REGIONAL DIRECTOR
FOR ENVIRONMENTAL
PROTECTION
IN GDAŃSK

Gdańsk, on 16 September 2022

RDOŚ-Gd-WOO.420.50.2021.KSZ.AM.10.

DECISION

On the basis of:

- Article 75 para. 1 item 1 point c) in connection with z Article 71 para. 2 item 1, Article 82 para. 1 item 2 point b), c) and Article 82 para. 1 item 4 *of the Act of 3 October 2008 on the disclosure of information on the environment, on public participation in environmental protection and on environmental impact assessments (the consolidated text in Dz. U. [Journal of Laws] of 2022, item 1029, as amended),* hereinafter the EIA Act,
- Article 76 para. 1 item 1 of the Act of 17/12/2020 *on the promotion and generation of electricity in offshore wind farms (Dz. U. [Journal of Laws] of 2022, item 1050),*
- § 2 para.1 item 5 of the Regulation of the Council of Ministers of 10 September 2019 *on projects which may significantly affect the environment (Dz. U. [Journal of Laws] of 2019, No. 1839, as amended),*
- Article 104 of the *Civil Procedure Code Act of 14 June 1960 (the consolidated text in Dz. U. [Journal of Laws] of 2021 Code, item 735, as amended),* hereinafter the CPC,

having considered the application from the Investor: C-Wind Polska Sp. z o.o. in Warsaw, represented by Mr Kacper Kostrzewa, no reference number, dated 06/10/2021, with the amendment filed on: 22/10/2021, regarding the issue of the environmental decision for the project titled the:

"BC-Wind Offshore Wind Farm",

acting on the basis of:

1) environmental impact assessment report (contractor: MEWO S.A. (the Leader) under the supervision of Radosław Opioła, October 2021) (hereinafter: the EIA Report);
2) approval by the Director of the Maritime Office in Gdynia, reference INZ.8103.135.2021.AD, dated 01/12/2021;
3) opinion from the State Border Sanitary Inspector in Gdynia, reference SE.ZNS.80.4912.11.21, dated 26/11/2021;
4) the results of the proceedings with public participation;

following the environmental impact assessment,

I decide as follows:

I. That the following environmental conditions be determined for the project titled the "BC-Wind Offshore Wind Farm":

1. Project type and site.

The object of the project is the BC-Wind Offshore Wind Farm (hereinafter: The BC-Wind OWF) of the total maximum capacity of 500 MW located in the sea territories of the Republic of Poland, at the development area of 86.28 km^2, approximately 22.6 km north of the seashore, the same latitude as the Choczewo and Krokowa communes (the Pomerania Region). The planned project comprises the construction, operation and decommissioning of the BC-Wind OWF. The farm will consist of a maximum of 41 wind turbines, 188 km cable pathways and a maximum of 6 other facilities.

<u>Geodetic coordinates of the BC-Wind OWF Development Area</u>

Point No.	**GRS80H geodetic coordinate system [DD°MM'SS.SSS"]**	
	ʎ	φ
1	17º50'29.701" E	55°05'41.945" N
2	17°51'12.921" E	55°05'45.974" N
3	17°54'07.585" E	55°06'01.656" N
4	17°56'01.352" E	55°06'11.346" N
5	17°58'58.043" E	55°06'15.594" N
6	18°01'03.574" E	55°06'18.656" N
7	18°01'52.922" E	55°06'20.769" N
8	18°01'53.282" E	55°06'20.785" N
9	18°03'17.508" E	55°06'24.392" N
10	18°03'30.060" E	55°06'19.193" N
11	18°03'55.078" E	55°06'08.831" N
12	18°04'25.851" E	55°05'54.849" N
13	18°07'58.862" E	55°04'18.065" N
14	18°08'40.068" E	55°03'59.343" N
15	18°08'44.911" E	55°03'50.593" N
16	18°08'45.125" E	55°03'50.205" N
17	18°08'50.792" E	55°02'43.042" N

18	18°08'50.365” E	55°02'40.918” N
19	18°03'56.238” E	55°02'15.151” N
20	18°01’53.405” E	55°02'10.619” N
21	18°01'53.045” E	55°02'10.619” N
22	18°00'00.360” E	55°02'06.000” N
23	18°00'00.360” E	55°03'38.548” N
24	18°00'00.359” E	55°04'18.343” N
25	17°56'28.930” E	55°04'28.352” N
26	17°51'30.273” E	55°04'42.490” N
27	17°49'49.441” E	55°04'47.263” N

The BC-Wind OWF will comprise:

1) wind turbines (nacelles with rotors, towers as well as foundations or supporting structures anchored in or supported on the sea bottom);
2) offshore substations;
3) internal power transmission and ICT lines.

Schedule of the most important parameters of the BC-Wind OWF for the Applicant’s scenario

Parameter	**Unit**	**Value**
Total installed capacity (maximum)	MW	500
Number of wind turbines (maximum)	-	41
Rotor diameter (maximum)	m	280
Clearance (minimum)	m	20
Structure height with rotor (maximum)	m	330
Number of additional structures (maximum)	-	6
Gravity based structure (GBS) diameter (maximum)	m	60
Bottom area occupied by a single gravity based structure (GBS) (maximum)	m^2	2826
Internal cable pathway length (maximum)	km	188

The detailed project characteristics are included in the appendix to this decision.

Conditions for the use of land at the project implementation and use/operation phase with special consideration for the need to protect precious natural values, natural resources and historic objects, and restrictions regarding the nuisance to adjacent areas:

Implementation and operation stage

2.1. On the installed foundations, wind turbines shall be mounted one by one, starting from one place, to cover the project water region gradually thus extending the BC-Wind OWF area with adjacent turbines.

2.2. The project shall be implemented in such a way as to exclude the possible penetration of any pollutants to the aqueous environment. For that purpose:

a) in the case of marine environmental pollution with solid and liquid wastes, they shall be removed from the water surface immediately and on an ongoing basis;

b) in the case of oil-based product spill during the works, contaminants shall be recovered from the water surface on an ongoing basis, first with mechanical recovery methods.

c) machinery and equipment used at the project shall be checked and maintained regularly.

2.3. The piling process from August to March shall be conducted under ornithological supervision. Works preceded by a soft start procedure may commence if no common murres, razorbills, long-tailed ducks and velvet scoters are spotted within the 2 km radius of the piling site.

2.4. Power cables shall be laid at the depth of up to 3 m below the sea bottom. The minimum burying depth shall be determined on the basis of the sea bottom characteristics, the type of sediments (their thermal conductivity) and the power grid type (the magnitude and type of loads, and thermal performance). If it is technically not possible to bury a cable, it shall be laid on the bottom surface. Cables on the bottom surface shall be protected with durable artificial structures.

2.5. The as-built cabling documentation shall be prepared, in which presented will be the cable burying or laying depth in relation to the sea bottom surface, the description of the criteria which have been applied, the assessment of compliance therewith, as well as the description of construction products or other materials and, moreover, the substantiation of the selection of the target cable laying method in or on the sea bottom. The documentation shall be submitted to the Regional Director for Environmental Protection in Gdańsk within 3 months from the completion of cabling works.

2.6. Archaeological supervision shall be provided during the works. If an object is encountered, not identified yet, which may be considered to be historic, action shall be taken in conformity with the Monument Protection and Custody Act of 23 July 2002 (Dz. U. [*Journal of Laws*] of 2021, item 710, as amended), hereinafter referred to as the "Monument Protection Act", including the following activities:

a) all the works which may damage or destroy the uncovered item shall be suspended;

b) as far as possible, the item and the place of the discovery shall be protected with available means;

c) the competent Director of the Maritime Office in Gdynia shall be notified of the finding situated in Polish sea territories.

2.7. Construction materials, substances and preparations used at the project implementation stage, from whose material safety data sheets it follows that they may pose a hazard to waters or the soil, shall be stored in the on-shore site facilities, on the surfaced and sealed subgrade, in places protected from weather conditions and secured against unauthorised access. These places shall be equipped with the means of recovery or equipment enabling the collection of those materials, substances and preparations or their neutralisation if they release from containers accidentally. The types and quantities of the means or equipment shall be suitable for the type and volumes of the materials, substances and preparations in store.

2.8. Oils, greases and other materials which may be the source of oil-based products shall be stored at the site facilities on a surfaced and sealed subgrade, in closed and leak-tight containers resistant to the activity of the substances kept in those containers, in places protected from weather conditions and secured against unauthorised access. These places shall be equipped with technical and chemical measures designed to limit the dispersion and eliminate or neutralise oil-based pollutants; in the event of a leak of oil-based products, they shall be removed or neutralised immediately.

2.9. The components of the BC-Wind OWF shall be equipped with elements minimising the risk of oil penetration into the marine environment including, for example, leak-tight wind turbine generator casings and oil spill trays.

2.10. At the construction and operation stages, the project site and the OWF (including vessels and substations) shall be equipped with technical and chemical measures (including floating anti-pollution booms and sorbents) intended to limit the spread of, eliminate or neutralise oil-based pollutants; in the event of a leak of oil-based products, they shall be removed or neutralised immediately.

2.11. At the construction and operation stages, ships with hulls covered with antifouling paint containing tributyltin (TBT) shall be excluded.

2.12. At the operation stage, the emission of light from the accommodation and service platforms shall be limited through the use of covers or appropriate lighting;

2.13. Following the completion of construction works on the BC-Wind OWF or on associated infrastructure, the remains of the construction works and impurities, if any, shall be removed from the sea bottom.

2.14. Information on the development of the BC-Wind OWF area shall be updated on a regular basis.

2.15. Emergency escape and safety plans as well as risk and structural collapse disaster prevention strategies shall be prepared.

Decommissioning stage:

2.16. Upon the completion of BC-Wind OWF operation, all its components shall be removed. It is allowed to leave parts of the facilities supported in/at the bottom in place if they provide the habitat of valuable communities of sea organisms or, upon previous arrangements with the competent environmental protection and maritime economy bodies, on the assumption that these parts of facilities will not be an obstacle to navigation.

2.17. The successive wind turbines shall be removed from the foundations starting from one place, that is in such a way that the water region occupied by the OWF is released of the structures gradually.

2.18. To limit underwater noise impact, the structures shall be decommissioned without blasting.

2.19. The project site and the OWF (including vessels and substations) shall be equipped with technical and chemical measures (including floating anti-pollution booms and sorbents) intended to limit the spread of, eliminate or neutralise oil-based pollutants; in the event of a leak of oil-based products, they shall be removed or neutralised immediately.

3. Environmental requirements to be taken into consideration in the construction permit design:

3.1. Solid wind turbine towers shall be used.

3.2. Between the BC-Wind OWF area and that of the nearest adjacent offshore wind farm planned in the west, a free bird migration corridor (an undeveloped area) shall be left in place, the minimum corridor width being 4 km and the axis being a straight line.

3.3. If it is not possible to use dry type transformers, offshore substations shall be equipped with a system of oil pans with the approximate capacity of 110 % of the oil volume in the transformers, i.e. such that will be able to receive the total oil leak from the transformers.

3.4. The BC-Wind OWF shall be equipped with a system enabling a short-term stop of selected wind turbines in bird migration periods if the operation monitoring results indicate that intensive crane migration takes place at the collision height above the wind turbine area. The system shall be used as and when required.

3.5. To minimise the collision risk during a bird migration, the BC-Wind OWF lighting shall be designed in a minimal way, however, with the regulations and safety rules taken into consideration.

3.6. Engineering solutions minimising the impact of underwater noise on fish and marine mammals shall be used, in particular:

a) the soft start piling procedure shall be used;

b) the construction works shall be executed on the individual wind turbine foundation stages gradually, i.e. wind turbine foundations shall be installed adjacent to each other by starting from one place to fill the water region with structures incrementally thus causing the scarring effect to increase and fish and mammals to be gradually driven out of the project area.

3.7. the schedule of the works on the BC-Wind OWF shall be adapted to the implementation schedule for other nearby projects to prevent the build-up of adverse environmental impacts. To reduce the noise from the piling process, the works shall proceed at maximum two locations at a time. This concerns both the construction of the BC-Wind OWF, and the adjacent offshore wind farms. Piling at the BC-Wind OWF shall proceed in such a way that, before the commencement of foundation pile driving into the sea bottom, piling at the other planned wind farms in the immediate vicinity shall be taken into consideration so that the number of simultaneous piling operations is not greater than two.

3.8. During the implementation of the project, the Noise Reduction System (NRS) shall be used, which is to be implemented by using engineering solutions effective in this regard. As a result, noise shall be reduced to a level not exceeding, at a distance of 11 km from the piling site, the following maximum levels:

- 140 dB re 1 $\mu Pa^2 s$ SEL_{cum} and weighted with the HF function (the HF weighting function for marine mammals highly sensitive to high frequency sounds – the porpoise);
- 170 dB re 1 $\mu Pa^2 s$ SEL_{cum} and weighted with the PW function (the PW weighting function for web-footed marine mammals – seals);
- 186 dB re 1 $\mu Pa^2 s$ SEL_{cum} not weighted for fish.

II. That the following obligations be imposed on the Applicant:

1. With regard to actions minimising and mitigating the adverse environmental impact in connection with the need to reduce piling noise and the influence on birds, fish and marine mammals:

a) Starting the work each time proceeded by the soft start procedure to allow animals such as fish, birds and marine mammals to leave and move away from the work area.

b) Conducting visual observations by skilled marine mammal observers (MMO) from the board of a ship in compliance with the methodology specified by the JNCC, combined with Passive Acoustic Monitoring (PAM) based on the application of a set of hydrophones (PAM detectors) located in the water depths.

2. Applicant's obligations concerning the monitoring of the project environmental impact:

2.1. Scope of pre-development monitoring (before the commencement of the construction works)

1. Pre-development monitoring of the OWF with regard to marine bird surveys shall include counting of birds staying in the OWF and the reference area.
   a) The route of the survey voyage shall be set out so as to cover a 5-kilometre zone around the OWF boundaries and in such a way that the changes in the density of bird population staying at different distances from the future wind turbines may be assessed.
   b) These surveys must cover, first of all, the period of the most abundant occurrence of birds in the southern Baltic, i.e. from October to May, with the minimum frequency of one voyage per month. In other months, the numerical force of the bird population in the BC-Wind OWF Area is small, therefore in the summer season it is sufficient to make two survey voyages i.e. one in August and one in September.
   c) The dates of the survey voyages shall be synchronised so that counting at both of these water regions will be done at the same time. These surveys shall continue for one year before the commencement of the construction works on the OWF.
2. Porpoise monitoring – this shall be conducted with the use of C-POD or similar equipment:
   a) A minimum of 5 devices shall be placed at the same locations as those during the environmental monitoring, and 5 additional devices shall be located in the gradient configuration covering the area not smaller than 20 km beyond the impact zone (with regard to the range of behavioural reactions related to piling).
   b) Surveys shall start not later than 6 months before the planned construction works.

2.2. Scope of monitoring at the construction stage:

2.2.1. Underwater noise monitoring:

a) The location of the noise measuring station shall be determined in a way enabling the assessment of underwater noise at the boundary of the Natura 2000 Ostoja Słowińska [*Słowińska Sanctuary*] PLH220023 site for the works executed at the BC-Wind OWF area.

b) Noise measurements shall be conducted with the use of calibrated hydrophones within the frequency range from 10 Hz to 20 kHz, with monitoring at two different depths (given 33 % and 66 % of the water depth, but always >2 m below the sea surface) with the determination of the SEL for each pile hammer blow (if the pile hammer is used).

c) Monitoring shall continue throughout the OWF construction period.

d) Underwater noise monitoring results in the form of periodic reports shall be forwarded to the Regional Director for Environmental Protection. If the noise exposure levels are exceeded, preventive or mitigating actions shall be suggested with the ways of their implementation and control of the results.

At the point of presentation of the monitoring results mentioned above, they shall be compared with previous monitoring for this project and with other relevant survey results. Monitoring results shall also be submitted to the Regional Director for Environmental Protection in Gdańsk within 3 months from the completion of the given survey cycle.

2.2.2. Porpoise monitoring by means of the C-POD devices shall continue throughout the construction phase in accordance with the pre-development methodology (before the commencement of the construction works), with the devices located at the same stations.

2.3. Scope of post-development monitoring

1. Ichthyofauna monitoring shall continue both during the OWF operation and after its decommissioning. Surveys shall be conducted in the spring and summer seasons, one and five years after the end of the construction works as well as one year after the decommissioning phase.
    a) As part of monitoring, a set of survey tools shall be used in the form of multi-panel bottom nets and, in the case of early development stages, the Bongo ichthyoplankton net.
    b) Survey stations shall be set out at both the OWF Area and at a distance from it, at the water region not designated for marine power engineering and distinguished by similar marine environment parameters (depth, distance from the shore and the like).
    c) Surveys shall be undertaken to check if the artificial reef effect will only be limited to attracting fish from the nearby water region to the reef area or rather the actual productivity increase will be noted.
    d) In the case of OWF decommissioning, the range of the changes which will occur after the destruction of the artificial reef, which is potentially the dwelling, feeding and reproduction site for many fish species, shall be assessed.
2. Migrant bird monitoring comprising both passage radar observations and the counting of birds staying in the OWF area, conducted during the day.
    a) Radar surveys shall be targeted on the flight trajectory of birds flying towards the OWF and their reaction to the barrier created by the farm. The survey objective will also be the determination of migration intensity at the OWF Area and in its immediate vicinity in order to allow the comparative analysis with other relevant survey results, as well as provide new data for the analysis of the barrier effect and the frequency of avoidance behaviour (birds turning back).
    b) Radar surveys shall be conducted in the migration period from March to May and from the end of July to mid-November.
    c) Monitoring to consist of simultaneous visual, radar and acoustic observations (at night, with a view to species identification) enabling the identification of not only the flight direction and bird reaction, but also of the species.
    d) Survey stations shall be located at a fixed platform (e.g. the OWF substation) or on board an anchored vessel so that the survey station enables the observation of the OWF from a direction from which birds come flying (at the south-western end of the OWF in spring and at the north-eastern end in autumn).

e) In each migration season, a minimum of 20 days and nights of observations at 2-5 day sessions shall be conducted at equal intervals during the season.

f) During the year, monitoring shall be conducted in two cycles following from bird migration periods i.e. from March to May and from July to November, in 4 monitoring blocks:

- 2 survey cycles in migration periods, in the fourth year after the commencement of operation (as the construction works may continue for more than 4 years from the start of operation and due to the need to verify the assumptions to the assessment);
- 2 survey cycles in migration periods, in the first year after the completion of the construction works.

g) Migrant bird mortality monitoring:

- this shall continue for 5 years from the completion of the construction of the entire OWF, during seasonal spring migrations (from the beginning of March to the end of May) and during autumn migrations (from mid-July to the end of November).
- bird mortality shall be monitored with the use of the automatic collision/casualty registration system for bird collisions with offshore wind turbine generators or by means of another acceptable method with the option to perform measurements both during the night and the day.

3. Marine bird monitoring shall comprise the counting of birds staying within the OWF and the reference areas, as performed during the day. The survey voyage route shall be the same or very similar to the one in the pre-development monitoring (before the commencement of the construction works).

    a) Surveys must cover, first of all, the period of the most abundant occurrence of birds in the southern Baltic, i.e. from October to May, with the minimum frequency of one voyage per month (optimally, two voyages per month). In other months, the numerical force in the BC-Wind area is small, therefore in the summer season it is sufficient to make two survey voyages i.e. one in mid-August and one in mid-September.

    b) The dates of the survey voyages shall be synchronised so that counting at both of these water regions will be done at the same time.

    c) These surveys shall be undertaken for the next 2 years (the first 2 years of OWF operation) if construction is not staged. Otherwise, these surveys shall be conducted after the completion of the first construction phase and the completion of the construction of the entire OWF.

4. Porpoise monitoring shall be carried out for at least 2 years after the completion of the construction of the planned project with the use of the same methods as during the pre-development monitoring.

5. Benthos monitoring focussed on the research into the colonisation of hard artificial substrates by epiphytic animal and plant associations.

    a) Benthos monitoring:

- The benthos monitoring programme at the OWF Area with regard to epiphytic flora and fauna shall be conducted at 5 underwater structural elements of wind turbines and associated infrastructure.
- Films and photos of the entire vertical space overgrown by macroalgae and epiphytic fauna shall be made at each facility under investigation.
- From the water surface to the maximum noted depth of occurrence of growth organisms, samples shall be taken by a diver or ROV from the specified area at various depths with the maximum interval of 2 m for the investigation into the taxonomic composition and biomass of the epiphytic flora and fauna.
- Surveys shall be undertaken once a year in June. For the first time, surveys shall be conducted if a minimum of 3 months has passed from the completion of the construction of the wind turbine selected for monitoring purposes. Further surveys shall be carried out after 2 and 4 years from the first survey. The last survey shall be performed one year before the planned dismantling of the wind farm.

b) Macrozoobenthos monitoring:

- Surveys shall be conducted within 5 wind turbine foundations or supporting structures selected in such a way that the represent construction stages, if any (the structures built at various stages) and that they are located at the various parts of the OWF area.
- Six stations including three at the main profile transect (in the demersal current axis) shall be set out at 20, 50 and 100 m from the foundation or supporting structure, and three stations shall be set out at the transect perpendicular to the main profile (the reference one) at the same distances.
- Surveys shall be carried out after the completion of the construction of the structures selected for monitoring, at one-off basis, in the period similar to that selected for inventory taking (May to June). The first survey shall be undertaken at the specified period after the completion of construction, and the next surveys after 2 and 4 years from the first survey. The last survey shall be performed one year before the planned dismantling of the wind farm.

6. Bat monitoring orientated towards the determination of the species composition and numerical force.

a) Equipment shall enable automatic registration and satisfy minimum requirements concerning equipment used for the surveys conducted at the environmental survey stage. Devices may be mounted for example at the mast of the measurement and survey station.
b) Post-development monitoring shall cover the period of 3 years in the first year after placing the wind turbine in service and in the second and third year of OWF operation. Monitoring must comprise the spring (April to May) and autumn (August to October) migration periods.

7. If the preceding items do not provide otherwise, conclusions from the development and post-development monitoring within 6 months of the end of the last season as part of post-development monitoring. The reports of detailed monitoring stages shall be submitted to the Regional Director for Environmental Protection in Gdańsk within 3 month of the end of each year of partial monitoring.

III. That project environmental supervision be provided:

1. The project shall be implemented under environmental supervision managed by a person(s) with the knowledge and experience in ornithology, biology and the ecology of marine mammals. That supervision shall comprise:
   a) training for construction supervisors;
   b) recommendations as to protection during the works;
   c) supervision of the performance of the provisions of the environmental decision to the extent of compliance with the Nature Protection Act.
2. By an environmental protection specialist responsible for the preparation and application of the emergency procedure (e.g. in the case of sea water contamination with oil-based substances from ships and transformers) at the farm and responsible for training the rescuers of animals coming in contact with oil-polluted waters.

IV. That it is necessary to undertake the repeated environmental impact assessment as part of the construction permit procedure with special consideration for the following:

1. Determination of the width and significance for bird migration of safety zones around the individual wind turbines and between the adjacent OWF areas.
2. Determination of the foundation methods as well as the precise determination of the areas permanently occupied by the foundations and, based on the above, undertaking the assessment of the influence of that project stage on the various natural components of the environment with the analysis of the maintenance method for the farm structural elements.
3. Determination of the layout and parameters of the various wind turbine generators and platforms, and of the influence of the above-mentioned elements on the availability of that area to animals including, in particular, marine birds and mammals, as well as the determination of influence on long-distance bird migration routes and passages on the local scale.
4. Determination of the key parameters of the wind turbines, and possibly of the measurement and survey platform as well as of the accommodation and service platform.
5. Indication of the detailed location and parameters of the offshore substations as well as the type and size of the foundations on which such stations will be supported.
6. Model calculations with regard to the propagation range and concentration of suspended solids in water as a result of the works disturbing bottom sediments.
7. Underwater noise propagation model calculations, which will be based on the size and type of wind turbine foundations.

8. Bird collision model calculations, which will be based on the parameters of wind turbines in the BC-Wind OWF area.
9. Proposed solutions minimising noise impact and the reduction of the noise impact range, as suitable for the accepted foundation methods.
10. Analysis of the option for the use of the temporary switch off system for individual wind turbines or their groups in the case of a greater number of bird species such as long-tailed ducks flying at the collision height, and in the case of passages of larger bird groups.
11. Indication of the detailed ornithological supervision methodology at the project implementation phase.
12. Indication of the detailed pre-development marine bird monitoring (before the commencement of the construction works)
13. Indication of the detailed post-development ichthyofauna and marine bird monitoring.

V. That it is not necessary to conduct transboundary environmental impact proceedings as part of the procedure for the issue of the decisions referred to in Article 72 para. 1 item 1 of the EIA Act.

VI. That the project characteristics should be attached as Appendix 1 to this decision.

EXPLANATORY STATEMENT

On 06/10/2021, an application was received by the Regional Director for Environmental Protection from the Investor, C-Wind Polska Sp. z o.o., represented by Mr Kacper Kostrzewa, letter dated 06/10/2021 without the reference number, concerning the issue of the environmental decision for the project titled the: **"BC-Wind Offshore Wind Farm".**

The application was accompanied by:

1. Environmental impact assessment report (hereinafter the EIA Report) (in writing and on data carriers with the recording in the electronic format, the number of copies suitable for the authority conducting the proceedings and the opinion- and approval-giving bodies),
2. Map in the scale ensuring the legibility of the presented data showing the planned project area and the estimated project impact area, with the electronic version,
3. Copy of the power of attorney granted to Mr Kacper Kostrzewa,
4. Proof of payment of the stamp duty for the issue of the environmental decision and for the power of attorney.

On 11/10/2021, by letter ref. RDOŚ-Gd-W00.420.50.2021.KSZ.1, this authority requested the Applicant to produce the original or certified copy of the power of attorney granted to Mr Kacper Kostrzewa to act on behalf of the Investor's behalf.

The Applicant submitted the relevant supplement on 22/10/2021 (the letter with no reference number, dated 21/10/2021).

Pursuant to Article 74 para. 3a of the EIA Act, the parties to the proceedings for the issue of the environmental decision are the applicant and the entity holding the right in real property located at the impact area of the project in the Applicant's scenario, subject to Article 81 para. 1 of the EIA Act. That area is understood as the planned project area and the one situated 100 m from the boundaries of the former area; the plots at which, due to project implementation, operation and use, the environmental quality standards would be exceeded, or the plots within the range of the significant project impact, which may introduce restrictions to the development of the property in compliance with its current intended use. Based on the environmental impact assessment report submitted in this case, the project will be implemented in the sea territory of the Republic of Poland (the exclusive economic zone), 22.6 km from the shoreline. Pursuant to Article 2 para. 2 of the Act of 21 March 1991 on the sea territories of the Republic of Poland and on maritime administration (the consolidated text in Dz. U. [*Journal of Laws*] of 2020, item 2135, as amended), the exclusive economic zone is not a part of the territory of the Republic of Poland. It follows from long-term jurisprudence that no entity may hold ownership rights to waters, air space above those waters and to the sea bottom of the waters in the exclusive economic zone, or to the earth interior. Moreover, the project in question will be implemented within the boundaries of the Development Area, and the project impact will not cause the environmental quality standards to be exceeded either within the project implementation boundaries or outside. It is for that reasons that the only entity which may have the rights of the party to these proceedings is the Investor, i.e. C-Wind Polska Sp. z o.o. with its registered office in Warsaw.

