



Fundusze Europejskie
Wiedza Edukacja Rozwój

Unia Europejska
Europejski Fundusz Społeczny



***Environmental Impact Prediction for the Maritime Spatial Plan of
the Polish Internal Sea Waters, Territorial Sea, and Exclusive
Economic Zone
in Scale 1:200,000
(Environmental Report)***

Draft (v. 3)

Task 5

Editor:

Monika Michałek, Marlena Mioskowska and Lidia Kruk-Dowgiałło

Gdańsk, July 2019

Wydawnictwa Wewnętrzne Instytutu Morskiego w Gdańsku
No 7289

The work has been prepared by the Department of Ecology of Waters of the Maritime Institute in Gdańsk within the task titled “Development of the Impact Prediction for the Draft Maritime Spatial Plan of the Polish Internal Sea Waters, Territorial Sea, and Exclusive Economic Zone in Scale 1:200,000” on the basis of the Agreement No INZ1.1-AC-81010-16/16 of 22 July 2016 concluded between the Treasury – the Director of Maritime Office in Gdynia and the Maritime Institute in Gdańsk

Head of the Department of Ecology of Waters:

Lidia Kruk-Dowgiałło

Project Manager:

Lidia Kruk-Dowgiałło

Prognoza wersja <i>1.3</i>	Imię i nazwisko	Podpis
Zespół autorski	Lidia Kruk-Dowgiałło	<i>Lidia Kruk-Dowgiałło</i>
	Monika Michalek	<i>Monika Michalek</i>
	Helena Boniecka	<i>Helena Boniecka</i>
	Marlena Typiak	<i>Marlena Typiak</i>
	Marlena Mioskowska	<i>Marlena Mioskowska</i>
	Magdalena Błęska	<i>Magdalena Błęska</i>
	Tomasz Kuczyński	<i>Tomasz Kuczyński</i>
	Anna Lemieszek	<i>Anna Lemieszek</i>
	Piotr Rutkowski	<i>Piotr Rutkowski</i>
	Piotr Pieckiel	<i>Piotr Pieckiel</i>
	Paulina Brzeska-Roszczyk	<i>Paulina Brzeska-Roszczyk</i>
	Agnieszka Gajda	<i>Agnieszka Gajda</i>
	Klaudyna Świstun	<i>Klaudyna Świstun</i>
	Joanna Kowalczyk	<i>Joanna Kowalczyk</i>
	Alicja Kaźmierczak	<i>Alicja Kaźmierczak</i>
	Włodzimierz Meissner	<i>Włodzimierz Meissner</i>
	Anna Tarała	<i>Anna Tarała</i>
	Andrzej Kośmicki	<i>Andrzej Kośmicki</i>
	Piotr Rydzkowski	<i>Piotr Rydzkowski</i>
	Mateusz Gorczyca	<i>Mateusz Gorczyca</i>
	Bartosz Pępek	<i>Bartosz Pępek</i>
Opracowanie kartograficzne	Bartosz Pępek	<i>Bartosz Pępek</i>
	Agnieszka Gajda	<i>Agnieszka Gajda</i>
	Anna Tarała	<i>Anna Tarała</i>
Zatwierdziła	Lidia Kruk-Dowgiałło	<i>Lidia Kruk-Dowgiałło</i>

The photographs used in the Prediction were made by Helena Boniecka and Piotr Domaradzki.

This document was prepared in 10 copies, including 1 copy for archive of the Maritime Institute in Gdańsk.

Contents

PART I

1	Introduction	7
1.1	Legal basis for the Prediction	8
1.2	Scope and purpose of the Prediction	8
1.3	Area influenced by provisions of the Draft Plan for which the Prediction has been developed	12
2	Information on methods used during development of the Prediction	14
2.1	General methodological assumptions	14
2.2	Environmental impact assessment method	23
2.3	Definitions of terms used in the Prediction	27
3	Information on the content and main objectives of the Draft Plan of the Maritime Spatial Plan of the Polish Internal Sea Waters, Territorial Sea, and Exclusive Economic Zone in Scale 1:200,000 together with its associations with other documents, including an assessment of the compatibility of the Draft Plan with planning documents at national and international level	42
4	Definition, analysis and assessment of environmental protection objectives established at international, Community and national levels relevant to the Draft Plan and methods of their inclusion in the Draft Plan	44
5	Identification, analysis and assessment of potential changes in the state of the environment if the Draft Plan is not implemented	45
6	Identification, analysis and assessment of the existing environmental protection problems significant for the implementation of the Draft Plan, in particular those problems which concern areas protected under the Act of 16 April 2004 on Nature Conservation (consolidated text, Journal of Laws of 2018, item 1614, as amended)	48
7	Identification, analysis and assessment of the predicted significant impacts of the findings included in the Draft Plan on the objectives and objects of conservation, the integrity and coherence of Natura 2000 areas and the environment	53
7.1	Assessment of predicted significant impacts	53
7.1.1	Assessment of predicted significant impacts on the environment	53
7.1.2	Assessment of anticipated significant impacts on the protection objectives and protected objects for Natura 2000 areas	126
8.4	Cumulative impacts	157
8	Determination, analysis and assessment of the state of the environment in areas affected by the anticipated significant impact	158
9	Alternative solutions indicated in the Draft Plan (including indication of the most beneficial options for the environment)	159
10	Information on possible transboundary environmental impacts of the Draft Plan	159

