Wind Farm Sulmierzyce
Environmental and Social Monitoring Report III (ESMR III)

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Ambiens Sp. z o.o.
www.ambiens.pl
04-915 Warszawa, Kędzierzyńska 9
81-341 Gdynia, Tadeusza Wendy 15

Approved:

Joanna Strykier

Reviewed:

Paulina Brzeska-Roszczyk, PhD

AUTHORS:

Bartosz Sobociński	Head of the Authors Team Documentation analysis
Bartłomiej Jerzak, PhD	Documentation analysis
Kinga Dobosz	Documentation analysis
Justyna Iwasiuk	Documentation analysis

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INVESTMENT:

Wind Farm Sulmierzyce
wielkopolskie province, Krotoszyn County
Sulmierzyce Municipality, Poland

EMPLOYER:

Contino Polska LLC
00-854 Warszawa
19 Al. Jana Pawła II
Poland

INVESTOR:

Contino Polska LLC
00-854 Warszawa
19 Al. Jana Pawła II
Poland

CONTRACTOR:

Ambiens LLC
04-915 Warszawa
9 Kędzierzyńska St.
Poland

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C-ESMP	Environmental and Social Management Plan for the construction phase
Contractor	A person or company that signs a contract to supply materials or workers to perform a service, e.g. maintenance work
dB	Decibel
Developer	OX2
E&S	Environmental and Social
ED	Environmental Decision
ESAP	Environmental and Social Action Plan
ESMR	Environmental and Social Monitoring Report
GPO	Główny Punkt Odbioru (eng. Electrical Substation)
GWh	Gigawatt hours
H&S	Health and Safety
HSE	Health, Safety and Environment
IOE	The independent and qualified bird expert
ION	Interim Operational Notification
km	Kilometer
MW	Megawatt
O-ESMP	Environmental and Social Management Plan for the operational phase
PCP	Project Communication Plan
PR	Performance Requirement
Project	WF Sulmierzyce
SEP	Stakeholder Engagement Plan
TCM	Technical and Commercial Management
WF Sulmierzyce	Wind Farm Sulmierzyce
WTG	Wind turbine generator

1. Introduction

Environmental and Social Monitoring Report III (ESMR III) for period January 2023 – December 2023 for Wind Farm (WF) Sulmierzyce is prepared to ensure compliance with the requirements of the Lenders, on environmental and social matters arising in relation the Project during reporting period. The aim of the report is to provide information: on the implementation of the Environmental and Social Action Plan (ESAP); on how the Project has monitored the compliance with the ESAP; on compliance by the Borrowers with Environmental and Social Laws in relation to the Project and its business and operations, on occupational Health and Safety (H&S) management of the Project. The report was based on Project's documentation analysis, and also on data and information obtained from OX2 Technical and Commercial Management (TCM) via a project questionnaire.

WF Sulmierzyce is situated in south-western part of Poland, in wielkopolskie voivodeship, Krotoszyński County, Sulmierzyce Municipality. Construction of the wind farm begun in August 2019 and ended in March 2023. The project has the Use Permits and the Interim Operational Notification (ION) issued. The Use Permit for the GPO substation was issued on 15 September 2022. The Use Permits for the wind turbine generators (WTGs) S2, S4, S5 were issued on 17 April 2023 and for WTGs S6, S7, S8, S10 on 4 May 2023. Taking over the turbines of the WF Sulmierzyce took place in June 2023. It consists of a total of 7 turbines (3.3 MW each, up to 23.1 MW in total; turbine type: Vestas 126; total height: 200 m). Estimated annual energy production is 67.6 GWh.

2. Environmental Decision Compliance

Based on the documentation provided as well as the information received from the Developer and Contractors, compliance of the activities carried out so far within the framework of project implementation with the Environmental Decision (ED) was verified and confirmed (Table 2.1).

Table 2.1 Compliance with Environmental Decision (number OŚ.6220.4.2012; dated 16 June 2015)

No.	Requirement	Timetable	Status	Comment
Required documents to develop and implement				
1.	Precise location of turbines specified in the ED.	Construction phase	Requirement fulfilled	The fulfillment reported in the ESMR I (dated 1 March 2022).
2.	Carry out construction and assembly work during the daytime (except when continuity of works is required for technological reasons) in such a way as to limit noise emissions.	Construction phase	Requirement fulfilled	The fulfillment reported in the ESMR I (dated 1 March 2022).
3.	Use equipment in good technical condition, as required by Polish law.	Construction phase	Requirement fulfilled	During the construction phase, H&S requirements were supervised by a staff of inspectors, i.e. from the Developer, the Contractors of all trades, and the contract engineer. The technical condition of the equipment was regularly checked by the H&S Inspector. Compliance with H&S regulations was documented regularly in weekly and monthly reports.