In relation to the above-mentioned notification of 26/10/2020, reference RDOŚ-Gd-WOO.420.50.2021.KSZ.2., this authority informed the Investor about the commencement of the proceedings in this matter and about the opportunity for the Investor to become familiar with the documents and submit any comments and applications. Information about the application was published in the publicly available schedule of data called the Ekoportal (www.ekoportal.pl) under number 389/2021, which is maintained under Article 21 of the EIA Act. The Applicant did not request the non-disclosure of any of the documents presented during their submission or in the course of the proceedings.

Pursuant to § 2 para.1 item 5 of the Regulation of the Council of Ministers of 10 September 2019 on projects which may significantly affect the environment (Dz. U. [*Journal of Laws*] of 2019, item 1839) the planned project is classified as *"systems utilising, for electricity generation, wind energy of the total nominal power plant capacity not smaller than 100 MW, located in the sea territories of the Republic of Poland'.*

In relation to the above, on the basis of Article 71 para. 2 item 1) of the EIA Act, project implementation requires the environmental decision to be obtained.

The BC-Wind Area is situated in the Polish exclusive economic zone, north of the Choczewo and Krokowa communes, approximately 22.6 km from the shoreline.

In consideration of the fact that the project ranks among those which may always significantly affect the environment and that the project is located in a sea territory, pursuant to the Article 75 para. 1 item 1) point c) of the EIA Act, the authority competent to consider this case is the Regional Director for Environmental Protection in Gdańsk.

Pursuant to Article 59 para. 1 item 1) of the EIA Act, the implementation of the planned project, which may always significantly affect the environment, requires undertaking the environmental impact assessment.

In this case, the project implementation conditions must be agreed with the Director of the Maritime Office in Gdynia under Article 77 para. 1 item 1) of the EIA Act, and an opinion of the State Border Sanitary Inspector in Gdynia must be sought under Article 77 para. 1 item 2) of the EIA Act. Pursuant to Article 6 of the EIA Act, the requirements concerning the approval or opinion shall not apply if the authority conducting the proceedings is the approval- and opinion-giving authority at the same time. The environmental decision is issued before the decisions referred to in Article 72 para. 1 of the EIA Act are obtained.

In relation to the above, this authority, by letter ref. RDOŚ-Gd-W00.420.50.2021.KSZ.3. of 26/10/2021, requested the opinion/approval of the project implementation conditions from the above-mentioned cooperating bodies.

In the ruling with the reference INZ.8103.135.2021.AD of 01/12/2021, the Director of the Maritime Office in Gdynia approved the implementation conditions for the project in question.

In letter reference SE.ZNS.80.4912.11.21 of 26/11/2021, the State Border Sanitary Inspector in Gdynia issued an opinion on the project implementation conditions.

The proposed conditions were taken into consideration in setting out the project implementation conditions.

The EIA Report is registered in the publicly available schedule called the Ekoportal (http://www.ekoportal.pl) under number 390/2021.

Pursuant to Article 79 of the EIA Act, before the environmental decision is issued, the authority competent to issue such a decision shall ensure public participation in the proceedings, within which the project environmental impact assessment is undertaken. Consequently, on 15/12/2021, in announcement ref. RDOŚ-Gd- W00.420.50.2021.KSZ.4, the Regional Director for Environmental Protection in Gdańsk provided the public with information about the submission of the EIA Report and about the option for the public to become familiar with the report as well as about the right of the public to submit comments and applications at the registered office of that authority within 30 days, from 30/12/2021 to 29.01.2022. The announcement was published on the authority's web site (www.rdos.gdansk.gov.pl) and on the notice board in the authority's registered office. The above-mentioned announcement was also forwarded for publication to the following: the Director of the Maritime Office in Gdynia, Mayor of the City of Gdańsk, Mayor of the City of Gdynia, Mayor of the City of Sopot, Head of the Ustka Commune, Mayor of the Town of Ustka, Head of the Smołdzino Commune, Mayor of the Town of Łeba, Head of the Wicko Commune, Head of the Choczewo Commune, Head of the Krokowa Commune, Mayor of the Town of Władysławowo, Mayor of the Town of Jastarnia, Mayor of the Town of Hel, Head of the Puck Commune, Mayor of the Town of Puck, Head of the Kosakowo Commune, Head of the Stegna Commune, Head of the Sztutowo Commune and the Mayor of the Town of Krynica Morska.

No comments or applications were filed within the above-mentioned time limit.

While evaluating the whole of the evidence gathered in this case, the Regional Director for Environmental Protection in Gdańsk established as follows:

The planned project is the BC-Wind OWF of the total maximum capacity of 500 MW located in the sea territories of the Republic of Poland, at the area of 86.28 km^2, approximately 22.6 km from the seashore.
The planned project comprises the construction, operation and decommissioning of the BC-Wind OWF. The farm will consist of a maximum of 41 wind turbines, 188 km cable pathways and a maximum of 6 other facilities.
On 9 May 2012, C-Wind Polska sp. z o.o. received permit No. MFW/7/12 of the Minister of Transport, Construction and Maritime Economy for the erection and use of artificial islands, structures and devices at Polish sea territories for the project titled: "The complex of offshore wind farms of the maximum total power of 200 MW with technical, measurement, survey and service infrastructure associated with the preparation, implementation and operation stage" (reference: GT7ak/62/1165094/decyzja/2012), and on 6 February 2013 B-Wind Polska sp. z o.o. received permit No. MFW/4/13 of the Minister of Transport, Construction and Maritime Economy for the erection and use of artificial islands, structures and devices at Polish sea territories for the project titled: "The complex of offshore wind farms of the maximum total power of 200 MW with technical, measurement, survey and service infrastructure associated with the preparation, implementation and operation stage" (reference: GT7/62/1172655/decyzja/2013).
On 18 February 2021, C-Wind Sp. z o.o. filed an application at the Ministry of Infrastructure for the decision transferring the permit for B-Wind Polska to C-Wind Polska. On 31 March 2021 the Minister of Infrastructure, in letter reference GM-DGM-7.530.36.2021, issued the decision on the transfer of the permit issued in favour of B-Wind Polska Sp. z o.o. to C-Wind Polska Sp. z o.o.
Moreover, the decisions on the permit for the erection and use of artificial islands, structures and devices at Polish sea territories were amended under the decision of the Minister of Infrastructure of 10 May 2022.

The entire area at which the project is planned to be sited is situated at water region POM.46.E [*POM - Polish sea areas*] which, in the Maritime Spatial Plan of the Polish sea areas, scale 1:200 000, hereinafter the "Plan" endorsed in the regulation of the Council of Ministers of 14 April 2021 on the endorsement of the spatial development plan for the national sea waters, the territorial sea and the exclusive economic zone, scale 1:200 000 (Dz. U. [*Journal of Laws*] of 2021, item 935) that area is designated for the needs related to renewable energy generation. Pursuant to § 6 para. 1 item 1 of the general arrangements, the Plan stipulates that the erection of offshore wind farms is acceptable only in water regions having the basic function E (renewable energy generation). In consideration of both the nature of the project applied for and the conditions at the area designated for its location, it is appropriate to hold that project implementation complies with the provisions of the Plan.

The EIA Report is based on the concept of the project's envelope description. This follows from the staging of offshore wind power engineering projects over considerable time, as OWF investment processes take many years, even more than 10 from the decision on the start of project preparations to the commencement of construction. During that time, the technologies used in OWFs undergo substantial changes mainly orientated at the mitigation of environmental impact through increased electricity generation efficiency from a single wind turbine and the reduction of the total number of turbines necessary to achieve the assumed OWF capacity. Given the perspective of the implementation of the BC-Wind OWF and the commencement of the first construction phase after 2024, existing and currently used wind turbines (from 3.6 MW to 12 MW) may prove unavailable for production and application. In such a case, the project parameters had to be described in a way which will enable taking advantage of the progress of technology and using the solutions which are not worse than the existing ones. The envelope concept means that, in the case of the evaluation of the given parameters and of the option to use various technical details, the environmental impact of the potentially most environmentally burdensome solution was evaluated. It is assumed that if the most burdensome solution does not significantly adversely affect the environment, the other solutions, as less onerous, will also be acceptable.

The Applicant's scenario assumes the utilisation of the state-of-the-art engineering solutions available on the market at the construction permit design preparation stage. That scenario also assumes that the BC-Wind OWF will achieve the maximum total nominal capacity specified in permits Nos. MFW/7/12 and MFW/4/13 concerning the construction of artificial islands. It is assumed in that scenario that wind turbines of various capacity will be used, however, the capacity of a single turbine generator will not be smaller than 12 MW. The use of the various types of foundations or supporting structures is also permitted. The implementation of the BC-Wind OWF of the total applied maximum capacity (up to 500 MW) assumes the installation of a maximum of 41 wind turbines.

The Applicant's scenario considers the steady and intensive development of technology in the OWF area in recent years; such development going both in the direction of increasing the size of rotors, generators and structural components, as well as improvement of the efficiency of the technical and engineering solutions in use. In the coming years, several manufacturers may be expected to launch the production of 10 MW wind turbines and bigger ones (12 MW wind turbines will be available in production as early as in 2021). Thus, new models, which will reach market maturity, will be verified. Works on the implementation of a new 12 MW Haliade-X (General Electric) wind turbine generator are a very good example of this process. This wind turbine generator is currently being tested at the port quay in Rotterdam. The total structure height is 269 m, and the rotor diameter is 220 m.

In view of the above and based on the assumption that the Applicant in this scenario assumes the installation of minimum 12 MW wind turbines, any other feasible solution (with a greater turbine generator capacity) will, as a consequence, cause:

- a smaller number of wind turbines;
- a smaller total rotor working area;
- reduction of the risk related to the number of maritime operations.

The reasonable alternative scenario is based, in its assumptions, on existing technologies, which are currently used and available on the industrial scale. In this scenario, it is assumed that the wind turbine generator will have the 8 MW capacity. Given the indicated maximum nominal OWF capacity (500 MW), the assumed wind turbine generator capacity determines the number of wind turbines, which is 62 in this scenario.

As is the case with the Applicant's scenario, it is assumed in the reasonable alternative scenario that various types of wind turbines may be used at various types of foundations or supporting structures.

The table below shows the schedule of the most significant project parameters for both scenarios under analysis, that is the Applicant's scenario and the reasonable alternative scenario.

The schedule of the most significant project parameters for the Applicant's scenario and the reasonable alternative scenario:

Parameter	Unit	Applicant's scenario	Reasonable alternative
Maximum installed capacity	MW	500	500
Maximum number of wind turbines	-	41	62
Maximum rotor diameter	m	280	180
Minimum clearance	m	20	20
Maximum height	m ASL	330	250
Maximum number of additional structures	-	6	6
Maximum number of cable pathways within the OWF	km	188	188

The project scenario applied for was selected as part of scenario comparative analysis based on the following criteria:

- the maximum total installed capacity of the OWF – the final capacity will be a consequence of optimisation from the point of view of environmental, engineering and economic conditions or other factors;
- maximum total number of wind turbines – the parameter following from the maximum installed capacity of the OWF and the assumed wind turbine size; it is possible to use wind turbines of the various size and capacity within the OWF;
- maximum wind turbine rotor diameter – the parameter specifying the rotor diameter (size);
- minimum clearance – the parameter specifying the distance between the rotor work area contour and the water level;
- maximum height of the wind turbine structure with the rotor – the parameter specifying the maximum height of the wind turbine from the water surface to the rotor work area contour;
- maximum length of cable pathways of the internal OWF system – the parameter specifying the total length of cable pathways in which internal power transmission cables connecting the individual wind turbines with substations will be laid.

The detailed identification and assessment of the project impact for the various scenarios is described in the EIA Report.

It follows from the comparison of the scenarios that, first of all:

- in the case of animals (birds and bats) flying across the OWF, the collision rate is lower for the scenario proposed for implementation than for the reasonable alternative scenario;
- in the case of the scenario proposed for implementation compared to the reasonable alternative scenario, the smaller number of wind turbines offers environmental benefits with regard to the sea bottom (the smaller number of sea operations related to the increase of the level of suspended solids), to macrozoobenthos (greater distances between wind turbines; and shorter internal connecting infrastructure cables of the OWF allow bigger bottom areas unaffected by underwater works), to marine mammals (the smaller number of piling operations, to the use of the water region (the smaller number of wind turbines results in a smaller number of marine operations and a lesser impact on navigation).

Despite the differences in the environmental impact as indicated above and as described in the report for the scenario proposed for implementation and the reasonable alternative scenario, the intensity and importance of the environmental impact of the planned project will still be similar enough for the same grades to be given to both scenarios. The table below shows the comparison of the impact of both scenarios of the planned project on the individual environmental components. The same level of the significance of impact does not mean that the various impacts have the same intensity. This shows that the differences between impact for the scenario proposed for implementation and the reasonable alternative scenario are not big enough to result in a change of the level of impact significance assumed in the environmental impact assessment methodology.

Table *Comparison of the significance of impact of the planned project on environmental components at the various phases of implementation for the Applicant's scenario and reasonable alternative scenario [Source: the Investor's own compilation]*

Environmental components	**Construction phase**		**Operation phase**		**Construction and operation phase overlapping**		**Decommissioning phase**	
	Applicant's scenario	Reasonable alternative scenario	Applicant's scenario	Reasonable alternative scenario	Applicant's scenario	Reasonable alternative scenario	Applicant's scenario	Reasonable alternative scenario
Sea bottom	P	P	P	P	P	P	P	P
Wave motion and sea currents	B	B	P	P	P	P	B	B
Sea water	P	P	p	P	P	P	P	P
Bottom sediments	Mw	Mw	Mw	Mw	Mw	Mw	Mw	Mw
Climate	Mw	Mw	P	P	Mw	Mw	Mw	Mw
Systems utilising the electromagnetic field (EMF)	B	B	P	P	P	P	P	P
Phytobenthos	B	B	P	P	P	P	P	P
Macrozoobenthos	Mw	Mw	U	U	U	U	U	U
Ichthyofauna	U	U	P	P	U	U	Mw	Mw
Marine mammals	U	U	U	U	U	U	U	U
Migrating birds	Mw	Mw	Mw	Mw	Mw	Mw	P	P
Marine birds	I	I	I	I	I	I	I	I

P - negligible; Mw - of minor importance; U - moderate; I - significant; B - none

Environmental components	Construction phase		Operation phase		Construction and operation phase overlapping		Decommissioning phase	
	Applicant's scenario	Reasonable alternative scenario	Applicant's scenario	Reasonable alternative scenario	Applicant's scenario	Reasonable alternative scenario	Applicant's scenario	Reasonable alternative scenario
Bats	P	P	Mw	Mw	Mw	Mw	P	P
Ecological corridors	P	P	P	P	P	P	P	P
Biological diversity	Mw	Mw	1	1	1	1	Mw	Mw
Cultural values, monuments as well as archaeological sites and objects	Mw	Mw	B	B	Mw	Mw	P	P
Water region use and development as well as tangible goods	Mw	Mw	Mw	Mw	Mw	Mw	P	P
Landscape	P	P	P	P	P	P	P	P
Population	U	U	P	P	U	U	P	P

P - negligible; Mw - of minor importance; U - moderate; I - significant; B - none

The main actions related to all the phases of offshore wind farm life, that is construction phases overlapping with the construction and operation, operation and decommissioning phases, will be as follows:

- transport of structural elements, including large ones, in the construction phase; incidentally during the operation, and again at the project decommissioning phase,
- transport of supplies and materials at all project phases,
- execution of construction works (e.g. foundations) and mechanical, electrical and plumbing works (e.g. cable laying),
- transport of service teams; and maintenance works,
- execution of dismantling works in the decommissioning phase.

In view of the location of the planned project, which as a whole is implemented at a sea territory, any related actions at all project phases will be carried out as sea operations, with their special conditions and nature taken into consideration.

Deliveries to and from the OWF area will be made with the use of the various types of vessels:

- offshore wind turbine installation vessels – large specialised vessels with an advanced safety level, equipped with the dynamic positioning system (with a varying degree of protection), not requiring anchoring during the works; during their operations, vessels of that type can often be fully stabilised at a selected position owing to a system legs supported on the sea bottom;
- transport ships – all-purpose or specialised vessels suitable for the transport of large structures (including foundations, supporting structures, towers and propellers), often equipped with dynamic positioning systems;

- transport barges (platforms) – vessels used for the transport of large structural items to the place of installation, unpropelled as a rule, and taking advantage of push busters or tugs;
- push busters and tugs – auxiliary vessels used for the servicing of bigger ships and transport barges or for the independent transport of large structural items (e.g. foundations or wind turbine supporting structures) from ports to the place of support.
- service ships – most often smaller vessels used for the transport of OWF service staff or consumables, suitable for mooring to wind turbine towers or associated platforms and enabling the safe movement of persons and hand-held equipment to the structural elements of the OWF.

In specific cases, especially at the OWF operation phase, helicopters may be used to transport service teams or in emergencies. At no stage of the implementation of the planned project does the Investor plan to use helicopters during the normal operation of the BC-Wind OWF.

The activities related to the transport of large structural elements of the OWF must be pursued from ports meeting the specific requirements, in particular:

- sufficient quay length and load bearing capacity enabling the assembly, storage and loading of the structural elements of the OWF;
- suitable port basin depth enabling the operations of large offshore wind turbine installation vessels in those basins.

It is assumed that the estimated area of the storage and potential preliminary assembly yard for the structural elements of the OWF should be approximately 20 ha. The quay enabling the works related to the loading of such elements onto ships should have an approximate minimum length of 300 m and an appropriate load bearing capacity.

At the current stage of the BC-Wind OWF project development, ports such as the following are considered to be the installation ports: Gdynia, Gdańsk, Sassnitz-Mukran, Szczecin, Świnoujście, Ronne, Rostock, Aalborgu, Karlskrona and Klaipeda. The nearest port having the complete and usable infrastructure designed for activities related to offshore wind power engineering is the Port of Ronne in Denmark (on the Bornholm island). The nearest Polish port which may serve as the installation port is Gdynia.

In the operation phase of the BC-Wind OWF, it will be possible to use smaller ports located at a shorter distance from the planned project area than the ports mentioned above, i.e. the ports in Władysławowo, Ustka, Łeba, Hel, Darłówko and Kołobrzeg or Dziwnów.

The number of specialised sea operations related to the construction phase of the BC-Wind OWF is proportional to the number of facilities installed and built at the OWF area, including the length of the installed power networks. That is why the number of operations and their consequences (e.g. fuel consumption and transport-related emissions) will be smaller for the Applicant's scenario than for the reasonable alternative scenario.

Waste and sewage handling during all phases of OWF life

Binding legal requirements and good practices related to waste and sewage handling procedures will be applied at each phase of the implementation of the BC-Wind OWF. Various hazardous materials will be used at the various phases of the BC-Wind OWF.

All vessels involved during the entire project shall meet the requirements and comply with the regulations following from the provisions of the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78). In particular, vessels shall follow the procedures included in the "Oil Pollution Prevention Plans".

Moreover, in the systems of the BC-Wind OWF, if the Investor is unable to use dry type transformers, preventive measures will be used against the spillage of hazardous substances and the measures aimed at the elimination of the effects of a possible spillage of hazardous substances (e.g. drip pans for spilt transformer oil, if any) and measures to eliminate the effects of the spillage of those substances (e.g. sorbents). Oily waters originating during the works will be collected and subjected to separation until oil-based product concentrations below 15 ppm have been obtained. Oil recovered from the separation process will be stored and handed over to specialised waste disposal companies on the shore.

The same procedure will apply to other wastes, including hazardous ones. Such wastes will be sorted out, collected in specially marked and secured containers, transported to the shore and handed over to specialised companies for disposal.

Sediment transport due to construction works

Depending on the depth and geological conditions at the BC-Wind OWF area and on the type of foundations or supporting structures, sea bottom preparation activities will be performed before the foundation works for the structural elements of the OWF. Such activities may comprise:

- sea bottom levelling,
- soil replacement,
- removal or relocation of bottom sediment layers etc.

One of the significant points following from the works disturbing bottom sediments is their utilisation method. It is assumed that all the disturbed sediment will be utilised within the BC-Wind OWF area. The sediment will only be relocated in the immediate vicinity of the work place. No pollution was found in the sediments at the BC-Wind OWF area, therefore sediment transport to dump sites or landfills is not planned. The maximum volume of relocated sediments may occur in the case of a gravity based structure (GBS), but these sediments will be able to be used to fill or load the foundations or supporting structures or to shape the bottom around them.

Noise emissions related to underwater works

In relation the major part of the OWF area, the construction site must be prepared by means of the dredging process, which causes noise and an increased level of suspended solids in water (Carstensen at al., 2006; Popper at al., 2020). As is the case with many other activities, dredging generates underwater noise. The four basic types of dredging vessels are the cutter suction dredgers (CSD), trailing suction hopper dredgers (TSHD), grading dredgers (GD) and backhoe dredgers (BHD). In many cases, TSHDs are used. Noise originating from a TSHD comes from many sources, mainly from the vessel propulsion and the dredger's suction head. Robinson at al. (2011) found that the TSHD emits noise at frequencies below 500 Hz. It was also noted that noise from a TSHD may have the frequency over 1 kHz depending on the composition of the ground excavated in the course of dredging. The highest noise level is considered to be generated by bigger sand and gravel grains when they are pumped through the pipe. Even if the dredged ground is sandy, acoustic energy is still generated, which may affect seals and porpoises. The reported noise levels are 186-188 dB re 1 µPa rms at 1 m [439, 370]. These levels are much lower than in the case of a drop hammer works, but as the dredging noise is more or less continuous, and piling noise is intermittent (the impulse length = 50 ms), they cannot be compared.

Underwater works with the use of dredger systems may occur with the highest intensity at the construction and decommissioning phases. Practically speaking, in the operation phase, such works may occur only during emergency maintenance works (e.g. the repair of buried and out-of-order cables).

Construction stage

In the implementation scenario (proposed by the Applicant), this phase will comprise the positioning of a maximum number of 41 wind turbines, internal cabling and up to six other construction structures or systems at the BC-Wind OWF.

The construction phase will require the mobilisation and involvement of the biggest number of vessels, equipment and human resources, both in the Applicant's scenario and in the reasonable alternative scenario.

The OWF construction phase is the project phase which requires the mobilisation and involvement of the biggest number of vessels, equipment and human resources. It is necessary to create a complicated supply chain process for both the goods and specialised services in various areas such as manufacture, transport, construction, assembly and installation.

It is assumed that the construction phase will be implemented in the shortest possible time and take 2-3 years, maximum 5 years.

Site facilities

Before the commencement of the OWF construction phase, it will be necessary to organise the onshore area (site facilities and storage yards) at which the preliminary assembly of the wind turbine subassemblies will be carried out and the OWF structural elements will be stored. This area will be located at the existing port or shipyard infrastructure existing at the project implementation time, with direct or very good access to a quay dedicated to the loading and unloading of vessels taking part in the construction process and in the subsequent maintenance of the OWF. It is from that area that the individual elements of the OWF will be transported to the area at which they will be supported or installed. Organising such a place within the existing port or shipyard infrastructure will not significantly affect its previous operations.

Sediment transport due to construction works

Depending on the depth and geological conditions at the BC-Wind OWF area and on the type of foundations or supporting structures, sea bottom preparation activities will be performed before the foundation works for the structural elements of the OWF. Such activities may comprise: sea bottom levelling, soil replacement, the removal or relocation of bottom sediment layers etc.

One of the significant points following from the works disturbing bottom sediments is their utilisation method. It is assumed that all the disturbed sediment will be utilised within the BC-Wind OWF area. The sediment will only be relocated in the immediate vicinity of the work place. No pollution was found in the sediments at the BC-Wind OWF area, therefore sediment transport to dump sites or landfills is not planned. The maximum volume of relocated sediments may occur in the case of the gravity based structure (GBS), but these sediments will be able to be used to fill or load the foundations or supporting structures or to shape the bottom around them.

Transport routes (onshore and offshore)

Maritime transport will be critical, and the impact of land transport should be minimal. Land transport will take place within the existing traffic routes. It is possible that the assembly or production of large components will take place at port or shipyard areas. In turn, marine shipping traffic will go to places where there has been little or virtually no traffic to date. Depending on the choice of the concept of procurement, supply and service ports, the transport system will include transshipment work and vessel traffic at routes between the port and OWF or between ports.

The number of specialised sea operations related to the construction phase of the BC-Wind OWF is proportional to the number of facilities installed and built at the OWF area, including the length of the installed power networks. Therefore the number of operations and their consequences (e.g. fuel consumption and transport-related emissions) will be smaller for the Applicant's scenario than for the reasonable alternative scenario.

Wastes

It is anticipated that wastes will be generated in connection with the normal operation of the various types of vessels taking part in this project phase and during the filling of foundations or supporting structures with concrete or sediments, the joining of structural elements (e.g. in the welding process), pile driving or drilling (e.g. the borings), assembly of corrosion protection elements and the possible abrasion of protecting coatings (e.g. during piling).

