
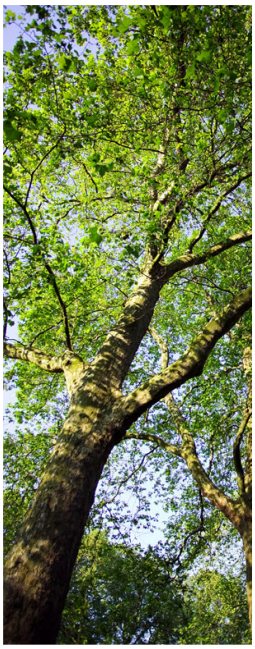


Kukinia Wind Farm

Non-Technical Summary

September 2012

rp GLOBAL
RENEWABLE POWER

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Content

1. Introduction

1.1 Overview

AWK Sp. z.o.o., a subsidiary company of RP Global is constructing a 46 MW wind farm in the vicinity of Kukinia in the north of Poland. This non technical summary (NTS) provides a summary of the project description, the benefits of the project and the mitigation of potentially adverse environmental and social impacts.

The Project will comprise of 23 wind turbines to be constructed in two phases. Construction has recently commenced and the project is due to be completed by end of December 2013.

This Non-Technical Summary is being made available for public review on RP Global's website (www.rp-global.pl), where a dedicated Project webpage will be used to make available relevant Project information, including a Stakeholder Engagement Plan in Polish. The website will be updated on a regular basis. Anyone may submit comments on the NTS and the project. Questions and comments can be addressed to RP Global via the following contact details:

Name:	Tomasz Zelek
Address:	RP Global Poland Sp. z o.o., 70-479 Szczecin, Wojska Polskiego, 70
Email:	t.zelek@rp-global.com
Telephone Numbers:	+48914322580

2. Summary of the Project

2.1 Why is the Project needed?

Wind energy is a form of renewable energy which provides a more sustainable energy source than conventional methods such as coal and gas fired power stations. As well as providing a renewable source of energy, wind farms do not cause impact on air quality, water quality or generate greenhouse gas emissions.

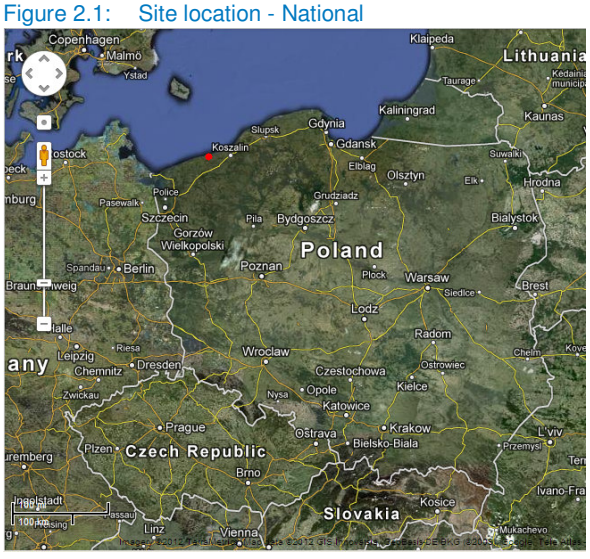
However, there can be potential environmental impacts associated with wind farm, including impacts on birds and bats, noise, visual impact and shadow flicker. An EIA report was prepared in accordance with national requirements to assess the significance of these impacts for this Project and where possible identify mitigation measures to reduce the effects. Environmental and social impacts identified for this Project are explained in section 3.

2.2 Where is the wind farm to be located?

The Project will be located in the coastal region of northwest Poland in the Zachodniopomorskie Province, approximately 6 kilometres (km) from the Baltic Sea and close to the village of Kukinia. The terrain is generally undulating and consists mostly of open farm land with adjacent woodland areas.