No.	Requirement	Timetable	Status	Comment
4.	Install safeguards for the soil and water environment which, in the event of an accident, will allow the entire volume of transformer oil used in the wind turbines to be absorbed.	Construction phase	Requirement fulfilled	According to information from the Developer, generated waste was stored properly throughout the construction phase.
5.	Noise monitoring to be undertaken within two months after operation phase. If noise levels exceed national requirements regarding noise, recommendations from the noise modeling reports will be applied. Submit the reports form noise monitoring to relevant environmental authorities.	Within 2 months after operational phase	Requirement fulfilled	Acoustic measurements were conducted for the WF Sulmierzyce on 11 May 2023. No exceedances of permissible noise levels were noted (see Chapter 5). The noise monitoring report was submitted to the relevant environmental authorities – to the environmental protection authority, to the Wielkopolskie Voivodeship Inspector for Environmental Protection and to the Regional Directorate for Environmental Protection in Poznań.

No.	Requirement	Timetable	Status	Comment
6.	During the operation of the project the acceptable noise level in relation to the nearest acoustically protected areas must be met.	Operational phase	No issues so far	Acoustic measurements conducted for the WF Sulmierzyce showed no exceedances of permissible noise levels (see Chapter 5).
7.	Periodic noise monitoring will be carried out in the nearest noise-protected areas. Submit the reports form noise monitoring to relevant environmental authorities.	During five years after the wind farm is fully operational, no less than twice a year, one measurement in the period from the beginning of December to the end of February, and one measurement from the beginning of March to the end of November	No issues so far	Acoustic measurements were conducted for the WF Sulmierzyce on 18 and 19 December 2023. No exceedances of permissible noise levels were noted (see Chapter 5). The next measurements are planned between March and November 2024. The noise monitoring report was submitted to the relevant environmental authorities – to the environmental protection authority, to the Wielkopolskie Voivodeship Inspector for Environmental Protection and to the Regional Directorate for Environmental Protection in Poznań.

No.	Requirement	Timetable	Status	Comment
8.	Do not use white light to illuminate turbines. Use a medium intensity light with the minimum power and number of flashes per minute required by Polish law.	Operational phase	Requirement fulfilled	The fulfillment reported in the ESMR II (dated 7 March 2023).
9.	During earthworks, secure the excavations and inspect them regularly for the presence of small mammals, amphibians, or reptiles. If found, relocate them to a distant safe place suitable for species.	Construction phase	Requirement fulfilled	Wildlife supervisions were carried out during the works. Analyses of the past nature supervision reports carried out during the construction phase were included in the ESMR I (dated 1 March 2022) and ESMR II (dated 7 March 2023).
10.	Provide a 3 – years – long ornithological and chiropterological monitoring in line with Polish guidelines.	Operational phase	No issues so far	Operational monitoring started on 5 January 2023 (for birds) and 16 January (for bats). Monitoring is in line with Polish guidelines. The annual report is already prepared (see Chapter 4).

3. Environmental and Social Action Plan Compliance

Based on the documentation provided, as well as the information received from the Developer and the Contractors, the compliance of most of the activities carried out so far in the project implementation with the ESAP has been verified and confirmed (Table 3.1). The only non-compliance to date is the lack of a shutdown on demand procedure, which will be prepared in the 1H 2024, and non-compliance with the timing of the preparation and implementation of the Environmental and Social Management Plan for operational phase (O-ESMP), which should have been made prior to the start of operations, while the O-ESMP is still under development, which started in November 2023.

Table 3.1 Environmental and Social Action Plan actions (number 21-0942) and their status

No.	Action	Timetable	Status	Comment
Required documents to develop and implement				
1.	Require the Construction Contractor to develop and implement documents which constitute Construction Environmental and Social Management Plan (C-ESMP). Plan BIOZ can be used as Construction Environmental Management Plan, together with the following supplements:	Prior to commencement of the construction works	Requirement fulfilled	The fulfillment reported in the ESMR I (dated 1 March 2022).

No.	Action	Timetable	Status	Comment
	• Management of labour including grievance mechanism for construction work, • Construction traffic management, • Emergency preparedness and response plan.			
2.	Include decommissioning plan as a part of the O-ESMP.	Prior to operation phase	Requirement fulfilled	Decommissioning Plan (dated 20 July 2022) was prepared by the Contractor and was included in the O-ESMP.
3.	Require the Operation Contractors to develop and implement documents which constitute O-ESMP.	Prior to operation phase	Non-compliance	O-ESMP is under development which began in November 2023, which is a non-compliance with the ESAP provision that the O-ESMP should be developed and implemented prior to operation.

No.	Action	Timetable	Status	Comment
				The Operation Contractors will be required to familiarise with the O-ESMP and to implement the actions and documents outlined in the O-ESMP.
4.	Report to Lenders annually and to environmental authorities on Project environmental and social performance and on implementation of environmental permits conditions and ESAP.	During construction and operation	No issues so far	Project environmental and social performance and implementation of environmental permits conditions and ESAP are addressed in this Report.
5.	Maintain a formal employee grievance mechanism in accordance with Performance Requirement (PR) 2 for all direct and nonemployee workforce and communicate it to all personnel.	Prior to main construction phase	Requirement fullfiled	The fulfillment reported in the ESMR II (dated 7 March 2023).

No.	Action	Timetable	Status	Comment
6.	The Company will ensure that Contractors have developed and implemented construction health and safety management plans in line with national legislation, PR4 and good international practices to manage the risks to all workers and project affected communities. This will include outlining such requirements in contracts for contractors and subcontractors	Prior to start of construction	Requirement fulfilled	The fulfillment reported in the ESMR I (dated 1 March 2022).
7.	Develop and implement traffic and transport management plans.	Prior to delivery of equipment and materials	Requirement fulfilled	The fulfillment reported in the ESMR I (dated 1 March 2022).