Schedule of wastes generated in the construction phase of the BC-Wind OWF on an annual basis:

Waste code (*hazardous wastes)	Waste type	Estimated volume [Mg/year]
08 01 11*	Waste paints and varnishes containing organic solvents or other hazardous substances	0.05
08 01 12	Waste paints and varnishes other than listed in 08 01 11	0.05
12 0113	Welding wastes	0.10
13 01 09*	Mineral hydraulic oils containing halogenated organic compounds	0.05
13 01 10*	Mineral hydraulic oils not containing halogenated organic compounds	0.05
13 0111*	Synthetic hydraulic oils	0.05
13 02 04*	Mineral engine, gear and lubricating oils containing halogenated organic compounds	0.05
13 02 05*	Mineral engine, gear and lubricating oils not containing halogenated organic compounds	0.05
13 02 06*	Synthetic engine, gear and lubricating oils	0.05
13 02 07*	Easily biodegradable engine, gear and lubricating oils	0.05
13 02 08*	Other engine, gear and lubricating oils	0.05
13 03 01*	Oils and liquids used as electroinsulator and heat-carrying agents containing PCB	0.20
13 04 03*	Bilge oils from sea-going ships	0.10

Waste code (*hazardous wastes)	Waste type	Estimated volume [Mg/year]
13 05 02*	Sludges from oil dewatering in separators	0.50
13 05 06*	Oil from oil dewatering in separators	0.50
13 05 07*	Oily water from oil dewatering in separators	0.50
13 07 01*	Furnace and marine gas oil	0.05
13 07 02*	Petrol	0.05
13 08 80	Oily solid wastes from ships	0.10
14 06 01*	Freons, HCFC, HFC	0.05
14 06 02*	Other halogenated solvents and mixtures of solvents	0.05
14 06 03*	Other solvents and mixtures of solvents	0.05
15 0101	Paper and cardboard packages	2.00
15 01 02	Plastic packages	2.00
15 01 03	Wooden packages	2.00
15 01 04	Metal packages	2.00
15 01 05	Composite packaging	2.00
15 01 06	Mixed packaging waste	2.00
15 01 07	Glass packages	0.10
15 01 09	Textile packages	0.10
15 02 02*	Sorbents, filtration materials (including oil filters not covered by other groups), wiping fabrics (e.g. rags and cloths) and protecting clothes contaminated with hazardous substances (e.g. PCB)	1.00
15 02 03*	Sorbents, filtration materials, wiping fabrics (e.g. rags and cloths) and protecting clothes other than those mentioned in 15 02 02	1.00
16 06 01*	Lead-acid batteries and accumulators	0.10
16 06 02*	Nickel-cadmium batteries and accumulators	0.10
16 06 03*	Mercury-containing batteries	0.01
16 06 04	Alkaline batteries (except for 16 06 03)	0.01
16 06 05	Other batteries and accumulators	0.01
16 8101*	Wastes showing hazardous properties	1.00
16 81 02	Wastes other than those mentioned in 16 81 01	1.00
17 01 01	Concrete wastes and concrete debris from demolitions and rehabilitation works	50.00
17 01 03	Wastes of other ceramic materials and equipment elements	10.00
17 01 82	Other wastes not mentioned elsewhere	50.00
17 02 01	Wood	2.00
17 02 02	Glass	0.10
17 02 03	Plastics	5.00
17 04 01	Copper, bronze and brass	0.05
17 04 02	Aluminium	0,05
17 04 04	Zinc	0.05
17 04 05	Iron and steel	1.00
17 04 07	Mixtures of metals	0.05
17 04 11	Cables other than those mentioned in 17 04 10	5.00
17 09 03*	Other construction, rehabilitation and disassembly wastes (including mixed) containing hazardous substances)	20.00
17 09 04	Mixed construction, rehabilitation and disassembly wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03	20.00

Waste code (*hazardous wastes)	Waste type	Estimated volume [Mg/year]
19 08 05	Stabilised municipal sewage sludges	1.00
20 0101	Paper and cardboard	1.00
20 01 02	Glass	1.00
20 01 08	Biodegradable kitchen wastes	1.00
20 01 10	Clothing	1.00
20 0121*	Fluorescent lamps and other mercury-containing wastes	0.05
20 0123*	Freon-containing devices	0.05
20 01 29*	Detergents containing hazardous substances	0.05
20 0130	Detergents other than those mentioned in 20 01 29	0.05
20 01 33*	Batteries and accumulators along with batteries and accumulators mentioned in 16 06 01, 16 06 02 or 16 06 03, and unsorted batteries and accumulators containing these batteries	0.05
20 01 34	Batteries and accumulators other than those mentioned in 20 01 33	0.05
20 01 35*	Waste of electrical and electronic equipment other than that mentioned in 20 01 21 and 20 01 23, containing hazardous components (1)	0.05
20 01 36	Waste of electrical and electronic equipment other than that mentioned in 20 01 21, 20 01 23 and 20 01 35	0,05
20 03 01	Unsegregated (mixed) municipal wastes	20,00

Operation stage

The concept for the OWF construction assumes the option for the construction and operation of the OWF as the same time. In terms of the environmental impact assessment, this phenomenon will be the sum of the simultaneous impact of the OWF construction at one place and operation at another place. In view of the different location and technical requirements, collisions and conflicts should not be expected provided that the operation and further extension of the OWF are comprised by the coordinated vessel traffic plan at the area of the BC-Wind OWF.

In contradistinction to the construction phase, the operation phase will be distinguished by less intensive vessel traffic. In the general terms concerning vessel traffic for that phase, an increased number of small and medium-size vessels related to the operation and maintenance of the OWF will be recorded. Three operation options are possible:

- the use of marine accommodation and service stations - small vessels will move between the station and individual wind turbines. To secure the operation of the accommodation and service station, regular supplies and replacement of the station crew and service personnel will be necessary. The estimated number of voyages will cause an increase in navigation intensity with regard to the main navigation routes only to a minimum extent, and increased navigation intensity in the service port to an insignificant degree;
- the use of medium-size ships/service mother ships, which will be on period service duty at the OWF area and take regular voyages to service ports to replenish the supplies and replace the crew or service personnel. The changes in navigation intensity will take place in the same way as above;
- the use of small vessels commuting between the service port(s) and the OWF area and emergency trips in the daily work cycle. The estimated number of voyages will considerably influence the increase of navigation intensity at navigation routes and in ports.

The number of specialised sea operations related to the operation phase of the BC-Wind OWF will be directly proportional to the number of facilities installed and built at the OWF area, including the length of the installed power networks. That is why the number of operations and their consequences (e.g. fuel consumption and transport-related emissions) will be smaller for the Applicant's scenario than for the reasonable alternative scenario.

Electromagnetic field (EMF)
The OWF operation process will be a long-term undertaking. Offshore wind farms will be connected by power and ICT networks with offshore substations. It is assumed that the total length of all cable pathways in which cables will be laid in the OWF area will not be longer than 188 km. Cables buried in the sea bottom are optimised to generate a residual electric field. Any magnetic component of the EMF is minimised by running individual conduits as close as possible to one another (for the various phases for the alternating current or passage directions for the direct current). In the case of direct current cables, the closer the individual line conduits the smaller the range of the EMF (there is practically no influence in a composite cable). In the case of the alternating current, the use of the composite cable reduces the magnetic field, but it may remain at the level generating the electric field in sea water (OSPAR, 2012). The remedy for this is to bury the cable in the sediment, which in itself does not reduce the effects of the EMF, but by separating the cables from the seawater, the sediment makes the impact much smaller.

Heat emission by power cables
The electric current, flowing through the cable, causes it to heat up; this is caused by power losses on the resistance, according to Joule's law. As the cable temperature increases above the ambient temperature, heat transfer to the surrounding environment begins. It is difficult to quantify the heat given off accurately, as the phenomena of heat conduction, convection and radiation occur, which are subject to different physical laws (Stiller et al., 2006). Sediment heating may lead to a change of the taxonomic composition of benthos living on and in the sea bottom in the immediate vicinity of cables (OSPAR, 2009). The minimum burying depth shall be determined on the basis of the type of sediments (their thermal conductivity) and the power grid type (the magnitude and type of loads, and thermal performance).
To control this impact, this decision lays down both the conditions concerning cable laying and the preparation of as-built documentation, which enables the efficiency of preventive measures to be assessed.

Wastes
The main factors causing the generation of wastes and sewage in the operation phase of the BC-Wind OWF are the use of ships and the repairs.
Waste volumes indicated below pertain to one offshore wind turbine or offshore substation. It is appropriate to assume, therefore, that waste and sewage volumes will be considerably greater in the case of the reasonable alternative scenario than the implementation (proposed) scenario.

Waste code (*hazardous wastes)	Waste type	Estimated volume [Mg/year]
08 01 11*	Waste paints and varnishes containing organic solvents or other hazardous substances	0.21
08 01 12	Waste paints and varnishes other than listed in 08 01 11	0.21
1201 13	Welding wastes	0.04
13 01 09*	Mineral hydraulic oils containing halogenated organic compounds	0.01
13 01 10*	Mineral hydraulic oils not containing halogenated organic compounds	0.01
1301 11*	Synthetic hydraulic oils	0.01
13 01 12*	Easily biodegradable hydraulic oils	0.01
13 01 13*	Other hydraulic oils	0.01
13 02 04*	Mineral engine, gear and lubricating oils containing halogenated organic compounds	0.01
13 02 05*	Mineral engine, gear and lubricating oils not containing halogenated organic compounds	0.01
13 02 06*	Synthetic engine, gear and lubricating oils	0.01
13 02 07*	Easily biodegradable engine, gear and lubricating oils	0.01
13 02 08*	Other engine, gear and lubricating oils	0.01
13 03 01*	Oils and liquids used as electroinsulator and heat-carrying agents containing PCB	0.42
13 04 03*	Bilge oils from sea-going ships	0.04
13 05 02*	Sludges from oil dewatering in separators	0.21
13 05 06*	Oil from oil dewatering in separators	0.21
13 05 07*	Oily water from oil dewatering in separators	0.21
1307 01*	Furnace and marine gas oil	0.04
13 07 02*	Petrol	0.02
13 08 80	Oily solid wastes from ships	0.04
14 06 01*	Freons, HCFC, HFC	0.02
14 06 02*	Other halogenated solvents and mixtures of solvents	0.02
14 06 03*	Other solvents and mixtures of solvents	0.02
15 01 01	Paper and cardboard packages	0.04
15 01 02	Plastic packages	0.04
15 01 03	Wooden packages	0.04
15 01 04	Metal packages	0.04
15 01 05	Composite packaging	0.04
15 01 06	Mixed packaging waste	0.04
15 01 07	Glass packages	0.04
15 01 09	Textile packages	0.04
15 02 02*	Sorbents, filtration materials (including oil filters not covered by other groups), wiping fabrics (e.g. rags and cloths) and protecting clothes contaminated with hazardous substances (e.g. PCB)	0.12
15 02 03*	Sorbents, filtration materials, wiping fabrics (e.g. rags and cloths) and protecting clothes other than those mentioned in 15 02 02	0.12
16 06 01*	Lead-acid batteries and accumulators	0.04
16 06 02*	Nickel-cadmium batteries and accumulators	0.04
16 06 03*	Mercury-containing batteries	0.04
16 06 04	Alkaline batteries (except for 16 06 03)	0.04
16 06 05	Other batteries and accumulators	0.01

Waste code (*hazardous wastes)	Waste type	Estimated volume [Mg/year]
16 81 01*	Wastes showing hazardous properties	0.12
16 81 02	Wastes other than those mentioned in 16 81 01	0.12
17 01 01	Concrete wastes and concrete debris from demolitions and rehabilitation works	2.10
17 01 03	Wastes of other ceramic materials and equipment elements	0.41
17 01 82	Other wastes not mentioned elsewhere	2.10
17 02 01	Wood	0.08
17 02 02	Glass	0.04
17 02 03	Plastics	0.21
17 04 01	Copper, bronze and brass	0.02
17 04 02	Aluminium	0.02
17 04 04	Zinc	0.02
17 04 05	Iron and steel	0.41
17 04 07	Mixtures of metals	0.02
17 04 11	Cables other than those mentioned in 17 04 10	2.10
17 09 03*	Other construction, rehabilitation and disassembly wastes (including mixed) containing hazardous substances)	0.82
17 09 04	Mixed construction, rehabilitation and disassembly wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03	0.82
19 08 05	Stabilised municipal sewage sludges	1.230
20 01 01	Paper and cardboard	0.82
20 01 02	Glass	0.82
20 01 08	Biodegradable kitchen wastes	0.82
20 01 10	Clothing	0.82
20 01 21*	Fluorescent lamps and other mercury-containing wastes	0.04
20 01 23*	Freon-containing devices	0.04
20 01 29*	Detergents containing hazardous substances	0.04
20 01 30	Detergents other than those mentioned in 20 01 29	0.04
20 01 33*	Batteries and accumulators along with batteries and accumulators mentioned in 16 06 01, 16 06 02 or 16 06 03, and unsorted batteries and accumulators containing these batteries	0.04
20 01 34	Batteries and accumulators other than those mentioned in 20 01 33	0.04
20 01 35*	Waste of electrical and electronic equipment other than that mentioned in 20 01 21 and 20 01 23, containing hazardous components (1)	0.04
20 01 36	Discarded electrical and electronic equipment other than that mentioned in 20 01 21, 20 01 23 and 20 01 35	0.04
20 03 01	Unsegregated (mixed) municipal wastes	12.30

Decommissioning phase

In the technical sense, the decommissioning phase is the reverse of the OWF construction phase. The various OWF components will be removed and transported to disposal sites in the reverse order to the construction phase.

The number of specialised sea operations related to the decommissioning of the BC-Wind OWF is proportional to the number of facilities installed and built at the OWF Area, including the length of the installed power networks. That is why the number of operations and their consequences (e.g. fuel consumption and transport-related emissions) will be smaller for the Applicant's scenario than for the reasonable alternative scenario.

Wastes

In the case of the decommissioning of the BC-Wind OWF, waste generation is related mainly to the physical removal of the disused farm components and the operation of ships used during decommissioning.

It is anticipated that the decommissioning of the construction structures at the BC-Wind OWF Area will be done to the sea bottom level (after cutting or burning off at an appropriate depth, piles will be left in the sea bottom as they do not have an impact on the environment, and their removal may cause such impact, e.g. if explosives are used to remove the piles).

Waste volumes presented below pertain to a single offshore wind farm or substation. Maximum values for these two types of structures have been taken. In the schedule, the greater value from the comparison for these two types of structures was taken. It is appropriate to assume, therefore, that waste and sewage quantities will be considerably greater in the case of the reasonable alternative scenario than the investment (proposed) scenario.

Waste code (*hazardous wastes)	Waste type	Estimated volume [Mg/structure]
13 01 09*	Mineral hydraulic oils containing halogenated organic compounds	0.05
13 01 10*	Mineral hydraulic oils not containing halogenated organic compounds	0.05
1301 11*	Synthetic hydraulic oils	0.05
13 01 12*	Easily biodegradable hydraulic oils	0.05
13 01 13*	Other hydraulic oils	0.05
13 02 05*	Mineral engine, gear and lubricating oils not containing halogenated organic compounds	0.01
13 02 05*	Mineral engine, gear and lubricating oils not containing halogenated organic compounds	0.01
13 02 06*	Synthetic engine, gear and lubricating oils	0.01
13 02 07*	Easily biodegradable engine, gear and lubricating oils	0.01
13 02 08*	Other engine, gear and lubricating oils	0.01
13 03 01*	Oils and liquids used as electroinsulator and heat-carrying agents containing PCB	82.5
13 04 03*	Bilge oils from sea-going ships	0.1
13 07 01*	Furnace and marine gas oil	0.05
13 07 02*	Petrol	0.05
13 08 80	Oily solid wastes from ships	0.1
14 06 01*	Freons, HCFC, HFC	0.1
14 06 02*	Other halogenated solvents and mixtures of solvents	0.1
14 06 03*	Other solvents and mixtures of solvents	0.1
15 01 01	Paper and cardboard packages	0.1
15 01 02	Plastic packages	0.1
15 01 03	Wooden packages	0.1
15 01 04	Metal packages	0.1
15 01 05	Composite packaging	0.1
15 01 06	Mixed packaging waste	0.1
15 01 07	Glass packages	0.1
15 01 09	Textile packages	0.1

Waste code (*hazardous wastes)	Waste type	Estimated volume [Mg/structure]
15 02 02*	Sorbents, filtration materials (including oil filters not covered by other groups), wiping fabrics (e.g. rags and cloths) and protecting clothes contaminated with hazardous substances (e.g. PCB)	1
15 02 03*	Sorbents, filtration materials, wiping fabrics (e.g. rags and cloths) and protecting clothes other than those mentioned in 15 02 02	1
16 06 01*	Lead-acid batteries and accumulators	0.1
16 06 02*	Nickel-cadmium batteries and accumulators	0.1
16 06 03*	Mercury-containing batteries	0.01
16 06 04	Alkaline batteries (except for 16 06 03)	0.01
16 06 05	Other batteries and accumulators	0.01
16 81 01*	Wastes showing hazardous properties	1
16 81 02	Wastes other than those mentioned in 16 81 01	1
1701 01	Concrete wastes and concrete debris from demolitions and rehabilitation works	7000
17 01 03	Wastes of other ceramic materials and equipment elements	50
17 01 07	Mixed wastes of concrete, brick debris, waste ceramic materials and equipment other than those mentioned in 17 01 06	50
17 01 82	Other wastes not mentioned elsewhere	50
17 02 01	Wood	0.1
17 02 02	Glass	2
17 02 03	Plastics	1000
17 04 01	Copper, bronze and brass	1
17 04 02	Aluminium	1
17 04 04	Zinc	1
17 04 05	Iron and steel	4000
17 04 07	Mixtures of metals	1
17 04 11	Cables other than those mentioned in 17 04 10	71
17 09 03*	Other construction, rehabilitation and disassembly wastes (including mixed) containing hazardous substances)	50
17 09 04	Mixed construction, rehabilitation and disassembly wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03	50
19 08 05	Stabilised municipal sewage sludges	1
20 01 01	Paper and cardboard	1
17 02 02	Glass	2
17 02 03	Plastics	1000
17 04 01	Copper, bronze and brass	1
17 04 02	Aluminium	1
17 04 04	Zinc	1
17 04 05	Iron and steel	4000
17 04 07	Mixtures of metals	1
17 04 11	Cables other than those mentioned in 17 04 10	71
17 09 03*	Other construction, rehabilitation and disassembly wastes (including mixed) containing hazardous substances)	50
17 09 04	Mixed construction, rehabilitation and disassembly wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03	50
19 08 05	Stabilised municipal sewage sludges	1
20 01 01	Paper and cardboard	1

Energy demand and consumption

The most important factor influencing energy demand and consumption is the choice of the type of structures erected at the OWF Area, general site management issues, and then the choice of one OWF operation methods. Nearly 100 % of energy needed and consumed for the OWF construction is the fuel for the transport, transshipment reloading and installation of the components of wind turbines and other OWF facilities.

Unlike commercial shipping, specialised vessels adapted to work in the construction and operation of industrial offshore structures have a different operational profile. This is primarily due to the need to perform complex marine operations (transshipments, operation in the dynamic positioning mode), which are not related to the distance sailed, but to a certain number of operating hours. Estimation of planned fuel consumption is therefore dependent on a very large number of variable factors and practically always subject to a significant error.

The number of specialized marine operations associated with the construction, operation and decommissioning phases of the BC-Wind OWF is proportional to the number of facilities installed and built in the OWF area, including the length of installed power cables. Therefore, fuel quantities and emission volumes associated with transportation for the Applicant's scenario will be smaller than in the case of the reasonable alternative scenario.

Failures

Types of failures resulting in environmental contamination

The project related to the construction, operation and decommissioning of offshore wind turbines is connected with several dozens of years of complex offshore and onshore activities. The project which is the object of these proceedings is not a place for storing or using substances determining the classification of the project as a plant with an increased or high risk of a serious industrial failure in accordance with the Regulation of the Minister of Development of 29 January 2016 on the types and quantities of hazardous substances present at the plant, determining the classification of the plant as a plant with an increased or high risk of a serious industrial failure (Dz. U. [*Journal of Laws*] of 2016, item 138).

All the components for the OWF construction and operation will be manufactured on land. Construction, installation, maintenance and repair works, and then dismantling works are executed at sea. All these activities depend on transport, service and construction vessels.

Ports and ships are of key importance during project implementation. Large components of wind turbines, foundations or supporting structures, towers, accommodation and service as well as measurement and surveys platforms and substations are manufactured in ports or in their immediate vicinity. The technologies and production processes involved in their manufacture do not pose a risk of emergency situations. Potential emergencies will not cause significant emissions of pollutants threatening the environment. Also, during the decommissioning or disposal of dismantled elements of wind turbines, which will take place in port or industrial areas, no events causing environmental hazards are expected to occur.

The main hazards that may occur during offshore wind turbine construction and decommissioning are the spills of oil-based products, mainly fuel, hydraulic, transformer and lubricating oils. To a lesser extent, the marine environment may be incidentally threatened by materials containing hazardous substances, if such are used. During the operation phase, oil spills may be the main cause of the pollution of sea waters. Both within open sea waters (e.g. the OWF) and near the shore, oil spills may be a problem with long-lasting effects on fauna, flora, fishing and beaches affected by contamination.

The amount of oil pollution may be classified as follows:

- Level I (a minor spill, up to 20 m^3) – minor oil-based product spills that do not require the use of external manpower and equipment, and can be cleaned up with in-house resources. These spills are local in nature, and their elimination does not pose special technical difficulties and they do not pose a major hazard to the marine environment;
- Level II (a medium spill, up to 50 m^3) – oil-based product spills whose scale requires coordinated prevention within the sea area subjected to the Director of the Maritime Office, who makes a decision on the required scale of counteraction;
- Level III (a disastrous spill, above 50 m^3) – oil-based product spills with the nature of an extraordinary environmental hazard, whose cleanup requires manpower and resources subjected to more than one Director of the Maritime Office.

The course of the failure with an assessment of potential consequences

Oil-based product leak (during normal ship operation)

The leaks of various oil-based products (lubricating and marine gas oils as well as petrols) may occur during normal ship operation. It is appropriate to assume that the leaks will be minor (level I).

From the environmental point of view, the following are the most vulnerable sites in the case of possible spills: Ławica Słupska [*Słupsk Bank*] and the coastal area approximately between Ustka in the west and Dębki in the east. Taking into account the prevailing westerly wind directions and coastal currents, at risk is the coastal strip with tourist destinations (Jarosławiec and Rowy) and the ports in Ustka and Łeba in the west as far as the town and port of Władysławowo.

The areas particularly sensitive to potential contamination are the protected natural areas, including Natura 2000 sites.

It is appropriate to emphasise that the key issue here is not the size of the spill, but its place. Indeed, there are known cases of high bird mortality in the case of minor oil spills at sea. Vast patches of oil drifting away from the coast in areas with very small number of birds do not entail such high population losses as smaller spills at the places of high concentration of marine avifauna (Meissner, 2005). In the area of the planned BC-Wind OWF, bird density was considerably lower than in the other surveyed areas of significant importance for marine birds. It is appropriate to emphasise, however, that in the case of first level spills and with proper organization of vessel traffic, a situation where the uncontrolled spread of petroleum substances reaches important natural areas is unlikely. It will be possible to determine the actual spill spread practically as late as during the incident, based on current meteorological data and information on the type and potential amount of the pollutant. Therefore, it is not possible at the report stage to make a more detailed assessment of the impact on marine organisms that are most vulnerable to the consequences of oil spills.

The number of potential spills is proportional to the number of vessels used for project implementation, operation or decommissioning.

Oil-based product leak (in an emergency)
During the construction, operation or decommissioning of the BC-Wind OWF, oil-based product spills may occur thus resulting in the pollution of water and bottom sediments. Spills may occur as a result of a failure or collision of vessels, their collision with OWF facilities, vessel sinking or running aground, and as a result of operational leaks and spills from vessels, a leak from the wind turbine oil system, a transformer at the substation, or oil spill associated with inspections and rehabilitation of OWF components. In the worst-case scenario, there will be level II (medium) spills during the construction or decommissioning phase. The calculated probability of serious accidents is very low, that is in range from of 10^{-5} (practically impossible: 1 case per 100,000 years) to 10^{-3} (very rare: 1 case per 1,000 years).
Given the worst case scenario and the release of 200 m^3 marine gas oil into the marine environment, in view of the oil type, its behaviour in sea water, and the time during which the oil patch disperses and drifts, the pollution range is expected not to exceed 5 to 20 km from the BC-Wind OWF.

In view of the potential risks, the decision requires the farm to be equipped with, without limitation, the elements that minimize the risk of oil penetration into the marine environment, including leak-tight turbine generator casings and oil drip pans. Moreover, in the event of a petroleum or oil-based product spill, the resulting pollution must be removed from the water surface on an ongoing basis with the use of mechanical means of collection. If non-mechanical measures are used, pollutants may be removed from the sea water surface only by consent from the director of the maritime office. In addition, in accordance with the regulations on maritime safety, the sea water hazards and pollution prevention plan will have to be developed and kept up to date. The plan will specify the potential area at risk of the spills of various sizes, oil spill prevention methods, and the equipment planned to be used to clean up level I spills with in-house resources.

Release of chemicals and wastes
In the course of the wind farm construction, on vessels and at onshore site facilities (in the port servicing project implementation) and at the project site, wastes directly related to the construction process will be generated. These may include damaged parts of farm components being installed, cement, joint grouts, mortars and binders used for joining wind turbine components as well as other chemical substances used during the construction works. Those substances may be accidentally released into the sea. Loose cement is packed in approximately 1 m^3 bags. It is assumed that some 5 m^3 of the product may sink during transshipment. Joint grouts, mortars and other binders will often contain hazardous substances. For example, (two-component) epoxy binders contain the following in different proportions: epoxy resin, alkyl glycidyl ethers and polyaminoamides. If these substances penetrate into the water depth, they sink and settle on the bottom due to their high density (approximately 1.3 g cm^{-1}). They are considered a serious hazard because they cannot be easily removed from the bottom, and are toxic to marine organisms.
During farm decommissioning, it seems that the contamination of bottom sediments with wastes originating from that process is unavoidable. The magnitude of that impact will depend on the assumed method of working.

The possibility of releasing waste or chemicals into water is proportional to the activity associated with the use of chemicals.

Other types of releases:

Release of municipal wastes or domestic sewage
During the construction of the wind farm, wastes will be generated on vessels and in onshore site facilities (in the port serving project implementation). These wastes will mainly comprise municipal and other wastes not directly related to the construction process, as well as domestic sewage. Wastes and sewage may be accidentally released into the sea when collected from ships by another vessel and in the event of a failure, thus causing the biogenic substance concentration to increase and the quality of water and sediments to deteriorate.
It is estimated that the occurrence of any releases mentioned above will neither affect the structure and functioning of marine organisms in the project area nor cause their mortality.

Pollution of the water depths and bottom sediments with antifouling agents
To protect ship hulls from marine growth, biocides are used which may contain, for example, copper, mercury and organic tin compounds (e.g. tributyltin (TBT)). These substances may penetrate into the water depths and eventually be retained in sediments. It is appropriate to assume that the emission of these compounds will be insignificant. Among the substances mentioned above, most harmful (toxic) to aquatic organisms are organic tin compounds. The use of TBT (the most harmful substance) is currently prohibited in antifouling paints, but the presence of those compounds in protective coatings on older vessels cannot be excluded. That influence may be limited by launching an inspection of protective coatings on vessels involved in the activities at the OWF Area.
It is estimated that the incidents mentioned above, if any, will neither affect the structure and functioning of marine organisms in the project area nor cause the increase of their mortality.
This authority holds that the Director of the Maritime Office in Gdynia, in the approval dated 13/12/2021, laid down the condition that machinery and equipment used at the project shall be checked and maintained regularly. The inspection shall also comprise the type of protective coatings on older vessels engaged in the activities at the area of the BC-Wind OWF in order to minimise the penetration of, for example, TBT, into the sea waters. The above condition was imposed on the Investor in the conclusion of this decision to the extent in which the obligation does not follow from the current regulations.

Releases of contaminants from anthropogenic objects on the bottom
The possible release of contaminants from anthropogenic objects lying on the bottom cannot be fully excluded. In the course of geophysical investigations in 2020, the bottom of the BC-Wind OWF Area was regularly inspected for the presence of objects of anthropogenic origin, including packages and containers which might contain hazardous chemical substances. Such objects may originate, for example, from insufficiently secured cargo of ships sailing across the BC-Wind OWF Area. The occurrence of such objects on the bottom of the OWF Area was not found. It is not ruled out, however, that such objects may be buried in the bottom and that is why they were not detected during the geophysical investigations. Review magnetometric surveys intended to disclose only major ferromagnetic objects were also conducted during the geophysical investigations.

As a result of these investigations, a torpedo was identified at the BC-Wind OWF development area. It cannot be excluded that, during the site preparation work, including in particular the bottom cleanliness check for the presence of UXO and chemical weapons, new anthropogenic objects (e.g. lost small barrels or UXO) may be found. To determine the procedure for handling such findings, the Applicant shall prepare the dangerous object handling plan, both in terms of operations at sea (e.g. the rules for working close to potentially dangerous objects), and in terms of the possible removal of such objects or avoiding their locations. The basic assumption to the dangerous object handling plan is to avoid a hazard to the life and health of people and avoid the spread of contaminants from such objects.