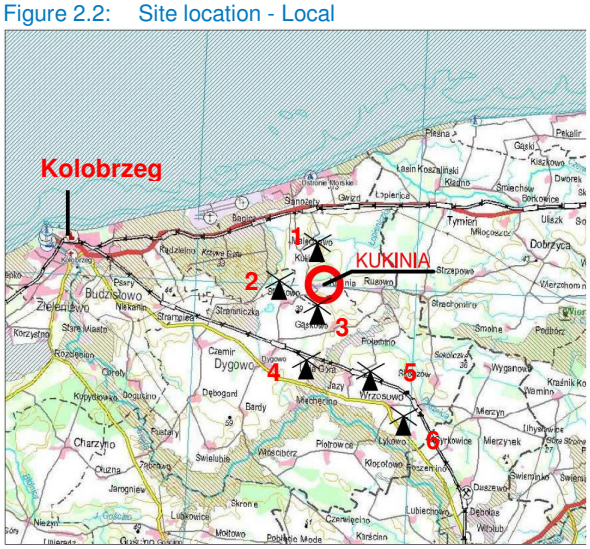
The full project is approximately 12 km north to south and approximately 6.5 km between the most westerly and easterly turbines. The nearest settlements to the wind farm are Stoikowo, Gąskowo, Dygowo, Ustronie Morskie, Rusowo, Lykowo, Kukinia and Jazy. The nearest housing to any of the turbines is between 450-500m.

Figure 2.1: Site location - National



Source: Google Maps

Figure 2.2: Site location - Local



Source: Mott MacDonald

2.3 What alternatives were considered?

The master plan for the Municipalities of Ustronie Morskie and Dygowo, issued in 2002, included for an area identified for the development of up to 38 wind turbines on farmland within their area to provide for the

development of locally generated renewable energy. Within the context of this master plan the Project Company looked at alternative options for the wind farm, including the "no project" option, taking into account the local environment, where the nearest houses were, whether the Project would have an effect in combination with other existing infrastructure, wind conditions and suggestions from the West Regional Office and the Regional Directorate for Environmental Protection. The starting point was a project of 38 turbines, however this was refined down to 32 turbines and then further to 25 turbines, including looking at different location options for siting of each turbine. The choice of wind turbine technology was also reviewed so that the most appropriate turbine could be installed.

The analysis of alternatives concluded that the most appropriate option for minimising impacts on nature, including migratory birds, and to meet noise standards and reduce shadow flicker at nearby housing was for a 25 turbine option. The number of turbines to be installed has since been further reduced to 23 during optimisation of the layout for the site and taking other local conditions into account.

2.4 What will the Project consist of?

The Project will consist of a total of 23 wind turbines in two phases:

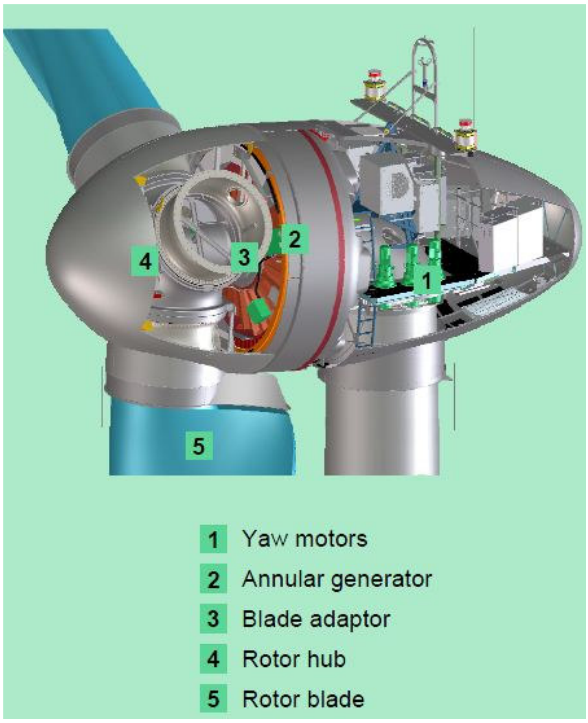
- Phase I: 14 wind turbines currently under construction; and
- Phase II: 9 wind turbines.

Wind turbines consist of a number of components. An example of a wind turbine to be used at the Kukinia wind farm is shown in Figure 2.3. Rotor blades are attached to an axle that runs into a gearbox. The gearbox, located within the nacelle increases the speed of the blades' rotation. The fast spinning shaft turns inside the generator, producing AC (alternating current) electricity. The energy produced is transferred to an electrical generator which transforms the energy into electricity which is input into the grid.