No.	Action	Timetable	Status	Comment
8.	Develop and implement a Stakeholder Engagement Plan (SEP)/ Project Communication Plan (PCP) covering the identification of key stakeholders, their concerns and interests in the project; targeted methods of engagement with these stakeholders throughout the project lifecycle; roles and responsibilities for implementing the plan; contractor oversight. A community grievance mechanism and monitoring & reporting arrangements to be in place.	Prior to start of construction/ongoing	No issues so far	Project Communication Plan was developed. It contains the complete list of stakeholder groups identified for the Project as well as the robust communication plan with activities specified for each group. It also includes community grievance mechanism. PCP is to be implemented throughout the Project lifecycle. During the handover of the land after the construction process, the landowners were informed by the Contractor that they can use the land. They were also notified on the completion of the construction work and obtaining of the Use Permits. The site managers also made the relevant post-construction statements about cleaning up the adjacent areas.

No.	Action	Timetable	Status	Comment
9.	Disclose annual Environmental and Social (E&S) performance reports with a summary of key E&S impacts and risks, how they were mitigated and key indicators of E&S performance (including incidents, grievance resolution etc.) in a format accessible to stakeholders.	Ongoing	No issues so far	E&S impacts and risks are addressed in this Report. WF Sulmierzyce project has a dedicated website, with the possibility to contact the developer on matters related to the project. Communication with stakeholders was carried out based on the standards and practices of participants in the construction phase. The ESMR III will be disclosed during 1H 2024 in a form accessible to stakeholders on Project's official website: https://www.ox2.com/projects/sulmierzyce
Other requirements				
10.	Undertake monthly supervision of the construction works through the construction stage by designated OX2 Environment, Health and Safety staff to confirm adherence to C-ESMP, conditions of the environmental permit ESAP and good construction practice.	Throughout construction stage	Requirement fulfilled	According to the Developer, H&S inspections were carried out throughout the construction phase.

No.	Action	Timetable	Status	Comment
11.	Implement ED conditions.	Ongoing	No issues so far	Environmental Decision conditions implementation has been analysed in the Chapter 2.
12.	Noise monitoring to be undertaken within two months after operation phase in the O-ESMP. If noise levels exceed national requirements regarding noise, recommendations from the noise reports will be applied. Submit the reports form noise monitoring to relevant environmental authorities.	Within 2 months after operational phase	Requirement fulfilled	Acoustic measurements were carried out for the WF Sulmierzyce on 11 May 2023. No exceedances of permissible noise levels were noted (see Chapter 5). The noise monitoring report was submitted to the relevant environmental authorities – to the environmental protection authority, to the Wielkopolskie Voivodeship Inspector for Environmental Protection and to the Regional Directorate for Environmental Protection in Poznań.

No.	Action	Timetable	Status	Comment
13.	Periodic noise monitoring will be carried out in the nearest noise-protected areas. Submit the reports form noise monitoring to relevant environmental authorities.	During five years after the wind farm is fully operational, no less than twice a year, one measurement in the period from the beginning of December to the end of February, and one measurement from the beginning of March to the end of November	No issues so far	Acoustic measurements were carried out for the WF Sulmierzyce on 18 and 19 December 2023. No exceedances of permissible noise levels were noted (see Chapter 5). The next measurements are planned between March and November 2024. The noise monitoring report was submitted to the relevant environmental authorities – to the environmental protection authority, to the Wielkopolskie Voivodeship Inspector for Environmental Protection and to the Regional Directorate for Environmental Protection in Poznań.

No.	Action	Timetable	Status	Comment
14.	Include safety consideration in design and procurements of turbines as required per national legislation. The use of wind turbines with high productivity and low noise emissions, as well as ensuring human safety. Marking the power plant in accordance with applicable regulations, preventing the possibility of a collision between aircraft and wind turbines.	Prior to start of construction	Requirement fulfilled	The fulfillment reported in the ESMR I (dated 1 March 2022).
15.	Community grievance mechanism in place.	Complaints investigated upon receipt	Requirement fulfilled	The fulfillment reported in the ESMR I (dated 1 March 2022).

No.	Action	Timetable	Status	Comment
16.	Implement awareness raising measures (including warning signs), in co-operation with the appropriate authorities, for local users of access tracks and agricultural fields regarding risks of blade and ice throw.	Prior to operation phase	Requirement fulfilled	Warning signs (warning against falling and thrown ice, among other things) were placed near each wind turbine (7 signs in total) (see Chapter 7.1). In the upcoming reporting period, the Project will review the correct placement of the signs and, if necessary, place new warning signs for land users / access paths. The issue will be addressed in the next ESMR.
17.	There should be an authorized surveyor on-site. Establish the function of the construction site manager in the appropriate specialization. The site manager is obliged to keep a construction log and place on the construction site, in a visible place, an information board and an advertisement containing data on work safety and health protection, and to properly secure the construction site.	Construction phase	Requirement fulfilled	The fulfillment reported in the ESMR I (dated 1 March 2022).