Potential environmental hazards

Construction stage

Based on the data from other OWFs and similar projects, the following potential incidents threatening the environment in the construction phase have been identified, which may become a source of adverse environmental impact of the OWF.

- oil-based product leak as a result of the collision of ships, a failure or structural collapse disaster (in the course of normal use or in emergency).
- accidental release of municipal wastes or domestic sewage;
- accidental release of construction materials or chemical agents;
- contamination of water and bottom sediments with antifouling agents.

It is appropriate to emphasize that it is the abiotic environment, first of all the sea waters and, to a smaller extent, the bottom sediments, that may be directly polluted as a result of incidents and emergencies. In turn, these incidents may indirectly affect living organisms occupying or otherwise taking advantage of the sea bottom, water depths and sea surface. Pollution of water and bottom sediments with municipal wastes or domestic sewage is an adverse direct impact, which is momentary or short-term, reversible and of the local range. The significance of this impact is negligible.

Ship collisions and the resulting releases of hazardous substances (especially oil-based products) are a factor which may cause the higher mortality and diseases of marine organisms. The probability of such incidents may be deemed to be low. Additionally, the implementation of the correct collision and spill response plan aims at the mitigation of the impact of such incidents on marine organisms. In the construction phase, the major hazard to Natura 2000 areas is the release of hazardous substances (especially oil-based products) as a result of ship collisions. This factor may cause higher mortality and diseases of marine organisms, including those protected at these areas. The probability of such incidents may be deemed to be low. Implementation of the collision and spill response plan in accordance with applicable laws for the duration of the project is intended to minimize the impact of such incidents on marine organisms. It may be assumed that this factor will not significantly affect the protected areas.

Operation stage

During the operation of the OWF, environmental hazards may also occur, particularly water and bottom sediment pollution with:

- petroleum substances,
- antifouling agents,
- accidentally released municipal wastes or domestic sewage,
- accidentally released chemicals and wastes from the OWF operation.

Wastes and sewage may be generated by persons present on ships and during the operation and maintenance of towers and transmission infrastructure.
Ship collisions and the resulting releases of hazardous substances (especially oil-based products) are a factor which may cause the higher mortality and diseases of marine organisms. The probability of such incidents may be deemed to be low. The implementation of the collision and spill response plan aims at minimising the influence of such incidents on marine organisms.
The impact caused by emergencies in the operation phase is identical to that which may occur at the OWF construction phase. Only the aspect concerning the accidental release of chemicals and wastes is slightly different. During OWF operation, the maintenance of its facilities will be carried out. The accidental release of small amounts of wastes or consumable liquids into the sea cannot be ruled out. It is estimated that the occurrence of the random events mentioned above will neither affect the structure and functioning of marine organisms in the project area nor cause their mortality.
During the operation of the OWF, as a result of collisions and failures of vessels engaged in servicing the project, harmful chemicals, mainly fuels, engine oils or hydraulic fluids, may leak into the environment. Their impact on marine organisms may be a significant pathogen and may result in increased mortality. The probability of such incidents may, however, be deemed to be low. Implementation of the collision and spill response plan aims at minimising the impact of such incidents. The threat posed by this factor may be considered negligible. The main hazard to Natura 2000 sites during the operation phase is the release of hazardous substances (especially oil-based products) into the environment as a result of ship collisions. This factor may cause the increased mortality and diseases of marine organisms, including the protected objects. The probability of such incidents may be deemed to be low. The implementation of the collision and spill response plan aims at minimising the influence of such incidents on marine organisms. It may be assumed that this factor will not significantly affect the protected areas.

Construction and operation phase
Ship collisions and the resulting release of hazardous substances (especially oil-based products) are a factor which may cause the higher mortality and diseases of marine organisms. The probability of such incidents was considered to be low if the works related to the construction and operation phases are executed separately. However, the presence of vessels executing construction and maintenance works increases the collision risk and the associated adverse impact. In relation to that, the original significance of impact (starting from that of minor importance to negligible) may increase to moderate, but this will not, however, cause the need to apply mitigating measures.

Decommissioning phase

During OWF decommissioning, impact resulting from emergencies and other environmental hazards may also occur, in particular water and bottom deposit pollution with:

- accidentally released municipal wastes or domestic sewage,
- petroleum substances,
- antifouling agents.

The hazard related to the penetration of sewage from a ship to water exists during sewage collection from ships by another vessel and when there is a failure. This may cause a local increase of biogenic substance concentration and the deterioration of water quality. Pollutants should disperse quickly, owing to which they will not contribute to the permanent deterioration of the condition of the environment at the project area. Impact related to environmental hazards in the decommissioning phase is identical to that described above for the OWF construction phase.
During the decommissioning of the OWF, as a result of collisions and failures of vessels engaged in servicing the project, harmful chemicals, mainly fuels, engine oils or hydraulic fluids, may leak into the environment. Their impact on marine organisms may be a significant pathogen and may result in increased mortality. The probability of such incidents may, however, be deemed to be low. Implementation of the collision and spill response plan aims at minimising the impact of such incidents. The threat posed by this factor may be considered negligible.

Failure prevention
Failure prevention is the whole of activities related to the protection of the health and life of people, the natural environment and property, and the reputation of the participants in the processes related to the construction, operation and decommissioning of the OWF. These activities comprise, without limitation:

- preparation of the OWF safe construction, operation and decommissioning plans in compliance with the binding regulations for the project implementation;
- preparation of rescue and crew/personnel training plans comprising the rules of update and verification through regular drills, in particular setting out the procedures for the use of in-house and third party vessels, including helicopters;
- preparation of the prevention plan concerning hazards and pollution arising during the OWF construction, operation and decommissioning;
- selection of suppliers and certified OWF components;
- setting out protection zones;
- precise marking of the area of the OWF, facilities and vessels sailing within that area;
- planning marine operations;
- application of standards and guidelines of the International Maritime Organisation (IMO) and recognised classification societies as well as recommendations from maritime administration;
- preparation of safe navigation plans for the OWF area and for voyages to ports;
- ensuring suitable navigation support in the form of nautical maps and navigation warnings;
- ensuring direct and indirect navigation supervision with the use of a stand-by vessel or remote radar supervision and the automatic identification system (AIS);
- continuous direct or remote vessel traffic monitoring within the OWF throughout the period of its construction, operation and decommissioning;
- establishing a coordination centre overseeing the construction, operation and decommissioning of the OWF;
- maintaining permanent communication lines between the OWF coordination centre, the maritime works coordinator and other coordination centres (the Maritime Search and Rescue Service in Gdynia and maritime administration).

Design, engineering and organisational protection measures planned to be used by the Applicant

The design, engineering and organisational protection measures primarily consist in undertaking navigation risk assessments and the development of prevention plans in relation to:

- hazards to human life – emergency escape as well as search and rescue plans;
- fire hazards;
- environmental pollution hazards – the hazard and oil pollution prevention plan. The rule concerning the duty to have the plan in place will pertain not only to the facility, but also to big and medium-size ships taking part in the OWF construction, operation and decommissioning process;
- structural collapse disaster hazards – any construction structures are designed with the possible extreme conditions for a minimum of double-length operation period taken into consideration.

Potential causes of failures with extreme situations taken into consideration and the risk of natural and structural collapse disasters

Because of their intended use, the OWF structures are designed and built to withstand extreme weather conditions. All components, despite being subjected to extremely high loads, are designed for many years of service. All devices are continuously monitored and any signal of the appearance of deviations from the situation classified as safe operation automatically triggers remote service interventions or a change in operating parameters up to and including equipment shutdown. The rotor is stopped automatically when wind speeds exceed safe operation limits for the wind turbine. The service plan is to ensure reliable operation.

Potentially, the greatest risks occur during the construction phase, however, the disaster risk is minimal due to the fact that marine operation planning always takes into account weather conditions and the possibility of their change. Each marine operation has its constraints in terms of visibility, wind speed, sea state (wave height) or ambient temperatures. The occurrence of negative effects of climate change in the form of the wind being too strong or the waves too high may only result in the extension of the construction cycle and increased energy demand (fuel consumption).

Risk of major failures and natural and structural collapse disasters with the substances and technologies applied taken into consideration, including the climate change risk

The risk of a serious failure resulting in the emission of hazardous substances is minimal. The probability of incidents such as ship collisions belongs to the category of very rare events (the probability of occurrence being 1/100 years), and incidents such as ship contact with the OWF structure belongs to the category of very rare events with the probability of occurrence being once in 200 years. Taking into account the consequences, those being the emission of 200 m^3 of marine gas oil, the risk level is within the acceptable range. The emission of 200 m^3 of marine gas oil will cause insignificant damage to the environment as such emission will disperse within 12 hours.

Impact on the climate

As part of the identification of the project's impacts on meteorological conditions, annual meteorological measurements including wind, pressure, humidity and air temperature were analysed, and the available literature on air quality and climate conditions for the Baltic Sea was reviewed.

During the farm construction phase, increased emissions of pollutants introduced into the atmosphere (including greenhouse gases) may be expected, which will be associated with increased traffic of vessels involved in the project. It is not possible to estimate the amount of these atmospheric emissions at this stage as the number, type and duration of use of specialised vessels will be determined as late as in the detailed design. It is assumed that only vessels that meet national and internationally agreed emission standards will be used.

During the construction phase, the significance of the planned project's impact on climate and greenhouse gases is expected to be insignificant as no factors will occur that could have any noticeable influence on climate change and greenhouse gas emission.

The impact on air quality during the construction phase of the planned project will be temporary and will disappear when the cessation of the works. Moreover, as the area is open and free from obstacles, the concentration of pollutants will quickly disperse. In connection with the above, the significance of impact will be negligible.

Wind turbines will reduce wind energy in some places and disturb atmospheric pressure within the rotor operation area. Wind turbine towers may disturb water flow speeds and directions as well as reduce sea wave energy in some areas, the result being the decrease of the wave height. In view of the significant distance from the BC-Wind OWF Area to the shore and other potential emission sources, it is appropriate to assume that the state of air purity within the area will correspond to purity class A. In view of the fact that the emissions generated during the operation of the OWF will be minimal (such emissions originating mainly from emergency generators, if any, installed at substations, and from air conditioning equipment, and to a small extent from service vessels), it can be practically assumed that there will be no emissions of dust pollutants, and only insignificant emissions of gaseous pollutants, including carbon dioxide, which is a greenhouse gas. Hence, no deterioration of air purity and the reduction of its purity class is expected. In the operation phase, the planned project will have both adverse and positive impact on the climate. The adverse impacts are related to greenhouse gas emissions caused by fuel combustion by service vessels. The positive impact on the climate will consist in the generation of electricity by the BC-Wind OWF from a renewable source at the level of 500 MW which, given the carbon dioxide emissions from the old-type conventional power generation at the level of 900-960 kg of CO_2 per MWh, will enable a noticeable reduction in the emissions of this gas in the country.

According to the findings in the design by GP WIND, the production of electricity in offshore wind turbines is associated with the emissions of 6 to 34 kg of CO_2 per MWh at all the phases of OWF life which, given the expected generation of 55.85 TWh over 25 years of operation, means the emissions of 0.34 to 1.90 million Mg of CO_2. The greater of the values mentioned above applies to the case where a GBS with a high proportion of cement in the construction is used. Even then, emissions will be at least 10 times smaller than those associated with electricity generation from other coal- or lignite-based sources (expected emission reductions are more than 20 million Mg of CO_2 without emissions associated with the construction of these sources).
During the operation phase, there will be an insignificant increase in local greenhouse gas emissions due to fuel combustion by service vessels operating the OWF, but the impact of these gases will be offset by emission reductions in wind power generation.
Climate conditions in the southern Baltic Sea area, which are related to the development of weather phenomena (mainly temperature, precipitation and wind) in the long-term period are subject to continuous changes which, although related to the global climate change, are generally of a regional nature. As the projected scope and scale of these changes over several decades for which the BC-Wind OWF is expected to operate is relatively small, the projected climate changes in the Baltic Sea region will have little impact on the area of the proposed OWF, as well as little impact on the operating conditions and safety of the wind turbines. However, it is appropriate to bear in mind that in order to ensure proper OWF operation it is necessary to take into account the possible occurrence of extreme weather conditions on a larger scale than currently observed, as well as the fact that the range of the variability of weather conditions during the year and in individual years will increase, taking into account the expected change trends over several decades.
With regard to the open sea, as the ice seasons become shorter and milder, this will have positive influence on the navigation conditions and on the operation of equipment at sea.
The progressive eutrophication of sea waters may cause certain impediments to the operation of the planned OWF, especially in summer. An increase in temperature in winter may cause the disappearance of species typical of cold water and the appearance of species found in warmer waters.
During the operation phase, the direct and local impact of the planned project (such impact related to the use of vessels and fuel consumption by them) will not have a significant impact on the change of climate conditions. Despite the long-term impact, its range will be local. However, indirectly, the OWF operation will result in the reduction of greenhouse gas emissions into the atmosphere by other sources, e.g. coal-fired power plants located in other areas of the country. Therefore, despite the immense importance of climate and air quality as well as the small scale of the impact of the BC-Wind OWF in the Applicant’s scenario in the operation phase, the impact in terms of the emissions of greenhouse gases into the atmosphere by ships may be deemed to be negligible. The impact of the reduction of greenhouse gas emissions is positive, but difficult to estimate. This is due to the fact that the emission reduction will be attributed to a completely different area (the location of an equivalent conventional fossil fuel power plant).

As the OWF Area is at a considerable distance from land, it is appropriate to assume that the planned project in the decommissioning phase will not affect the climate and air purity. Since emissions generated during OWF decommissioning will be minimal (as they will mainly originate from vessels performing dismantling works), it can be assumed that there will be no emissions of dust pollutants and insignificant emissions of gaseous pollutants. Hence, it is not anticipated that this situation will change.

During the decommissioning phase, there may be an insignificant increase in greenhouse gas emissions due to the combustion of fuels by vessels servicing the dismantling of offshore wind turbines.
During the decommissioning phase, the significance of the planned investment's impact on climate and greenhouse gas emissions will be negligible, as there will be no factors that could have a noticeable impact on climate change.
The impact of the planned project in the decommissioning phase on air quality will be temporary and will disappear after the cessation of the works. In addition, as the area is open and free from obstructions, the concentration of pollutants will quickly decrease. In relation to the above, the significance of the impact on air quality will be negligible.

Impact on the landscape
The following potential impacts of the project on the landscape, including the cultural landscape, have been identified in the construction phase of the planned OWF:
- vessel traffic, primarily that of contractors for construction works, as well as investigations, supervision and other works,
- transportation of OWF structural elements, including large ones,
- successively built offshore structures such as wind turbines, substations, platforms and others structures.

The impact on the landscape will be both objective, changing the landscape character from natural to industrial, and subjective, depending on the individual characteristics of the viewer, and may be perceived as both negative and positive, as well as neutral.
Offshore structures may be erected successively, in stages. It is expected that the OWF construction phase may last from 2 to 3 years, a maximum of 5 years. Offshore structures will be painted and marked, and illuminated at night to ensure maritime and aviation safety.
The impact of the OWF on the landscape in the construction phase depends on:
- vessel traffic related to the construction works, and the size of the structures being transported;
- the size of the structures, rotor diameter and its position in relation to the viewer;
- number and location of the wind turbines and other facilities;
- weather conditions and the sea state;
- the place at which the landscape observer is positioned.

People not directly related to the OWF stay in the area temporarily. These are employees on ships, passengers on tourist ferries, deep-sea anglers and fishermen, tourists on leisure vessels, participants in search and rescue operations, persons flying over the sea by airplanes, scientists and others. It is to this group that the planned OWF will be the most conspicuous, with more people able to observe the OWF during the day than at night when some ferry crew and passengers will be asleep. During construction, this group will expand to include workers on the OWF construction vessels. The impact on the landscape will be short and temporary, and will depend on how long the observer will see the OWF construction and the components being transported.

During the construction phase, the landscape will change not only at sea, but also in the ports where offshore structures will be made. In this regard, the impact on the landscape will be short and temporary, and will primarily take place in industrial and port areas. Depending on the location of the production area, impact will be more or less conspicuous to a casual observer as such impact will take place in medium and large ports. The landscape of the port and industrial areas is transformed, with many facilities and structures that convert the landscape into the industrial and anthropogenic one. These areas may partly or even completely obscure the observer's view of the structures being manufactured for the OWF. Impact was assessed as negligible, although it varies depending on the distance between the observer and the OWF as well as on the type of landscape being impacted. In the open sea, the landscape is not immune to disturbance, but its value there is not high, as very few people will be exposed to the change in the landscape in a short period of time, and some of them (e.g. tourists) may perceive it as beneficial or interesting. The spatial range of impact will be large and will decrease with the distance from the OWF. The vessel traffic will increase, and impact in ports will be local.

The following potential impacts of the project on the landscape, including the cultural landscape, have been identified in the operation phase of the planned OWF:

- operating offshore structures such as wind turbines, collecting substations and the export substation;
- vessel traffic for purposes of OWF servicing,

The landscape within the OWF will have an industrial character from the objective point of view, but the impact of landscape will also be subjective and dependent on the individual characteristics of the viewer, and may be perceived as both negative and positive, as well as neutral.

The impact of the OWF on the landscape during the operation phase depends on:

- the size of the structures, rotor diameter and its position in relation to the viewer;
- number and location of the wind turbines and other facilities;
- vessel traffic connected with OWF servicing,
- weather conditions and the sea state;
- the place at which the landscape observer is positioned.

Offshore structures will operate in the open sea space for over 20 years. People not directly related to the OWF stay in the area temporarily. In the operation phase, these will be the employees on ships, including those intended for regular OWF servicing, as well as passengers on tourist ferries, deep-sea anglers and fishermen, tourists on leisure vessels, participants in search and rescue operations, persons flying over the sea by airplanes and scientists. It is to these groups that the planned OWF will be the most conspicuous, with more people able to observe the OWF during the day than at night when some ferry crew and passengers will be asleep. Impacts on the landscape will be long-term (approximately 20 years) and temporary and the decommissioning of the OWF is planned after operation has ended.

What matters during this phase is how long the observer will see the OWF. It is anticipated that the persons mentioned above will stay in the area from which the OWF will be best seen only occasionally, and some persons only once.

Meteorological conditions, more specifically visibility understood as the weather-dependent range of seeing and distinguishing the facilities, are the primary factor that will determine whether or not the wind turbines will be seen from the shore. In the case of Łeba, a situation when the OWF will be visible from that location will not occur. In the case of Lubiatowo and Dębki, single wind turbines may be visible for as many as up to 6,000 hours per year, but 100 % of the wind turbines installed in the BC-Wind OWF may be visible for up to 1,000 hours per year.

In the case of Jastrzębia Góra, single wind turbines may be visible for over 4,000 hours per year, and all the wind turbines installed in the BC-Wind OWF may be visible for as many as up to several hundred hours per year.
The Earth's curvature and the associated constraints on the height of objects that can be seen from a large distance are an additional limitation associated with the visibility of wind turbines from the shore. In practical terms, this limitation manifests itself in the fact that the further away from the observer the wind turbines are, the smaller portion of them will be seen. However, the planned structures are so large that it is the atmospheric visibility and not the Earth's curvature that will influence the number of wind turbines and structures that will be seen.
In the implementation scenario, the maximum height of the offshore wind turbines may be 330 meters, and the maximum rotor diameter – 280 meters. Both parameters are greater than those taken for the reasonable alternative scenario, but this will make no noticeable/significant difference to an observer on a ship, for example. In view of the distance of approximately 22.6 km from land, the height of several dozen metres will not be noted as making a difference.
When weather conditions are favourable, i.e. with very good visibility, the topmost parts of the OWF structures will be visible from land at the horizon line. The OWF will be virtually invisible on most days of the year. Within the range of the OWFs potential landscape impact zone is the land area from Łeba in the west to Jastrzębia Góra in the east. Whether the OWF will be visible to persons on land depends on the location from which they observe the sea. For those on the beach, the OWF will be less visible than for those at a higher altitude above sea level, in coastal locations such as: Rowy, the Czołpino sea lighthouse, the dunes in the Słowiński National Park, Łeba, the Stilo sea lighthouse and Jastrzębia Góra. For each of the observers on land, the OWF will be located in the horizon line when visibility is good. The operating OWF will not have a negative impact on the forms of nature and landscape protection located on land, either.
In the operation phase of the BC-Wind OWF, which will be located approximately 23 km from the shore, there will be no impacts occurring on land, such as the rotor blade turning effect, light flicker or noise, as such impacts only occur close to the operating structures, and the range of these effects will not reach the shore. Offshore structures will be painted and marked, and illuminated at night in view of the need to ensure maritime and aviation safety.
The importance of the impact was assessed as negligible, although it varies depending on the distance between the observer and the OWF. In the open sea, the landscape is not immune to disturbance, but its value there is not high, as very few people will be exposed to the change in the landscape in a short period of time, and some of them (e.g. tourists) may perceive it as beneficial or interesting. The impact scale will have a large spatial range, which will decrease with the distance from the OWF. This will be a long-term but reversible change. On land, the upper parts of the OWF may be discernible occasionally.

Impact on population, its health and living conditions

During the construction period of the OWF, the impact on the population will occur in varying degrees in onshore and offshore areas. In port and shipyard areas, the basic wind turbine components, such as the foundations or supporting structures, towers and nacelles with rotors, will be stored and assembled. The substations and infrastructure platforms determining the correct operation of the OWF will be built at other plants. Those components will continue to be manufactured for several years with the use of various technologies, and then transported by ship to the OWF site. The construction phase of the planned project will result in the provision of jobs for many people in the shipbuilding, electric power, electrical machinery and marine transportation industries. Potentially, large plants and ports from the Tri-City area, as well as Świnoujście and Szczecin, will be involved in the production and shipping of wind turbine components for the OWF. Within the plants and port infrastructure located there, OWF structures and equipment will be manufactured and, moreover, the transshipment of the components transported from other production plants may take place in those places. In these centres, the health and living conditions of the employed persons will be influenced in relation to the emissions of noise, air pollution, sewage and waste. Smaller ports such as Władysławowo, Łeba, Ustka, Darłowo, Kołobrzeg and Dziwnów, in the case of adaptation of their existing infrastructure, may also play the role of service or rapid response ports in which similar impacts on the health and living conditions of employed persons will occur in relation to the emission of noise, air pollution, sewage and waste, but on a much smaller scale.

In sea territories, the long-term OWF construction period will result in significant changes to navigation routes in the OWF surroundings, and in significant disruptions to the navigation by all sea-going vessels due to the crossing with the main shipping routes on the southern Baltic. This will cause an increased hazard to the safety of navigation by all types of vessels, including leisure ones, and to fishing in this sea area. The construction of an OWF of the size similar to the BC-Wind OWF may require several dozen voyages by ships of various sizes in the OWF/ports of the Bay of Gdańsk destination pair (or other selected construction ports) and the ones in Łeba and Władysławowo. This will have an insignificant impact on navigation safety. During the construction period, fisheries will have to give up fishing in some parts of the following fishing quadrants: 08 and P8 in water regions affected by the construction works.

The current oil and gas field exploitation at B3 and B8 fields and the planned exploitation of subsea natural gas reservoirs B4 and B6 will not be disturbed in view of the significant distance, in the order of several dozen kilometres, between the reservoirs and BC-Wind OWF area.

The construction process of the BC-Wind OWF will be a constraint on offshore emergency management and response activities. This pertains to the various types of emergencies and accidents involving vessels, to rescue operations, salvage of property or oil pollution cleanup.

In offshore areas, potential impacts on the health conditions and human life will be related to the transportation and assembly of the individual wind turbine structures and to the possible collisions of vessels with offshore wind turbine structures.

The commissioning and operation of the successive offshore wind turbines requires regular maintenance. During operation, the following components, without limitation, will be subject to scheduled inspections and interventions undertaken as a result of observed faulty operation: offshore wind turbines, OWF foundations or supporting structures, substations and submarine cables. These activities will be carried out with the use of, for example, specialized ships, helicopters, service vessels, work boats and submarine vehicles. During the operation of the BC-Wind OWF, the number of voyages of by OWF service vessels may amount to several dozen per year. These vessels will travel mainly between the ports of the central coast and the OWF Area. The number of possible voyages in the Bay of Gdańsk/BC-Wind OWF/Bay of Gdańsk destination pair (or in other destination pairs depending on the choice of a service port) in the operation phase will be much smaller, i.e. in the order of several dozen per year.

The regular maintenance of the OWF in the operation phase will consolidate the changes in the navigation of sea-going ships. The intensity of vessel traffic between the central coast service ports will be close to the maximum in the construction phase, which will adversely affect the risk of emergencies.

For safety reasons, fishing vessel access to the BC-Wind OWF Area may be restricted. This may mean, for example, reduced access to the fishing grounds that are currently being exploited, as well as the increase in the length of fishing boat routes from some ports to the fishing grounds north of the BC-Wind OWF Area. The scale of these impacts will affect several dozen boats, primarily from the ports of Łeba and Władysławowo.

A variant of sea fishing is recreational fishing, which is practised by both sea fishermen and angling enthusiasts, as well as by sports and leisure vessel owners. In these cases, it is a small group of people whose financial situation will deteriorate due to the construction and operation of the BC-Wind OWF.

The living standard of the inhabitants of the seaside towns, communes and settlements depends to a large extent on the development of seaside tourism and recreation. In some communes, such as the town of Łeba, the income of the local government and inhabitants mostly comes from tourist services as well as from qualified tourism and recreation. The tourist and recreation potential of this part of the Baltic coast is among the highest in the country, and thousands of the inhabitants provide the visitors, predominantly in the summer season, with a variety of services, with a tendency to make the holiday season longer.

In view of the long distance from the shore (approximately 22.6 kilometres or more), noise from wind turbines and service vessels will not reach the coastal zone. During most meteorological situations (the wind, wave motion, cloud cover and air humidity), the operation of the BC-Wind OWF will not be noticeable from the level of the beach or dunes. Only from higher lookout points and in suitable visibility conditions will it be possible to see a bigger number of wind turbines (tower and rotor parts). The number of visible wind turbines will depend on their layout, position and the distance from the shoreline. In the case of such big distances, weather conditions will result in the maximum reduction of the shadow flicker effect on land. At night time, however, the elements of the OWF lighting along a lengthy coastline stretch will be clearly visible from the shore. Human health and life are associated with direct or indirect impacts related to the emissions of noise, air pollution, electromagnetic fields and radiation, as well as sewage and waste.

The majority of these will not cause significant impact on human health and living conditions owing to the separation from the facilities and systems. In view of the occurrence of electromagnetic fields from equipment at offshore substations and of the transmission capacity of radiolocation and radio communication equipment, the potential hazard will occur to the maintenance staff of these devices throughout the substation operation period. The public will never be within the range of electromagnetic impact of these devices. Persons staying at in the BC-Wind OWF Area in connection with the performance of their business duties will be subject to labour, occupational health and safety regulations. Accordingly, if there is a hazard connected with the emissions mentioned above, these persons will be provided with personal protective equipment or their working time in these conditions will be optimized as appropriate so that they will not be subjected to these exposures for the time longer than allowed by occupational health and safety regulations.

