



## Non-Technical Summary

### Linowo Wind Farm 48 MW, Poland

Special Purpose Vehicle: QWP Linowo Sp. z o.o.

7 October 2019

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### **Acronyms and Abbreviations**

Name	Description
EBRD	European Bank for Reconstruction and Development
EIA	Environmental Impact Assessment
E&S	Environmental & Social
ESDD	Environmental and Social Due Diligence
GHG	Greenhouse Gas
NTS	Non-Technical Summary
PR	Performance Requirements
SPV	Special Purpose Vehicle
WF	Wind Farm
WT/WTG	Wind Turbine/ Wind Turbine Generators

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## 1. INTRODUCTION

This Non-Technical Summary (NTS) provides an overview on the potential Environmental and Social (E & S) impacts associated with the operation and decommissioning of the *48 MW Linowo Wind Farm* Project (hereinafter referred to as “*the Project*”) and the measures considered to keep these at acceptable levels, so that no harmful effects are induced and relevant norms and regulations are met.

The Project was developed by the company GB Linowo 201 Sp. z o.o. and is in operation since the end of 2012. The ownership of the windfarm changed in 2019, when SPV New Co Sab 37 acquired the Project and Quadran Polska started to manage the operations. The Project is located in the area of Swiecie nad Osa and Gruta Communes, Grudziadzki County, Kujawsko - Pomorskie Voivodeship, northern Poland.

An Environmental Impact Assessment (EIA) prepared by a local consultant was completed for the Project in June 2009. The local EIA process was favorably approved for the Project, through an Environmental Decision issued on November 6<sup>th</sup>, 2009 by the Head of Swiecie nad Osa Commune. Furthermore, additional biodiversity (mainly birds) surveys were performed during the Project pre-construction and the first two years of operation, with the purpose of confirming the results of the completed assessments and defining any additional mitigation, if necessary.

The above-mentioned EIA identified the environmental and social impacts anticipated to occur as a result of the Project implementation, and evaluated their significance. Where significant adverse changes were identified, measures to avoid, reduce or compensate for those changes have been defined and implemented during the course of construction and, furthermore, during the operation of the Project.

The Project Owner is seeking to enter a financial agreement with international lender institutions such as the European Bank for Reconstruction and Development (EBRD), having strict environmental and social requirements (Performance Requirements - PRs) for project financing. In order to assess how the Project meets these standards, ERM was commissioned to undertake a gap analysis of the environmental and social documents prepared for the Project (local EIA and follow-up bird surveys) against the EBRD PRs. As part of this process, and to bridge the gaps identified to lender requirements, ERM also developed additional documents such as:

- this NTS;
- a Corporate Stakeholder Engagement Framework (see Section 4).

The above documents will be translated into Polish and together with the local EIA (2009) will form the disclosure package for the Project and will be made publicly available. Furthermore, the Corporate Stakeholder Engagement Framework will be used by the Project Owner to develop a Stakeholder Engagement Plan for the Project.

The disclosure package will be publicly available in hard copy at Quadran’s office at the following address: 2c Wagonowa Street, 53-609 Wroclaw. Additionally, the electronic form of these documents will be available for consultation on the:

- Project Owner website: [www.quadran-international.com](http://www.quadran-international.com); and
- the EBRD website ([www.ebrd.com](http://www.ebrd.com)).

There is a mechanism in place to receive and address grievances, questions, comments and suggestions from stakeholders. Such grievances regarding the Project can be submitted through the following channels:

- by regular mail to: Quadran Polska - 2c Wagonowa Street, 53-609 Wroclaw, Poland;
  - by e-mail to: [biuro@quadran-international.com](mailto:biuro@quadran-international.com);
  - by contacting the Project’s Communication Officer, Mr. Mateusz Tylecki, at [m.tylecki@quadran-international.com](mailto:m.tylecki@quadran-international.com), phone +48 574 404 211.
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## **2. SUMMARY OF THE PROJECT**

### **2.1 Site Selection Criteria**

The location of the Linowo wind farm was selected based on a number of criteria, for example:

- the site is located outside any protected and residential areas;
- wind measurements indicated that the site has good wind resources;
- relative proximity to a main energy distribution grid connection (11 km south-east of the site);
- the site has good access via existing public roads;
- suitable geotechnical ground conditions;
- land availability;
- limited environmental, health and social predicted impacts (e.g. on noise and shadow flickering, respecting health protection buffers, area of low-value landscape etc.).