11 Presentation of solutions aimed at prevention, limitation or natural compensation of negative environmental impacts, which may result from the implementation of the Draft Plan	166
12 Presentation of alternative solutions to those contained in the Draft Plan together with justification of such selection and description of methods of the assessment used for making selection, or explanation why there are no alternative solutions	169
13 Comments and conclusions collected during national and international consultation meetings as well as comments from the Contracting Authority.....	174
13.1 Proposals and comments to the Prediction collected during the first international consultation meeting	174
13.2 Proposals and comments to the Prediction collected during the second international consultation meeting	175
13.3 Report from the Fourth National and the Third International Consultation Meeting.	176
14 Recommendations to the “Draft Plan of the Maritime Spatial Plan of the Polish Internal Sea Waters, Territorial Sea, and Exclusive Economic Zone in Scale 1: 200,000” made at all stages of the works	180
14.1 Recommendations to the “Draft Plan of the Maritime Spatial Plan of the Polish Internal Sea Waters, Territorial Sea, and Exclusive Economic Zone in Scale 1: 200,000”, to version of 23 January 2018	180
14.2 Recommendations to the “Draft Plan of the Maritime Spatial Plan of the Polish Internal Sea Waters, Territorial Sea, and Exclusive Economic Zone in Scale 1:200,000” resulting from the course of works on the Draft Plan and the Prediction after the comments from the Contracting Authority (4 April 2018).....	190
14.3 Recommendations to v.1 of the “Draft Maritime Spatial Plan of the Polish Internal Sea Waters, Territorial Sea, and Exclusive Economic Zone in Scale 1:200,000” (of 23 April 2018)	194
15 Summary to the FINAL version of the Draft Plan of July 2019 (v.3)	208
16 Summary in non-specialist language.....	210

1 Introduction

Environmental Impact Prediction (hereinafter referred to as the Prediction) for the draft document entitled: “Draft Maritime Spatial Plan of the Polish Internal Sea Waters, Territorial Sea, and Exclusive Economic Zone in Scale 1:200,000” (hereinafter referred to as the Draft Plan), was developed in accordance with the Agreement No INZ1.1-AC-81010-16/16 of 22 July 2016 concluded between the Treasury – the Director of Maritime Office in Gdynia, hereinafter referred to as the Contracting Authority, and the Maritime Institute in Gdańsk (IMG), hereinafter referred to as the Contractor.

The Contracting Authority has set 36 months (from 22 July 2016 to 22 July 2019) to develop the Environmental Impact Prediction for the Draft Plan.

This version of the Prediction refers to the last version of the Draft Plan of July 2019 submitted to the authors. The document takes into account comments on the Prediction made during the whole period of realisation of the Project (Chapter 17).

The main objective of maritime spatial planning is to promote sustainable development and to manage space and conflicts in marine areas. The basis for planning is the implementation of the provisions of Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning (Official Journal of the EU L 257/135 of 28.8.2014) into the Polish legal order. Pursuant to Article 4 of the aforementioned directive, each Member State shall establish and implement maritime spatial planning. The directive requires that the work on planning documents should take into account economic, social and environmental aspects, and that the so-called ecosystem-based approach should be applied.

To apply an ecosystem-based approach the following conditions must be met:

- the impact of planned human activities on the ecosystem is maintained at a level that allows achieving and maintaining good ecological status of the environment;
- both the ability of the ecosystem to function properly and the resistance to environmental changes resulting from human activities are maintained;
- the simultaneous, sustained and sustainable use of ecosystem resources and services by present and future generations is enabled.

The spatial development plan is to decide on the designation of areas of the internal sea waters, territorial sea and exclusive economic zone. In particular, it is to decide on the so-called basic functions of these areas, i.e. on the primary designation of the area, which cannot be violated by other permissible functions (see Articles 37a(2) and 37a(3) of the Act of 21 March 1991 on Sea Areas of the Republic of Poland and Maritime Administration – Journal of Laws of 2018, item 2214, as amended, hereinafter referred to as the “Act on Sea Areas”), but also it is to allow the maintenance of good condition of the environment and nature protection.