Other types of events that may affect the health and living conditions may include various kinds of the collisions of vessels at sea. Events of that kind are random in nature, and the operation of the OWF may impede rescue operations at sea. Although the resource, that being the human population and its health and living conditions, is of high value, since the distance of the BC-Wind OWF from the people's permanent places of residence and work is large, the significance of the impact of the BC-Wind OWF in this case was deemed to be negligible.

Impact on the use and development of the water region and on tangible goods
During the construction phase of the BC-Wind OWF, the area will be gradually and temporarily excluded from navigation, fishing, research voyages and tourist cruises for safety reasons. Only the presence of ships associated with the project will be allowed. The construction of the BC-Wind OWF will not interfere with the use of MW P-18 and MW P-19 naval ranges. The cultural heritage items identified during surveys shall be protected by establishing no construction zones of up to 100 m. Busier vessel traffic resulting from the OWF construction may mean impediments to vessel traffic on routes located to the south and north-east of the OWF.
Restrictions resulting from the gradual conversion of the BC-Wind OWF area from its current use will have the greatest impact on fishing, including the aspect regarding the fishing sites and the need to increase the length of routes to fishing grounds located north of the BC-Wind OWF area. The impact on fishing will be adverse (following from the restrictions) and direct (influencing the affected party directly). Moreover, in view of the assumed length of the construction phase (from 2 to 3 years, maximum 5 years), that impact will be long-term and local (limited to the BC-Wind OWF Development Area).
Taking into account that the use of the BC-Wind OWF Area in fishing activity has been insignificant so far, and that this activity can be pursued in adjacent water regions, it is appropriate to assume that the impact of the BC-Wind OWF on fishing will be of minor importance.

In the operation phase, the BC-Wind OWF Area will be excluded from regular navigation for safety reasons. The traffic of other vessels (fishing, survey and tourist ones) may be allowed depending on the layout of the wind turbines, under conditions developed with the investors. Decisions on the approval of vessels other than those serving the OWF in the BC-Wind OWF Area will be made by maritime administration authorities.
Excluding the BC-Wind OWF Area from free navigation by fishing vessels may cause their routes to and from fishing grounds to become longer. However, taking into account the location of the BC-Wind OWF in relation to the shortest routes to the fishing grounds in the area of the Słupsk Trough (Rynna Słupska) from the ports in Władysławowo and Łeba, these routes may become longer only after the next areas for planned OWFs have been taken into account. In no way will the exclusion of the BC-Wind OWF Area from free navigation affect fishermen from other ports, who catch fish in the Słupsk Bank area.
As a result of the occupation of the sea territory by the BC-Wind OWF, that territory may be excluded from fishing. The BC-Wind OWF Area is located within two fishing quadrants. The area is distinguished by low fishing productivity, in relation to which the significance of the impact was assessed as being of minor importance.

The EIA Report analysed the activity of fishing vessels departing from and returning to the ports of Kołobrzeg, Darłowo, Ustka, Łeba and Władysławowo. The number of voyages to fisheries located north of the OWF was included in the calculations. For the calculations, the centre of fishing quadrants M9 and N9 was taken as the target point.
The calculations, based on the data from the years 2017-2019, indicate that the need to bypass the OWF by fishing vessels departing from and returning to the ports in Kołobrzeg, Darłowo, Ustka, Łeba and Władysławowo and fishing in the fisheries in the Słupsk Trough area, will result in an increase in fuel costs by about PLN 40,000 per year. The longer time of sailing to and returning from the fishing ground may generate additional labour costs at approximately PLN 111,000 per year. In view of the crucial importance of the fishing grounds in the Słupsk Trough area to fishermen whose home port is Ustka, and in consideration of the longest route extension (28 km both ways), the fishermen from that port will note the highest cost increase following from the need to avoid the OWF area. The estimated total fuel cost and salary increase for that port will be approximately PLN 135,000, that figure constituting approximately 90 % of the total costs for all ports under analysis.

Impact of the planned project on the environment
The survey of phytobenthos in the BC-Wind Offshore Wind Farm (OWF) was conducted in June 2020. In the shallowest parts of the area, where the rocky bottom was found, six transects were set out along which bottom filming by was performed by means of a remotely operated vehicle *(ROV).* The transects at which the inspection was conducted ranged in depth from 28.1 to 36.8 meters. The analysis of the films demonstrated the lack of underwater plants.
Macrozoobenthos inventory surveys in the BC-Wind OWF Area were conducted in June 2020. A total of 146 samples were taken with a van Veen scoop from the soft bottom (mainly the sandy and gravel sediment) prevailing in the survey area. In turn, the epiphytic and phytophilous fauna was collected from the hard bottom, which is a small part of the BC-Wind OWF Area, at 10 stations by means of an ROV equipped with a pipe collecting macrozoobenthos from the surface of boulders and large stones. Based on the collected material, the taxonomic composition, numerical force and biomass of macrozoobenthos were determined. Its structure and state of ecological quality were described with selected ecological indicators.
On the soft bottom, the occurrence of 21 species and higher taxonomic units (not determined as regards the species) was noted. Among those, in terms of the numerical force, dominant was the sand-seeking polychaete (*Pygospio elegans),* and the greatest share in biomass was contributed by a bivalve, the Baltic macoma (*Limecola balthica).* On the hard bottom, in terms of both the numerical force and biomass, definitely predominant was the bay mussel (*Mytilus trossulus).* In that habitat, in addition to the aggregation of bivalves, there occurred crustaceans, bryozoans, hydrozoans and polychaetes. The presence of a maximum of 17 taxa was found there. The taxonomic composition, numerical force and biomass of macrozoobenthos in both habitats were typical of a moderately deep bottom of the open zone of the Baltic Sea (up to 60 m BSL). The valorisation demonstrated that the soft bottom benthos did not present high values, and the quality of macrozoobenthos communities was assessed as "average". The valorisation of the hard bottom demonstrated a higher degree of the natural importance of that habitat type, which is in a "good" environmental condition.
The works on the sea bottom in the construction phase of the BC-Wind OWF may cause the following impacts affecting the condition of macrozoobenthos inhabiting in that area:

- disturbance of the bottom sediment structure,

- increase of suspended solids concentration in water,
- sedimentation of suspended solids on the bottom,
- redistribution of pollutants from the sediment into water.

The most important OWF technical parameters, which are significant from the point of view of the assessment of the project impact on macrozoobenthos in the construction phase are:

- OWF development area,
- wind turbine foundations – the type and number of foundations with the largest area covering the sea bottom,
- power cables – their length and bottom surface disturbed during cable laying.

The assessment of wind turbine impact at the BC-Wind OWF area (1 NM) in the construction phase was undertaken separately for soft and hard bottom macrozoobenthos. The assessment of the project impact on macrozoobenthos follows from the fact that these two associations of (soft and hard) bottom fauna differ from each other in the taxonomic composition, numerical force and biomass of the taxa forming the complexes. In relation to that, they differ from each other in the importance and sensitivity in the context of the various types of influence. The importance and sensitivity of the group of organisms being evaluated (soft and hard bottom macrozoobenthos) along with the assessment of the scale of the impact (the nature and type of impacts, the spatial and time range) influence the assessment of the significance of a given impact.

Violation of the bottom sediment structure is the most negative type of impact on macrozoobenthos among all those impacts occurring during the construction phase of the OWF. The recovery of the excavated material for foundations and/or supporting structures and anti-erosion layers, bottom levelling, the burial of power cables in the sea bottom, the placement of the excavated material at the storage site, as well as the operation of jack-up vessels are the factors that most strongly affect macrozoobenthos species inhabiting the surface of sandy and gravel sediments and the rocky bottom, as these species are not able to move actively within the sediment, as well as organisms living in the sediment, mainly in its top layer. An increase in the concentration of suspended solids in water is another type of impact on macrozoobenthos of the BC-Wind OWF area during the construction phase. During dredging works and the laying and burying of power cables in the sea bottom, suspended solids rise from the sea bottom and spread in water due to the disturbance of the bottom sediment structure. The suspended solids concentration depends on the speed of sea currents, their direction, turbulence processes as well as the magnitude of the sea bottom sediment fraction.

The sedimentation of suspended solids on the bottom leads to the covering of benthic habitats with an additional layer of sediment. Moreover, suspended particles which will fall to the bottom may erode by being put back into motion in the resuspension process, which follows from the hydrodynamic conditions in the water region. Many macrozoobenthic organisms are naturally adapted to life in the conditions of repeated sediment agitation and settlement on the bottom (due to storms or tidal cycles) causing these organisms to become buried. Due to the fact that at the entire BC-Wind area, both in the Applicant’s scenario and in the alternative scenario, the project works would result in the formation of a layer approximately 0.8 mm thick, that being a relatively low value, which may mostly consist of a permeable fraction of fine sands, and also given favourable oxygen conditions prevailing in the demersal layer, the scale of negative impact on macrozoobenthos will be small. Although the sedimentation of suspended solids on the bottom may temporarily reduce benthic resources and thus affect the food base for fish and marine birds in the area, the maximum sediment thickness, except in the locations closest to the foundations or cables, will not actually exceed the lethal values reported in literature for all macrozoobenthos taxa identified within the project area. Moreover. this impact will be short-term and reversible.

Taking into account the low sensitivity of both evaluated macrozoobenthos associations and the scale of the described impact which is assessed as low, the significance of suspended solids sedimentation on the bottom of the BC-Wind OWF area for both soft- and hard-bottom macrozoobenthos is determined as negligible.
The redistribution of contaminants from sediments to water is the last of the factors having a harmful effect on macrozoobenthos. Due to the disturbance of bottom sediments during installation works on the bottom, cable burying or ship anchoring, bottom fauna is exposed to an increased concentration of contaminants, e.g. heavy metals and toxic organic compounds: polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and tributyltin (TBT), penetrating from the sediments into the water depth as a result of chemical and biochemical processes. Based on the study of the physical and chemical state of bottom sediments in the BC-Wind OWF area in terms of the pollutants, the impact on macrozoobenthos was determined indirectly. As a result of the investigations conducted, it was found that the analysed surface bottom sediments belong to inorganic sediments with organic matter content [expressed by loss on ignition (LOI)] below 4 %. These were distinguished by a small content of biogenic substances. The concentrations of durable organic pollutants (i.e. PAHs, PCBs and TBT) and harmful substances, such as metals and mineral oils, in the study area were low and did not generally differ from the literature data for sandy bottom sediments of the southern Baltic Sea. The investigated sediments were also distinguished by low concentrations of the radioactive 137 Cs element, which are typical for sandy sediments. The obtained concentration values of the labile form of metals which are responsible, for example, for their toxicity, bioavailability or accumulation in the bottom sediments of the OWF area, as well as the values of PAHs and PCBs, compared to the normative values given in the Regulation of the Minister of Environment of 11 May 2015 on the recovery of wastes outside installations and devices (Dz. U. [*Journal of Laws*] 2015, item 796), were low in the investigated bottom sediments. The sediments were not contaminated with the compounds of these groups. Next, the obtained concentrations of TBT and its decomposition products (DBT and MBT) in bottom sediments from the BC-Wind OWF area were typical of sandy sediments of the southern Baltic Sea. As the redistribution of contaminants from the sediment into the water is possible, both the representatives of the soft- and hard-bottom macrozoobenthos association will have irrelevant sensitivity to this impact. This phenomenon is expected to have a very low impact on changes in the structure and functioning of both of the macrozoobenthos associations, given that the results confirming that the concentration values of all substances toxic and hazardous to the bottom fauna in the survey area were low, and the processes related to the release of labile forms of metals, biogenic substances (nitrogen and phosphorus compounds) and PAH and PCB will occur with low intensity in the entire BC-Wind OWF area.
The operation of the BC-Wind OWF will cause the following impacts on macrozoobenthos living in that area: the loss of a part of the macrozoobenthos habitat and the artificial reef effect. The artificial reef effect consists in the colonization of artificial hard substrates of supporting structures introduced into the environment by epiphytic animal and plant associations, as well as by mobile epifauna. Based on the literature, it is known that in the place where the hard substrate did not exist before, the will be a change of the qualitative and quantitative structure of the zoobenthic community within the whole microhabitat, i.e. on the surface of underwater systems and on the sea bottom surface around them. The process of growing on the supporting structures by epiphytic organisms (invertebrates and macroalgae) begins after the reproduction of lichen species and after larvae have settled on the hard structure, usually in late spring.

Lichen associations have a significant impact on the marine environment at the ecosystem level, although the nature of this impact is difficult to determine clearly. This impact depends on local environmental conditions, the reproductive potential of zoobenthic organisms and ecosystem management plans in the BC-Wind OWF area.
In this decision, this authority obliged the Applicant to perform post-development monitoring of benthic organisms. Benthos monitoring focussed on the research into the colonisation of hard artificial substrates by epiphytic animal and plant associations.

In the course of ichthyoplankton surveys conducted in the OWF Area in 2019 and 2020, covering the autumn (October), winter (January), spring (March) and summer (July) survey seasons, the spawn of one fish species and larvae belonging to 10 taxa were caught.
As regards the spawn, 100 % were sprat eggs. Sprat spawn was present in January, March and July. A little amount of sprat span caught in the winter and spring originated from the early spring deep-water spawning phase taking place directly in the deeper regions of the investigated area, where the water temperature exceeded the required min. 4 °C, and salinity was over 9 PSU. The absence of spawn of other pelagic spawning fish species is a phenomenon which was expected and is due to water salinity being too low for the proper development of these eggs.
In the cycle of surveys beginning in autumn 2019, 5 larva taxa were recorded: Gobiidae, herring, Ammodytidae, fourbeard rocklings and cod. The number was similar to the number of species most often observed in the autumn season in the southern Baltic Sea – three larvae species were recorded in winter 2020: sprat, rock gunnel and herring. Only three taxa were found in spring: sprat, European flounder and common seasnail. In spring the larvae belonging to the following 8 taxa were caught: the sprat, Gobiidae, Ammodytidae, herring, fourbeard rocklings, long-spined bullhead, cod and European flounder.
In the total fish larvae numerical force (converted to 10 m^2 of the water surface) throughout the survey period, sprat was by far the most important (82.9 % of the total numerical force of the larvae of all species) followed by Gobiidae (8.7 %) and European flounder (4.8 %). Markedly less abundant (from 0.1 to 1.2 % of the total larvae numerical force) were the larvae of the remaining 7 species: Ammodytidae, herring, common seasnail, fourbeard rockling, Ammodytidae, long-spined bullhead, rock gunnel and the least abundant cod. Their joint contribution to the total abundance was only 3.6 %.
An analysis of the catch and productivity results of the fish association dwelling within the OWF shows that the area is relatively poor in terms of species diversity, with a clear predominance of cod and European flounder in bottom fishing and with herring and sprat in pelagic fishing.
The result of bottom fishing with set-nets in the OWF Area is 1351.39 kg of fish belonging to 13 taxa. Dominant were European flounder and cod, with the remaining species making a small catch (sandeel, plaice, shorthorn sculpin, hooknose, fourbeard rockling, turbot, herring, lumpsucker, viviparous eelpout, merling and common dab).
Fish belonging to 21 taxa were caught in all survey gear in the OWF Area. The following were included in the durable fish associations in the area: cod, platfish (*Pleuronectiformes*), herring, sprat as well as shorthorn sculpin, lumpsucker, sandeel, fourbeard rockling and viviparous eelpout *(Zoarces viviparus).* The observed occurrence of the larvae of species such as Gobiidae, rock gunnel, long-spined bullhead and common seasnail does not indicate that the area is constantly populated by adult fish.

The analysis of the performance of set-survey tools showed that the peak of fish densities fell during the summer season due to the fact that the OWF Area is a feeding ground during that season. In other periods, fish densities were similar, while the lowest yields were recorded in winter.

The main impacts of the planned project on ichthyofauna will be the emission of noise and vibration, an increase in suspended solids concentration, the release of pollutants and biogenic substances from the sediment into the water, a habitat change, and the formation of a barrier.

The main source of acoustic disturbance during the construction phase will be the driving of wind turbine foundation elements into the bottom (piling). The noise associated with this process may adversely affect marine organisms. According to Popper and Hastings [2009], piling is the only noise source next to underwater explosions that may cause fish death.

According to the EIA Report, the numerical model of noise propagation during piling predicts that the range of impact causing behavioural responses will be a maximum of 23 km for fish without a swim bladder and 59 km for fish with a swim bladder. As regards noise and vibration impacts that induce a temporary threshold shift (TTS), the range will not exceed 0.1 km for a single impact and 8 km for the cumulative sound exposure level (SEL) in one hour. In addition, the use of the soft start procedure to scare ichthyofauna prior to the commencement of work from the impacted area should further offset the impact causing the TTS.

The BC-Wind OWF is not a spawning ground for cod or the dominant deep-sea spawning European founder due to the prevailing hydrological conditions. Sprat spawning was found during the ichthyological survey, however, this water region is small compared to the extensive pelagic fish spawning ground. The impact of noise and vibration on adult fish will be negative, direct, short-term and beyond the BC-Wind OWF Area (regional).

Sediment will be disturbed during dredging and installation activities, which will result in increased suspended solids in the water and in the deterioration of visibility. Such situations may occur primarily during the construction phase (foundations or supporting structures of wind turbines, excavation for cables) and during the decommissioning of the project (the removal of OWF structural components). The significance of the impact of suspended solids on fish depends both on physical factors resulting from local abiotic environmental conditions and those related to the biology of ichthyofauna. The impact of increased concentrations of suspended solids on ichthyofauna may cause a whole range of adverse effects, such as an avoidance response, a reduction in growth rate and reproductive efficiency. This impact may also cause increased susceptibility to disease and even increased fish mortality.

Sensitivity to the effects of this agent depends on the developmental stage of the organism. While as regards early life stages (eggs and larvae), adverse effects may occur at concentrations in the order of milligrams per dm^3, increased mortality in juvenile and adult fish is observed at concentrations on the order of grams per dm^3. Suspended particles penetrating the gills of larvae may impede respiration and cause increased mortality. High concentrations of suspended solids may also reduce visibility. Taking into account the insignificant larvae sight ability (limited to distances equal to their body length in many cases), this may negatively affect their ability to spot and acquire food. Negative impact of higher concentrations of suspended solids on fish eggs has also been observed. Due to the possibility of active avoidance of areas with high concentrations of suspended solids by adult fish, sublethal rather than lethal impacts should be expected.

The increase in suspended solids will affect relatively small areas in relation to the total area of spawning and feeding grounds. At the same time, the results of modelling of suspended solids dispersion in the BC-Wind OWF Area indicate that the increase in suspended solids content will be short-term and local.

The impact associated with the increase in suspended solids will be negative, direct, local and short-term. Sensitivity to impact for cod, European flounder, common seasnail and sand goby was assessed as moderate, and such impact for sprat and herring is estimated as high. The significance of the impact is assessed as negligible for all surveyed fish species.

During the construction of the OWF, harmful chemicals may be released. The main sources of emissions may include oil spills resulting from the failure or sinking of vessels, as well as the release of harmful substances from the sediment during dredging works (excavation for wind turbine foundations and chases for transmission infrastructure cables).

The sensitivity of fish to harmful substances depends on the developmental stage, gender and species. Particularly sensitive are maturing females, embryos and early larval stages. High concentrations of certain harmful substances in the gonads of spawning fish may cause high mortality of their offspring. Fish exposure to toxic substances may cause morphological changes. Physiological changes such as lowered heart rates and endocrine disorders may also occur, including those that reduce spawning efficiency.

Oil-based product will be the main toxic substances released into the water during vessel collisions and accidents. Particularly dangerous may be the polysaturated aromatic hydrocarbons (PAHs) belonging to the former group as their adverse impact on the embryonic stages of fish was observed even at low concentrations.

It can be assumed, however, that the risk of high concentrations of these substances caused by their release from sludge in the Polish sea territories is low. Neither the surveys of the content of polychlorinated biphenyls, organochloride pesticides nor of heavy metals (copper, zinc, cadmium, lead and mercury) in sludge from various locations in Polish sea territories showed the presence of the above-mentioned substances in concentrations that could cause harmful effects on organisms. The results of measurements of heavy metal concentrations (copper, zinc, cadmium, lead and mercury) in sediments and European flounder tissues conducted in 2011 indicate a low level of harmful substance accumulation in fish tissues. The concentrations of DDT, HCB, PCDD/F in the sandy sediments of the area remain at levels that do not exert toxic effects on marine organisms, either. The impact associated with the release of pollutants and biogenic substances from the sediment into water will be negative, direct, temporary and local. Sensitivity to impact for cod, European flounder, common seasnail, small goby, sprat and herring was assessed as moderate. The significance of the impact is assessed as negligible for all surveyed fish species.

During construction, there may be times when, due to the impact of a number of adverse factors (noise, an increased concentration of suspended solids or heavier vessel traffic), the work area will be avoided by fish. The scale of this impact depends on both the biology of the individual species and on their developmental stage. The size of the area, time and timing of the works are also important factors.

Construction work may lead to physical changes in the environment, such as the nature of the sediment or bottom morphology. As a result of these changes fish reproductive processes may be disrupted. The disruption of the original sediment structure may result in periodic abandonment of spawning or induce unfavourable developmental conditions for eggs or fry. This type of reaction may affect herring that requires a sediment-covered bottom for spawning, such bottom enabling eggs to attach

The bottom surface will also be occupied by the structural components (wind turbine foundations and structures preventing that foundation deep scouring). The scale of this loss depends on the number of wind turbines and the type of foundations. However, the loss should not exceed 1 % of the total project area. The loss of the surface available to benthic organisms and the changes in environmental parameters may result in the reduction of the benthos numerical force and biomass. Combined with the physical destruction of sediment-dwelling animals during construction works, this may lead to a reduction in the food base of benthic fish and cause a reduction in their numerical force. Given the likely small spatial scale of this impact and the ability of the fish to actively search for food, it can be assumed that the reduction in food resources will not have a significant impact on benthophagous fish.

The BC-Wind OWF is not a spawning ground for cod or the dominant deep-sea spawning European founder. Sprat spawning was found during the ichthyological survey, however, this water region is small compared to the extensive pelagic fish spawning ground. Herring spawning may occur in the area of the BC-Wind OWF, it can be assumed, however, that any disturbance to the spawning process will not affect the recruitment of this species at the population level. The impact was considered to be long-lasting and affecting relatively small areas in relation to the total area of spawning and feeding grounds. The impact related to habitat alteration will be negative, direct, temporary and local. The sensitivity of the impact for cod, European flounder, common seasnail, small goby, sprat and herring was assessed as high. The significance of the impact is assessed as negligible for all surveyed fish species.

The construction of underwater structures may act as a migration barrier for fish whose routes may run at that place. This effect may be strengthened by the heavy sea traffic in the construction period. Observations carried out in Danish OWF areas indicate that due to the possibility of active fish movements, the factors mentioned above do not significantly interfere with migration processes. The scale of impact is likely to be local and short-term, thus causing only temporary avoidance of the area during the works. The offshore wind turbine density is so low that it will not affect the migration possibilities of ichthyofauna.

The impact associated with the rise of the barrier will be negative, direct, local and temporary for all species. Sensitivity to impact for cod, European flounder, common seasnail, small goby, sprat and herring was assessed as moderate. The significance of the impact is assessed as negligible for all surveyed species.

Monitoring of marine mammals comprised the acoustic monitoring of the porpoise and aerial visual observations. Marine mammals were also watched during marine bird observations from vessels along the designated transects. These observations were an additional element during the surveys of avifauna distribution in the OWF Area (2 NM) and in additional areas of significant importance to birds. Environmental surveys conducted for the BC-Wind OWF took place from October 2019 to January 2021.

Monitoring included passive acoustic monitoring of the porpoise in the BC-Wind OWF Area (2 NM) with the use of C-POD equipment. Visual monitoring was performed by way of observation flights. Additionally, observations of marine mammals were made during marine bird surveys from vessels.
Acoustic monitoring of the porpoise showed that these mammals appeared very sporadically in the BC-Wind OWF Area. During the entire monitoring period, out of 2790 monitoring days, only 17 positive detection days were recorded at survey stations. Porpoises most often appeared in the area of survey stations CPOD_03 and CPOD_05, and during the summer season. No marine mammals were spotted during 6 observation flights. In addition to this, marine mammal observations during bird surveys from vessels confirmed the presence of seals in the BC-Wind OWF Area (2 NM) and adjacent waters. A total of 28 seals were noted, nine of them in the BC-Wind OWF development area.
The results of acoustic monitoring and aerial visual observations indicate that porpoises are sparse in the survey area. Within the framework of the present survey, more intense porpoise activity was noted between May and October than between November and April.

In the construction phase of the BC-Wind OWF, marine mammals may be subject to impacts due to underwater noise from piling and vessel traffic, an increase in suspended solids concentration in the water, habitat alteration, and the spillage of oil-based products into the environment as a result of ship failures.
In general, noise impact on marine mammals may be divided into five broad categories, which largely depend on the animal's distance from the sound source: detection; masking; changes in behaviour (the behavioural response); physical damage to auditory cells after sound exposure (TTS, PTS); as well as physical and physiological effects. The boundaries of the above-mentioned noise impact zones are not sharp and the different zones overlap to a large extent. It is generally accepted that the OWF construction noise detection zone is quite large for marine mammals due to the high level of noise generated. Physical and physiological effects include tissue damage and physiological consequences (such as stress). Masking occurs when noise interferes with the detection of biologically relevant signals used by marine animals for communication and navigation. Masking is natural environmental phenomenon which occurs if the frequencies of the signal of interest and noise overlap.
Changes in the behaviour of porpoises due to anthropogenic noise are, in most cases, rather short and reversible. The most common response of these animals to pile-driving noise is to move away from the piling area, sometimes to less favourable areas, the disturbance of feeding and a change of the mating behaviour.
Similarly to porpoises, in the case of seals the changes in behaviour due to pile driving are rather short and reversible.
In the EIA Report for the BC-Wind OWF, noise exposure criteria for seals were derived on the basis of the received sound levels (in the SEL), where there was a 50 percent change in area use (the median) for the portion of the water column with the highest received sound levels. This resulted in the criterion of 158 dB per 1 pPa2s for the behavioural response for seals. Noise-induced shifts in the hearing threshold may lead to temporary (TTS), or permanent (PTS) changes. With TTS, the animal will regain its original hearing capacity after a period of convalescence. In contrast, PTS leads to irreversible changes in the hearing organ.
The increase in suspended solids in the water due to the construction of the BC-Wind OWF is expected to be short-term, and so of minor importance to porpoises, grey seals and common seals.

Marine mammal habitat changes associated with the construction of the BC-Wind OWF include changes to the sea bottom and an increase in the number of ships on the surface, which indirectly affects marine mammals. However, none of these changes will have a significant impact compared to the effect of noise generated during the construction phase. Thus, the significance of this factor for porpoises and seals was assessed as of minor importance.
Ship collisions and failures causing oil spills in the area of the BC-Wind OWF project may negatively affect marine mammals, even those occurring in adjacent waters. Such a scenario is very unlikely but, if it occurs, it will have a very strong impact on marine mammals. Taking this into account, the significance of this factor for porpoises and seals was assessed as moderate. It is recommended that an oil spill prevention and response plan should be developed for such situations at various stages of the project.