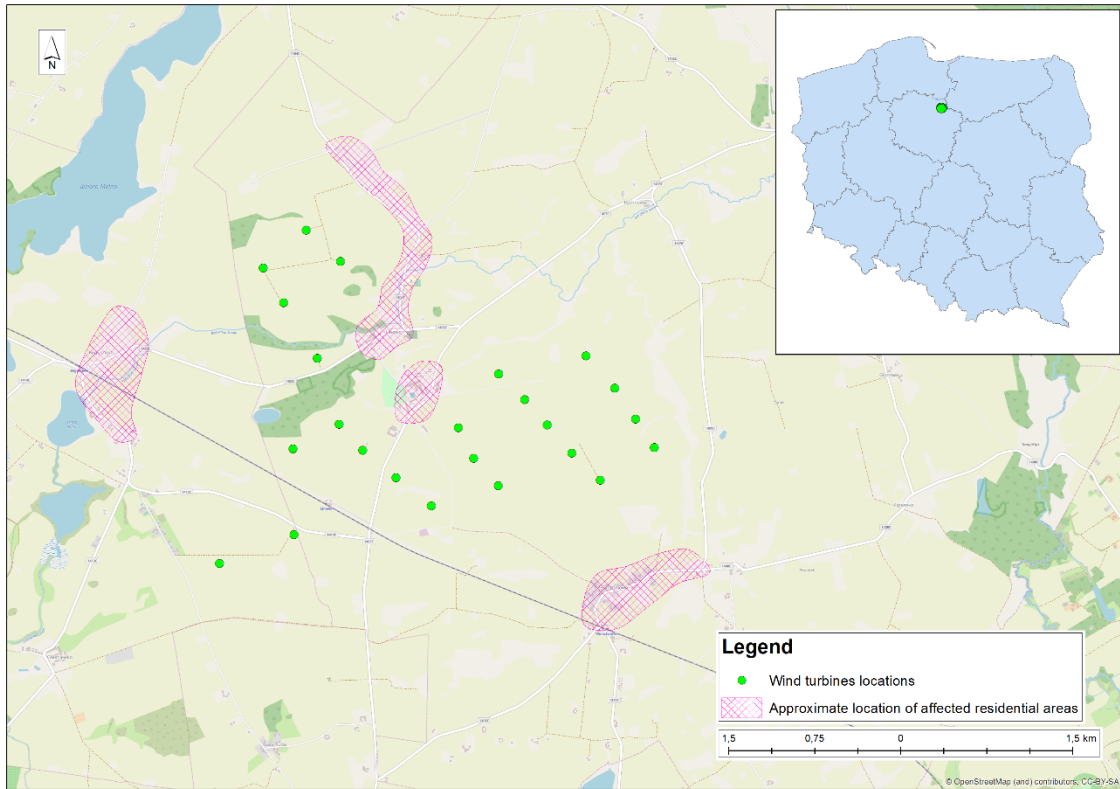
### **2.2 Project Description**

The Project is located on flat and slightly hilly arable land, in the area of Swiecie nad Osa and Gruta Communes, Grudziadzki County, Kujawsko - Pomorskie Voivodeship, northern Poland. The nearest surface water body is Melno lake, located approximately 3 km north-west of the Project. The nearest house is located at approximately 360 m west of WTG No.18 (Figure 2-1).

The Project is located outside of any legally protected areas. The nearest protected area is Natura 2000 Dolina Osy (PLH040033), protected under the EU Habitats Directive, at approximately 2.5 km north and north-east of the Project site (Figure 2-3).

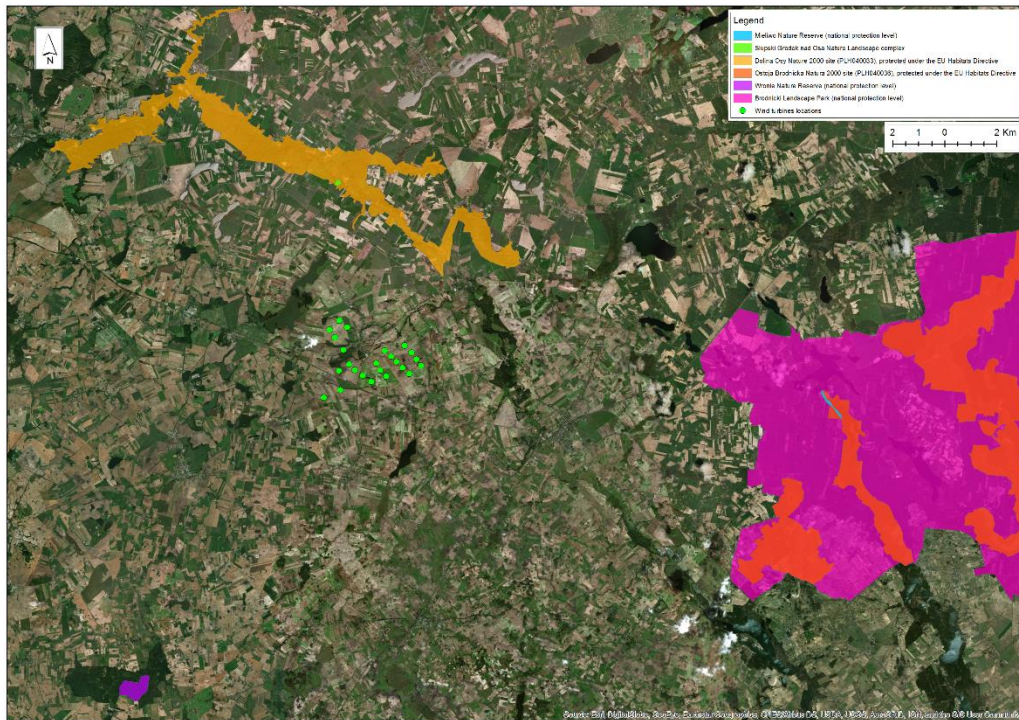
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**Figure 2-1 Project Layout relative to Residential Areas**



Source: Google maps, edited by ERM.