No.	Action	Timetable	Status	Comment
18.	Upon completion of construction and reinstatement of temporary areas conduct information sessions with adjacent regular land users to inform them of ability to re-use land (as applicable); safety restrictions in proximity to the turbines and the community grievance mechanism.	Before operation starts	Requirement fulfilled	According to the information given by the Project, during the handover of the land after the construction process, the landowners were informed by the Contractor that they can use the land. They were also notified on the completion of the construction work and obtaining of the Use Permits. The site managers also made the relevant post-construction statements about cleaning up the adjacent areas.
19.	Develop a biodiversity management plan (including shut down on demand etc.) as part of the O-ESMP.	Before operational phase	Requirement fulfilled	The Biodiversity Management Plan was developed and included in the O-ESMP.

No.	Action	Timetable	Status	Comment
20.	Implement design conditions stipulated in Environmental permit at design stage. Design the protection of soil and water in places where transformers are located in line with national requirements. After construction, the agricultural land should be restored. Do not backfill ponds and undrained basins of the land, it is prohibited to change the water conditions on the site. They should be restored to its state before construction.	Before construction	Requirement fulfilled	ED conditions implementation has been analysed in the Chapter 2.
21.	Establish direct ornithological supervision of the construction works.	Through construction phase	Requirement fulfilled	According to the documentation, direct ornithological supervision was provided throughout the construction phase.
22.	Develop shutdown on demand procedure prior to commissioning stage. Application of the shutdown on demand procedure will be made following the results of operational monitoring. Provide a summary in annual report to Lenders.	Prior to commissioning	Non-compliance	The procedure will be developed in the 1H 2024. The decision to implement the procedure (as well as information on when and for how long it will be implemented) will be taken after analysis of the results of the full operational monitoring.

No.	Action	Timetable	Status	Comment
23.	Undertake monitoring at the operational stage in line with the ED requirements.	Prior to operational phase	No issues so far	The Investor has appointed an independent / qualified bird expert (IOE) to carry out monitoring and prepare reports (Jakub Hankiewicz "Ecoinvent"). The submission of an avifauna and bats monitoring report is scheduled annually for 3 consecutive years. The field work methodology for the WF Sulmierzyce will be compliant with the Polish guidelines (see Chapter 4).
24.	Develop a Chance Finds Procedure as required by Lenders' policies, covering, at a minimum: the legal framework for cultural heritage; the process to follow in the event of chance finds; roles and responsibilities for implementing the procedure and an induction for all workers, including project staff, contractors and government agencies.	Before construction	Requirement fulfilled	The fulfillment reported in the ESMR I (dated 1 March 2022).
25.	Limit visual impacts of the windfarm by: • use one type of wind turbine,	Before construction	Requirement fulfilled	The fulfillment reported in the ESMR I (dated 1 March 2022).

No.	Action	Timetable	Status	Comment
	• use of a light color of turbines (e.g. white, gray), subject to meeting the requirements of aviation safety, • use of tubular mast structures, • selection of wind turbines consisting of three blades, • masts and turbines cannot become advertising media (only the logo/name is allowed on the nacelle housing), • do not use white light illumination of turbines, use light of medium intensity with the minimum power required by law and the number of flashes per minute.			

No.	Action	Timetable	Status	Comment
26.	SEP / PCP to define operational phase engagement and reporting with local stakeholders including adjacent communities and implement. This should include specific engagement required related to relevant disturbance impacts as noted under PR3 & 4. Review annually and update the SEP / PCP if necessary for the life of the Project. Provide information on local Corporate Social Responsibility programs as well as payments made to the local community in terms of tax etc.	Before construction	No issues so far	Project Communication Plan was developed. It contains the complete list of stakeholder groups identified for the Project as well as the robust communication plan with activities specified for each group. It also includes community grievance mechanism. PCP is to be implemented throughout the Project lifecycle. During the handover of the land after the construction process, the landowners were informed by the Contractor that they can use the land. They were also notified on the completion of the construction work and obtaining of the Use Permits. The site managers also made the relevant post-construction statements about cleaning up the adjacent areas.

No.	Action	Timetable	Status	Comment
27.	Communicate to the workforce a Human Resources policy and procedures which meet Lenders and national legislation requirements (contractors to have equivalent policies/procedures in place). This will include Covid management procedures under H&S. Ensure both the Company and contractors retain appropriate responsible persons for PR2 implementation.	Prior to main construction phase	Requirement fulfilled	The fulfillment reported in the ESMR I (dated 1 March 2022).

4. Supervision and Monitoring Reports Analysis

4.1 Birds

An IOE – Jakub Hankiewicz "Ecoinvent" appointed by the Investor, conducted annual monitoring between 5 January 2023 and 29 December 2023 and prepared a report with results of monitoring (dated January 2024). Methods applied during the field work were in accordance with the following Polish guidelines:

- Chylarecki P., Paslawska A. Guidelines for the impact of wind power plants on birds recommended by the Polish Wind Energy Association, the Polish Society for the Protection of Birds and the West Pomeranian Association for Practical Ecology (PWEA) 2008.
- Chylarecki P., Kajzer K., Wysocki D., Tryjanowski P., Wuczyński A. Guidelines for assessing the impact of wind power plants on birds submitted for consultation by the General Directorate for Environmental Protection, 2011.