The Draft Plan developed by the Maritime Institute in Gdańsk and the National Marine Fisheries Research Institute – PIB should constitute a tool for functional and territorial coordination of various

spatial activities in sea areas in a manner consistent with nature and other economic activities, creating conditions for the achievement of the objectives resulting from Article 37b(1) of the Act on Sea Areas and from strategic documents binding in Poland.

1.1 Legal basis for the Prediction

Pursuant to Article 46 of the Act of 3 October 2008 on Sharing Information About the Environment and its Protection, Public Participation in Environmental Protection and Environmental Impact Assessment (consolidated text of Journal of Laws of 2018, item 2081, of 2019, item 630) (hereinafter referred to as the “EIA Act”), spatial development plans require a strategic environmental impact assessment. The Environmental Impact Prediction is one of the four elements of the procedure for strategic environmental impact assessment (Article 3(1)(14) of the EIA Act).

1.2 Scope and purpose of the Prediction

The present version of the Prediction, so called v. 3, was developed under Task 5: “Development of the Prediction after repeated agreements”, and it refers to all the Draft Plan documents prepared as a part of the Project:

- ❖ version v. 0 of 22 May 2017;
- ❖ version v. 1 of 23 January 2018, then amended on 23 April 2018 as a consequence of comments made by the Contracting Authority and recommendations of the team responsible for development of the Prediction;
- ❖ version v. 2 of 22 August 2018;
- ❖ version v. 2 of 22 November 2018;
- ❖ version v. 3 of 22 April 2019;
- ❖ version v. 3 of July 2019, including:
 - Draft Ordinance of the Minister of Maritime Economy and Inland Navigation and the Minister of Investments and Development on the Adoption of the Spatial Development Plan for the Internal Sea Waters, Territorial Sea and Exclusive Economic Zone, version 3 of 22 April 2019, in scale 1:200,000.
 - Appendix 1 to the aforementioned Ordinance, i.e. General Provisions;
 - Appendix 2 to the aforementioned Ordinance, i.e. Detailed Decisions (Basin Sheets);
 - Appendix 3 to the aforementioned Ordinance, i.e. Explanatory Memorandum to the Detailed Decisions.

The scope and the level of detail of the Prediction results from the provisions of Article 51 of the EIA Act, detailed requirements included in the description of the subject of the contract, arrangements with the Regional Director of Environmental Protection in Gdańsk and Szczecin, and the West-Pomeranian and Pomeranian Voivodeship State Sanitary Inspectorates, as well as from the completeness of materials included in the Draft Plan document. Prediction consists of the main part (text and graphic part) and 11 appendices.

Prediction includes (according to the description of the subject of the contract):

1. information on the content, main objectives of the Draft Plan and its associations with other documents,

2. information on methods used during development of the Prediction,
3. proposals concerning predicted methods of analysing consequences of the provisions of the Draft Plan and frequency of such analysis,
4. information on possible cross-border environmental impacts,
5. summary in a non-specialist language,
6. information concerning basins which are valuable in terms of nature, including areas protected under the Act of 16 April 2004 on Nature Conservation (consolidated text of Journal of Laws of 2018, item 1614, as amended),
7. presenting spatial phenomena and interactions of these phenomena on maps,
8. statement of the head of the team of authors on meeting the requirements set out in Article 74a(2) of the EIA Act,
9. recommendations for each version of the Draft Plan,
10. summary and conclusions.

Furthermore, in connection with the Prediction the following aspects have been identified, analysed and evaluated:

1. the existing state of the marine environment in the area covered by the Draft Plan,
2. potential changes in the state of the environment if the Draft Plan is not implemented,
3. the state of the environment in areas affected by the expected significant impact,
4. existing environmental protection problems significant for the implementation of the Draft Plan, in particular those problems which concern areas protected under the Act of 16 April 2004 on Nature Conservation (consolidated text of Journal of Laws of 2018, item 1614, as amended),
5. environmental protection objectives established at the international, Community and national levels, significant for the Draft Plan, and the ways in which these objectives and other environmental problems have been taken into account during development of the Draft Plan,
6. the expected significant impacts of the Draft Plan's findings (including: direct, indirect, secondary, cumulative, short-, medium- and long-term, permanent, temporary, positive and negative impacts) on the objectives and objects of conservation and the integrity and coherence of Natura 2000 areas, as well as on the environment, in particular:
 - biodiversity,
 - people,
 - animals,
 - plants,
 - water,
 - air and acoustic climate,
 - land surface, including seafloor,
 - landscape,
 - climate,
 - natural resources,
 - monuments, including underwater cultural heritage,
 - material assets,

taking into account dependencies between components of the environment and impacts on these elements (effects of Draft Plan's findings on the marine environment and a land covered by the impact area).