**Figure 2-2 Protected Areas in the vicinity of the Project Site**



Source: Geoserwis, edited by ERM.

The main Project components include:

- 24 Vestas V90 wind turbine generators (WTG), with a 90-m rotor diameter and hub height of 105 m; each WTG has a capacity of 2 MW, i.e. a total Project capacity of 48 MW;
  - 22 WTGs are located in Swiecie nad Osa commune; and
  - 2 WTGs are located in Gruta commune.
- one 110/30 kV Project electrical substation covering an area of approximately 2,400 m<sup>2</sup>, located approximately 150 m south of WTG No. 5;
- a 30 kV underground power line connecting all 24 WTGs to the 110/30 kV electrical substation; the routes of these power lines were established along the internal access roads;
- approximately 11 km of underground power lines, which connect the Project's electrical substation to the external existing electrical substation located in Jablonowo (south-east of the Project). The external electrical substation is owned and operated by Energa Operator Company;
- internal access roads from the local asphalt roads to the individual turbine locations.

Project components are displayed in Figure 2-3.

**Figure 2-3 Project Components Layout**

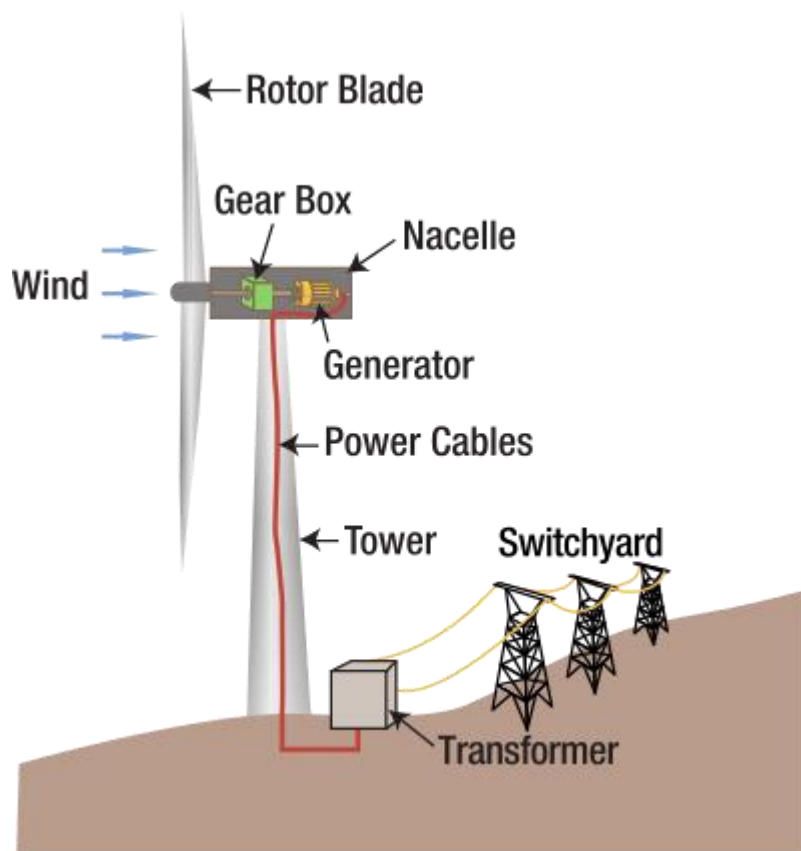


Source: Google Earth, edited by ERM.



The diagram of a wind turbine is illustrated below.

**Figure 2-4 Diagram of a wind turbine**



Source: [https://en.wikipedia.org/wiki/File:Wind\\_turbine\\_diagram.svg](https://en.wikipedia.org/wiki/File:Wind_turbine_diagram.svg).

### *Project Schedule*

The civil works related to Linowo WF were completed in August 2012, the grid was energized in September 2012 and the official commissioning date of the Project was in November 2012. Since the commencement of the operational phase, there were no major accidents (e.g. lightning with severe damages to WTG), which significantly affected the Project.

### *Land acquisition*

The cession and superficies agreements for the land required for the Project were concluded with land owners on a voluntary basis. No owners were forced to give up their land and no physical resettlement was required for the development of the Project. At the end of the construction period, the land areas not permanently occupied by turbines and other infrastructure were restored to agricultural use.

## **2.3 Other Wind Farm Projects in the Area**

Based on public information and data provided by the representatives of local authorities, the following operating wind farms are located in the vicinity of the Project:

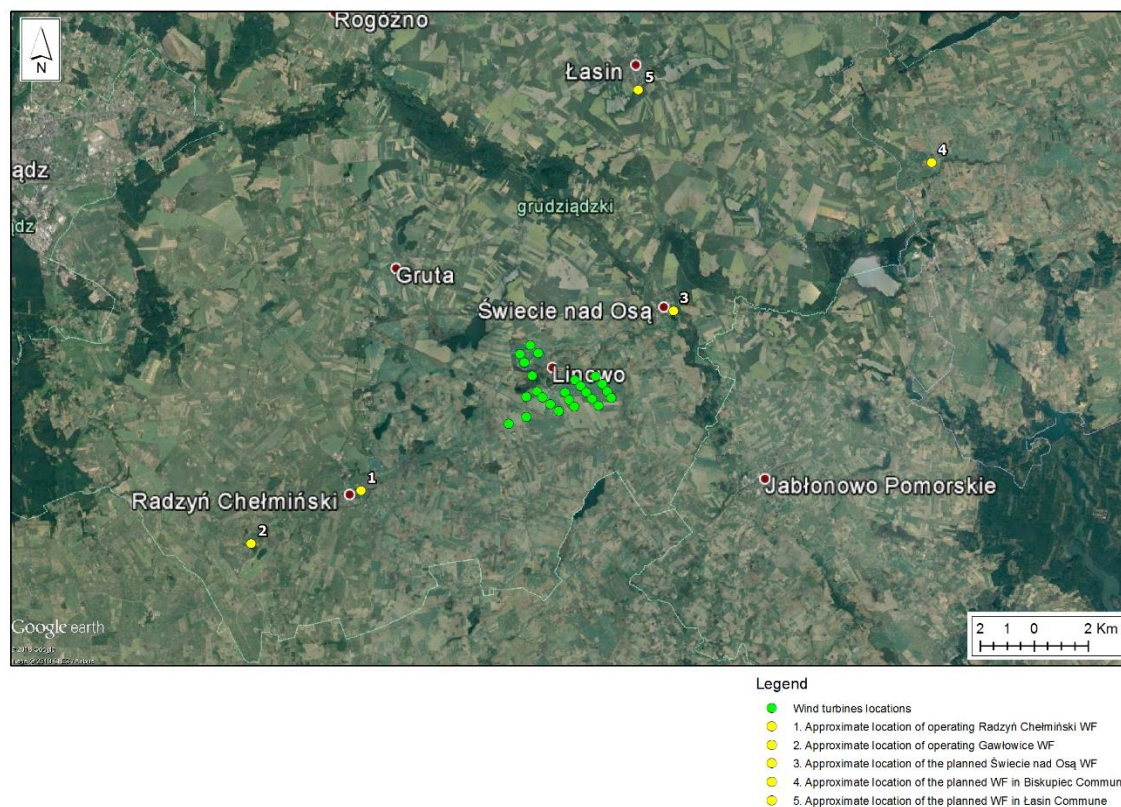
- Radzyn Chelminski wind farm, located approximately 13 km south-west of the Project site, comprising 13 WTGs with a total capacity of 39 MW;
- Gawlowice wind farm, located approximately 18 km south-west of the Project site, comprising 18 WTGs with a total capacity of 48 MW.

Moreover, the following wind farm projects are planned in the Project area:

- Swiecie nad Osa wind farm in the area of Linowo and Parteczyny, i.e. approximately 10 km north-east of the Project site. This new investment will consist of 5 WTGs with a total capacity of 16.3 MW, including a project electrical substation. The construction works are going to be commenced in June/July 2019.
- Wind farm comprising 8 WTGs along with auxiliary infrastructure – planned in the Biskupiec commune, i.e. approximately 15 km north-east of the Project site.
- Wind farm comprising 24 WTGs along with auxiliary infrastructure – planned in the Łasin commune, i.e. approximately 18 km north of the Project site. Currently, administrative proceedings related to issuing environmental decision are being conducted.

The locations of these wind farms in relation to the Project site are illustrated below.

**Figure 2-5 Project Site location in relation to the existing and planned wind farms within a 20-km radius**



Source: Google Earth, edited by ERM.

## 2.4 Project Environmental Performance

The total annual energy production from the Project was:

- 126,328.61 MWh in 2016;
- 145,520 MWh in 2017;
- 118,584.23 MWh in 2018.

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As a positive effect, the wind farm operation resulted in a significant reduction of greenhouse gas carbon dioxide (CO<sub>2</sub>) emissions, by replacing CO<sub>2</sub> emitting power generation facilities. Therefore, the environmental benefit from Linowo WF, in the last three years, was the reduction of approximately 83,032 tons of greenhouse gas (GHG) emissions/year. This is an average value for years 2016-2018, calculated based on an emission factor, representative for conventional energy projects, of 0.638 t CO<sub>2</sub>/MWh, for Poland in 2012.

Apart from saving on GHG emissions, the operation of the Project also results in significant avoidance of post-combustion emissions. For instance, the equivalent production of electricity by the largest Polish hard-coal power plant would result in the production of the following emissions (estimations based on emission factors for 2011):

- Particulate matter (PM): approximately 11.5 tons/year (average for years 2016-2018);
- Sulphur dioxide (SO<sub>2</sub>): approximately 324.3 tons/year (average for years 2016-2018);
- Nitrogen oxides (NO<sub>x</sub>): approximately 223.1 tons/year (average for years 2016-2018).

### **3. SUMMARY OF PROJECT IMPACTS AND MITIGATION MEASURES**

#### **3.1 Soil and Groundwater**

Impacts on soil and groundwater from the Project could potentially result from leakage of lubricants from the wind turbine nacelle and the Project electrical substation. However, this is unlikely due to the liquid retention systems integrated into the structure of the wind turbine nacelle and Project electrical substation.