Figure 2.3: Example of a Enercon wind turbine to be installed at the Project

Source: Enercon

Figure 2.4: Parts of a wind turbine



Source: Europa.eu

The turbines used at the Kukinia wind farm will be installed on 98 metre towers with blades with a diameter of 82 metres. Each of the turbines will be capable of generating 2.3 MW of power.

In addition to the wind turbines, an electrical substation, two transmission lines, service roads and underground cabling connecting the wind turbines to the substation and onwards to the national grid will be constructed.

2.5 What is the condition of the existing environment?

The area covered by the Project is generally undulating and consisting mostly of open farm land with adjacent trees. There are also some significant areas of mature forestry in close proximity to the Project site and a number of small settlements are located nearby.

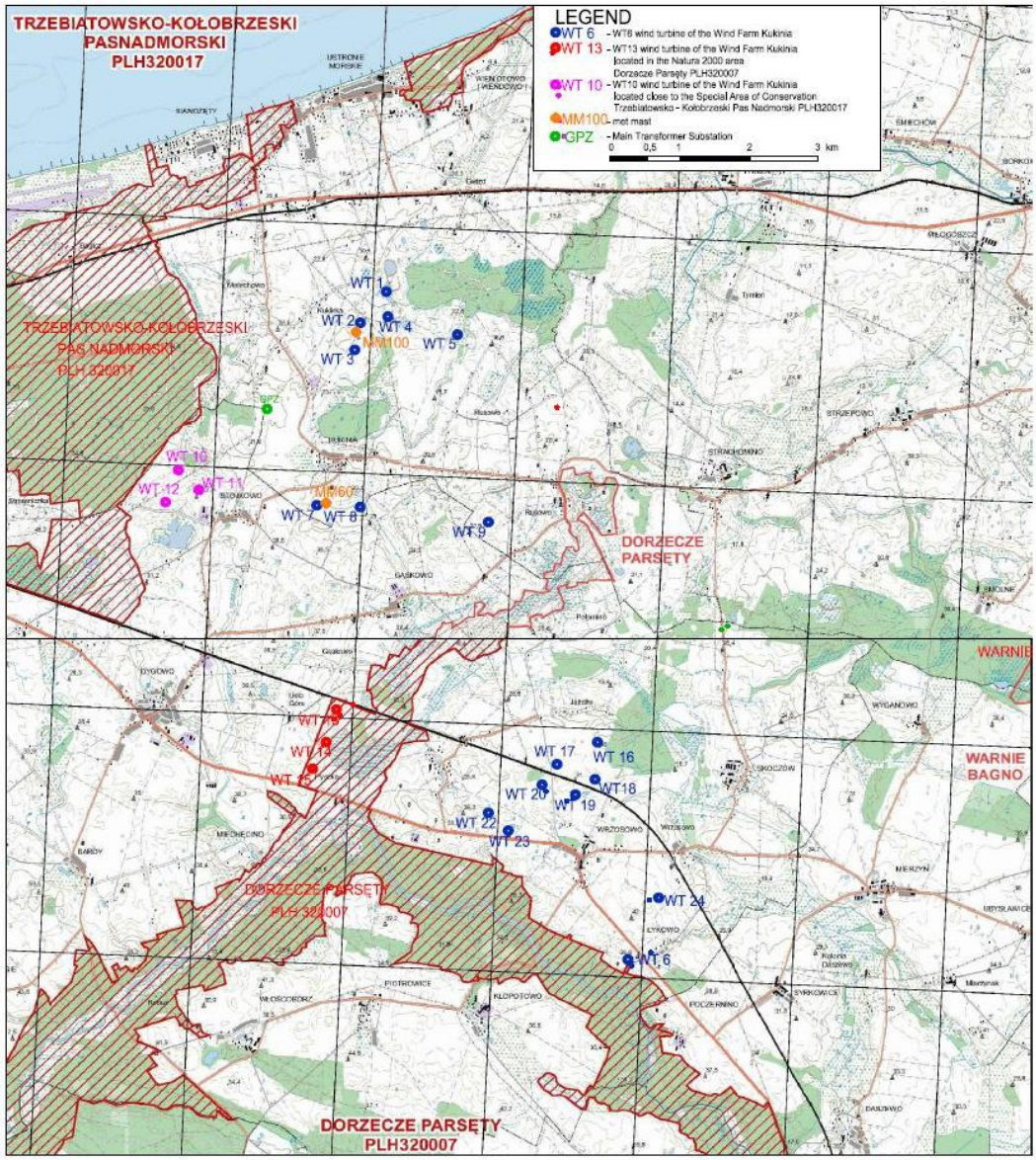
Five sites that are protected at European level (Natura 2000 sites) have been identified within 15 km of the Project.

