters, at the top of which the nacelle of the wind turbine is mounted. Inside the nacelle, the main equipment of the wind turbine is housed, comprising the main shaft on which the hub and the rotor (blades) of the wind turbine with a diameter of 150 meters are mounted, the speed multiplier, and the generator. The total height of the wind turbine (tower, nacelle, rotor) is 200 meters.

The wind turbines are arranged at an appropriate distance from each other, which is greater than the minimum distance, equal to 2.5 times the diameter of the rotor ($2.5 \times 150 = 375$ meters), in order to avoid aerodynamic shadowing effects and high wind turbulence, thus optimizing their energy efficiency, reducing wear and tear, and increasing the lifespan of the installation.

For the **siting of the wind turbines**, the following data were taken into account:

- Topography of the terrain and possible presence of local obstacles/irregularities,
- Prevailing wind directions,
- Terrain morphology and suitability for the foundation of wind turbines,
- Restrictions of relevant legislation regarding compliance with distances from roads, settlements, and other prohibited areas.

The proposed project is developed within a polygon of an area of 376 ha for which a Producer Certificate has been granted by RAE (attached in the Annex of Documents).

The interventions for the construction and operation of the RES project include:

- Improvement of the road network access pavement,
 - Improvement and construction of short-length new segments of the internal road network,
 - Excavations for RES foundations,
 - Excavation of Low/Medium Voltage cable channels and low current wiring parallel to the internal road network,
 - Crane pads and WTG foundations,
 - Excavation of Medium Voltage cable channels up to the authorized Substation (33/150kV).
-

For access to the project, the existing road will be used, and then new road sections will be constructed, or existing ones will be improved for access to the Wind Farm positions, as well as for their connection. The improvement mainly involves work on the thickness and strength of the pavement, especially at curves turns. The total length of the required road network is 11,182.63 meters.

The total electricity generated will be exclusively supplied to the National Electricity Transmission System of ADMIE via a medium voltage (33kV) transmission line and a substation of 33/150kV. The total length of the interconnection line is 25 km, the routing of which is planned to be installed underground.