The following measures are currently implemented on site to avoid potential contamination:

- regular checks and maintenance works are performed in order to keep all equipment in good condition;
- maintenance works are restricted to specially designated platforms with strict control of accidental spills;
- maintenance machinery and vehicles can move only on designated internal roads;
- procedures for responding to emergencies/accidental spills of hazardous materials, fuel storage and handling, and waste management are developed and implemented;
- there is no storage of hazardous substances at the Project site.

With the above mitigation measures in place, impacts on soil and groundwater are not expected to be significant.

#### **3.2 Surface Water**

The nearest surface water bodies are:

- Melno Lake – approximately 3 km north-west of the Project site;
- Boguszewo Lake – approximately 3.3 km west of the Project site; and
- Golebiewko Lake – approximately 4 km west of the Project site.

The Project site is not supplied with water for potable and sanitary purposes. No wastewater is generated and discharged from the site. Bottled water for the employees of EDF EN Services (subcontractor) is supplied by EDF EN Services (company responsible for onsite maintenance).

Therefore, the Project does not have an impact on surface water quality.

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### 3.3 Air Quality

During the Project construction, air emissions consisted of dust generated from construction activities (e.g. land moving) and combustion related emissions from vehicles and construction equipment. These impacts were mitigated by employing good construction practices, including the use of well-maintained construction equipment and employing dust abatement measures.

No significant air quality impacts are associated with the Project operation phase. Operational traffic impacts are associated with emissions from a limited number of vehicles accessing the site for maintenance or security purposes.

### 3.4 Biodiversity and Nature Conservation

#### 3.4.1 Site Context

The Project site elevation varies between 76 m above sea level (a.s.l.) and 109 m a.s.l. No legally protected areas are located within the Project site.

#### 3.4.2 Protected and Recognized Sites

The nearest protected areas to the Project site are the following:

- Dolina Osy Natura 2000 site (PLH040033), protected under the EU Habitats Directive, located approximately 2.5 km north and north-east of the Project site;
- Slupski Grodek nad Osa Nature Landscape complex – located approximately 9.5 km north of the Project site;
- Wronie Nature Reserve (national protection level) – located approximately 11.5 km south-west of the Project site;
- Brodnicki Landscape Park (national protection level) – located approximately 12 km east of the Project site;
- Ostoja Brodnicka Natura 2000 site (PLH040036), protected under the EU Habitats Directive, – located approximately 15 km south-east of the Project site;
- Mieliwo Nature Reserve (national protection level) – located approximately 15 km south-east of the Project site;
- Karas Lake (Ramsar site) - located approximately 35 km north-east of the Project site.

#### 3.4.3 Birds

To determine the Project site's importance to birds, a number of surveys were conducted, the first of which between April 2008 and March 2009. The Environmental Decision issued for the Project included requirements to conduct post-construction bird monitoring, in spring and autumn, for two consecutive years. Post-construction monitoring was conducted between April 2013 and December 2014, and included:

- recorded bird flight lines in respect with collision risk height in the Project area, using a point-count monitoring methodology, during spring and autumn migrations;
- inventory of rare breeding bird species and species of conservation concern in the area of the Project site and its surroundings;
- monitoring of common breeding bird species (in the same areas as during the pre-construction monitoring);

In total, 22 field surveys in 2013 and 21 field surveys in 2014 were conducted. Post-construction point-count monitoring indicated at least 64 birds species in 2013, and 65 in 2014. Some small bird species could not be identified and were classified as passerines (247 individuals in 2013 and 21 in

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2014). In Poland, according to the Nature Conservation Act dated 2018, most of the passerines are under strict protection<sup>1</sup>, while others are under partial<sup>2</sup> protection. The most frequently recorded species in the Project site were: jackdaw, barn swallow, wood pigeon, starling, chaffinch, skylark and geese. Out of raptors, the most common were the buzzard and marsh harrier.

During all field surveys, 52 bird aggregations (more than 100 individuals) were identified. Species forming these groups were the jackdaw, starling, geese, cormorant and rook. Within the Project area and its surroundings, nesting sites of three birds species (white stork, black woodpecker and red-backed shrike) mentioned in Annex I of the Birds Directive were identified.

Carcass searches were conducted around eight randomly selected turbines from spring until autumn. During the two seasons of operational phase surveys, five bird carcasses were identified, assumed to have been caused by collisions with WTGs. Only one species (western marsh harrier) is under protection.

Bird monitoring results indicated the Project does not have a significant impact on avifauna. However, in order to follow good practices<sup>3</sup>, the following measures will be implemented:

- apply an active turbine management procedure, to curtail turbines during peak migration periods or when species of conservation concern are identified flying towards the Project area at collision height;
- avoid elements that may potentially attract birds to the Project area (e.g. improper storage of food waste in the Project area). To increase the efficiency of this measure, it is advisable to avoid storage of any food waste in a 1-2 km buffer zone;
- reduce hunting pressure on the Project area and surroundings;

The Project Owner will conduct additional bird monitoring in line with the recommendation of the Polish and international guidelines, and, depending on the results of these surveys, additional mitigation measures will be considered.

### **3.4.4 Bats**

Bats pre-construction monitoring was not an obligation imposed at the time of field studies (2008 – beginning of 2009) as national regulations or guidelines for conducting pre-construction bats monitoring were not available in Poland. The first draft guidelines for the evaluation of the impact of wind farms on bats were established in Poland at the end of 2008<sup>4</sup>, while the EIA for Linowo was being prepared. An amended version of the guidelines for bats monitoring was issued by the General Directorate for Environmental Protection<sup>5</sup> in 2013 and will be considered by the Project owner for future bat monitoring in relation to the Project.