The purpose of monitoring migratory birds in the BC-Wind OWF project was to identify species migrating over the survey area, determine the species composition, migration intensity, phenology (the time of migration), as well as the migrating birds' flight direction and altitude. Taking into account methodological recommendations and current practices for monitoring migratory birds, and placing high quality of research as a priority, it was decided that monitoring will be carried out at a single survey station located in the central part of the study area in order to evenly cover the study area for a maximum of 22 observation days during autumn migration (August-November 2019) and a maximum of 22 observation days during spring migration (March-May 2020).
Among the most abundant birds watched during the spring migration were geese, passerines, sea ducks [common scoter *(Melanitta nigra),* long-tailed duck *(Clangula hyemalis),* velvet scoter *Melanitta fusca*)], and then auks [common murre *(Uria aalgae)* and razorbill *(Alca torda*)]. The noted migrating birds were classified into 93 categories, out of which 76 were identified as specific species.
The greatest migration geese streams (mainly the bean goose and greylag goose) calculated on the basis of the collected data were recorded for September and October.
Flight heights recorded during the autumn migration were up to 20 m ASL were noted for a total of 42.2 % of birds. Almost 9 % of observations were recorded for heights of 200 m ASL and 5 % at 450 m ASL. As it was the case in spring, almost all long-tailed ducks, common scoters, velvet scoters, all mallards, scaups and auks were recorded at heights up to 20 m ASL. A significant proportion of swans which were observed would fly at 200 m ASL.
During the spring migration, the vast majority of birds were recorded at heights not exceeding 20 m ASL. Single birds were noted at above 100 metres. In spring, all auks, greater white-fronted geese, almost all long-tailed geese, common scoters and would fly across at up to 20 m ASL, while cranes were noted at up to 70 m ASL.
Tracking individual flying birds and recording their flight paths enabled the migration flight direction to be determined for individual species or groups of species. A total of 522 flight paths were recorded for 30 species and 10 categories of birds not identified with regard to a species. Sparse species were classified in groups to obtain more reliable results. Most flight paths were recorded for geese as they accounted for more than 50 % of all the recorded paths. Gulls and ducks not identified with regard to a species were the next large group. Among sea ducks, the highest number of flight paths was recorded for velvet scoters.
Following acoustic recordings, 5406 voices were identified in autumn for 16 bird species and categories, and 8890 voices for 23 bird species and categories in spring. Large gull species (probably the herring gull and great black-backed gull) were recorded in the greatest numbers. The second category of the recorded birds included passerines. While the voices of gulls were recorded mainly during the day, passerines were recorded mainly at night, which is due to their adaptation to avoid predation by gulls and birds of prey which are active during the day.

In contrast to the results obtained for autumn, the vocal activity of nocturnal migrants was not recorded very often in spring. The following belong to the most often identified species migrating during the night: the blackbird, redwing, starling, song thrush, goldcrest and European robin. Among night migrants also identified were two Charadriiformes species – the common snipe and common sandpiper – and the Eurasian teal, however, in considerably smaller, insignificant numbers (from several to approximately a dozen individuals).

As regards marine birds, the surveys focused on obtaining data on the changes in bird numerical forces associated with the marine environment in the area of the planned BC- Wind OWF including the buffer zone and additional areas.

Birds were counted from a vessel, according to the methodology described in the methodical manual issued by the General Directorate for Environmental Protection. During the voyage along the designated transects, all swimming and flying birds were counted separately, including birds within a 600 m wide strip (300 m on each ship 's side) were recorded separately. Counting was done at the same time by 2 persons standing close together, each of them counting birds on one side of the vessel (the port/starboard). The third person from the counting team monitored the position and speed of the vessel using a GPS and recorded the water depth based on the sonar readings, and recorded weather conditions

Construction works will require the presence of various types of vessels that will disturb marine birds through physical presence, noise (including noise generated by pile driving if such foundations are selected) and light emissions. The first two factors are not expected to alter the flight paths of those waterbird species that do not take advantage of that area, but only fly over it (e.g. the common scoter). However, it cannot be ruled out that such an impact will manifest itself at night, especially if the construction site is lavishly illuminated. This is because birds navigate during migration in relation to natural light sources such as stars and the sun. It was noted that they also head towards lighthouses, drilling towers and other structures illuminated by artificial light at night. The scale of the impact will depend on the number of vessels involved, their size, the way in which the vessels are illuminated and the intensity of the light sources. The duration of the construction phase and the location of the wind turbines within the OWF Area, where there will be heavier vessel traffic, will also have an impact. The duration of the works is important because the numerical force of most marine bird species, including the long-tailed duck, varies very considerably in the various phenological periods. The scaring effect will increase as the development of the OWF area progresses. Initially, the scaring effect will be of a local character and birds will be able to find feeding grounds nearby (e.g. in the neighbouring Przybrzeżne Wody Bałtyku [*Coastal Baltic Sea Waters*] Natura 2000 area, but at the final stage of construction the range of this impact will clearly increase, thus strongly restricting the option for birds to feed and rest in the OWF Area.

The presence of ships and fixed structures protruding from the water will, on the other hand, result in a greater abundance of gulls, which take advantage of such elements as resting places and search for food near ships. Three species of large gulls, including the most abundant herring gull, gather around fishing boats in the open sea. If commercial fishing is restricted in this area during the construction (or subsequent operation) of the OWF, these gulls (or at least some of them) will move to other fishing sites.

Vessel traffic during the construction phase will result in direct local negative impacts on marine birds. For the auk, common murre, herring gull, velvet scoter and common scoter, this is a medium-term impact, and for long-tailed ducks that impact is short-term and temporary. The wind turbine structures, gradually appearing in the construction phase, will deter the birds. The importance of this impact on birds depends on how quickly the OWF will be built. Initially, individual wind turbines will have a minor impact, but the deterrent effect will increase gradually. Literature data clearly indicates that marine birds avoid the area occupied by wind turbines and that bird numerical force declines within the radius up to 2 or even 4 km. Adult birds are most likely to be able to become accustomed to the presence of the OWF to some extent.

The distance between the individual wind turbines at the OWF and adjacent OWFs is important. Both the construction and operation of wind turbines located at a small distance from the BC-Wind OWF will have a cumulative barrier effect on birds.

In addition, the presence of a large number of vessels used in the construction of the OWF may result in an additional barrier effect, reducing the opportunity for birds to move between stopover areas during their migration. The magnitude of the impact will depend on the number of vessels involved in the construction phase, their size, the duration of that phase and the phenological period during which the works will proceed.

Impact sensitivity was assessed as low for the herring gull and high for the other species under analysis.

The significance of the impact varies by species and is assessed as negligible for the herring gull, moderate for the auk and the common murre, and significant for the duck species under analysed – the long-tailed duck, velvet scoter and common scoter.

The analysis of possible impacts resulting from construction activities in the OWF construction phase indicates that their effects will be mostly local and temporary. This applies to all types of emissions (noise, suspended solids, and the release of biogenic substances from bottom sediments).

As a result of the construction works, a temporary change in the species structure in the BC-Wind OWF Area and in the immediate vicinity of that area may take place. In the case of marine birds from the OWF area, the most sensitive species will be ousted from the OWF area as early as in the construction phase, and the numerical force of sea ducks will gradually decrease. It is expected that the number of gulls and cormorants, which use the structures protruding from the water as resting places, will increase. Thus, in the case of birds, it cannot be stated that biodiversity will remain unchanged. It is appropriate to emphasise that this change concerns the site where the OWF will be constructed, and the immediate surroundings of the OWF. Once the OWF construction phase is complete and the wind turbines are put into operation, some of the birds of the species more sensitive to the OWF impacts (auks and sea ducks) may leave the OWF Area and move to the neighbouring feeding grounds. Less sensitive species will remain indifferent and some species (the silver gull and cormorant) may increase their numerical force at the OWF. The loss of zoobenthos volumes insignificant from the point of view of food resources for marine birds will not cause a disruption in food relations, and this will not disturb the existing balance or lead to the permanent elimination of species.

There will be no fragmentation of the marine habitat, which would result in the isolation of populations permanently or temporarily associated with the BC-Wind OWF and adjacent water regions.

The impact of the OWF on migratory birds is being considered through the barrier effect and the risk of collision with OWF components. As a result of the barrier effect, birds approaching the OWF perceive it as a barrier and change their flight direction. In order to avoid the OWF, birds may adjust their flight, which involves the increase in length of their migration route. The analyses indicate that in each phase of the project, the energy costs associated with the migration route becoming longer will be minimal (energy inputs will be up to 2 % higher). The migration route is not the same for all individuals of the given species, and differences due to individual route choice and the impact of weather phenomena may be greater than those following from the barrier effect. In the case of the cumulative impact analysis, i.e. under the assumption that the other OWFs adjacent to the BC-Wind OWF operate simultaneously, the additional energy input would be a minimal part of the total energy required during the seasonal migration.

In order to minimise the project impact on birds, the following conditions were imposed, among others:

- pile driving from August to March under ornithological supervision. If ornithological supervisors do not note the presence of common murres, auks, long-tailed ducts and velvet scoters within the 2 km radius of the piling site, work may be commenced each time preceded by the soft start procedure.
- work start shall each time be preceded by the soft start procedure to allow birds to move away from the work area.

Additionally, bird monitoring must be ensured.

There are no binding legal regulations in Poland regarding the methodology for bat monitoring. In order to conduct the monitoring and analysis of bat populations in the survey area, adopted was the methodology based on the draft "Guidelines for assessing the impact of wind turbines on bats" developed by Polish specialists and practitioners upon order from the General Directorate for Environmental Protection in 2013 and on the Annex to Resolution No. 7.5 of the "EUROBATS Agreement on the Conservation of Populations of European Bats".

Bat activity surveys in the BC-Wind OWF area were conducted during the spring and autumn migration periods. During the autumn migration period, 8 survey campaigns were conducted from August to October 2019. During the spring migration period, 6 survey campaigns were conducted in April and May 2020. The survey campaigns involved recording bat activity at two listening points (visited on a rota basis during the campaign) and along a transect route (which consisted of three individual transects).

In the course of the surveys conducted at the OWF Area, the activity of bats representing the following groups was noted: *Nyctalus* spp. (the great noctule), *Pipistrellus* spp. (Nathusius' pipistrelle and soprano pipistrelle), as well as of the species group called Nyctaloid *(Nyctalus* + *Eptesicus* + *Vespertilio* spp.). Bat activity was noted during both the autumn and spring migration periods. The range of the species detected during the project coincides with the species that are normally found at sea and in the Baltic Sea region during the migration period.

During the entire bat activity monitoring period, mainly low, very low or no bat activity was observed. However, a moderate average bat activity rate was calculated during the autumn migration period. Therefore, no additional protection is required during the project implementation period.

It cannot be excluded, either, that migrating bats will fly through the area of the BC-Wind OWF. In view of the above, in this decision, this authority has imposed the obligation to carry out bat monitoring aimed at the determination of the species composition and the numerical force. Equipment shall enable automatic registration and satisfy minimum requirements concerning equipment used for the surveys conducted at the environmental survey stage. Devices may be mounted for example at the mast of the measurement and survey station. Post-development monitoring shall cover the period of 3 years in the first year after placing the wind turbine in service and in the second and third year of OWF operation. Monitoring must comprise the spring (April to May) and autumn (August to October) migration periods.

The planned project is located outside areas comprised by the European Natura 2000 network, the closest of such areas located at the following distance:

- approximately 12 km southward – Przybrzeżne Wody Bałtyku PLB990002,
- approximately 43 km westward – Ławica Słupska PLC990001,
- approximately 37 km south-westward – Ostoja Słowińska PLH220023.

Pursuant to the Standard Data Form (update: October 2020) the objects of protection in the Natura 2000 area of Przybrzeżne Wody Bałtyku PLB990002 are: the razorbill *Alca torda,* black guillemot *Cepphus grylle,* long-tailed duck *Clangula hyemalis,* herring gull *Larus argentatus,* velvet scoter *Melanitta fusca* and common scoter *Melanitta nigra.* The area includes a strip of coastal waters of the southern Baltic Sea with a depth of 0 to 20 m and a length of approximately 200 km, starting from the tip of the Hel Peninsula and ending in the Bay of Pomerania. The sea bottom there is uneven with elevation differences of up to 3 m. Small crustaceans prevail in the benthic fauna. Two bird species from Annex I to the Birds Directive winter in the area: black-throated diver and red-throated diver. During winter, more than 1 % of the migration route population of the long-tailed duck and at least 1 % of such population of the black guillemot and velvet scoter occur there. No conservation plan was established for the Przybrzeżne Wody Bałtyku area PLB990002.
Pursuant to the Standard Data Form (update: October 2020), the following natural habitats are the objects of protection in the Ławica Słupska PLC990001 Natura 2000 area; 1110 – sandy subsea shoals permanently covered with water of a small depth and 1170 – reefs, as well as the following bird species: the black guillemot *Cepphus grylle* and long-tailed duck *Clangula hyemalis.* The Ławica Słupska comprises an area with a strongly elevated sea bottom, the boundaries of which are conventionally delineated according to the 20 m isobath pattern. This is an area with a very diversified seabed, with numerous hills and depressions. The dominant plants are macroalgae, with many species vanishing in the Gdańsk Bay already. A bird sanctuary of the E 79 European rank. During winter, a minimum of 1 % of the migration route population (C3) of the long-tailed duck and black guillemot occur there; water and mud birds occur in concentrations of over 20,000 individuals (C4). Isolated site of habitat 1170 (marine bivalve shoals) in Polish sea waters. The shallow patches are inhabited by numerous invertebrates, which provide a rich food base for flocks of water and mud birds stopping over in autumn and wintering there. The dominant plants are macroalgae, with many species found to be declining in the Bay of Gdańsk. The place of occurrence of red algae *Delesseria sanguinea,* which was deemed lost in the Proper Baltic Sea area. No conservation plan was established for the Ławica Słupska PLC990001 area.

Pursuant to the Standard Data Form (update: September 2021), the protected objects in the Ostoja Słowińska PLH220023 Natura 2000 are the following natural habitats: coastal lagoons (1150), reefs (1170), seaside salt pans (*Glauco- Puccinellietalia Maritimae,* the part called *seaside communities* (1330), initial stages of seaside white dunes (2110), seaside white dunes *(Elymo Ammophiletum)* (2120), seaside grey dunes (2130), seaside black crowberry moorland

(*Empetrion nigri)* (2140), seaside dunes with downy mountain willow bush (2170), mixed and coniferous forests on seaside dunes (2180), humid interdune depressions (2190), old river beds and natural eutrophic water reservoirs with the communities of *Nympheion, Potamion* (3150), natural dystrophic water reservoirs (3160), mountainous herb shrubs (*Adenostylion alliariae*) and riverside herb shrubs (*Convolvuletalia sepium)* (6430), (live) highmoor with peatland vegetation (7110), degraded highmoor capable of natural and stimulated regeneration (7120), transitional moor and swamps (mostly with vegetation with *Scheuchzerio-Caricetea*) (7140), acid beech wood (*Luzulo-Fagetum*) (9110), acid oak wood (*Quercion robori-petraeae)* (9190), swamp coniferous and deciduous forests (*Vaccinio uliginosi Betuletum pubescentis, Vaccinio uliginosi Pinetum, Pino mugo-Sphagnetum, Sphagno girgensohnii-Piceetum)* and boreal birch and pine swamp forests (91 DO) *as well as* the following species: toad flax *(Linaria ioeselii),* large white-faced darter *(Leucorrhinia pectoralis),* green snaketail *(Ophiogomphus cecilia),* twait shad *(Alosa fallax),* spined loach *(Cobitis taenia),* river lamprey *(Lampetra fluviatiiis),* brook lamprey *(Lampetra planeri),* weatherfish *(Misgumus fossilis),* European bitterling *(Rhodeus amarus),* ziege *(Pelecus cultratus),* sea lamprey *(Petromyzon marinus),* porpoise *(Phocoena phocoena),* otter *(Lutra lutra),* grey seal *(Halichoerus grypus),* European beaver *(Castor fiber),* and wolf (*Canis lupus).* Threats to the area include: abandonment of shepherding, the lack of grazing, removal of dead and dying trees, paths, hiking trails, cycling paths, scattered buildings, wastes, sewage, sports and various forms of active leisure and recreation activities in the open air, hiking, horse riding and riding on non-motor vehicles, sailing, sports and recreation infrastructure, modification of water functioning, the removal of sediments (mud), works related to defence against sea activity and to coast protection, as well as dykes.
No conservation plan has been established for the area of Ostoja Słowińska PLH220023.

The planned project is located outside the boundaries of the above-mentioned protected areas of the European Natura 2000 network. Furthermore, in relation to any of the aforementioned Natura 2000 areas, no conservation plan was established, which would define, without limitation, the objectives of the protection activities and threats to the protected objects at a given area. However, based on the results of the environmental studies and nature surveys performed in 2019- 2021 for the BC-Wind OWF as included in the case files and in accordance with the prudence principle, in which any probability of negative effects of an action should be treated as the certainty of their occurrence, in view of the type, nature and range of possible impact of the proposed construction project at all stages of the planned investment process, in the case of avifauna species and marine mammals, in the opinion of this authority, the potential impact of the project on the protected objects at the above-mentioned Natura 2000 areas is possible. The presence of the Offshore Wind Farm (OWF) may result, for example, in a barrier effect affecting the behaviour (movement) of migratory birds. The scale of such impact will depend on the number of wind turbines forming the farm, their size and layout in the BC-Wind OWF Area. Due to the above-mentioned impact, birds may be forced to change the direction of their horizontal or vertical flight, which may make their migration slightly longer and increase energy demand. However, based on the relevant surveys carried out so far, it appears that avoiding even several OWFs increases both the total length of the migration route and the energy expenditure associated with the migration insignificantly. Even though these surveys concerned other maritime areas, in the opinion of this authority, the results of these surveys may be a reference point in the assessment of the barrier effect of the BC-Wind OWF. The analysis of the data collected shows that the forced route change to avoid the BC-Wind OWF is extended by an average of 12.4 km, which makes migratory routes longer by 0.5 % on average, in the case of the crane by 1 %. Route lengthening by 12.4 km, associated with the barrier effect of the OWF, will increase the energy expenditure for the route to a negligible extent. Additionally, in the case of the passerines that cover the migration route mainly at night and at high altitudes (above the rotor range), the barrier effect will not occur, as birds will fly over the OWF. Therefore, the significance of the impact related to the barrier effect, for all groups of birds and species considered in the analysis, was deemed to be negligible. Moreover, according to the case files, the indicated location of the proposed BC-Wind OWF was planned at the autumn and spring bird migration route and therefore its implementation may affect various bird species during seasonal passages. Birds migrating across the southern Baltic Sea may collide with wind turbine components (the tower and parts of the rotor) if birds do not notice these obstacles at an appropriate time (for example, when visibility is limited due to weather conditions, or at night). The collision risk along with the loss of the habitat is considered to be potentially the greatest impact of the OWF on birds, as impacts are generally permanent and persistent throughout the life of the OWF, and mitigating measures are limited to these impacts. The collision risk can be seen as the reverse of the barrier effect with an increasing collision risk when the barrier effect is less significant. Important behavioural aspects in assessing the collision risk are the flight altitude, flight speed and the OWF avoidance rate. Based on the collision risk modelling results for the various species such as the long-tailed duck *Clangula hyemalis,* common scoter *Melanitta nigra* and velvet scoter *Melanitta fusca,* that is the sea duck species which were noted in large or relatively large numbers in the OWF Area during the surveys, it was demonstrated that sea ducks are distinguished by a high collision avoidance rate (>99 %). Given such a high collision avoidance rate and taking into account the clearance options, a zero or near-zero collision risk was shown for the above sea duck species. However, despite the risk estimated at a zero level, with regard to each of the above sea duck species, occasional single collisions cannot be completely excluded. In relation to the above, with regard to birds of importance as high as the long-tailed duck *Clangula hyemalis,* common scoter *Melanitta nigra* and velvet scoter *Melanitta fusca,* as the collision rates are negligible, the significance of this impact was considered to be of minor importance. In turn, in the case of the crane *Grus grus*, a species which was scarcely notes during monitoring for the proposed project, but which is known to migrate across the Baltic Sea in large numbers, as a result of approximate calculations based on the results of observations used from other OWF projects adjacent to the BC-Wind OWF Area, the estimated collision risk in autumn indicates a moderately high number of collisions (13-14 individuals for 20-70 m clearances) and the collision risk which is many times lower in spring. Based on the analyses, there is no scenario in which collisions will not happen at all. However, taken into consideration the size of the biogeographical population (490,000 individuals – Garthe S., Huppop S., Scaling possible adverse effects of marine wind farms on marine birds. Developing and applying a vulnerability index. J. Appl. Ecol. 2000, 41:724-734), in the worst case scenario with the greatest number of collisions, the number of individuals involved in collisions will not exceed 0.02 % of the biogeographical population. The importance of that influence was therefore assessed as insignificant. Similarly, on the basis of the collected monitoring and literature data, the size of the remaining groups and species of birds was estimated, and the analysis enabled the assessment of the significance of the above-mentioned impacts as negligible or of minor importance for the indicated groups and species of avifauna. Nevertheless, in accordance with the prudence principle, according to which any probability of negative effects should be treated as the certainty of their occurrence, the aim of part of the above-mentioned obligatory conditions imposed on the Applicant in relation to the project in question, at the stage of its implementation, operation or decommissioning, is to minimise the possible losses in the population of the various avifauna species. Apart from the above, when considering the potential impact of the proposed project, for example on the protected objects in the nearest Natura 2000 areas, it was noted that the presence of the OWF is also connected with the generation of sound at all stages associated with the OWF construction, operation or decommissioning. However, the greatest concerns are related to underwater noise, emitted during construction/erection in relation to high sound levels generated during pile driving into the sea bottom (piling). The available scientific research proves that marine organisms, including but not limited to marine mammals, are sensitive to sound, hence the noise accompanying the OWF construction activities may affect those organisms at considerable distances. In order to estimate noise impact zones (i.e. the distance from the sound source) for seals and porpoises, an analysis was conducted for the worst case scenario regarding construction details with the use of the numerical modelling of underwater noise. Based on acoustic modelling, noise impact zones (i.e. the distance from the sound source) were estimated for the representatives of the marine mammals mentioned above, which may experience a permanent hearing threshold (shift PTS), a temporary hearing threshold shift (TTS) or a behavioural response (a change in behaviour). In the analyses, sound levels for the various technical assumptions were estimated, including sound levels taking into account the use of noise reduction methods in the form of an air curtain (the noise reduction system, NRS) placed around equipment which is used to drive the piles into the seabed, the air curtain causing the reflection and absorption of underwater sound, thereby reducing the sound levels generated by piling. Additionally, as a situation is possible where simultaneous piling at two or more locations will take place at a given area, modelling was conducted to determine the potential accumulation of noise and its impact on, for example, seals and porpoises. Based on the estimates, it was found that it is the number of noise sources and not the distance between them which is important for the magnitude of impact. Furthermore, it follows from the estimated impact zones that for a single blow the hearing loss zone consisting in the permanent hearing threshold shift (PTS) for both porpoises and seals is located relatively close to the sound source, 1.8 km and 0.1 km for the BC-Wind OWF respectively. In contrast, the temporary hearing threshold shift (TTS) could occur at a distance of 12 km for porpoises and 1.8 km for seals, and a behavioural response (based on values where the animals' hearing sensitivity was not recognised) could occur up to 150 km from the indicated location for porpoises, and up to 19 km for seals. Given the use of the noise reduction system (NRS), the impact zones for a single blow are significantly reduced: the range of PTS occurrence is reduced to 0.2 km for the porpoise and to less than 0.1 km for seals, and the TTS may occur at a distance of up to 1.8 km for porpoises and up to 0.1 km for seals. In turn, the behavioural response given the use of the air curtain is reduced to a distance of 28 km for porpoises and to 3.5 km for seals. As the main objective of the nearby Swedish (SE0330308) and Polish (PLH220023) Natura 2000 sites is to maintain or restore the appropriate status of protected species and their natural habitats (in this case the porpoise and grey seal) for which these sites were delineated, in order to avoid impacts on Natura 2000 sites, the underwater noise level should be safe at the boundary of these sites for the protected species. In relation to that, it was ordered that, during project implementation, the NRS be applied through the use of engineering solutions efficient in this regard, which will result in noise reduction to a level not exceeding [...] [*translator: the value not stated*] at the boundary of the Ostoja Słowińska PLH220023 Natura 2000 area. The analysis of available data indicates that, on the assumption that the above-mentioned values are not exceeded at the border of the Polish Natura 2000 area, the indicated values will not be exceeded at the border of the Swedish Natura 2000 area, either.

It can therefore be stated that following noise reduction by means of the NRS, the impact ranges for the PTS, TTS and behavioural responses will not reach the two Natura 2000 sites mentioned above.

In addition to the above, it was found during the analysis of transboundary impacts that the studies undertaken as part of the migratory bird survey for the BC-Wind OWF project indicated that the impacts of the barrier effect and collision risk for the vast majority of species were deemed to be negligible and of minor importance. The significance of the barrier effect at the OWF level was assessed as negligible for all species. The transboundary impact was deemed to be the same (or considered to be minor importance in a few cases). The added bird mortality as a result of collisions with the OWF in the transboundary context will be an undetectable proportion of total mortality (natural and anthropogenic) for most species. The moderate significance of the collision risk in the case of cranes (none too many of them observed during the survey) will not affect the condition of nesting and wintering populations in the other Baltic countries. The threshold of crane mortality that the biogeographic population can cope with and remain in good condition is 1,887 individuals per year and will be at a negligible level or of minor importance if the mitigation measures are applied (the periodic shutdown of the various wind turbines during an intensive crane passage). The predicted collision mortality will not pose a hazard to the population, which will be able to compensate for the individuals lost due to the project impact. In the case of a larger number of OWFs in this area of the Baltic Sea, the cumulative mortality could theoretically exceed the above mortality threshold enabling the population to be maintained in a good condition, but this will largely depend on the mitigation measures applied on other projects close to the BC-Wind OWF. The obligation to monitor bird mortality laid down in this decision.

When assessing the project impact on the protected objects in the closest Natura 2000 areas, the analysis of the data presented by the Applicant in the EIA Report was conducted, part of which was based on the concept of the project's envelope description. The envelope concept means that, in the case of the evaluation of the given parameters and of the option to use various technical details, the environmental impact of the potentially most environmentally burdensome solution was evaluated. It is assumed that if the most burdensome solution does not significantly adversely affect the environment, the other solutions, as less onerous, will also be acceptable. In this way, the impact of the foundations of the various components that will be comprised by the BC-Wind OWF was assessed. The gravity based structure (GBS) requires a large amount of sediment moving work and is the most burdensome solution in this respect. In turn, driving the large diameter pile will generate the loudest noise. In the envelope concept of the assessment, it was assumed that the assessment would consider the amount of sediment moved in the case of the GBS use and the underwater noise generated in the case of driving a large diameter pile. Accordingly, the environmental impact of the technology most burdensome to the given environmental component was assessed. It was considered unlikely that these impacts would occur simultaneously. If the GBS is selected for the project, underwater noise would be much lower, and if large diameter piles are selected, there will be virtually no sediment movement. It was therefore assumed that any choice of the foundation or supporting structure would lead to lesser impacts than those assumed in the submitted EIA Report. Therefore, a cause-and-effect analysis was performed for the most environmentally burdensome design details that could be taken for implementation by the Applicant.