Several types of field work were carried out in the area of the wind farm and in the 2 km buffer zone around it:

- observations from points (studies of the intensity of airspace use by birds) - their aim was to estimate the intensity of flights (local and long-distance) of birds in the airspace, with a particular focus on species with high collisions (birds of prey, other large birds) and to know the variability of these parameters over the annual cycle. Each time the field work (46 inspections) included an inspection,
- observations of birds in the plot (transect surveys) - their aim was to obtain basic information on the species composition of the avifauna using the plot and how birds use the area, the densities of individual species and the variability of these

parameters over the annual cycle. Transect inspections were performed twice each month,

- counts according to the methodology of the Monitoring of Common Nesting Birds - their aim was to find out the species composition of birds during the breeding season. Counts were performed twice during the breeding season (the first by mid-May, the second by mid-June),
- censuses of breeding rare and medium-sized species - its aim was to estimate the abundance and distribution of breeding rare species and species of large or medium body size. Censuses of rare species, crane, white stork, raptors, owls (night checks) were carried out during spring inspections,
- searching for fatalities of collisions with turbines - their aim is to estimate the magnitude of collisions of birds and bats with turbines, the species composition of the fatalities, to confront the results with the mortality forecasts resulting from the pre-implementation monitoring, and to determine the change in collision intensity on an annual basis. Each time the field work (46 inspections) included a search for collision fatalities under each of the 7 turbines.

During the analysed period, the bodies of two dead birds were found, victims of collisions with turbines (eurasian skylark *Alauda arvensis* and buzzard *Buteo buteo*). The dead birds were located under wind turbine generators (WTG) WTG S5 and WTG S1. The estimation of the actual mortality of the number of dying birds was carried out in two variants according by Chylarecki et al. (2011). In first variant, the actual bird mortality for the 7 turbines was estimated at 2.67 individuals, resulting in 0.38 fatalities/turbine/year. In second variant estimated actual bird mortality for the 7 turbines at 3.04 individuals, resulting in 0.43 fatalities/turbine/year. Based on the above calculations, it can be assumed that the annual actual bird mortality at the WF Sulmierzyce was in the range of 2.7-3.0 fatalities per entire farm, resulting in a mortality rate of **0.4 fatalities/turbine/year.**

Against the background of the reported magnitude of bird collisions at some wind farms and against the background of other causes of mortality for this group of animals, the demonstrated mortality for WF Sulmierzyce in 2023 was evaluated by IOE as very low.

WF Sulmierzyce may have an impact on the local population of buzzards, which, in addition to being exposed to collisions, may increase the flight distance from hunting grounds to nesting sites. Additionally, buzzards, as the most numerous raptors in Poland, are the most frequent victims of collisions in the group of birds of prey. The death of one individual per year may not necessarily but may signal a possible negative impact of the wind farm resulting in habitat fragmentation by partitioning of flight routes from nesting to feeding grounds with turbines. In addition, the death of a honey buzzard, a rare species in Poland, was observed. There are many indications that this individual died during the breeding dispersal period or autumn migration. The mortality of raptors should be monitored with great care (future years of monitoring) and adequate minimising measures should be taken in case of repeated collision incidents at the sites. Other species should not be subject to this effect, especially as the siting of the turbines and the location of the infrastructure does not disturb biotopes that are valuable from the point of view of avifauna.

Observations of key species: marsh harrier *Circus aeruginosus*, buzzard *Buteo buteo*, kestrel *Falco tinnunculus*, red kite *Milvus milvus*, white-tailed eagle *Haliaeetus albicilla*, honey buzzard *Pernis apivorus*, eurasian hobby *Falco subbuteo*, red-footed falcon *Falco vespertinus*, eurasian crane *Grus grus*, white stork *Ciconia ciconia*, black stork *Ciconia nigra*, geese and corvidae clearly show that birds using the airspace above the WF Sulmierzyce area do not exhibit avoidance behaviour towards wind turbines. The impact of WF Sulmierzyce date in terms of barrier effect and habitat loss and fragmentation should be considered low and not significantly affecting the bird populations present.

Based on the results of the annual ornithological post-completion monitoring in the first year of the farm's operation, it can be concluded that minimisation measures for the WF Sulmierzyce are not needed at this time. Depending on the results obtained in the following monitoring years, especially in the case of repeated collision incidents, adequate mitigation measures will be implemented.

4.2 Bats

An IOE appointed by the Investor has conducted annual monitoring and prepared a report (Jakub Hankiewicz "Ecoinvent"). Methodology of field work for WF Sulmierzyce was in accordance with Polish guidelines:

- Kepel A., Ciechanowski M., Furmankiewicz J., Gottfried T., Górawska M., Ignaczak M., Jaros R., Jaśkiewicz M., Kasprzak K., Kmicik P., Kowalski M., Popczyk B., Szkudlarek R., Urban R., Wojtaszyn G., and Wojtowicz B. Interim guidelines for the assessment of the impact of wind turbines on bats, version II, December 2009.
- Kepel A., Ciechanowski M., and Jaros R. Draft guidelines for the assessment of the impact of wind turbines on bats, 2013.