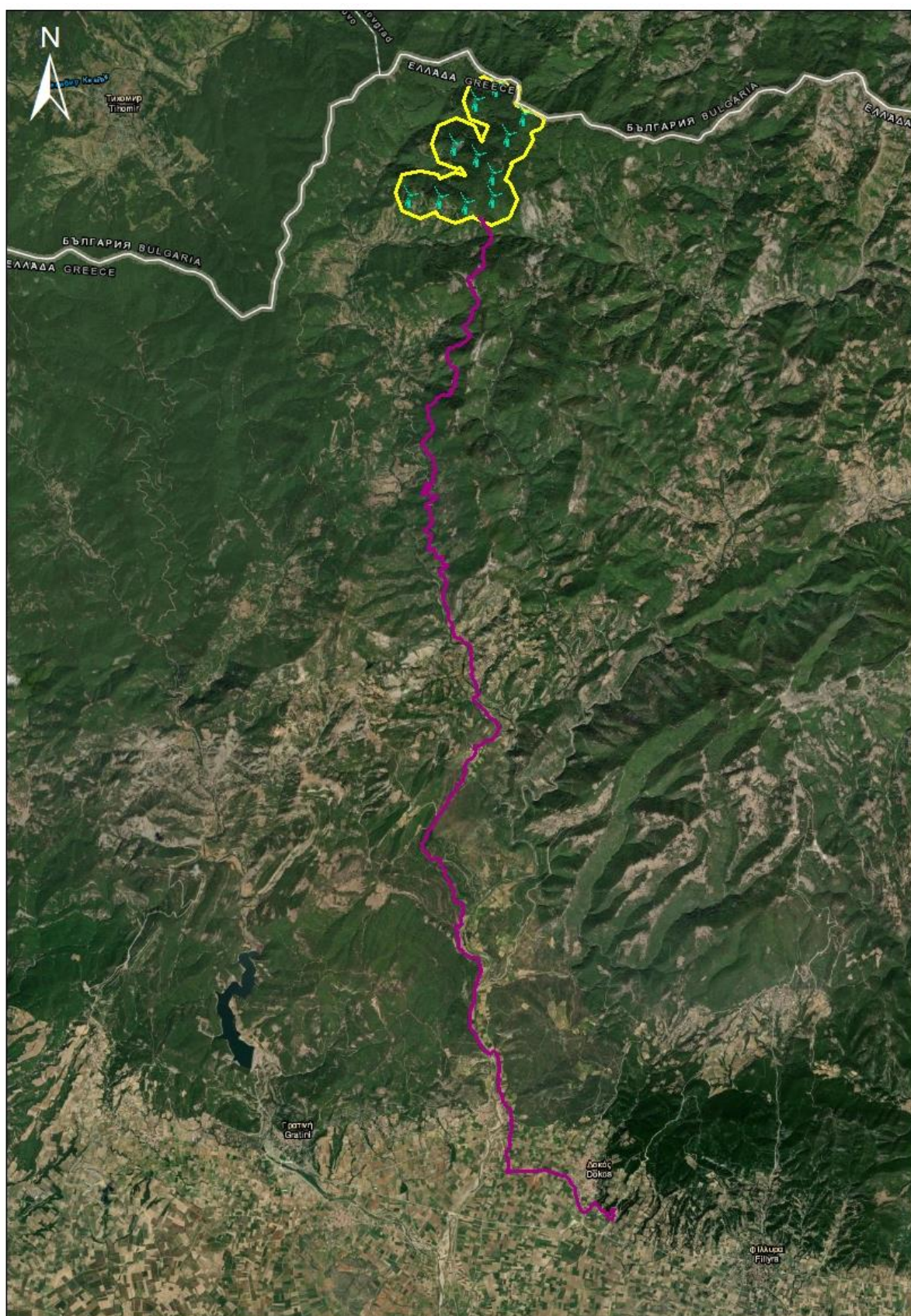
The total permanent land occupancy by the wind turbines is approximately 2,02 ha, mainly consisting of forested areas.

1.2. GEOGRAPHICAL LOCATION OF THE PROJECT

The geographical coordinates of the proposed wind turbines (W/T) are given in the following tables according to the World Geodetic System 1984 (WGS 84).

Table Error! No text of specified style in document.-1: Geographical coordinates of the positions of the wind turbines (WGS 84)

	WGS '84	
	lon	lat
W/T 1	25,56156865	41,29598652
W/T 2	25,56813529	41,29582813
W/T 3	25,57367994	41,29486222
W/T 4	25,57937545	41,29575600
W/T 5	25,57140032	41,30441762
W/T 6	25,57615139	41,30236786
W/T 7	25,57952756	41,29942119
W/T 8	25,5827758	41,30568854
W/T 9	25,57612249	41,31136737
W/T 10	25,58053834	41,31363988
W/T 11	25,58640421	41,30886485



Picture 1-2: Area of Project Location

(The polygon is represented in yellow, the Medium Voltage Line and the Substation in purple)

1.3. DATA OF THE NATURAL ENVIRONMENT OF THE STUDY AREA

Protected Areas

The project is located outside Special Protection Areas (SPA) or Special Areas of Conservation (SAC). Specifically, at a distance >10.5 km, the Special Protection Area for birdlife known as 'Koilada Filouri' with code GR1130011 and an area of 37,565.9 hectares, is identified.

In the broader area and at a distance greater than 1.8 km from the nearest wind turbine of the examined Wind farm, up to 22 km, the following Wildlife Sanctuaries are located:

- K805 - 'Petarmon-Adas, Municipality of Komotini,'
- K799 - 'Nymphaea, Municipality of Komotini,' and
- K798 - 'Arrianon-Nea Santa, Municipalities of Arrianon-Sapon.

Both the under-study wind turbines, as well as the infrastructure works and the installation area of the Substation, are located outside the above-mentioned areas and at a distance of at least 1.5 km. Regarding the medium-voltage transmission line, a section of it passes through the Wildlife Sanctuary K805 'Patermon - Adas' Area. However, the entire interconnection cable is planned to be constructed underground up to the existing Substation.