In summary, in order to ensure the protection of the individuals of the various marine bird species and mammals (with special consideration for the species protected in the above-

mentioned Natura 2000 areas) against the consequences of possible negative impacts of the project, at all stages connected with project construction, operation and decommissioning, the Applicant was obliged to implement certain conditions of the project implementation. It was ordered, without limitation, that all the works connected with the said project be conducted under the environmental supervision and that they be managed by a person(s) with the knowledge of and experience in ornithology as well as the biology and ecology of marine mammals. A decision was also made about the introduction of the appropriate monitoring of marine and migratory avifauna, marine mammals and underwater noise with an adverse influence on aquatic organisms at precisely defined stages of project implementation and/or operation. On the basis of the above, it may be assumed that the implementation of the contemplated construction project specified in the application, such project consisting in the construction of the BC-Wind Offshore Wind Farm, given that the conditions indicated in this internal opinion of this department are fulfilled, will not have a significant negative impact on the Natura 2000 areas which are adjacent to this project: Przybrzeżne Wody Bałtyku [*Coastal Baltic Sea Waters*] PLB990002, Ławica Słupska [*Słupsk Bank*] PLC990001 and Ostoja Słowińska [*Słowińska Sanctuary*] PLH220023.
It follows from the environmental impact assessment, including pursuant to Article 6.3 of the Habitats Directive, that the planned project will not have a significant adverse impact on the protected objects and on the integrity of the nearest Natura 2000 sites mentioned above. There are no grounds to believe, either, that the implementation of the proposed project could result in the loss or fragmentation of natural habitats or the habitats of species for which the Natura 2000 areas in question were designed: Przybrzeżne Wody Bałtyku PLB990002, Ławica Słupska PLC990001 and Ostoja Słowińska PLH220023. Moreover, the implementation of certain mitigating measures and appropriate design details at the individual stages of the proposed project will eliminate or significantly reduce the impact of the contemplated construction project on natural habitats, species and habitats of the species which are the protected objects in the above-mentioned Natura 2000 areas. Therefore, if the conditions of this decision are fulfilled, the construction of the BC-Wind OWF will not cause any hazard to the above-mentioned protected objects in these areas.

Cumulative impact on landscape

The disturbance of the landscape in the case of cumulative impacts associated with the simultaneous operation of the BC-Wind, Baltic Power, Baltica, Baltic II, Bałtyk II and Bałtyk III OWFs depends mostly on the weather conditions – visibility and Earth curvature. This impact was assessed as insignificant.

Disturbance to systems utilising the EMF

The space above the OWF areas is used for the operation of the systems using the electromagnetic field, such as: vessels' navigational radars, coastal radar systems, radio communication devices as well as radio and terrestrial TV signal transmission systems. The construction of a single OWF, as well as a greater number of OWFs, may disturb the proper operation of these systems. The magnitude of the disturbance would be directly proportional to the number of structures built in sea territories and could cover a proportionally larger sea territory.

Taking into consideration the possible negative effects resulting from disturbances in systems utilising the electromagnetic field, in the permits concerning the construction of artificial islands for all the OWFs, the minister competent for maritime economy obliged investors to perform a number of specified actions. These actions will aim at ensuring the defence and security of the state and the safety of navigation. The need to perform these actions, which are of a compensatory character, indicates that the impacts of the BC-Wind OWF and other OWFs on systems utilising the electromagnetic field should be considered only as hypothetical and one which will not occur in reality.

Cumulative impact on fishing

The authors of the EIA Report indicated the existence of a cumulative impact on fishing.

In view of the importance of the potential cumulative impact on the aspects related to sea fishing in relation to the construction and operation of the OWFs, the following were taken into consideration for the assessment of these impacts: Bałtyk II, Baltica 2, Bałtyk III and Baltica 3, Baltic II and Baltic Power. With the space used for fishing activities taken more broadly than just as the space above the water surface, the connection infrastructure of the OWFs was also included in the cumulative impact assessment.

The negative impact of the presence of many OWFs in adjacent locations will consist in the creation of a barrier to the free passage of fishing vessels.

Siting the OWFs on the western side from the BC-Wind OWF, without designating a vessel navigation corridor, will increase the length of the fishing vessels' route to the high-yield fishing grounds located north of the OWF, in the area of the Słupsk Trough. This may cause additional costs, mainly for fishing vessels based in the ports of Ustka (59 ships) and Łeba (30 ships). These costs will result from an increase in the amount of fuel necessary to sail around the OWF and the time to reach the fishing grounds.

According to the authors of the report, the significance of the cumulative negative impact connected with the need to lengthen the fishing vessels' routes to the fishing grounds should be considered moderate. Leaving an area with a width necessary to maintain navigation safety between the OWFs will cause a situation where the significance of the cumulative impact of the project on fishing may be considered to be of minor importance. Permitting the transit of fishing vessels across the BC-Wind OWF Area may be another solution. Establishing navigation corridors or permitting navigation across the BC-Wind OWF Area is at the sole discretion of the director of the competent maritime office.

Transboundary impact

The BC-Wind OWF Area is situated in the Polish Exclusive Economic Zone (EEZ). The distances from that area to the boundaries of the EEZs of other states are as follows:

- more than 64.7 km from the Swedish Exclusive Economic Zone (EEZ);

- 90.5 km from the Danish EEZ;
- over 67 km from the Russian EEZ;
- over 208.2 km from the German EEZ.

The assessment of the impacts on the various elements of the environment indicates that the range of these impacts will be local. Only in three cases do the identified impacts of the BC-Wind OWF have a regional range. This concerns the impact of:

- underwater noise during the construction phase on adult fish;
- underwater noise at the construction phase on marine mammals;
- barrier effect at the operation phase on birds.

The analysis of underwater noise conducted for the purpose of the EIA Report for both fish and marine mammals showed that the ranges of significant impact, including cumulative, as determined by TTS values, did not exceed the boundary of the Polish exclusive economic zone.

Almost all species flying across that area are the birds travelling long distances between nesting and wintering grounds, or birds moving locally. This means that the barrier effect and collision risk affect the birds that spend at least part of their lives in north-western Russia and Scandinavia Additionally, some of the species at risk of that exposure are listed in Annex I of the Birds Directive or included in the Natura 2000 programme of protected areas in neighbouring countries and therefore the impacts of the BC-Wind OWF may affect the bird numerical force in those conservation areas.

Investigations conducted as part of the migratory bird survey for project indicate that the impacts of the barrier effect and collision risk for the vast majority of species were deemed to be negligible and of minor importance. The significance of the barrier effect at a single OWF level was assessed as negligible for all species. The moderate significance of the collision risk in the case of the crane will not affect the condition of nesting and wintering populations in the other Baltic countries and will be at a negligible level of or minor importance if the mitigation measures are applied (the periodic shutdown of the various wind turbines during intensive crane migration).

In the context of all OWFs in the area, an important element which reduces the collision risk is the creation of a system of corridors (undeveloped areas), enabling the free movement of birds between the individual OWFs.

The OWF Area is a place of periodical concentrations (in the winter season) of the long-tailed duck, velvet scoter, auks and herring gull, and of the common murre in the summer season). The surveys showed that birds wintering in that part of the Baltic Seal locally moved in all directions, without a clear pattern, during short breeding flights. This confirms the rule that marine birds show a strong attachment to their wintering site. Compared to the Baltic population, the size of the long-tailed duck population in the OWF area is 0.004 %, that of the velvet scoter is 0.001 % and that of the auk is 0.2 %. There is no data on the population size of the Baltic herring gull. However, as these birds accompany fishing boats on fishing grounds, the occurrence of these birds in the open sea is strongly determined by human activity. Transboundary impacts are therefore not anticipated from a single project consisting in the construction of the BC- Wind OWF.

Taking into account the above, it is appropriate to state that there is no possibility of a significant transboundary environmental impact in connection with the implementation of the BC-Wind OWF.

Analysis of potential social conflicts

The starting point for public consultation on the planned OWF were the requirements of national and EU law, which indicate that the planned projects likely to have a significant impact on the environment, including the construction of OWFs, shall be consulted with the public at the earliest possible stage. The opinions of the persons concerned and local communities shall be sought in order to identify potential problems and determine the ways of solving those problems, as well as

provide information to the groups or persons concerned.
The planned OWF is located in the Baltic Sea within the Polish EEZ, north of the seashore at a distance of approx. 22.6 to 31 km from land. The closest seaports are Łeba and Władysławowo in the Pomerania Region. The regional, offshore/onshore nature of the project means that there is a wide range of potential stakeholders and parties concerned in the northern part of the Pomerania Region and of other persons concerned.
The target groups for meetings were selected taking into account several criteria such as the project nature, location, potential impacts of the planned project and the degree and type of the various social groups' interest in other offshore projects.
The planned OWF is sited in a water region exploited and used by people, therefore the implementation and operation of the project and, first of all, the prevention or restriction of the current use and impediments following from establishing transport corridors, may be expected to cause potential social conflicts. The possibility of using the water region, as well as the safety zones and other restrictions will be determined in the future by the Director of the Maritime Office in Gdynia. In view of the nature of the OWF, it is considered that fishing and shipping within and in the area of the OWF are likely to be affected.
The following aspects related to the planned OWF that may cause social conflicts were identified:
- proceeding with the works and the transport of large offshore structures;
- concern about the state of the environment in the Baltic Sea and issues related to broadly understood protection of nature and birds;
- concern of the existing and potential users of the OWF Area about the possibilities of access to the area, jobs, e.g. related to fishing; ensuring the proper operation of communication systems;
- concern about navigation restrictions and their nature in the OWF Area;
- landscape-related aspects and the visibility of the OWF;
- concerns about the impact on tourism in seaside communes;
- concerns about the impact on the economy in seaside communes.

Potential positive changes that the planned OWF may bring about were also identified:
- jobs for the inhabitants of coastal communes during the construction phase and long-term operation of the OWF;
- impact on tourism and the perception of the OWF as a tourist attraction.

The fundamental issues that underlie the potential conflict regarding the planned OWF are as follows:
- depending on the decisions of the maritime administration, impediments to fishing in the area occupied by the OWF can be expected, resulting in restricted access to the area, and so impediments to free fishing and transit across the OWF Area;

- incompatibility of the objectives and interests of the parties – the objective indicated by the fishermen's circles is to engage in fishing and pass across the OWF Area to further fishing grounds, as well as ensure the presence of fish in the Baltic Sea;
- environmental intrusion that may be caused by the planned OWF.

Potential stakeholders (target groups) are as follows:

- state administration and institutions;
- self-government units and institutions;
- industry organisations, including fishermen;
- national, regional and local social associations and organisations;
- non-governmental environmental organisations;
- potential suppliers, partners and other offshore investors;
- scientific, research and design entities.

In view of the location and scope of the tasks of the planned OWF and of the direct sea users in that area at the current early stage of project preparation, the Applicant decided to hold a meeting with the representatives of fishermen's organisations. The meeting with the representatives of fishermen's organisations was held on 8 June 2021 in Władysławowo. Presentations and information materials were prepared. The participants of consultation meetings raised several issues of varying importance, including environmental ones. Based on the meeting conducted in 2021, it followed that the fishermen's primary concern was the taking of the fishing grounds by the OWF Area, the transit across that area and the way in which the OWF Area can be shared for fishing and the transit of the fishing vessels to the fishing grounds north of the OWF Area, as well as the increase in the length of the route to these fishing grounds. At the meeting, the Applicant confirmed that he did not intend to request additional restrictions over and above those set by the maritime administration.

Formal consultation was carried out during this environmental impact assessment procedure. No comments or proposals were made by the public during the consultation.

Having analysed the EIA Report, taking into account the specific nature of the site at which the project will be implemented, the scope of the planned works and the presence of protected areas, guided by prudence principle, in this decision this authority laid down the conditions applicable at the project implementation and operation stage.

The conditions and obligations set out in point I.2 of this decision were imposed on the basis of conclusions and recommendations of the submitted EIA Report and opinions of co-operating authorities. The conditions set out for the project implementation phase were formulated with the following obligations, without limitation, taken into consideration:

- ensuring the economical use of the area during the preparation and execution of the investment (Article 74 para. 1 of Environmental Protection Law),
- taking into account environmental protection in the work area, in particular the protection of soil, plants, the natural land configuration and water circulation pattern (Article 75 para. 1 of Environmental Protection Law),

- using and transforming natural elements during the execution of construction works only to the extent to which this is necessary in connection with the implementation of a specific project (Article 75 para. 2 of Environmental Protection Law),
- pursue waste management in a way ensuring the protection of human life and health as well as the environment, in particular in such a way that waste management does not pose a hazard to water, air, soil, plants or animals (Article 16 of the Waste Act).

The above requirements are laid down in consideration of the most significant identified emissions which, if not managed, could become a source of adverse environmental impact, including influence on human health or, in the extreme, lead to the hazard to the environmental. The considerations given above cover both preventive and surveillance measures, as well as technical emission management measures. The conditions set out for the construction project provide a direct guidance to the designer and aim to ensure the economical use of environmental resources, minimise emissions and manage them properly. The following are, for example, the grounds for the guidelines above:

- the principles of prevention, prudence and bearing of the costs of environmental impacts, under Articles 6 and 7 of Environmental Protection Law;
- prohibition to cause the substantial deterioration of the environment or a hazard to human life or health (Article 141 section 2 of Environmental Protection Law);
- obligation to comply with environmental quality and emission standards (Article 141 para. 1 and Article 144 para. 1 of Environmental Protection Law);
- the prohibition to operate an installation causing the introduction of gases or dust into the air, emission of noise and generation of electromagnetic fields to the extent resulting in exceeding the environmental quality standards outside the area to which the operator has the legal title (Article 144 (2) of the Environmental Protection Act);
- the prohibition to undertake activities which may, separately or in combination with other activities, have a significant adverse impact on the protection objectives of the Natura 2000 area (Article 33 para. 1 of the Nature Protection Act).

Due to the lengthy process of preparing the project up to the physical implementation phase and in view of the possible environmental changes during that time, it was found necessary to obtain additional inventory data documenting the most up-to-date state of the environment before the commencement of the project. In view of the need to assess the efficiency of the applied preventive and mitigating measures, an obligation was imposed on the Applicant to monitor environmental changes caused by project implementation and operation of the systems to the extent indicated in this decision. The monitoring reports were considered to be a sufficient source of data enabling the comparison of the results of the environmental impact assessment and the actual environmental impact of the BC-Wind OWF.
Under this decision, an obligation was imposed on the Applicant to prepare documentation for the repeated assessment of project environmental impact. Pursuant to Article 82 para. 2 of the Environmental Protection Act, the need to undertake a repeated assessment shall be decided while taking into account that:

- the data in place at the point of issue of the environmental decision which pertain to the project or the natural elements of the environment covered by the scope of the predicted project environmental impact do not allow the sufficient assessment of the environmental impact of the project;

- due to the type and characteristics of the project and its connections with other projects, the impacts of projects located in the area which will be affected by the project in question may accumulate;
- the project may influence areas requiring special protection due to the occurrence of protected plant and animal species or their habitats or protected natural habitats, including Natura 2000 areas and other forms of nature conservation.

In the opinion of the Regional Director for Environmental Protection in Gdańsk, the factual circumstances supporting the repeated assessment in this case are as follows: various options regarding the technical details taken in the functional and spatial plan constituting the basis for the assessment undertaken in the EIA Report and, in relation to that, the need to confirm the conclusions with regard to the scale and intensity of the environmental impact as well as the lack of significant adverse impacts of the project on Natura 2000 areas on the basis of the final details taken in the construction permit and engineering designs and the additional results of inventory surveys; and the lack of detailed hydrogeological investigations at the stage of the current assessment.

Pursuant to Article 135 para. 1 of Environmental Protection Law, the establishment of an emergency planning zone is permissible if, jointly: 1) the project concerns or has concerned a sewage treatment plant, municipal landfill, composting plant, transport route, airport, power line and substation, facilities in a gas substation as well as radio communication, radio navigation and radiolocation installations; this list being closed; 2) the environmental review, project environmental impact assessment or post-development analysis shows that despite the application of the available technical, engineering and organisational solutions, environmental quality standards outside the plant or another facility cannot be complied with. Wind turbines are not included in the list of systems for which an emergency planning zone may be created. This means that the investor's legal title shall cover such an area which guarantees that environmental quality standards are satisfied at the boundary of that area. The emergency planning zone may only be created for power lines and substations if standards concerning electromagnetic fields or environmental noise are exceeded. It is not expected that any environmental quality standards could be violated by these facilities, and therefore there is no need to create an emergency planning zone for the project in question. At the current stage of project preparation, there are no grounds for claiming that the environmental quality standards may be exceeded both in relation to air, noise and sewage, as well as to the magnetic and electric field strength. It is expected that the impacts will not exceed the limit values outside the area to which the Applicant has the legal title. The nearest areas for which environmental quality standards are specified to the extent mentioned above are located on land. Therefore, it is not expected that any environmental quality standards could be violated by these facilities, and therefore there is no need to create the emergency planning zone.

Pursuant to Article 3 item 23 of Environmental Protection Law, a major failure is understood as an event, in particular an emission, fire or explosion, resulting from an industrial process, warehousing or transport, in which one or more hazardous substances are present, thus leading immediately to a hazard to human life or health, or to the environment, or to the emergence of such a danger with a delay. Pursuant to Article 3 item 24 of Environmental Protection Law, a major industrial failure means a major failure in an establishment. Pursuant to Article 3 item 48 of Environmental Protection Law, an establishment is one or several systems with the area to which the operator of the systems has a legal title, and devices located on such an area. Pursuant to Article 248 para. 1 of Environmental Protection Law, an establishment posing a hazard of a major industrial failure, depending on the type,

category and quantity of a hazardous substance present therein, shall be deemed to be an increased or high failure risk establishment, depending on the expected quantity of the hazardous substances which may be present therein.
The criteria for classifying the establishment into one of the categories mentioned above are set out in the *Regulation of the Minister of Development of 29 January 2016 on the types and quantities of hazardous substances present at an establishment, determining its classification as an establishment at increased or high risk of a major industrial failure*(Dz. U. [*Journal of Laws*] of 2016, item 138). It is also appropriate to note that pursuant to Article 2 para. 4 of Environmental Protection Law, the rules for the protection of the sea against pollution by ships and the administrative bodies competent in the matters related to protection shall be specified by relevant regulations. However, due to relatively small quantities of hazardous substances, the farm was not included in any of the above categories.

Having analysed the scope of the planned project and following the identification of its environmental impacts and their magnitude, it was concluded that the planned project will not cause significant transboundary environmental impacts. The identified possible emergency/unplanned situations are not expected to lead to such impacts, either, given that the recommended emergency procedures are taken into consideration. Furthermore, the EIA Report indicates that as the other contemplated projects remain at an earlier stage of implementation, the question of the accumulation of impacts was considered on the basis of available data pertaining to these projects and with the appropriate use of envelope parameters for the BC-Wind OWF. Thus, the scenarios actually implemented will be distinguished by parameters within the assumed maximum limits. Therefore, the envelope method of analysis enables the accumulated project impacts (also in the aspect of the transboundary impact), which are at an early stage of implementation, to be taken into account.
For these reasons, it was not necessary in the present case to carry out a transboundary impact procedure as referred to in Article 104 et seq. of the EIA Act, as well as to determine the conditions related to such impacts in the content of this decision.

Prior to issuing the decision, in letter ref. RDOŚ-Gd-W00.420.50.2021.KSZ.AM.6. dated 10/03/2022, the Regional Director for Environmental Protection in Gdańsk notified the parties to the proceedings the Management Board of C-Wind Polska Sp. z o. o., via its representative, Mr Kacper Kostrzewa, in accordance with Article 10 of the Code of Administrative Procedure, about the completion of the collection of evidence, the option to become acquainted with the case file and to comment on the collected evidence and materials. No comments or motions were submitted within the specified deadline.

In ruling ref. INZ.8103.135.2021.AD of 01/12//2021, the Director of the Maritime Office approved the project implementation conditions and laid down the following considerations:

I. General conditions with regard to all project implementation stages:

1. The project shall be implemented in such a way as to exclude the possible penetration of any pollutants to the aqueous environment. To this end, the following shall be done:
    a) in the case of marine environmental pollution with solid and liquid wastes, they shall be removed from the water surface immediately and on an ongoing basis;
    b) In the case of a spill of petroleum and oil-based products during the works, pollutants shall be removed from the water surface on an ongoing basis using mechanical means of collection. If measures other than mechanical are used, the removal of pollutants from the surface of sea waters is possible only after consent has been obtained each time from the competent director of the maritime office in accordance with the provisions in § 6 para. 1 of the *Regulation of the Council of Ministers of 8 August 2017 on the manner of organisation of the elimination of hazards and pollution at sea (Dz. U. [Journal of Laws] of 2017, item 1631);*
    c) Machinery and equipment used at the project shall be inspected and maintained regularly. The type of protective coatings on older vessels used in the operations in the area of the BC-Wind OWF shall also be inspected in order to minimise the penetration of TBT, among others substances, into sea waters.
2. The vessels used in project implementation shall have up-to-date documents required by the relevant regulations and satisfy all requirements in terms of navigation safety and environmental protection.
3. The project shall be implemented and operated in a way that does not pose a hazard to people, the environment and navigation safety, in accordance with the applicable regulations.
4. The sea water hazards and pollution prevention plan shall be developed and kept up to date. The plan shall specify the potential area at risk of the spills risk various sizes, oil spill prevention methods, and the equipment planned to be used to clean up level I spills with in-house resources.
5. Rescue and crew/personnel training plans shall be prepared which comprise the rules of update and verification through regular drills, in particular setting out the procedures for the use of in-house and third party vessels, including helicopters.

II. Specific conditions:

1. Environmental requirements to be taken into consideration in the construction permit design:
    a) The project shall be equipped with a system enabling a short-term stop of selected wind turbines in bird migration periods if the operation monitoring results indicate that intensive crane migration takes place at the collision height above the OWF area. The system shall be used as and when required.
    b) To minimise the collision risk during a bird migration, the BC-Wind OWF lighting shall be designed in a minimal way, however, with the regulations and safety rules taken into consideration.

2. At the project implementation stage:

a) The works related to the introduction of new infrastructure components shall be executed in compliance with prohibitions and restrictions established in the *Regulation of the Council of Ministers* of *14 April 2021 on the endorsement of the spatial development plan for the national sea waters, the territorial sea and the exclusive economic zone, scale 1:200 000 (Dz. U [Journal of Laws] of 2021, item* 935), in particular § 55 *para. 4, and para. 7 of Appendix No.* 2 to the above-mentioned *Regulation* – Detailed determinations, or its update.

b) Appropriate engineering solutions minimising the impact of underwater noise on fish and marine mammals shall be used, in particular:
   - the so-called soft start piling procedure shall be used;
   - the construction works shall be executed on the individual wind turbine foundation stages gradually, i.e. wind turbines shall be built adjacent to each other by starting from one place to fill the water region with structures incrementally thus causing the scarring effect to increase and fish and mammals to be gradually driven out of the project area.
   - the schedule of the works on the BC-Wind OWF shall be adapted to the implementation schedule for other nearby projects to prevent the build-up of adverse environmental impacts. To reduce the noise from the piling process, the works shall proceed at maximum two locations at a time. This concerns both the construction of the BC-Wind OWF, and the adjacent offshore wind farms.

c) The piling process from August to March shall be conducted under ornithological supervision. Works preceded by a soft start procedure may commence if no common murres, razorbills, long-tailed ducks and velvet scoters are spotted within the 2 km radius of the piling site.

d) Take into account the need for an undeveloped wind turbine migration corridor. The area which is not developed with wind turbines shall be located in such a way as to create an unobstructed straight corridor with a minimum width of 4 km between the proposed project and the adjacent Baltic Power OWF in the west.

e) The transport of elements and construction materials on the waters managed by the Director of the Maritime Office in Gdynia shall be conducted in conditions ensuring the safety of the elements and materials being transported, in compliance with applicable regulations on navigation safety and with engineering requirements.

f) After the works have been completed, all debris generated during construction shall be removed from the sea bottom.

g) For the duration of the works, prior to their commencement, a no-navigation and no-fishing safety zone shall be established at the construction site and within 500 m from that area, in a relevant decision of the competent director of the maritime office, as pursuant to § *55 para. 9 item 5 of Appendix No. 2* to the *Regulation of the Council of Ministers of 14 April 2021 on the endorsement of the spatial development plan for the national sea waters, the territorial sea and the exclusive economic zone, scale 1:200 000 (Dz. U [Journal of Laws] of 2021, item* 935) at the time of the commencement of the project, a decision of the territorially competent director of the maritime office is required to prohibit fishing and navigation in the water region taken for construction works, including a 500-metre safety zone around the water region, for the duration of the construction works.

h) Suitable procedures to prevent incidents involving UXO and, in particular, chemical warfare agents, shall be prepared and implemented before the commencement of the farm construction.
i) Information on finding UXO or chemical warfare agents shall be transmitted to the Director of Maritime Office in Gdynia and to the Naval Hydrographic Office.
j) Archaeological supervision shall be provided during the works. If an object is encountered, not identified yet, which may be considered to be historic, actions shall be taken in accordance with the provisions of the *Monument Protection and Custody Act* of *23 July 2003 (Dz. U. [Journal of Laws] of 2021, item 710, as amended),* hereinafter referred to as the "*Monument Protection Act*" including the following:
   - suspend any works that may damage or destroy the object to have been discovered;
   - secure, if possible, with the available means, the object and the place of its discovery,
   - immediately notify the competent Director of the Maritime Office in Gdynia of the discovery of the object, located in Polish sea territories.

3. At the project operation stage:
   a) The components of the BC-Wind OWF shall be equipped with elements minimising the risk of oil penetration into the marine environment, including leak-proof turbine generator casings and oil trays. Additionally, the project area shall be equipped with oil spill cleanup measures.
   b) Appropriately marked safety zones restricting the traffic of sea-going vessels with a width of no more than 500 m shall be designated around the structures. Pursuant to *Article 24 para. 1 of the Act on sea territories*, these zones shall be established by the competent director of the maritime office.
   c) Before the occupancy permit is obtained or operation commences, fishing rules for the OWF area shall be agreed with the Main Sea Fishing Inspectorate.
   d) The area shall be documented by means of bathymetric plans of the water region, underwater survey certificates and bottom investigation reports satisfying the requirements of the *Regulation of the Minister of Maritime Economy of 23 October 2006 on the technical conditions of use and on the detailed scope of inspection of marine hydraulic engineering construction structures (Dz. U. [Journal of Laws] of 2019, item 1065).*
4. At the project decommissioning stage:
   a) after the end of project operation, it is recommended that all the components should be removed. It is allowed to leave parts of the facilities supported in/at the bottom in place if they provide the habitat of valuable communities of sea organisms, upon previous arrangements with the competent environmental protection and maritime economy bodies.
   b) Component removal shall start from one place so that the area occupied by the OWF is emptied from the structures gradually.
   c) The area comprised by the dismantling activity shall be documented by means of bathymetric plans of the water region, underwater survey certificates and bottom investigation reports satisfying the requirements of the *Regulation of the Minister of Maritime Economy of 23 October 2006 on the technical conditions of use and on the detailed scope of inspection of marine hydraulic engineering construction structures* (Dz. U. [*Journal of Laws*] of 2019, item 1065).