While the Environmental Decision for the Project does not impose obligations to conduct post construction bat monitoring, the Project Owner will voluntarily develop and implement an operation phase monitoring program for bats in order to align the Project with the regulatory requirements currently in force in Poland.

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<sup>1</sup> strict protection – total and permanent interdiction of direct human intervention in the state of ecosystems, wild fauna and flora and in the course of natural processes in protected areas;

<sup>2</sup> partial protection – protection of species of plants, animals and fungi allowing harvesting, i.e. the possibility to reduce the size of a given population;

<sup>3</sup> Wytyczne dotyczące ocen oddziaływania elektrowni wiatrowych na ptaki. Projekt. (Chylarecki i in. 2011, Generalna Dyrekcja Ochrony Środowiska, Warszawa).

<sup>4</sup> Tymczasowe wytyczne dotyczące oceny oddziaływania elektrowni wiatrowych na nietoperze (rok 2009), prepared by Andrzej Kepel (red.), Mateusz Ciechanowski, Joanna Furmankiewicz, Monika Górawska, Janusz Hejduk, Radosław Jaros, Michał Jaśkiewicz, Krzysztof Kasprzyk, Marek Kowalski, Agnieszka Przesmycka, Michał Stopczyński, Radosław Urban.

<sup>5</sup> Wytyczne dotyczące oddziaływania elektrowni wiatrowych na nietoperze. Projekt. (Kepel i in. 2013, Generalna Dyrekcja Ochrony Środowiska, Warszawa).

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### 3.4.5 Other Biodiversity Receptors

#### 3.4.5.1 Habitats and Flora

The total area of the land leased for the Project is approximately 8 km<sup>2</sup>, of which only 0.04 km<sup>2</sup> corresponds to the project footprint (land effectively taken up by WTGs, access roads, accompanying infrastructure). The Project area is dominated by arable land with scattered forested patches. However, the latter were not affected by project activities. During the Project development phase, a habitat site survey was conducted. It revealed the presence of three plant communities, in addition to the arable land:

- Class *Quercus-Fagetum* – mesotrophic and eutrophic deciduous forests;
- Class *Phragmitetum* – grassy rushes;
- Class *Artemistetum vulgaris* – nitrophilous communities on ruderal habitats and on the banks of water reservoirs.

In the above-mentioned plant communities, three flora species were identified in the vicinity – not within – the Project area, i.e. *Asarum europaeum* (European wild ginger), *Galium odoratum* (Sweet scented bedstraw) and *Frangula alnus* (Alder buckthorn). At the time of records, the species were protected under the Executive Order of the Minister of the Environment (dated January 2012). Meanwhile, it was replaced by the Executive Order of the Minister of the Environment (dated October 2014) which excluded the species from the protected list.

All WTGs, along with the electrical substation and related infrastructure, were constructed on arable land (0.04 km<sup>2</sup>, which is approximately 0.5% of the total Project area). The EIA report states that flora, which might have been impacted by construction activities, is mainly of low conservation value.

Based on the EIA report and the biodiversity surveys results it was concluded that the operation of Linowo Wind Farm does not have a significant impact on habitats and flora.

#### 3.4.5.2 Amphibians and Reptiles

According to the EIA report, presence of amphibians were recorded mainly in forested areas within the Project site. In Poland all reptiles (in total 18 species) and all amphibians (in total 9 species) are under legal protection.

Based on the EIA report, the Project operations are not likely to pose a threat to herpetofauna. No significant impacts on amphibians and reptiles are associated with the Project.

#### 3.4.5.3 Mammals

Roe deer and wild boar are known to be present in the Project area. However, with the exception of bats, which are addressed separately, in Section 3.4.4, the Project is unlikely to affect mammals.

### 3.5 Landscape and Visual Impacts

The WTGs dominate the flat landscape and are visible or partially visible within a radius of about 20 km from the Project site, in particular to people from Jasiewo, Rychnowo, Boguszewo, Swiecie nad Osa, Bursztynowo and Golebiewko villages.

A landscape and visual impact assessment was performed as part of the EIA process and concluded that the Project would not generate a significant visual and landscape impact due to the fact that the sensitivity of the receptors is very low.

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However, in order to mitigate any potential landscape and visual impacts, the following measures were implemented:

- WTGs were placed in an orderly layout to avoid visual disturbances and perception of chaotic or random clusters;
- smooth cylindrical towers were used, as this type of tower has a simpler configuration, less complex surface characteristics and a lower reflection/shadow casting potential;
- non-reflective paints and coatings that do not reflect sunlight to reduce glare were used;
- the Project only uses underground power cables at the site in order to minimize distortion of the surface;
- a uniform color was used for painting the tower, nacelle and rotor, in order to reduce visual impacts.

### 3.6 Cultural Heritage

There are no known archaeological sites within the Project area and none have been discovered during the construction of the Project.