In the study area, no insular wetlands are identified, as defined by Government Gazette 229/ΑΑΠΘ/19-06-2012. At a distance greater than 34.5 km southwest from the location of the wind turbines, the Ramsar Wetland Lake Vistonis, Porto Lagos, Lake Ismaris, and adjacent lagoon areas' is located, covering an area of 24,396 hectares.

Important Bird Areas (IBAs) are designated as areas of utmost priority for the general preservation of biodiversity and, in particular, for the protection of birds, which are often irreplaceable or vulnerable, as they regularly host significant populations of one or more threatened, endemic, or congregatory species. The Wind turbines of the examined Wind Farm (WF) are located within the boundaries of the Important Bird Area (IBA) 'Koilada Filouri and Anatoliki Rodopi' with code GR008.

Protected Areas in Bulgaria

The project is located near the Greek-Bulgarian border inside Greek territory. In particular, the nearest WTG to the border is located at a distance of ~170m from it. The study area of the Wind Farm and its impacts on the environment is designated within a zone of 1km from the project's polygon.

In the territory of Bulgaria, adjacent to the border there is a designated Protected Area of Natura 2000 network named '**Rodopi - Iztochni**' with code BG0001032 - S.C.I., which is considered in the Environmental Impact Assessment study (EIA).

The characteristics of S.C.I. - BG0001032 according to the Natura 2000 Standard Data Form are the following:

✓ Geographical location

- Latitude: 41.505000
- Longitude: 25.846000

✓ Area: 217446.9973 ha

✓ Administrative affiliation: Yuzhen Tsentralen District

This Natura 2000 network site protects 45 species of fauna, 1 kind of flora, and 27 species of habitats.

The species protected are as follows:

-As regards the flora

1) *Himantoglossum caprinum* (M.Bieb.) Spreng

-As regards the fauna

Mammals: *Wolf Canis lupus*, *Mouse-tailed dormouse*, *Lesser mouse-eared bat Myotis blythii*, *Bechstein's bat*, *Barbastelle - Barbastella barbastellus*, *Schreiber's Bat Miniopterus schreibersii*, *Long-fingered bat Myotis caaccinii*, *Geoffroy's bat - Myotis emarginatus*, *Greater mouse-eared bat, Blasius' horseshoe bat - Rhinolophus blasii*, *Mediterranean horseshoe bat*, *Greater horseshoe bat - Rhinolophus ferrumequinum*, *Greater horseshoe bat Rhinolophus euryale*, *Lesser horseshoe bat – Rhinolophus hipposideros*, *Mehely's horseshoe bat - Rhinolophus mehelyi*, *European souslik - Spermophilus citellus*, *Brown bear - Ursus arctos*, *Marbled polecat - Vormela peregusna*, *Eurasian otter - Lutra lutra*

Amphibians: *Yellow-bellied toad - Bombina variegata*, *Triturus Karelinii*

Reptiles: *Elaphe sauromates*, *European pond terrapin - Emys orbicularis*, *Caspian terrapin - Mauremys caspica*, *Mediterranean spur-thighed tortoise - Testudo graeca*

Invertebrates: *Austropotamobius torrentium*, *Cerambyx cerdo*, *Dioszeghyana schmidtii*, *Coenagrion ornatum*, *Eriogaster catax*, *Marsh Fritillary – Euphydryas aurinia*, *Euplagia quadripunctaria*, *Stag beetle*, *Large Copper*, *Morimus funereus*, *Osmoderma eremita*, *Paracaloptenus caloptenoides*, *Probatiscus subrugosus*, *Rosalia alpina*, *Unio crassus*,

Fish: *Aral asp - Aspius*, *Barbus cyclolepis*, *Spined loach - Cobitis taenia*, *Rhodeus Amarus*, *Golden loach - Sabanejewia aurata*

It is worth noting that the protected area has as a protected species the chironomids. However, these species are mammals and are therefore not listed separately but they are considered in the mammal category together with the other mammals

The following table summarizes the types of habitats that are protected in this area, as well as the areas they cover.