The monitoring was carried out between 16 January and 30 November 2023 (dated January 2024), by types of bat activity: search for wintering grounds (January), leaving wintering grounds (15 to 31 March), spring migration and formation of breeding colonies (1 April to 31 May), breeding, peak activity of local populations and search for a breeding site (1 June to 31 July), disintegration of breeding colonies, start of autumn migration and swarming (1 August to 15 September), autumn migration and swarming (16 September to 31 October) and last migration and start of hibernation (1 to 30 November).

During the period analysed, the bodies of 22 dead bats were found, all of which died because of pressure injury (barotrauma). Dead bats were located under WTG S1, WTG S3, WTG S5, WTG S6 and WTG S7. Estimation of the actual mortality of the number of bats that die was done in two variants according to the draft guidelines by Kepel et al. (2013), which use the formulas and calculations adopted in the assessment of bird mortality, according to the draft guidelines by Chylarecki et al. (2011), to assess the actual mortality of bats. In first variant actual bat mortality for the 7 turbines was estimated at 29.3 individuals, resulting in 4.2 fatalities/turbine/year. In second variant, actual bat mortality for 7 turbines was estimated at 32.5 individuals, resulting in 4.65 fatalities/turbine/year. Based on the above calculations, it can be assumed that the annual actual mortality of bats at the WF Sulmierzyce was in the range of 30-33 fatalities for the entire farm, resulting in a mortality rate of **4-5 fatalities/turbine/year**. Against the background of the reported magnitude of bat collisions at some wind farms and against the background of other causes of mortality of this group of animals, the demonstrated mortality for the WF Sulmierzyce in 2023 was among the average. However, the mortality of bats as a result of collisions was not uniform, higher mortality (at the level of 5-7 fatalities) was found near WTG S6 and WTG S7, only slightly lower (4 fatalities each) near WTG S3 and WTG S5, in other cases it was negligible (0-2 fatalities), under WTG S2 and WTG S4 fatalities were not found.

Bats use the farm area with low intensity during the period of forming breeding colonies (not found at all during the spring migration period), but periodically high activity indices and higher numbers of prey were found at four sites (WTG S3, WTG S5, WTG S6 and WTG S7), mainly during the July-August period. At the sites mentioned, the movement of bats to and use of foraging grounds during the summer may be at risk of higher mortality. The location of the WF Sulmierzyce does not affect the migration routes of bats. Very low bat activity (none was recorded in spring). At this stage of monitoring, the impact of the wind farm on the occurrence and migration routes of bats should be considered low/moderate. In light of the results presented (comparison of bat activity under the WTG and outside the farm area and mortality), in the case of WF Sulmierzyce in the year 2023 the barrier effect, although locally may be significant, can generally be considered as minor and locally moderate.

Due to the identified elevated bat mortality between late July and late August (4-7 fatalities under the three WTGs), in accordance with the IOE conclusions, measures to minimise bat mortality during this period and possible compensation may be necessary. According to the provisions of the draft "Guidelines for assessing the impact of wind turbines on bats" by A. Kepel, M. Ciechanowski, R. Jaros (2013 version): *if the number of dead or injured bats found for the turbine under study exceeds the value of 1 individual/turbine in a given phenological period, periodic shutdowns of turbines under which killed individuals were found should be introduced for the whole of this phenological period (from dusk to dawn), with wind speeds below 6 m/s. If the estimated mortality exceeds 10 individuals, shutdowns should be applied, with wind speeds below 8 m/s. Exclusions need not be applied during heavy rainfall. The period of shutdowns can be adjusted to the actual time of increased bat activity in the vicinity of the turbine or the entire farm, based on the results of post-implementation detector surveys. After applying the shutdowns, it is necessary, using the same method, to check their effectiveness in the next season and, if necessary, adjust the applied measures - for example, changing the dates of the shutdowns.* Under the circumstances, taking measures to periodically shut down the turbines should be considered if repeated high bat mortality under the same turbines is found in successive years of bat mortality and activity monitoring. Elevated bat mortality or activity under specific turbines can result from both local and periodic conditions. Important in this context is the variability of crop types, which can affect the occurrence of an adequate food base for bats in specific locations and periods, as well as changing weather conditions. In subsequent years, these conditions may change, entailing

changes in the use of space by bats. According to information obtained from Developer the shutdown procedure will be developed in the 1H 2024. The decision to implement the procedure (as well as information on when and for how long it will be implemented) will be taken after analysis of the results of the full operational monitoring.

In addition, according to the IOE suggestion, a possible compensatory measure is the installation of such artificial shelters in forests and forested areas located at an appropriate distance (minimum 4-5 km) from the wind farm. Such activities may reduce the activity of bats on the wind farm itself, since their feeding grounds are usually located in the immediate vicinity of the summer roosts. The Project decided to implement compensatory measures in the form of artificial shelters. The shelters will be built in 2024.

5. Summary of Noise Analysis

An independent and qualified accredited acoustic-environmental laboratory EKO-POMIAR appointed by the Investor conducted acoustic measurements. Acoustic measurements were carried out for the WF Sulmierzyce on 11 May 2023. The measurements took place before 2 months from the start of operation of the wind farm (April 2023), so the ED requirement was fulfilled. The results were presented and analysed in a report dated 21 September 2023. A summary of the results is presented below (Table 5.1, Table 5.2).