- Trzebiatowsko-Kołobrzeski Pas Nadmorski Special Areas of Conservation (SAC)
- Dorzecze Parsęty SAC;
- Zatoka Pomorska Special Protection Areas (SPA);
- Warnie Bagno SAC; and
- Wybrzeże Trzebiatowskie SPA.

Three wind turbines are located within the Dorzecze Parsęty SAC Natura 2000 area and a further three wind turbines are located close to Trzebiatowsko-Kołobrzeski Park Nadmorski SAC. In addition, Warnie Bagno SAC, located to the east of the wind farm site was designated as a Natura 2000 site in 2008 after the Project EIA was completed.

Figure 2.5 indicates the proposed layout of the wind farm in relation to Natura 2000 sites.

Figure 2.5: Proposed locations of wind turbines



Source: RP Global

2.6 Legislative context

The initial EIA report was submitted to the commune head on 12 August 2008. The final EIA report (dated February 2009) was submitted to the commune head on 19 March 2009.

An Environmental Impact Assessment (EIA) procedure must be performed for projects which can significantly impact the environment (group I projects) or particular ones which can potentially impact the environment (group II projects), or may impact an area of 'Natura 2000' protected land. An EIA was carried out to inform the application for an environmental permit.

The Project EIA and consultation activities were conducted in 2008 in compliance with the Polish Environmental Protection Act of 27 April 2001 (EA 2001) and the national permits were granted. At this time, the EA 2001 was in the process of being amended by the Polish Act on the Provision of Information on the Environment and its Protection, Public Participation in Environmental Protection and Environmental Impact Assessments of 3 October 2008 (EA 2008).

The EIA report was published in February 2009 and in accordance with Polish administrative procedure was sent out to statutory consultees. Information on the planned investment together with EIA Reports were made available for comments of the public, including local communities and potential interested parties, such as nature protection bodies and ecological organisations.

The first Environmental Permit (EP) no. 10/2007 dated 2 July 2009 was based on the requirements of the 2001 Environment Act. This permit was cancelled as the Project Company revoked its original application. A new EP was issued on 17 January 2011. This permit is still based on the 2001 Environment Act as it has been issued through the original procedure.

A license to produce electricity from renewable energy sources was granted which is valid until 18th July 2015 (decision no. WEE/2190/18633/P/OSZ/2012/MG).

3. Environmental and Social Impacts

3.1 Summary of Environmental and Social Risks and Impacts

3.1.1 Overview

Table 3.1 describes the main environmental and social impacts (positive and negative) associated with the Project for construction and operation and the mitigation measures which will be implemented to remove or reduce the level of impact. Mitigation measure will be implemented via:

- The Project Environmental and Social Action Plan (ESAP), which forms the basis of environmental and social management measures to be provided by AWK and third party construction contractors.
- Overarching Environmental and Social Management Plan to oversee contractor environmental, occupational health and safety and social performance during construction; and
- An environmental management system (EMS) and occupational health and safety management system (OHSMS) for the operational phase.

As there are three turbines within a Natura 2000 site and the potential for the Project to impact on birds and bats the potential impacts on these features has been presented separately.

3.1.2 What impacts may arise during construction?

The main impacts from the construction stage will be as a result of earth works; excavations associated with the foundations of wind turbines, laying of underground cables, building of access roads and the electrical substation. Good environmental practice will be adopted to reduce the risk of impact from things like noise, dust, dirty water run-off and impact on flora and fauna so that the potential impact is considered to be minor and temporary.