The nearest cultural heritage site listed in the Monuments Register is the Park and Palace complex in Linowo, located approximately 790 m east of the nearest WTG (No. 18). There are also several monuments of sacred architecture of local importance located outside the Project area, i.e. Church of Michal Aniol in Linowo (approximately 600 m of the Project area), Church of Andrzej Bobola in Bursztynowo (approximately 500 m of the Project area).

Based on the EIA report, considering the distance, the Project is not likely to generate a direct negative impact on the above-mentioned monuments. Some limited indirect influence may be related to changes in the landscape constituting the surroundings and the current visual context of the historical monuments.

The Project is not expected to impact cultural heritage sites during operation.

### 3.7 Socioeconomic Impact

Socioeconomic impacts during Project construction were associated with the permanent loss of 4 hectares of arable land required for the Project components (WTG, substation and access roads) and with impacts on livelihoods and local economic activities. Moreover, the following direct positive impacts have been identified:

- direct employment opportunities during Project construction and operation; currently, during the operation phase, there are five permanent employees of EDF EN Services who work on site (i.e. technicians, substation operators, periodical maintenance staff).
- increase of the annual income of land leasers for each WTG;
- improvement of local communication routes;
- construction and improvement of local pavements;
- additional investments in the communes (for example annual support such as reconstruction of local pavements);
- increasing the communes' income through payment of fees and taxes;
- events held for local children.

The land for the Project was secured based on land lease agreements signed with the land owners.

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At the discussions held in June 2019, the representatives of Swiecie nad Osa Commune were not aware of grievances having been filed by local community members in relation to damages to their crops during the construction stage of the Project.

The current Project Owner will develop and implement a SEP (see section 4) which will also include a formal grievance management procedure for the Project.

Local farmers are granted access and can continue to use the agricultural land around the turbines mainly for farming and occasional cattle grazing activities.

## **3.8 Community Health, Safety and Security**

### **3.8.1 Environmental Noise**

At the stage of preparing the EIA report, the former owner, GB Linowo 201 Sp. z o.o., completed a noise analysis to determine whether the Project meets mandatory noise levels defined as 55 dB for daytime and 45 dB for night-time in residential areas. The noise analysis did not reveal exceedances of permissible levels.

The nearest noise receptor is the residential area in Linowo village, with the closest house located approximately 360 m west of WTG No.18.

The Environmental Decision issued for the Project requires post-construction noise measurements during daytime and night-time, in three measurement points located closest to the residential areas, during spring and summer seasons.

Consequently, noise measurements were conducted by an accredited laboratory EKO-POMIAR, in the spring and summer of 2013. The results showed exceedances of the limit values and EKO-POMIAR recommended mitigation measures. The second noise measurement session was conducted following the implementation of the mitigation measures defined, during the summer period (i.e. between July and September 2013). The measured noise levels were compliant with permissible levels, both during the day and at night.

### **3.8.2 Shadow Flicker**

Any moving object that comes between a viewer and a light source can cause a flicker effect. Wind turbines, like other tall structures, will cast a shadow on the neighboring area when the sun is visible. Modelling of the area affected by shadow flicker from each turbine was performed to calculate potential impacts on dwellings using specialized software. The shadow flicker modelling predicts the area where shadow flicker can be expected and the maximum number of hours that the nuisance may last.

According to the recommendations of the World Bank Environmental, Health and Safety Guidelines For Wind Energy<sup>6</sup>, the minimum distance between the Project turbines and the nearest residential areas should be 292.5 m. The closest residential area to any of the Project turbines is 360 m. Given the above, no shadow flicker effect is likely to occur.

### **3.8.3 Ice and Blade Throw**

Wind farms operating in cold climates may suffer from icing in certain weather conditions and ice accretion can result in 'throwing' of ice from the wind turbines, which may affect public safety. The average annual temperature in the Linowo WF area is +17.6°C, with an average monthly temperature in January of -3.4°C. Icing of the wind turbines is rather unlikely under such climatic conditions.

The Project is located in an agricultural area, with regular farmer car traffic, farmers working the land, as well as grazing livestock. In addition, the Project employees regularly work there.

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<sup>6</sup> Environmental, Health and Safety Guidelines for Wind Energy, August 7, 2015. World Bank Group, IFC, MIGA.

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To minimize ice throw risks, the following mitigation measures have been adopted:

- all WTGs are equipped with ice detecting systems to control ice formation on the rotor blades. In case of icing detection, wind turbines are shut down automatically;
- warning signs are placed at the entrance to every single WTG location;
- informing the wind farm operational personnel and local farmers about the conditions that could lead to WTG icing, about the risk of ice falling from the wind turbine rotor, as well as the existing risk area; such information will be delivered through continuous engagement with local communities as the Project SEP will outline;
- if a change in WTG operation is detected, which may be associated with the start of rotor blade icing, the turbine will be shut down or slow down.

With the aforementioned mitigation measures in place, no significant impacts from ice throw are expected.

### **3.8.4 Electromagnetic Interference**

Wind turbines could potentially cause electromagnetic interference with aviation radar and telecommunication systems (e.g. microwave, television, and radio). As part of the construction permitting procedure, the relevant authorities were consulted and no concerns were raised in relation to the Project.

The nearest airport is located approximately 98 km to the south west of the Project site; therefore, there are no risks associated with aviation radar interferences.