7. alternative solutions indicated in the Draft Plan together with an indication of the most beneficial options for the environment,
8. the degree of compliance of the Draft Plan with planning documents at the national and international level, as well as other documents important for the preservation and protection of the environment,
9. potential social conflicts arising from the implementation of the provisions of the Draft Plan.

Extremely important will be the following elements of the Prediction, which are necessary to ensure sustainable development of the use of Polish Sea Areas:

10. solutions aimed at preventing and limiting negative impacts on the environment, which are a result of the implementation of the Draft Plan, in particular on the objectives and objects of protection of Natura 2000 areas, and the integrity and cohesion of these areas,
11. alternatives to solutions contained in the Draft Plan together with justification for their choice and a description of the assessment methods which led to this choice or an explanation of the lack of alternatives, including an indication of the difficulties encountered due to technical deficiencies or gaps in contemporary knowledge, taking into account the objectives, geographical scope of the document, and the objectives and objects of protection of Natura 2000 areas, as well as the integrity and coherence of these sites.

The Regional Director of Environmental Protection in Gdańsk, acting in agreement with the Regional Director of Environmental Protection in Szczecin, due to the specificity of the area covered by the study, extended the scope of the Prediction resulting from the EIA Act to include the following issues which, in his opinion, should be analysed in this document:

- reference to environmental impact predictions of the already adopted documents relating to the project in question,
- analysing the impact of options planned by GAZ-System S.A. on the route of the Denmark-Poland Baltic Pipe gas pipeline and ongoing updates of the route to avoid conflict with wind power generation areas,
- taking into account, with regard to all Natura 2000 areas and all nature reserves, not only the provisions resulting from the plans of protection tasks or protection plans, or their draft versions, but also the provisions resulting from the Act on Nature Conservation, the Environmental Protection Law (consolidated text of Journal of Laws of 2018, item 799, as amended) and other acts relating to the aforementioned ones, regardless of whether the plans of protection tasks or protection plans apply for the given protection area,
- taking into account the protection of species of plants, fungi and animals associated with marine waters, coastal zone and land, with particular regard to the protection of harbour porpoises, birds and their migratory routes, fish and benthic organisms which occur in the coastal zone,
- taking into account the ecophysiological conditions, in particular the geomorphological conditions of the Baltic Coast,

- taking into account international conventions and agreements relating to the Baltic Sea, of which Poland is a party,
- addressing the impact on the coastal zone and coastal waters, in particular on internal waters, ports, development of navigation, breeding marine organisms, tourism and marine recreation.

The West-Pomeranian Voivodeship State Sanitary Inspector drew attention to the need to take into account in the Prediction the impact of the activities included in the Draft Plan on human health through:

- identification, analysis and assessment of predicted significant impacts, including direct, indirect, secondary, cumulative, short-, medium- and long-term, permanent and temporary, positive and negative impacts on the environment, and in particular on people, water and air, taking into account dependencies between these elements of the environment and between the impacts on these elements,
- presenting solutions aimed at preventing and reducing negative impacts on living conditions and human health that may result from the implementation of the draft document.

The Pomeranian Voivodeship State Sanitary Inspector, having familiarised themselves with the submitted materials, stated that due to the type of project the Prediction should be drawn up to the scope specified in the Act of 3 October 2008 on Sharing Information About the Environment and its Protection, Public Participation in Environmental Protection and Environmental Impact Assessment (consolidated text of Journal of Laws of 2018, item 2081, of 2019, item 630).

Moreover, in accordance with the description of the subject of the contract, the Contractor should take into account in the final document the opinion of the Minister in charge of regional development concerning the confirmation of Plan compliance with development strategies, which is not possible at this stage of works (see Appendix 11).

This final version of the Prediction ends with a summary of version v. 3 of the Draft Plan of July 2019.

1.3 Area influenced by provisions of the Draft Plan for which the Prediction has been developed

The spatial scope of the Prediction was determined by the provisions contained in the description of the subject of the contract and in version v. 3 of the Draft Plan, according to which the Draft Plan "(...) covers Polish Sea Areas as defined by the Act of 21 March 1991 on Sea Areas of the Republic of Poland and Maritime Administration (hereinafter referred to as the "Act on Sea Areas"), in the part referring to the Polish exclusive economic zone together with the adjacent zone and the territorial sea of the Republic of Poland and internal sea waters adjacent to the territorial sea located between the basic line of the territorial sea and the coastal belt, together with internal sea waters of the Gulf of Gdańsk. The Draft Plan does not include the following waters: Szczecin Lagoon, Vistula Lagoon and Kamieński Lagoon and waters within the port borders." (Figure 1.1, Map 1), (as specified in Article 4(4) of the Act on Sea Areas). According to the information specified in the Draft Plan the area covered by the Draft Plan is ca. 29,770 km².