3.1.3 What impacts may arise during operation?

The main impacts arising from the operation of the wind farm are impacts to ecology, visual impact, noise and traffic. Table 3.1 provides a summary of potential impacts and mitigation to minimise impacts.

Table 3.1: Summary of Key Environmental and Social Impacts of the Project

Environmental / Social Aspect	Key Issues Identified and Proposed Mitigation
Landscape and Visual	
Potential Impact	Visual impact to the surrounding area caused by the wind farm.
Assessment and Mitigation	The Project will influence the landscape of the local communes and could be considered visually intrusive. To assess the visual impact, computerised visual simulations were prepared for panoramas judged as most vulnerable. A selection of photomontages showing how the landscape will look with the presence of wind turbines are presented in Appendix A. The landscape character is largely agricultural and is not protected or considered to be sensitive. The existing land use pattern will be largely unaffected by the Project and the landscape character has a large capacity to absorb change. However, the turbines will create large elements, contrasting with the existing character and there are limited opportunities for additional mitigation. The new wind turbines would become prominent features in the landscape and be visible from nearby villages and houses. The turbines, in combination with other proposed wind farms, will have an adverse effect on the landscape character and visual amenity however this is not consider to be significant due to the nature of the current landscape and its ability to absorb

Environmental / Social Aspect	Key Issues Identified and Proposed Mitigation
	change. Furthermore, no complaints were raised about the visual impact during the consultation process with local communities and authorities.
Noise	
Potential Impact	Potential noise disturbance to residential receptors caused by construction activities and during operation.
Assessment and Mitigation	Good practice measures to minimise noise impacts during construction and operational maintenance periods will be implemented. Assessments indicate that noise generated by the wind farm during operation will be within national limits. Mitigation in the EIA states that in the event that noise at residential receptors during operation exceeds allowable levels then individual turbines may be curtailed to reduce sound levels. The assessment confirms sound levels from turbines at identified receptors are within national standards Operational noise will be monitored to ensure compliance with the Environmental Permit.
Ecology	
Potential Impact	Potential to affect sensitive ecological habitats and species.
Assessment and Mitigation	The Project is unlikely to have a significant effect on flora, woodlands and fauna due to its small Project footprint minimising habitat loss and that there are not significant populations of protected species observed in the area. However, due to there being potentially suitable habitats near the site there is a potential significant effect to bat populations and bird species. Additional information on these aspects and the potential impact on Natura 2000 sites is presented below. There could be localised ecological features that will be protected from construction activities through the adoption of good practice construction environmental management measures.
Bats	
Potential Impact	Potential to affect local populations of bats due to disturbance and collision.
Assessment and Mitigation	Surveys for bats were undertaken in 2007 to identify the presence of bats at the site for the EIA. The surveys were undertaken before current Polish guidelines or European (EUROBATS) guidelines were required so the effect of the Project on bats was not as robust as required and it has been concluded that there could be a potentially significant impact on local bat populations. This is mainly considered to be from the turbines located within 200m of wooded areas and within the arable field and along the field margins which may represent foraging grounds, commuting routes, or migration routes for bats. Bats are of international conservation value but the magnitude of such an impact will be dependent on the population size of those species present. At this stage, given the information available, it is considered that the although the impact would not be significant on the species population as a whole some localised moderate impacts on bats foraging or commuting across the wind farm area may occur. Further assessment of the potential impact needs to be done when the results of further survey work being undertaken in autumn 2012 to determine the bat species present and their population sizes. Mitigation measures to reduce the impact to an acceptable level are expected to focus on optimising the operational regime and habitat creation to minimise impacts on these species and will be confirmed after the additional surveys have been completed.
Birds	
Potential Impact	Potential to affect local populations of breeding and migratory birds due to disturbance and collision
Assessment and Mitigation	An assessment of the potential impact of the Project on birds carried out for the EIA was based on bird surveys carried out in 2006/07, which was before current Polish guidelines were introduced. As a result it has been identified that further bird surveys are needed to provide the basis for a more robust assessment. Preliminary assessment of impacts showed that there could be potentially significant impacts during migration of certain protected bird species (greater white-fronted goose and bean goose) due to collision with turbine blades. There is also a potential risk of collision for other protected species such as Red Kite,