III. <u>As regards monitoring the project environmental impact:</u>

a) Monitoring of the efficiency of the measures taken to minimise the impact with regard to migrating and local ornithofauna shall be conducted. Ornithofauna monitoring shall be conducted during the construction and operation staged and be planned on the basis of radar surveys and traditional observation. After each year of monitoring, a report on the various stages of monitoring shall be submitted to the competent environmental authority within 3 months of the year end.

b) Monitoring regarding the occurrence of marine mammals during the construction and operation phases shall be conducted. After each year of monitoring, a report on the various stages of monitoring shall be submitted to the competent environmental authority within 3 months of the year end.

In the conclusion of this decision, the Regional Director for Environmental Protection in Gdańsk did not take into account the conditions stated by the Director of the Maritime Office in Gdynia, which pertain to issues directly regulated in the applicable regulations, which were therefore of an informative or instructive nature.

This concerns in particular the subject matter of:

- items II.2 g), II.3 b) of the approval which pertains, as far as the determination of safety zones around artificial islands, structures and devices is concerned, to the subject matter of Article 24 of the Act of 21 March 1991 on the sea territories of the Republic of Poland and on maritime administration (Dz. U. [*Journal of Laws*] of 2022, No. 457),
- item 1.1 of the approval, to the extent as it coincides with the subject matter of the Act of 16 March 1995 on the prevention of sea pollution by ships (Dz. U. [*Journal of Laws*] of 2020, No. 1955),
- item ll.2.j. of the approval, to the extent as it pertains to Article 32 of the Monument Protection and Custody Act of 23 July 2003 (Dz. U. [*Journal of Laws*] of 2022, item 840 as amended), as regards the duties of the discovered of the monument,
- items I.2 and I.5. of the approval to the extent as they coincide with the provisions of the Maritime Safety Act of 18 August 2011 (Dz. U. [*Journal of Laws*] of 2022, item 515), governing navigation safety issues, as well as, without limitation, in Article 113a para. 2 item 2 and Article 113b para. 1 item 4 – the issues concerning offshore wind farm operation safety, including the obligation to develop emergency plans and plans for the elimination of hazards and pollution for the offshore wind farm. Additionally, these conditions go beyond the range of environmental protection issues,
- item II.2 h) i), which coincides with the provisions of Chapter VI of the Act of 13 June 2019 on the performance of economic activity in the manufacture and trade in explosives, weapons, ammunition as well as products and technology intended for military or police purposes (Dz. U. [*Journal of Laws*] of 2022, item 1650), governing in division VI the cleanup of areas of explosives and hazardous materials,
- item I.1 c) of the approval, which coincides with the provisions of the Regulation of the Minister of Infrastructure of 6 February 2003 on occupational health and safety during construction works (Dz. U. [*Journal of Laws*] No. 47, item 401), to the extent pertaining to the requirements for machinery and other technical devices used during construction works.

- item II.3.c of the Regulation of the Minister of Maritime Economy of 23 October 2006 on the technical conditions of use and on the detailed scope of inspection of marine construction structures (Dz. U. [*Journal of Laws*] No. 206, item 1516, as amended),
- item I.1.b) of the approval to the extent as it refers to the provisions of § 6 of the Regulation of the Council of Ministers of 8 August 2017 on the manner of organisation of the elimination of hazards and pollution at sea (Dz. U. [*Journal of Laws*] of 2022, item 216), with requirement to obtain consent to the elimination of pollution from the surface of sea waters by methods other than mechanical,
- item II. 1.b) to the extent as it refers to the subject matter of the Regulation of the Minister of Infrastructure of 12 January 2021 on obstructions to aviation, obstruction-limiting surfaces and devices of a hazardous nature (Dz. U. [*Journal of Laws*] item 264), in particular § 23, § 27 and § 37 concerning offshore wind farm marking,
- items II.2(a), (d), (g), Ii.3(c) which refer to the Regulation of the Council of Ministers of 14 April 2021 on the endorsement of the spatial development plan for the national sea waters, the territorial sea and the exclusive economic zone, scale 1:200 000 (Dz. U. [*Journal of Laws*] of 2021, item 935 as amended), governing the principles of using the areas on which offshore wind turbines will be built and operated,
- items I.4 and I.5 which coincide with the provisions of the Regulation of the Minister of Infrastructure of 15 December 2021 on the rescue plan and hazards and pollution combat plan for an offshore wind farm and a set of equipment (Dz. U. item 2391 as amended), which defines the detailed scopes of the rescue plan as well as the hazard and pollution combat plan for the offshore wind farm and equipment set
- item I.1.c) to the extent as it coincides with the provisions of Regulation (EC) No. 782/2003 of the European Parliament and of the Council of 14 April 2003 on the prohibition of organotin compounds on ships (O J L. of 2003, No. 115, page 1, as amended).

This authority did not take into account, either, the conditions in items I.3 and II.2.e of the approval, in relation to which, as they were laid down in a general manner or as a recommendation or guidelines, it would not be possible to apply Article 86c of the EIA Act.

To the remaining extent, the Regional Director for Environmental Protection in Gdańsk agreed with the position of the Director of the Maritime Office and reflected that position as the project implementation and environmental conditions set out in the conclusion of this decision.

Among the obligations signalled by the interacting authorities and having their source in the legislation, the following in particular are worthy of emphasising:

- Article 32 paras. 1 and 10 of the Monument Protection and Custody Act; pursuant to this provision: Any person who, in the course of construction or earthworks, discovers an object which is presumed to be a monument, is obliged to: 1) suspend all works which may damage or destroy the discovered object; 2) secure, using available means, this object and the place of its discovery; 3) immediately notify the competent director of the maritime office of the discovery of the object in Polish sea territories;

- Article 130 of the Act of 13 June 2019 on the performance of economic activity in the manufacture and trade in explosives, weapons, ammunition as well as products and technology intended for military or police purposes: Explosives and hazardous materials located in national sea waters and in the territorial sea shall be reported to the territorially competent maritime office. Clearing of areas of explosives and hazardous materials shall be conducted out by entrepreneurs conducting economic activity in this field. Clearing of areas from explosives and hazardous materials of military origin may be performed by the Armed Forces of the Republic of Poland. An entrepreneur performing the clearing of land of explosives and hazardous materials is obliged to reimburse the costs of clearing such land from explosives and hazardous materials of military origin as incurred by a unit of the Armed Forces of the Republic of Poland in relation to specialised military services.

Pursuant to the letter from the Director of the Maritime Office, reference: INZ1.8103.43.2022.MG dated 04/08/2022, issued at the request of the Investor, this authority's conditions regarding the way of performance of the obligations under the *Monument Protection and Custody Act* shall be understood as: "the need to oblige the Investor to provide a legal entity with legally required qualifications to conduct archaeological supervision through:

1) the readiness to provide archaeological supervision throughout the construction period,
2) formulating the guidelines as to the working method as appropriate for exploratory archaeological research results obtained by the Investor in the process of project implementation preparation, and
3) in the event of encountering a monument, not identified yet, to undertake supervision and actions on the construction site, in accordance with the provisions of the Monument Protection and Custody Act of 23 July 2003;"

In turn, the condition imposed by that authority in terms of adjusting the time schedule of the works on the BC-Wind OWF to the time schedules of other projects in the neighbourhood, if any, shall be understood as "(...) the need to oblige the Investor to act in such a way, when creating and implementing the time schedule of construction of the BC-Wind OWF, which will take into account the time schedules of other projects constructed in the neighbourhood of the BC-Wind OWF, including the adjacent offshore wind farms, which time schedules have been made public or available at the request of that Investor. Taking into account the data mentioned above shall ensure the simultaneous compliance by all the investors, on the reciprocity basis, with the requirements stemming from legally valid administrative decisions, implemented or coinciding in terms of the time schedule, concerning the BC-Wind OWF and other projects.

The requirement in question is instructive (coordinating) in the course of construction and does not mean that the commencement of the BC-Wind OWF depends on the creation or implementation of the schedules of other projects. Nor does that mean that any of the schedules of others entities, regardless of the resulting date of the commencement of the project, has priority over others. No schedule is a basis for giving preference to projects whose construction commenced earlier than the implementation of the BC-Wind OWF, nor does such schedule mean that the BC-Wind OWF schedule must be subordinated to the progress of other projects".

In the conclusion of this decision, the Regional Director for Environmental Protection in Gdańsk did not take into account the conditions stated by the Director of the Maritime Office in Gdynia, which pertain to issues directly regulated in the applicable regulations, which were therefore of an informative or instructive nature.

In letter reference SE.ZNS.80.4912.11.21 of 26/11/2021, the State Border Sanitary Inspector in Gdynia reviewed and successfully accepted the project and specified the following project implementation conditions:

1. Prepare the safe construction, operation and decommissioning plans for the BC-Wind OWF (hereinafter: the OWF),
2. Provide the coordination centre overseeing the construction, operation and decommissioning of the OWF,
3. Update information on the development of the OWF area on the regular basis,
4. Ensure the proper organisation and scheduling of the construction site and prepare offshore operations plans,
5. Organise appropriate welfare facilities with suitable sanitary facilities for the employees,
6. Execute the construction work through contractors with appropriate experience and qualifications and trained workers,
7. Ensure that equipment is operated by persons who are trained in its operation, with regard to the general and specific occupational health and safety rules and who are under the permanent control of an occupational medicine doctor,
8. Carry out appropriate regular training of ship crews as well as workers and subcontractors involved in the construction and operation of the OWF,
9. Develop emergency escape and safety plans as well as risk prevention strategies, including those pertaining to collapse disasters,
10. Develop search and rescue plans,
11. Ensure appropriate conditions for the storage and transportation of OWF components,
12. Proceed with the construction works in weather conditions enabling their precise execution in accordance with the selected method,
13. Proceed with the works with the use of operational equipment, and ensure that construction machinery and equipment is properly maintained and serviced,
14. Design the location of indoor radio communication and radiolocation equipment so as to minimise the occurrence of fields, so that works can be carried out without the need to switch those devices off or use other additional procedures which reduce operation efficiency,
15. Define, in view of the transmitting power of radio communication and radiolocation equipment, the rules and zones in which workers may be temporarily present,
16. Switch off equipment when working on antennas and transmitters, taking into account the transmitting power of the radio communication and radiolocation equipment,
17. Maintain audited operators' working time control systems,
18. Develop procedures for handling and warehousing substances that may be a source of contamination,
19. Develop plans to handle anthropogenic hazardous objects that might be discovered during a sea bottom inspection,
20. Ensure the selective collection of wastes (including bilge and other hazardous oils) during construction and maintenance works,
21. Equip vessels and substations with the means to clean up oil-based product spills or released waste,

22. Ensure that sewage is collected and disposed of in a manner appropriate to the place of sewage generation,
23. Ensure adequate levels of the treatment and disposal of oil-polluted waters,
24. Publish information on the planned scope of work, traffic volume and the need for caution in the construction area,
25. Apply warning systems for vessels not involved in the construction of the OWF,
26. Check the sea bottom in order to precisely determine the location of objects that could pose a hazard to other users of the sea territories and inform the competent services about the existing hazard,
27. Properly mark and report objects constituting obstacles to aviation,
28. Prepare a facility protection plan,
29. Determine safety zones,
30. Mark the OWF area on nautical charts,
31. Provide navigation surveillance and use a system of navigation warnings and communiques, as well as conduct continuous monitoring of vessel traffic,
32. Properly paint, illuminate and equip the farm facilities with warning systems, in accordance with the requirements of Polish aviation and maritime regulations,
33. Perform regular periodic inspections of the various components of the OWF,
34. Establish a system of effective communication with the services responsible for the safety of navigation and for hazard and pollution prevention,
35. Ensure continuous supervision over the operation and monitoring of the OWF by the OWF coordination centre.

The Regional Director for Environmental Protection did not include the following conditions in this decision, as the issues contained therein are dealt with in the following regulations:

- items 1, 19 and 20 - in the Environmental Protection Law Act of 27 April 2001 (Dz. U. [*Journal of Laws*] 2021, item 1973, as amended) and the Regulation of the Minister of Infrastructure of 15 December 2021 on the rescue plan and hazards and pollution combat plan for an offshore wind farm and a set of equipment (Dz. U. [*Journal of Laws*] item 2391 as amended),
- item 9 - in the Fire Protection Act of 24 August 1991 (Dz. U. [*Journal of Laws*] of 2021, item 869, as amended),
- items 1, 3, 5, 6, 9 and 33 - in the Construction Law Act of 7 July 1994 (Dz. U. [*Journal of Laws*] 2021.2351, as amended),
- items 2, 3, 5, 7, 9 and 22 - in the Regulation of the Minister of Labour and Welfare Policy of 26 September 1997 on general occupational health and safety regulations (Dz. U. [*Journal of Laws*] of 2003, No. 169, item 1650, as amended)
- items 7, 8, 17 - in the Labour Code Act of 26 June 1974 (Dz. U. [*Journal of Laws*] of 2022, item 1510) along with secondary legislation,
  item 7 - in the Regulation of the Minister of Energy of 28 August 2019 on occupational health and safety in power engineering devices (the consolidated text in Dz. U. [*Journal of Laws*] of 2021, No. 1210),
- items, 7, 12 and 24 - in chapter 7 of the Regulation of the Minister of Infrastructure of 6 February 2003 on occupational health and safety during construction works (Dz. U. [*Journal of Laws*] No. 47, item 401) pertaining to the requirements for machinery and other technical devices used during construction works,

- items 8, 31 and 34 - in the Sea Safety Act of 18 August 2011 (Dz. U. [*Journal of Laws*] 2022. 515, as amended) along with secondary legislation, including the Regulation of the Minister of Maritime Economy and Inland Navigation of 23 April 2018 on training and qualification of the crew members of sea-going ships (Dz. U. [*Journal of Laws*] of 2018, item 802)
- item 13 - in chapter 7 of the Regulation of the Minister of Infrastructure of 6 February 2003 on occupational health and safety during construction works (Dz. U. [*Journal of Laws*] No. 47, item 401) pertaining to the requirements for machinery and other technical devices used during construction works,
- item 13 - in the Technical Inspection Act of 21 December 2000 (the consolidated text in Dz. U. [*Journal of Laws*] of 2022, item 1514), and the Regulation of the Council of Ministers of 7 December 2012 on the types of technical devices subject to technical inspection (Dz. U. [*Journal of Laws*] of 2021, item 1468)
- items 4, 10, 19 and 35 - in the Sea Safety Act of 18 August 2011 (Dz. U. [*Journal of Laws*] 2022. 515, as amended) along with secondary legislation,
- items 14, 15, 16 and 17 - in the Regulation of the Minister of Family, Labour and Welfare Policy of 29 June 2016 occupational health and safety during works related to exposure to an electromagnetic field (Dz. U. [*Journal of Laws*] of 2018, item 331),
- items 18 and 28 - in the Regulation of the Minister of Infrastructure of 15 December 2021 on the rescue plan and hazards and pollution combat plan for an offshore wind farm and a set of equipment (Dz. U. [*Journal of Laws*], item 2391, as amended), item 20 - in the Waste Act of 14 December 2012 (Dz. U. [*Journal of Laws*] 2022, item 699, as amended),
- items 22, 23 and 25 - in the International Convention for the Prevention of Pollution from Ships (MARPOL) (Dz. U. [*Journal of Laws*] of 2016, item 761, as amended) and the Act of 16 March 1995 on the prevention of sea pollution by ships (Dz. U. [*Journal of Laws*] of 2020, No. 1955),
- item 27 and 32 - in the Regulation of the Minister of Infrastructure of 12 January 2021 on obstructions to aviation, obstruction-limiting surfaces and devices of a hazardous nature (Dz. U. [*Journal of Laws*] item 264), in particular § 23, § 27 and § 37 concerning offshore wind farm marking,
- items 29, 30 and 31 - in Article 24 of the Act of 21 March 1991 on sea territories of the Republic of Poland and on maritime administration (the in Dz. U. [*Journal of Laws*] of 2022, item 457) and in the secondary legislation to that Act.

This authority did not take into account, either, some of the conditions mentioned above, as they were laid down in a general manner or as a recommendation or guidelines, therefore it would not be possible to apply Article 86c of the EIA Act.
Project implementation on the basis of this decision, and the subsequent operation of the facilities which have come into being as a result of the project, notwithstanding the provisions of this decision, does not relieve the Investor from his obligation to:

- apply the regulations on the technical conditions laid down on the basis of Article 7 of the Construction Law Act of 7 July 1994 (the consolidated text in Dz. U. [*Journal of Laws*] of 2021, No. 2351, as amended);
- obtain the legally required permits, opinions and approvals;
- carry out the obligations directly following from the regulations, including, in particular, the obligations concerning correct water management, as specified in the provisions of the Law on Water Management of 20 July 2017 (the consolidated text in Dz. U. [*Journal of Laws*] of 2021, item 2233 as amended);

- with regard to the correct operation of the devices specified in the provisions of Environmental Protection Law Act of 27 April 2001 (the consolidated text in Dz. U. [*Journal of Laws*] of 2021, item 1973, as amended), waste management as specified in the provisions of the Act of 14 December 2012 (the consolidated text in Dz. U. [*Journal of Laws*] of 2022, item 699).

Such obligations, as they exist and are binding by law, are not re-imposed or disclosed in this decision.

The environmental decision does not supersede the permit under Article 56 of the Nature Protection Act. A permit for any destruction of habitats of the species and for the scaring or relocation of the protected species must be obtained under Article 56 para. 1 of the Nature Protection Act of 16 April 2004 (the consolidated text of 2022, item 916, as amended).

In this state of affairs, it was appropriate to decide as in the introduction.

This decision shall be disclosed in a list of data available to the public.

An appeal against this decision may be made by the party to the General Director for Environmental Protection via the Regional Director for Environmental Protection in Gdańsk, ul. Chmielna 54/57, 80-748 Gdańsk, within 14 days of receipt of the decision, in conformity with Article para. 3 of the Act of 17/12/2020 on the promotion of electricity generation in offshore wind farms (Dz. U. [*Journal of Laws*] of 2021 item 234).

In relation to the issue of this decision, stamp duty at PLN 205 was charged (Appendix No. 1, part I, item 45 of the Stamp Duty Act of 18 November 2006 *(the consolidated text in Dz. U. [Journal of Laws] 2020, item 1546, as amended).*

[*round seal with the state emblem of the Republic of Poland:*]
REGIONAL DIRECTOR FOR
ENVIRONMENTAL PROTECTION
IN GDAŃSK

[*oblong stamp:*]
REGIONAL DIRECTOR FOR
ENVIRONMENTAL PROTECTION
in Gdańsk
[*illegible signature*]
Radosław Iwiński

Circulation:

1. Management Board of C-Wind Polska Sp. z o.o. via the representative, Mr Kacper Kostrzewa, C-Wind Polska Sp. z o.o., ul. Przyokopowa 33, 01-208 Warszawa
2. Grand Agro Fundacja Ochrony Środowiska Naturalnego, ul. Sportowa 30/B 05-100 Nowy Dwór Mazowiecki – ePUAP electronic public administration service platform
3. File

Cc:

1. Director of the Maritime Office in Gdynia, ul. Chrzanowskiego 10, 81-338 Gdynia
2. State Border Sanitary Inspector in Gdynia, ul. Kontenerowa 69, 81-155 Gdynia

Appendix to the DECISION of the Regional Director for Environmental Protection in Gdańsk, ref. RDOŚ-Gd-W00.420.50.2021.KSZ.AM.10

PROJECT CHARACTERISTICS

The object of the project is the BC-Wind Offshore Wind Farm (hereinafter: The BC-Wind OWF) of the total maximum capacity of 500 MW located in the sea territories of the Republic of Poland, at the development area of 86.28 km^2, approximately 22.6 km north of the seashore, the same latitude as the Choczewo and Krokowa communes (the Pomerania Region). The planned project comprises the construction, operation and decommissioning of the BC-Wind OWF. The farm will consist of a maximum of 41 wind turbines, 188 km cable pathways and a maximum of 6 other facilities.

Geodetic coordinates of the BC-Wind OWF Development Area

Point No.	**GRS80H geodetic coordinate system [DD°MM'SS.SSS"]**	
	ʎ	**φ**
1	17°50'29.701" E	55°05'41.945" N
2	17°51'12.921" E	55°05'45.974" N
3	17°54'07.585" E	55°06'01.656" N
4	17°56'01.352" E	55°06'11.346" N
5	17°58'58.043" E	55°06'15.594" N
6	18°01'03.574" E	55°06'18.656" N
7	18°01'52.922" E	55°06'20.769" N
8	18°01'53.282" E	55°06'20.785" N
9	18°03'17.508" E	55°06'24.392" N
10	18°03'30.060" E	55°06'19.193" N
11	18°03'55.078" E	55°06'08.831" N
12	18°04'25.851" E	55°05'54.849" N
13	18°07'58.862" E	55°04'18.065" N
14	18°08'40.068" E	55°03'59.343" N
15	18°08'44.911" E	55°03'50.593" N
16	18°08'45.125" E	55°03'50.205" N
17	18°08'50.792" E	55°02'43.042" N
18	18°08'50.365" E	55°02'40.918" N

19	18°03'56,238” E	55°02'15,151” N
20	18°01'53.405” E	55°02'10.619” N
21	18°01'53.045” E	55°02'10.619” N
22	18°00'00.360” E	55°02'06.000” N
23	18°00'00.360” E	55°03'38.548” N
24	18º00'00.359” E	55°04'18.343” N
25	17°56'28.930” E	55°04'28.352” N
26	17°51'30.273” E	55°04'42.490” N
27	17°49'49.441” E	55°04'47.263” N

The grounds for siting the BC-Wind OWF are as follows:

1) decision No. MFW/7/12 of 09/05/2012 of the Minister of Transport, Construction and Maritime Economy on the permit to erect or use artificial islands, structures and devices in Polish sea territories for the project titled the “The complex of offshore wind farms of the maximum total power of 200 MW with technical, measurement, survey and service infrastructure associated with the preparation, implementation and operation stage” (reference: GT7ak/62/1165094/decyzja/2012), amended in decision No. MFW/7a/12 of the Minister of Transport, Construction and Maritime Economy, reference GT7t/62/1165094/decyzja/2012 of 31/10/2012, decision reference DGM.VII.53.71.2016.AK.7. of 22/07/2016 of the Minister of Maritime Economy and Inland Navigation and in decision reference DGM-3.530.23.2022 of 10/05/2022 of the Minister of Infrastructure;
2) decision No. MFW/4/13 reference Gt7/62/1172655/decyzja/2013 of 06/02/2013 of the Minister of Transport, Construction and Maritime Economy on the permit to erect or use artificial islands, structures and devices in Polish sea territories for the project titled the “The complex of offshore wind farms of the maximum total power of 200 MW with technical, measurement, survey and service infrastructure associated with the preparation, implementation and operation stage” issued in favour of B-Wind Polska, assigned to C-Wind Polska in decision reference GM-DGM-7.530.36.2021 of 31/03/2021 of the Minister of Infrastructure and amended in decision reference DGM-3.530.22.2022 of 10/05/2022 of that Minister.

<u>Schedule of the most important parameters of the BC-Wind OWF for the Applicant’s scenario</u>

Parameter	Unit	Value
Total installed capacity (maximum)	MW	500
Number of wind turbines (maximum)	-	41
Rotor diameter (maximum)	m	280

Parameter	Unit	Value
Clearance (minimum)	m	20
Structure height with rotor (maximum)	m	330
Number of additional structures (maximum)	-	6
Gravity based structure (GBS) diameter (maximum)	m	60
Bottom area occupied by a single gravity based structure (GBS) (maximum)	m^2	2826
Internal cable pathway length (maximum)	km	188

Each of the offshore wind turbine generators will consist of the nacelle with rotors, the tower, foundation or supporting structure anchored or supported on the sea bottom. Feasible permanent supporting structures include: the large diameter pile, truss structure, tripod and gravity based structure.

The objective of the planned project is to generate electricity with the use of wind as a renewable energy source. Offshore wind turbine generators are the systems intended for the conversion of kinetic wind energy to electricity by driving the power generator rotor by means of the wind force. The mechanical energy of the rotating rotor is converted in the generator to low-voltage alternating current, which is usually transformed to medium-voltage and then high-voltage current for further transmission.

The substations planned as part of the project serve to transform and transmit energy generated by offshore wind turbine generators to the shore. The task of the substations is to raise the voltage of the current from the offshore wind turbine generators (usually from 33/66 kV) to the transmission level (even up to 400 kV), with the intention to reduce the losses, increase the transmission capacity or enable the reduction of the conductor cross-section in the cables. The basic substation components comprise: transformers, including auxiliary and earthing ones, high and medium voltage switchgear, standby generators, reactors and capacitors as well as AC filters. Offshore wind turbine generators alike, substations may be installed on supporting structures.

The purpose of converter stations is to convert alternating current (AC) into direct current (DC). This current is then transmitted over considerable distances to another converter station on land, where the current is converted from DC to AC and then transmitted to the National Electric Power System. The basic elements of the converter station structure are the same as those of the gathering substations, and the differences are mainly in the electrical system.

Test and measurement equipment as well as data recording and transmission instruments will be installed at the substation. Measurements, primarily meteorological and hydrological, will be performed out at the station.

Offshore accommodation and service platforms operate as a local base for all activities related to the OWF construction, operation, maintenance and, ultimately, decommissioning.

In addition to their primary functions, these platforms may also contain additional systems, including electrical ones. Accommodation and service platforms are also installed on supporting structures such as the gravity based or truss foundation.

In view of the location of the planned project, which as a whole is implemented at a sea territory, any related actions at all project phases will be carried out as sea operations, with their special conditions and nature taken into consideration. Deliveries to and from the OWF area will be carried out using various types of vessels: construction and installation vessels, transport vessels, transport barges (platforms), pushers and tugboats as well as service vessels.

The project will be implemented in a continuous process or in stages.

The construction phase will comprise:

- preparation of the sea bottom prior to placing the foundation or supporting structures for individual offshore wind turbine generators and infrastructure. The type of activities will follow from the geological conditions at the foundation sites and on the type of the foundations used;
- transport and placing the foundation or supporting structures in the sea bottom;
- transport and installation of the offshore wind turbine generator components, substations and the accommodation and service station on platforms;
- laying of internal power transmission cables between the individual OWF structures.

During the decommissioning phase, most of the OWF structures will most likely be removed from the sea bottom. Decommissioning works will be executed in such a way that they will not hinder navigation and will not have an adverse impact on the marine environment. The structures may be left in place if they provide habitat for valuable marine communities or in other cases where this will not lead to a conflict with the use of sea territories.

[*round seal with the state emblem of the Republic of Poland:*]
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[*oblong stamp:*]
REGIONAL DIRECTOR FOR
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in Gdańsk
[*illegible signature*]
Radosław Iwiński