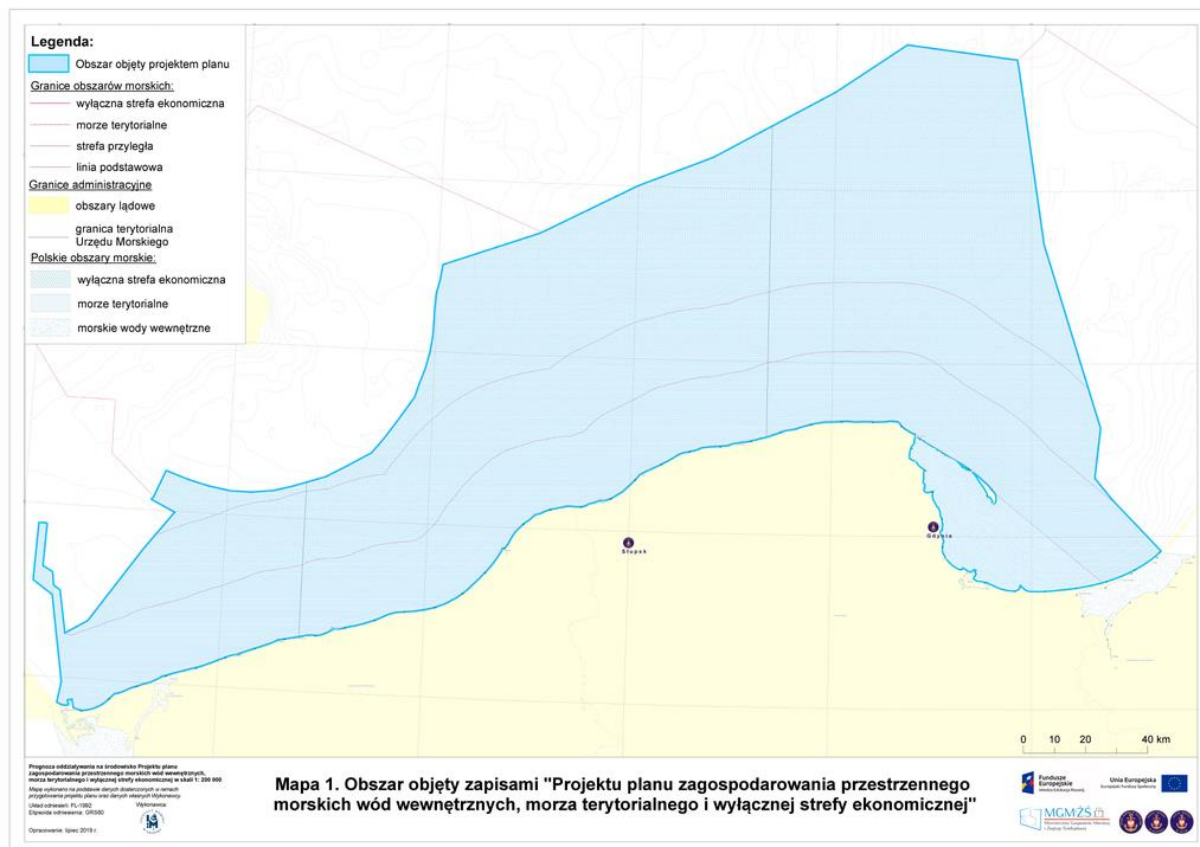


Figure 1.1. The area covered by the provisions of the "Draft Maritime Spatial Plan of the Polish Internal Sea Waters, Territorial Sea, and Exclusive Economic Zone in Scale 1: 200,000" (prepared by IMG).

The Prediction treats the region covered by the Draft Plan as a natural area, ignoring administrative divisions. The provisions of the Prediction also refer to areas adjacent to the area covered by the Draft Plan, including land areas where positive and negative impacts may occur as a result of implementation of these provisions.

Impacts of the Draft Plan provisions on the adjacent land area within the coastal belt have been taken into account (Figure 1.2, Map 2). The adoption of such a range on the land results directly from

the definition of the coastal belt, which according to Articles 36(1) and 36(2) of the Act on Sea Areas *“is a land area adjacent to the sea coast. The coastal belt includes: 1) the technical strip – which is the zone of directly sea-land interaction; it is an area designated for maintaining the coast in a condition consistent with the needs of safety and environment protection; 2) the protective strip – covering the area where human activity has a direct influence on the state of the technical strip. The coastal belt runs along the sea-coast.”*