No exceedances of permissible noise levels were recorded at the 8 measurement points. The standards for permissible noise levels set by Polish law have been met.

Table 5.1 Noise measurement results for the time of day in May 2023

No.	Measurement point	Equivalent sound level A [dB]	Permissible value [dB]*	Exceedance [dB]
1.	P1	38.1	55	No exceedance
2.	P2	40.8	55	No exceedance

No.	Measurement point	Equivalent sound level A [dB]	Permissible value [dB]*	Exceedance [dB]
3.	P3	40.4	55	No exceedance
4.	P4	34.5	55	No exceedance
5.	P5	37.0	55	No exceedance
6.	P6	38.9	50	No exceedance
7.	P7	37.9	55	No exceedance
8.	P8	39.1	55	No exceedance

*the permissible levels of noise in the environment, specified in the detailed regulations in Decree of the Ministry of the Environment dated 14.06.2007 on permissible levels of noise in the environment, Journal of Laws 2014 item 112

Table 5.2 Noise measurement results for the time of night in May 2023

No.	Measurement point	Equivalent sound level A [dB]	Permissible value [dB]*	Exceedance [dB]
1.	P1	36.0	45	No exceedance
2.	P2	40.3	45	No exceedance
3.	P3	40.9	45	No exceedance
4.	P4	35.1	45	No exceedance
5.	P5	37.2	45	No exceedance
6.	P6	37.8	40	No exceedance
7.	P7	37.8	45	No exceedance

No.	Measurement point	Equivalent sound level A [dB]	Permissible value [dB]*	Exceedance [dB]
8.	P8	41.4	45	No exceedance

*the permissible levels of noise in the environment, specified in the detailed regulations in Decree of the Ministry of the Environment dated 14.06.2007 on permissible levels of noise in the environment, Journal of Laws 2014 item 112

An independent and qualified accredited acoustic-environmental laboratory dB-Projekt appointed by the Investor conducted the first acoustic measurements as part of the periodic noise monitoring. Acoustic measurements were carried out for the WF Sulmierzyce on 18 and 19 December 2023. The measurements took place between the beginning of December and the end of February, so the ED requirement was fulfilled. The results were presented and analysed in a report dated 29 December 2023. A summary of the results is presented below (Table 5.3, Table 5.4). The next measurements are planned between the beginning of March 2024 and the end of November 2024.

No exceedances of permissible noise levels were recorded at the 8 measurement points. The standards for permissible noise levels set by Polish law have been met.

Table 5.3 Noise measurement results for the time of day in December 2023

No.	Measurement point	Equivalent sound level A [dB]	Permissible value [dB]*	Exceedance [dB]
1.	P1	39.5	55	No exceedance
2.	P2	39.8	55	No exceedance
3.	P3	38.3	55	No exceedance
4.	P4	38.3	55	No exceedance
5.	P5	37.3	55	No exceedance
6.	P6	37.5	50	No exceedance

No.	Measurement point	Equivalent sound level A [dB]	Permissible value [dB]*	Exceedance [dB]
7.	P7	38.3	55	No exceedance
8.	P8	41.5	55	No exceedance

*the permissible levels of noise in the environment, specified in the detailed regulations in Decree of the Ministry of the Environment dated 14.06.2007 on permissible levels of noise in the environment, Journal of Laws 2014 item 112

Table 5.4 Noise measurement results for the time of night in December 2023

No.	Measurement point	Equivalent sound level A [dB]	Permissible value [dB]*	Exceedance [dB]
1.	P1	36.9	45	No exceedance
2.	P2	39.9	45	No exceedance
3.	P3	37.5	45	No exceedance
4.	P4	37.8	45	No exceedance
5.	P5	33.9	45	No exceedance
6.	P6	37.6	40	No exceedance
7.	P7	36.4	45	No exceedance
8.	P8	41.2	45	No exceedance

*the permissible levels of noise in the environment, specified in the detailed regulations in Decree of the Ministry of the Environment dated 14.06.2007 on permissible levels of noise in the environment, Journal of Laws 2014 item 112

6. Spatial Development Plan Analysis

According to the Developer, the Project is consistent with the principles of protection and shaping of spatial order, the principles of protection of the cultural landscape and the natural environment, as well as with the specific arrangements for the areas designated as "technical infrastructure areas – wind power generation" established by the resolution no. XXXII/201/2014 of April 25th, 2014, on establishing a local spatial development plan for Sulmierzyce city (Official Journal of Wielkopolskie Voivodeship of June 12th, 2014, item 3555).

Based on the location layout (dated 26 November 2020), the location of the turbines is within a valid local spatial development plan. No risks associated with the project location have been identified. The plan imposes mandatory restoration of the site to its original state after construction works have been completed. The works leading to the restoration of the agricultural land have already been caried out.

7. Health and Safety Analysis

According to the documentation provided, no Health, Safety and Environment (HSE) events (such as severe incidents, accidents, or severe accidents) occurred during the reporting period. In terms of HSE, the Contractors responsible for maintenance work acted in accordance with internal guidelines and manuals for organizing safe work. The Contractors have provided, in compliance with the requirements of Polish H&S regulations, introductory training for persons involved in service and maintenance work, internal training and obtaining the necessary qualifications. They have also provided periodic H&S training for those involved in maintenance work, which, in accordance with Polish H&S legislation, should take place at least every 12 months.