Environmental / Social Aspect	Key Issues Identified and Proposed Mitigation
	Lesser Spotted Eagle and White-tailed eagle that have been observed at the Project site and may nest nearby. In general it is considered that for breeding and migratory birds impacts would occur at a local level rather than a population level and therefore would not be significant. However additional bird surveys being undertaken during autumn 2012 so that a more robust assessment of the potential impacts can be undertaken and the most appropriate mitigation measures determined. At this stage it is considered that mitigation measures would focus on implementing habitat management measures to reduce the attractiveness of the surrounding habitats coupled with habitat improvements or creation elsewhere to support at risk populations away from the windfarm site.
Traffic and Transportation	
Potential Impact	Increased number of large vehicles on local roads and potential damage to roads during construction works.
Assessment and Mitigation	Impacts from construction will result in a short term increase in vehicle movements, typically Heavy Goods Vehicles and large load vehicles. Impacts will be short term and not significant. Mitigation to minimise disturbance and damage to roads from construction vehicles will include: • Selecting routes for construction vehicles to minimise impact on local community areas, in accordance with road authorities and agreements with communes. • Use of existing access roads for the delivery of turbines components. Existing access roads will be re-built or upgraded during construction which will also benefit the community that use these roads. Minimal traffic will be generated during the operation of the wind farm.
Shadow Flicker	
Potential Impact	Rotating blades of the wind turbines can create a flickering effect which can cast shadows periodically over buildings.
Assessment and Mitigation	The distance and orientation of the turbines in relation to properties that could be affected by shadow flicker has been considered and any potential impact is expected to be minor. Should impacts occur these will be managed through the community grievance mechanism to identify receptors that adversely affected, allowing appropriate mitigation to be implemented.
Archaeology	
Potential Impact	Construction activities can disturb archaeological features
Assessment and Mitigation	A number of the wind turbines and parts of the access track and cable routes are situated within an area designated as an archaeological protection zone W III. Whilst there are anticipated to be no direct impacts on known archaeological or cultural heritage features, there is a risk that unknown sites or artefacts could be damaged during construction. The Project will follow municipal rules governing construction in such areas and in the event of a discovery the Provincial Heritage Monuments Protection Office, Branch in Koszalin, will be informed.
Employment	
Potential Impact	Provision of fair employment for all employees.
Assessment and Mitigation	Some employment opportunities will be generated during the construction phase through the employment of a number of contractor firms. The Project will not result in any permanent staff being employed on site for operation. The wind farm will also not significantly affect the agricultural activities occurring in the surrounding area to the wind farm.
Community Health and Safety	
Potential Impact	Potential impacts arising during construction and operation of the project to local infrastructure and public safety.
Assessment and Mitigation	Construction safety plan/procedures will be implemented throughout construction to minimise construction impacts to local communities.

Environmental / Social Aspect	Key Issues Identified and Proposed Mitigation
	Signs and other means of enhancing community awareness of danger zones hazards will be maintained. Construction work and non emergency maintenance works will be undertaken during daylight hours. Ongoing community consultation will be in place with local municipality officials and nearest residents to inform them of upcoming construction activities in the area and the local community will be informed of the grievance mechanism that can be used to raise any concerns about risks from the Project; for example, regarding non-adherence to traffic speed limits and safe driving rules.
Electromagnetic Fields	
Potential Impact	Concern on impact to health caused by electromagnetic fields generated by transmission lines.
Assessment and Mitigation	The Project is constructing a 30 kV power line. As part of the EIA, calculations were performed to estimate potential emissions of electric and magnetic fields of the power line. The calculations established that the standards defined in the Regulation of the Minister of Environmental Protection on permissible electromagnetic field levels in the environment that will not be exceeded in any place under or near the line.
Land Acquisition	
Potential Impact	Potential impact to residents and livelihoods of those who use the agricultural land being used for the wind farm and transmission line.
Assessment and Mitigation	AWK has land lease agreements in place for all land required for the wind turbines, substation and transmission and cable lines. Land take will be minimal. No houses are too close to the substations or the transmission line corridors, so no one will need to be resettled.