As far as the habitat types are concerned, the following table presents a summary of the habitat types protected by the specific area, as well as the areas they cover.

LIST OF HABITATS PROTECTED IN AREA WITH CODE "BG0001032"		
CODE	Title	Cover (ha)
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp	0.02055
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	272509
5130	Juniperus communis formations on heaths or calcareous grasslands	361.36
5210	Arborescent matorral with Juniperus spp.	3022.77
6110	Rupicolous calcareous or basophilic grasslands of the Alysso-Sedion albi	144.08
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	634.1
6220	Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea	14107
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	1.96
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	44.68
6520	Mountain hay meadows	71.69
8210	Calcareous rocky slopes with chasmophytic vegetation	457.19
8220	Siliceous rocky slopes with chasmophytic vegetation	690.07
8230	Siliceous rock with pioneer vegetation of the Sedo-Scleranthion or of the Sedo albi-Veronicion dillenii	1479.93
8310	Caves not open to the public	0
9130	Asperulo-Fagetum beech forests	1141.67
9150	Medio-European limestone beech forests of the Cephalanthero-Fagion	341.59
9170	Galio-Carpinetum oak-hornbeam forests	4166
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	761064
92A0	Salix alba and Populus alba galleries	2.16
92C0	Platanus orientalis and Liquidambar orientalis woods (Platanion orientalis)	31.15
92D0	Southern riparian galleries and thickets (Nerio-Tamaricetea and Securinegion tinctoriae)	500128
9530	(Sub-) Mediterranean pine forests with endemic black pines	98.06
62A0	Eastern sub-Mediterranean dry grasslands (Scorzoneratalia villosae)	4222.09
91M0	Pannonian-Balkan turkey oak –sessile oak forests	63263.2
62D0	Oro-Moesian acidophilous grasslands	6.55

91W0	Moesian beech forests	6552.68
91AA	Eastern white oak woods	14225.9

In the next chapter of this report, the potential impacts of the Wind Farm on the above species are estimated, as well as the the prevention and mitigation measures to be taken for these impacts.

CHAPTER 2: IMPACTS AND MITIGATION MEASURES

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2. IMPACTS AND MITIGATION MEASURES

This chapter contains the potential impacts that the wind farm under consideration may have and the measures to mitigate these potential impacts.

Since the project under consideration is a cross-border project, the information in this chapter is based on the part of the study area that falls within the territory of Bulgaria. This means that, in addition to the potential impacts on habitats, the potential impacts on bat species are specifically investigated, as this is a protected species of the Natura 2000 protected area 'Rodopi - Iztochni', code BG0001032.

In addition, mitigation measures for potential impacts are presented for the same species.

2.1 ASSESSMENT OF POTENTIAL IMPACTS

Habitats

Habitat fragmentation and degradation

There will be no fragmentation of raptor nesting habitat, as no nesting is observed in the project area (except for the *Strix aluco*, which is outside the project site). Due to the geomorphology of the surrounding area, and the land cover, as shown on the Corine maps, foraging and wintering of the species is not expected to be significantly affected. However, it is suggested that earthworks and concreting works should be undertaken in non breeding season in order to avoid damaging nestlings' nests.

During project's operation phase, the impacts will be non-significant. The small reduction in mainly occasional foraging habitat due to the facilities is not expected to cause significant interception of flights. It is estimated that the potential minor diversion of natural flight continuity would be non-significant and therefore would not result in a significant increase in energy costs for birds.

Measures to address impacts from loss of individuals and habitat degradation

A special effort has been made to ensure that the new roads allow the transport of the wind turbines with the least possible interference with the environment. This is achieved by in the road design phase by taking into account the natural slopes of the terrain, the specifications of the forest roads and the specifications of the transport of equipment. The lengths and gradients of the new roads have been kept to the absolute minimum and to be adapted to the natural topography.

Provision should be made for the temporary and final deposition of construction materials in appropriately planned places which will be located away from feeding areas and habitat for species typical of the area.