According to the Developer, all Contractors and Subcontractors acted in line with the signed contracts. There were no breaches of contracts during the reporting period. Contractors have carried out annual and every 3 months routine maintenance and any non-routine maintenance

which has been outlined in the Monthly Operational Reports prepared by OX2 TCM for information and internal viewing. All measures performed were audited through inspections of site and site facilities, which were carried out by OX2 TCM Managers twice during the reporting period, in accordance with the contract. During these audits, a visual inspection of trees, roads, signs, visible infrastructure, among others, was carried out. In conjunction with the site inspection, a technical inspection of the wind turbines was conducted. These audits included the inspection of 33% of wind turbines and covered checking the expiry or renewal date of fire extinguishers and safety kits.

7.1 Community Health and Safety

In accordance with the ESAP, awareness-raising measures were implemented for local users of access roads and agricultural fields regarding the risks associated with throwing blades and ice. The Project has placed warning signs (measuring 700 millimetres x 900 millimetres) at each of the wind turbines – 7 signs in total (Photo 7.1, Photo 7.2, Photo 7.3). In the upcoming reporting period, the Project will review the correct placement of the signs and, if necessary, place new warning signs for land users / access paths. The issue will be addressed in the next ESMR.

No Community H&S incidents were notified during the reporting period.

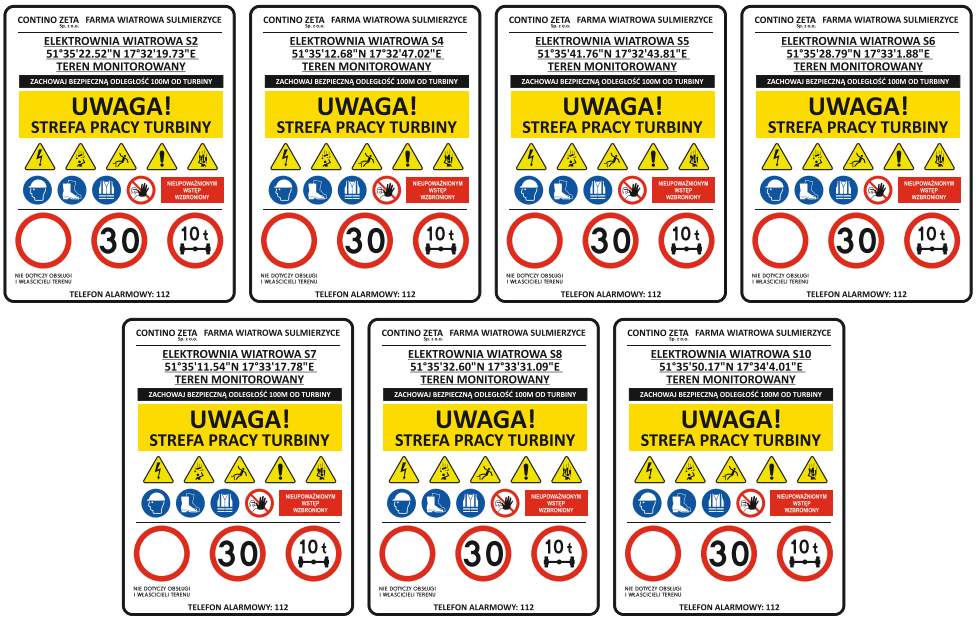

Photo 7.1 Template of warning signs

Photo 7.2 Warning sign placed in the vicinity of WTG S8

Photo 7.3 Warning sign placed in the vicinity of WTG S10

8. Conclusion

During the operation of the WF Sulmierzyce in the reporting period from January to Decemeber 2023, it was found that:

- compliance of the activities carried out during the reporting period as part of the Project implementation with the ED was verified and confirmed, as the acoustic measurements were conducted within two months after operation phase, there were no exceedances of the permissible noise levels, noise monitoring and operational monitoring of birds and bats have commenced and are being carried out in accordance with Polish guidelines,
- the Project was operating in compliance with most of the actions required in ESAP, as a Decommissioning Plan and a Biodiversity Management Plan were prepared and included in the O-ESMP, which is under development, acoustic measurements, noise monitoring and operational monitoring of birds and bats were conducted, community grievance mechanism is in place, and awareness raising measures in the form of warning signs were implemented,
- a lack of compliance was identified for the timeline for the preparation of the O-ESMP, which according to the ESAP should be prepared and implemented before operation commences, whereas it is still under development which began in November 2023,
- a gap was identified, as the shutdown on demand procedure has not yet been prepared, whereas, according to the ESAP, it should have been developed prior to commissioning phase and the application of the procedure should be made following the results of operational monitoring,
- the gap will be addressed by the Project, as the shutdown on demand procedure will be developed in the 1H 2024, and it will be implemented if needed, after a full operational monitoring that will give a more complete picture of birds and bats activity and mortality in the area of WF Sulmierzyce,

- the Project decided to implement compensatory measures for bats in the form of artificial shelters, which will be built in 2024 in forests and forested areas located at the appropriate distance (minimum 4-5 km) from the wind farm.