3.1.4 What impacts will arise during decommissioning?

The Project is expected to operate for approximately 30 years. The main impacts of the decommissioning phase will be similar to those during construction.

3.1.5 How could the project affect Natura 2000 sites?

The Natura 2000 sites near the Kukinia site are designated for the qualifying features set out in Table 3.2.

Three wind turbines are being located within the Dorzecze Parsęty SAC while another three turbines are located close to Trzebiatowsko-Kołobrzeski Park Nadmorski SAC.

Although during the EIA process the possible impact of the Project on Natura 2000 sites was considered and the Environmental Permit granted by the regulatory authorities on the grounds that there would not be a negative effect on Natura 2000 sites, this matter has been reviewed again in more detail through an assessment process under the EU Habitats Directive. The findings of this additional assessment process are also shown in Table 3.2.

Table 3.2: Natura 2000 site designations

Site Name	Habitat Type	Annex I & II Habitats Directive Significant Qualifying Features	Potential Effect of the Project
Trzebiatowsko-Kolobrzeski Pas Nadmorski SAC	Grass and scrub with areas of coniferous and broad-leaved deciduous woodland/	21 habitats listed. No significant qualifying populations of terrestrial species	The nearest wind trurbine is located approximately 0.5 km from this SAC and no works will affect any Annex I listed habitats and no signifcant populations of Annex II

Site Name	Habitat Type	Annex I & II Habitats Directive Significant Qualifying Features	Potential Effect of the Project
		occur.	terrestrial species occur within the SAC so no likely significant effects on any qualifying habitats or species are anticipated.
Dorzecze Parsęty SAC	Coniferous, broad-leaved deciduous and mixed woodland with areas of grassland, scrub and agricultural habitats.	23 habitats and 3 significant species populations listed on Annex I & II of the Habitats Directive • Otter (Lutra lutra), • European fire-bellied toad (Bombina bombina) • Beetle (Osmoderma eremita).	The three turbines being located within the Dorzecze Parsęty SAC will not have an impact on the qualifying features of that protected site as no Annex I habitats will be built on and no changes to hydrological conditions that could affect the qualifying habitats or species are anticipated.
Zatoka Pomorska SPA	Coastal waters and inlets within the Baltic Sea.	3 significant populations of species listed on Annex I of the Birds Directive Supporting migratory and wintering assemblages over 20,000 birds. Qualifying species include black-throated loon (*Gavia arctica*), red-throated loon (*Gavia stellata*) and horned grebe (*Podiceps auritus*).	This site is designated for a significant number of wintering birds included three species listed in Annex I of the Habitats Directive. All three species breed in Scandinavia and migrate to the Baltic in the winter. Given the location of the nearest WTG to the protected area is 3 km inland, it is considered that collision risks are unlikely.
Warnie Bagno SAC	Predominantly coniferous, broad-leaved deciduous and mixed woodland.	8 habitats and one significant species populations listed on Annex I & II of the Habitats Directive; the large white-faced darter (*Leucorrhina pectoralis*) dragonfly.	This SAC is located approximately 3 km from the closest wind turbine and as such it is considered unlikely that the Project will have a negative impact on any of the Annex I supporting habitats identified. No impact is likely to the large white-faced darter dragonfly.
Wybrzeże Trzebiatowskie SPA	Grass, scrub and agricultural habitats with water bodies, coniferous, broadleaved deciduous and mixed woodland.	4 significant populations of breeding and three migratory species listed on Annex I of the Birds Directive: • Short-eared owl (*Asio flammeus*), • Montagu's harrier (*Circus pygargus*), • Corncrake (*Crex crex*) • Red kite (*Milvus milvus*). The migratory birds are greater white-fronted goose (*Anser albifrons*), bean goose (*Anser fabalis*) and black-headed gull (*Chroicocephalus ridibundus*).	The project is not anticipated to impact upon the breeding birds identified as the nearest wind turbine of the project is located over 11 km from the protected area. However, the two migrating species identified; the greater white fronted goose and bean goose pass through northern Poland between wintering and breeding grounds. During autumn migration the greater white-fronted goose and bean goose pass close to the Baltic coast and so is likely to occur within the project area at this time. Both species are considered vulnerable to collision with turbines and have the potential to pass through the project site and for there to be a potentially significant impact. Due to limitations in the bird survey data available additional monitoring will be undertaken during autumn 2012 and a second stage of assessment carried out to confirm the potential impact of the Project and the requirement for additional mitigation to reduce the impact on these migratory species to an acceptable level