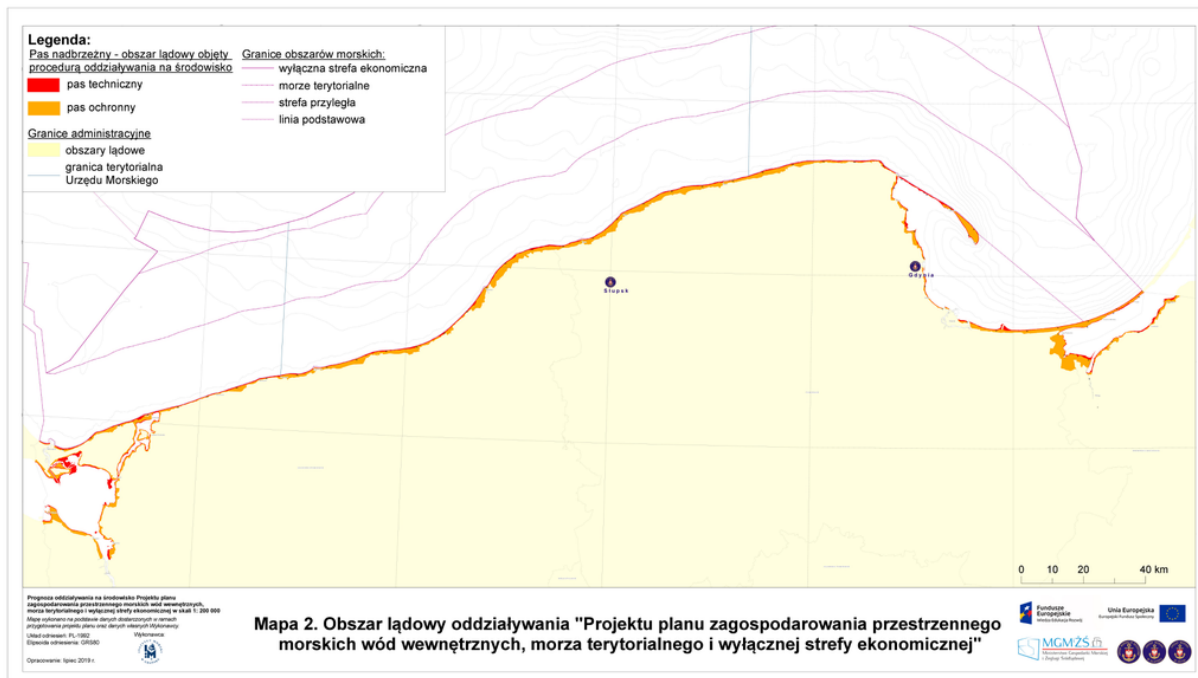


Figure 1.2. Land area covered by the environmental impact assessment procedure of the Draft Plan (prepared by IMG).

The Council of Ministers, by way of an ordinance, determined the minimum and maximum width of the technical and protective strips, and the method of determining their borders, following the local conditions, the relief of the land, the type of their development, and taking into account the impact of natural elements (Ordinance of the Council of Ministers of 29 April 2003 on Determining the Minimum and Maximum Width of the Technical and Protective Strip and the Method of Determining Their Borders, Journal of Laws of 2003, No 89, item 820, as amended).

Pursuant to §1(1) and 1(2) of the above mentioned Ordinance: *“The technical strip runs along the coast of sea areas and covers a 10 to 1000 m wide area from the waterline of the sea-coast towards the land, depending on the type of the coast, excluding areas lying within the borders of ports and sea havens defined in separate regulations, while the protective strip covers a 100 to 2500 m wide area adjacent to the inland border of the technical strip or sea haven and the lakes Kopań, Bukowo and Jamno together with a 200 m wide land strip directly adjacent to them (...).”*

Due to the existing diversity in the development of the coastal area, in sections where no functions exist or are planned, deviations from the adopted principle were applied. In these sections no significant environmental impact is expected.

2 Information on methods used during development of the Prediction

2.1 General methodological assumptions

Methodology of strategic environmental impact assessments and provisions of the Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the Assessment of the Effects of Certain Plans and Programs on the Environment, and of the EIA Act, do not provide specific methods of developing environmental predictions for draft strategic documents.

The scope of the Prediction results from the type, scope and level of detail of the basic document (here: “Maritime Spatial Plan of the Internal Sea Waters, Territorial Sea and Exclusive Economic Zone in Scale 1:200,000”). The approach to the method of strategic document assessment results from the role of this assessment, which is considered an instrument ensuring the inclusion of environmental aspects and sustainable development into the mainstream of decision-making processes at the level of the European Union and individual countries (Ebelt et al. 2009).

It should be stressed that the Prediction and the Draft Plan needed to be developed paralelly in time, and the Plan has been significantly modified during the planning works. The comments and recommendations made by the Prediction Team to the draft development plan at each stage of Plan preparation are presented in Chapters 18, 19 and 20 hereof.