The excavation products, after the removal of unsuitable products, shall be used for the embankments in order to minimize the impacts on the environment.

The removal of the plant soils will also be used to line the slopes and for planting.

The uncontrolled disposal of solid and liquid waste during construction and operation phase should be prohibited. The disposal of excess excavation products will be done through a Waste Management System at a Waste Treatment Facility. The liquid waste of the construction workers' wastewater will be collected in chemical toilets.

Bat species

Regarding the bat species from the Bulgarian SCI, the species listed in the Red List of Europe in the Vulnerable (VU) category are *Barbastella barbastellus*, *Myotis bechsteinii* and *Rhinolophus blasii*.

Of the 19 species observed in the field, 5 of them (*Barbastella barbastellus*, *Miniopterus schreibersii*, *Myotis capaccinii*, *Myotis myotis* and *Rhinolophus hipposideros*) are also included in the protected species in the SDF of the neighboring SCI "BG0001032" in Bulgaria. Of these, only *Barbastella barbastellus* is Vulnerable (VU) and had a presence rate well below 1%. The same happens for the other species which had an equally very low presence rate of less than 1%. In conclusion, based on the results of the field survey, no significant transboundary impacts on the populations of the bats of the Natura 2000 site "BG0001032" - Rodopi - Iztochni are expected.

2.2 MITIGATION MEASURES

Although no significant impacts are anticipated from project's construction and operation on bat habitats and species, it is recommended that precautionary mitigation measures should be implemented to further reduce any potential impacts, even non-significant impacts, and ensure the integrity and conservation objectives of the protected area. In order to minimize, mitigate or significantly avoid potential impacts from the construction and operation of the project, the following measures are proposed to be implemented by type of impact.

Mitigation measures for and bats collisions

All wind turbines, and especially turbine nacelles, should be designed, constructed and maintained in such a way that they do not support their use as shelters by bats - all openings and gaps should be inaccessible.

Insects are attracted to lights (security lights at the bottom of the tower, Beucher et al. 2013), to the heat generated by some types of turbine blades (Ahlén 2002, Hensen 2004, Horn et al. 2008, Rydell et al. 2010b), the colour of wind turbines (Long et al. 2011) and some generated sounds (Kunz et al. 2007). Insect concentrations in areas around wind turbines therefore entice bats to hunt in these areas, and this can lead to mortality (Kunz et al. 2007; Horn et al. 2008; Rydell et al. 2010b). Therefore, wind turbines and their immediate surroundings should be managed and maintained in such a way that they do not attract insects (i.e., the concentration of insects near wind turbines should be reduced as much as possible, but without affecting their abundance elsewhere in the study area).

Some of the measures that can achieve this and that should be applied to all wind farms are:

- the use of lighting that does not attract insects,
- the use of lighting only when necessary unless it is mandatory for safety reasons,
- avoiding water retention and the growth of weeds and new bushes in the immediate area around the construction of wind turbines (wind turbine operating zones, access roads, etc.),
- new vegetation fences, other shrub and tree clusters, as well as forests and orchards, should not be allowed to be installed within the 200 m zone around wind turbines and such structures should not be used as compensation measures within the given distance.

Mitigation measures for disturbance and displacement of bats

Disturbance to foraging and movement should be prevented by limiting certain construction works during periods of the day when bats are active (construction should generally be carried out during the daytime) as much as possible. In any case, no lighting should be used unless it is mandatory for safety reasons, but always in compliance with the above-mentioned conditions.

Mitigation measures for habitat fragmentation

There is no necessity for measures because there will be no habitat fragmentation.

ANNEX

ANNEX

DRAWINGS - MAPS

This report is accompanied by maps and drawings, which depict the under consideration Wind Farm, and are as follows:

Title	Description	Scale
EIA MAP – 1	ORIENTATION MAP	1 : 100.000
EIA MAP – 2	MAP OF PROTECTED AREAS	1 : 30.000
EIA DWG – 1	GENERAL LAYOYT OF THE PROJECT	1 : 5.000