Electromagnetic fields (EMF) are produced by any wiring or equipment carrying electric current. The potential effects of EMF on human health vary depending on the frequency and intensity of the fields. For wind power projects, EMF generation is associated with overhead transmission lines (which are not present at the Linowo Project) and the substation.

The following measures were adopted to protect employees and the local communities:

- all works on maintenance and repair of the Project electrical substation are carried out in compliance with the safety regulations related to these activities;
- the Project electrical substation is fenced and equipped with adequate warning signs;
- entrance to the Project electrical substation is prohibited except for employees holding adequate permits;
- the substation is regularly inspected for compliance with the relevant safety requirements, constant monitoring is implemented, and monthly, quarterly and annual inspections are conducted.

No significant impacts from electromagnetic interference are expected to arise in association with the Project.

### **3.8.5 Public Access and Health and Safety**

Appropriate public communication to allow timely notice of affected residents before major construction operations or traffic movements on public roads were implemented during the construction phase of the Linowo WF.

Currently, the Linowo WF area is used for arable farming and occasional grazing. All the access roads to each WTG are adequately marked and all signs clearly prohibit access to the WF area.

The whole Linowo WF area is equipped with security alarm; additionally, all five employees of EDF EN Services (subcontractor) have access to an electronic system, into which they have to log every

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time they enter the Linowo WF area. This solution prevents unauthorized persons from entering the WF area.

Having the above mitigation measures in place, impacts on public health and safety are not expected to be significant.

### **3.9 Cumulative Impacts**

Projects can generate impacts in isolation or cumulatively with other projects, either existing or planned to be developed in the area. Additional projects identified in the Project area are presented in *Section 2.3*.

According to the EIA, the presence of cumulative impacts is considered unlikely given the distance between the projects; however, further assessment is required in order to validate this conclusion.

any future wind farm investment will require a robust cumulative impact assessment.

The Project Owner is committed to exchange information on the results of environmental monitoring for the Project (with focus on bird and bats mortalities) with other operators of wind farms identified in the Project area. In case of any increase of the number of carcasses identified in the Project site, the Project Owner will liaise with the developers of the other windfarms in the area to identify and agree proper mitigation measures. Such actions will be carried out upon consultation of relevant stakeholders (e.g. Bird-related associations and NGOs, experts, communities members, lenders, authorities etc.).

### **3.10 Transboundary Impacts**

The Project is located approximately 150 km from the nearest border with the neighboring country – the Russian Federation. Taking into account the nature, scale and location of the Project, as well as the range of potential impacts, transboundary impacts are not expected.

### **3.11 Impacts during Decommissioning**

Impacts caused by decommissioning activities are, in principle, comparable with construction impacts.

The projected operational lifetime of a typical wind farm is 25 years. After this period, there are two options: repowering the site and replacing existing wind turbines or decommissioning the site, removing the wind turbines and other major structures, and restoring and reinstating the site. At this stage, the Project Owner has not decided which of the two options will be selected for the Project. However, the Project Owner will comply with the relevant mandatory requirements and best practices in force at the time of Project decommissioning.

Prior to decommissioning, a method statement, detailing how the site would be restored is usually prepared and approved by the relevant authorities.

At present, wind turbines are removed by crane and reused elsewhere, if possible. In the case of the foundation works, upper sections are removed and the voids backfilled with appropriate materials to support land use. Underground cables and deep concrete foundations are usually left in place, as removal is likely to cause more disruption than leaving them in-situ. However, if techniques allowing removal of underground cables with limited disruption and impacts are available at the time of decommissioning, they will be considered. Areas affected by decommissioning activities will be restored to the use defined for the respective land plots at that moment in time. As with the turbines, the electrical control building and internal equipment are removed and reused or recycled, where possible.

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## 4. ENVIRONMENTAL AND SOCIAL MANAGEMENT

The EIA Report performed for the Project identified the potential environmental and social impacts associated with the Project and also defined mitigation measures to be implemented in order to maintain these impacts within acceptable limits. The gap analysis of the EIA Report against EBRD PRs also indicated a number of actions that still are necessary for the Project to meet the respective standards. These measures were defined within the following documents that will be used during Project implementation:

- the Environmental and Social Action Plan (ESAP), which represents a roadmap for the implementation of key environmental and social actions required for the Project; furthermore, the ESAP will define additional monitoring measures (e.g. birds, bats, habitats/flora) which will be implemented during Project operation, including responsibilities and timelines for implementation;
  - the Corporate Stakeholder Engagement Framework (SEF) defines the overall engagement strategy and will be further used by the Project Owner to develop a Project specific Stakeholder Engagement Plan (SEP). The SEP will define the relevant Project stakeholders, planned engagement activities, resources from the Project Owner to deal with stakeholder engagement, community grievance mechanism and management process, along with monitoring and evaluation. The Project SEP will aim to lay the foundation for an effective, bilateral communication between the Project and its stakeholders, and to build reliable relations between the Project and affected communities. Regular stakeholder engagement will also enable the Project Owner to gain a better understanding of the ways in which communities prefer for receive information about the Project. The Project SEP will be made available to the public on the Project Owner's website, and as hard copy to local authorities and communities. It will be periodically updated as needed, to reflect engagement undertaken, stakeholder feedback and potential changes in the Project.
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