The following assumptions have been made in the development of the Prediction:

1. The analyses contained in the Prediction were carried out in accordance with the content and level of detail of the materials included in the Draft Plan document, see the list of documents included in the Draft Plan – section 1.2, p. 8.
2. The information contained in the Prediction is relevant to the state of contemporary knowledge about POM (the Polish Sea Areas) and methods of their assessment (Article 52(1) of the EIA Act). The environment of Polish Sea Areas, the mechanisms occurring therein, as well as the condition of some protected areas are poorly recognised. This is important in the context of areas valuable in terms of nature, which could be determined mainly on the basis of expert knowledge.
3. No environmental research was conducted. The Prediction document was prepared on the basis of published information and unpublished own materials by specialists of the interdisciplinary team responsible for development of the Prediction, available research results of other research teams, research results from environmental impact reports (hereinafter referred to as EIA Reports) and data of institutions which perform the assessment of the state of marine environment.
4. Various methods and techniques of study work and a heuristic method of making predictions, which uses the knowledge and experience of specialists of the interdisciplinary team of authors, have been applied. This Prediction of qualitative nature is based on rational, scientific premises and has a specific time horizon (Kruk-Dowgiałło et al. 2011).
5. Provisions of national law on the preparation of strategic environmental impact assessment and information contained in the legal regulations applicable to environmental protection and protected areas located in the area of potential impact of the Draft Plan are taken into account:

- international law, HELCOM recommendations,
 - European Union legislation (Directives),
 - national legislation,
 - planning acts:
 - environmental protection programmes for coastal voivodeships,
 - studies of conditions and directions of spatial development of municipalities located in the neighbourhood of the area covered by the Plan.
6. The used information included current available information and spatial data from, inter alia, the Ministry of the Environment (MŚ), the General Directorate for Environmental Protection (GDEP), the European Environment Agency (EEA), other institutions, and in particular, data from maritime offices concerning the location of the technical and protective strips. The list of materials and data sources used is provided in the chapter “Source materials”.
 7. Functions and activities within the functions defined in the Draft Plan have been assessed.
 8. Areas, plant and animal species, and habitats being under legal protection pursuant to national and international regulations were taken into account.
 9. Provisions of the protection plans in force and plans of protective actions for sea- and land-based Natura 2000 areas at sea and on land were taken into account. In the case of areas which do not have approved protection plans yet, the authors of the Prediction will rely on the draft protection plans, until the actual protection plans are approved by the Minister of Environment. Protection plans (or drafts of these plans) for national parks, landscape parks and nature reserves are also included in the Prediction.
 10. Information from websites of the General Directorate for Environmental Protection (<http://natura2000.gdos.gov.pl/>), and precisely, from the Standard Data Forms (SDFs) of the Natura 2000 network areas in the Polish Sea Areas and those located in the coastal area adjacent to the area covered by the Draft Plan, were used.
 11. Moreover, the results of nature inventories (mainly cartographic materials) made for the purposes of development of draft protection plans for Natura 2000 areas in the region of the Vistula Outlet, Puck Bay, Vistula Lagoon, Coastal Waters of the Baltic Sea, Słowińska Refuge and Pomeranian Bay (Ławicki et al. 2012, Michałek and Kruk-Dowgiałło 2014a, Michałek and Kruk-Dowgiałło 2014b) were also used.
 12. It has been assumed that the basis for any strategic environmental impact assessment is the characteristic of the state of the environment (Kistowski 2001, 2002).

Environmental state characteristic method

The characteristic of the state of the environment in Chapter 5 was carried out in accordance with the description of the subject of the contract for the whole Polish Sea Area, excluding the Lagoons, and for the coastal zone in terms of the area of potential impact of the Plan on the environment.

In the Prediction, the authors have described the state of the natural environment, taking into account areas of valuable nature, degraded or important for the functioning of the Baltic ecosystem. These descriptions have been prepared based mainly on the materials from:

- document: Uwarunkowania Oceanograficzne i Przyrodnicze (Part II). In: Analiza Uwarunkowań Zagospodarowania Przestrzennego Polskich Obszarów Morskich. [Oceanographic and Natural Conditions (Part II). In: Analysis of Spatial Development Conditions for Polish Sea Areas] 2017. Olenycz M., Michałek M., Brzeska-Roszczyk P., Osowiecki A., Piekiel P., Kruk-Dowgiałło L., Meissner W., Świstun K., Kałas M., Matczak M.