This NTS will be updated following completion of the bird surveys and reassessment of the potential impacts and mitigation measures to include a summary of the results.

3.1.6 Will there be a cumulative impact with other nearby projects?

The Kukinia wind farm was assessed in combination with other wind farms within 10 km of the Kukinia site such as;

- Tymień wind farm - 25 turbines, 50 MW, ~6km to North East, in operation
- Karścino - 60 turbines, 90 MW, ~ 5.5 km to South West, in operation.
- Jarogniew-Mołtowo – 10 turbines, 20 MW, ~8 km to South West
- Stramniczka wind farm is planned (~2 km to west and north from Kukinia turbine clusters)

It was found that there would be no cumulative impact of these projects on Natura 2000 sites, which was also confirmed by the Commune Head of Dygowo and noted in the Environmental Permit. For other issues, such as noise, due to the distance between Kukinia and the other wind farms there is not considered to be a risk of cumulative noise impact. There will however be a cumulative impact on the landscape, with the concentration of wind farms being a prominent feature of the overall landscape in the area. The landscape is however not of a particularly sensitive nature, being largely flat, slightly undulating farmland. It is considered therefore that although the cumulative impact on landscape will be large it would not be significant due to the low sensitivity of the landscape environment.

3.2 Monitoring

Independent monitoring is being undertaken during autumn 2012 to further understand potential impacts that the wind turbines may have on different species of bird and bats which will be shared with the public and regulatory authorities.

In accordance with the requirements of the environmental decision, the Project will be implementing monitoring requirements including but not limited to:

- Monitoring of all protected species occurring in the area (especially birds listed in Annex I of the Bird Directive and /or considered as endangered species at national level) three times in the first five years following commissioning. The results of the monitoring will be analysed and interpreted as to the need for any additional mitigation or compensation measures;
- Monitoring of spring and autumn migration, using specialised equipment;
- Monitoring program concerning bats particularly during the period from May to September.
- During three of the first five years of operations an investigation will be undertaken to discover any dead animals (birds and bats) in the vicinity of the wind turbines, documenting animal deaths as a result of collisions. Such investigations should take place at least twice every month all year around and every 10 days during the migration season. Any discovered dead animals should be classified as to species and the date and location of the finding recorded.

Monitoring results will be provided to the Regional Director of Environmental Protection in Szczecin (Regionalny Dyrektor Ochrony Środowiska w Szczecinie) are planned to be provided for the public via information boards in the local Communes.

3.3 Stakeholder Engagement

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

will also be reviewed periodically during project implementation and updated as necessary. The SEP includes the following:

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

Stakeholders can be individuals and organisations that may be directly or indirectly affected by the project either in a positive or negative way, who wish to express their views. Should you wish to discuss the project further, contact details are provided in Section 1.1 of this NTS.

Appendices

Appendix A. Photomontages

Figure 3.1: In the direction of Kukince (turbine cluster 1)

Figure 3.2: Pyszka - view from the Karlino Kolobrzeg road (turbine cluster 4)

Figure 3.3: Kukinia - view from the road to the north, towards Stójków (turbine cluster 2)

Figure 3.4: Stojkowo - the view from the southern entrance to Kukinia village (part of turbine cluster 3)

Figure 3.5: View of the village Jazdze Wrzosowo from southern direction (part of turbine cluster 5)

Figure 3.6: Wrzosowo - view of the village from Karlino-Kolobrzeg road (part of turbine cluster 5)

Source: RP Global