2017. Edited by Matczak M. Maritime Institute in Gdańsk, National Marine Fisheries Research Institute. Gdańsk-Gdynia. p. 87, quoted in the Prediction as Olenycz et al. (2017),
- document: Opis dotychczasowego użytkowania. Gminy nadmorskie i pas nadbrzeżny (Part III). In: Analiza Uwarunkowań Zagospodarowania Przestrzennego Polskich Obszarów Morskich. [Description of the current use. Coastal municipalities and the coastal belt (Part III). In: Analysis of Spatial Development Conditions for Polish Sea Areas] 2017. Fańciszewski J., Zaucha J., Boniecka H., Gajda A., Kazimierczak A., Kowalczyk U., Kalinowski M., Koba R., Rakowski M. Edited by Matczak M. Maritime Institute in Gdańsk, National Marine Fisheries Research Institute. Gdańsk-Gdynia. p. 71, quoted in the Prediction as Fańciszewski et al. (2017),
 - document: Uwarunkowania zagospodarowania przestrzennego polskich obszarów morskich w zakresie zagrożeń, przekształcenia i ochrony brzegu morskiego. (Appendix III-2) (Part III). In: Analiza Uwarunkowań Zagospodarowania Przestrzennego Polskich Obszarów Morskich. [Determinants of spatial development of Polish Sea Areas in terms of threats, transformation and protection of the coast (Appendix III-2) (Part III). In: Analysis of Spatial Development Conditions for Polish Sea Areas] 2017. Boniecka H., Gajda A., Kaźmierczak A. Maritime Institute in Gdańsk, National Marine Fisheries Research Institute, Gdańsk-Gdynia. p. 65, quoted in the Prediction as Boniecka et al. (2017),
 - document: Prognoza oddziaływania na środowisko dla zmiany programu wieloletniego na lata 2004–2023 [Environmental Impact Prediction to amend the multiannual programme for the years 2004–2023] entitled: “Programme of Coastal Protection” established by the Act of 28 March 2003 on establishment of the multiannual programme “Programme of coastal protection” (Journal of Laws of 2016, item 678), quoted in the prediction as Boniecka et al. (2015),
 - materials collected during execution of task 1.3. In accordance with the description of the subject of the contract, the analysis and assessment of the state of the environment for the area affected by the Draft Plan was carried out with regard to the following issues:
 - biodiversity,
 - people,
 - animals,
 - plants,
 - water (hydrological and oceanographic conditions, ecological status),
 - air and acoustic climate,
 - geological conditions,
 - landscape,
 - climate,
 - natural resources,
 - monuments,
 - material assets,
 - protected areas, including Natura 2000 areas together with analysis of the protected subjects.

The scope of environmental state description, and particular parameters included therein, varied and resulted mainly from the materials and data obtained so far during environmental research.

Description of **living conditions and people** was based on the following study: “Opis dotychczasowego użytkowania. Gminy nadmorskie i pas nadbrzeżny (Part III)” [in:] M. Matczak (ed.) Analiza Uwarunkowań Zagospodarowania Przestrzennego Polskich Obszarów Morskich (Fańciszewski

J., Zaucha J., Boniecka H., Gajda A., Kazimierczak A., Kowalczyk U., Kalinowski M., Koba R., Rakowski M.) of 2017. This section describes the population of coastal municipalities and its living conditions as well as threats to human health and life resulting from the vicinity of the sea. It also describes the impact of the function of tourism, port infrastructure and defence on human health.

Description of the condition of **animals** was divided into the following categories:

- **terrestrial animals** – described on the basis of the analysis of scientific publications which take into account faunistic reports from areas adjacent to the sea coast and expert knowledge. This description was supplemented by information included in legislation (acts, regulations, directives), Standard Data Forms (SDFs) of Natura 2000 areas, reserve protection plans, nature inventories and environmental impact reports for investments carried out in the immediate vicinity of the sea.
- **macrozoobenthos** – description is based primarily on the information contained in publication entitled “Analiza uwarunkowań zagospodarowania przestrzennego POM” (Olenycz et al. 2017) and expert knowledge enriched with new research results, which can be used in the Prediction, including without limitation data from benthos research in the area of planned wind farms Polenergia Bałtyk II (former Bałtyk Środkowy II) and Polenergia Bałtyk III (former Bałtyk Środkowy III) (Błęńska et al. 2014, 2015).
- **ichthyofauna** – described by reference to the publication entitled “Analiza uwarunkowań zagospodarowania przestrzennego POM” (Olenycz et al. 2017), and in the case of commercial fish, further data from the Fisheries Monitoring Centre (CMR) was taken into account (www.cmr.gov.pl/).
- **avifauna** – characterised on the basis of the information contained in the publication entitled “Analiza uwarunkowań zagospodarowania przestrzennego POM” (Olenycz et al. 2017). This description has been supplemented by information included in legislation (laws, regulations, directives), Standard Data Forms (SDFs) of Natura 2000 areas, scientific publications and available results of avifauna monitoring carried out under the following national programmes: Monitoring of Wintering Waterbirds, Monitoring of Wintering Birds in Transitional Waters, Monitoring of Wintering Seabirds and monitoring preceding implementation of offshore wind farms Polenergia Bałtyk II (former Środkowy Bałtyk II) and Polenergia Bałtyk III (former Środkowy Bałtyk III).
- **marine mammals** – described on the basis of the publication entitled “Analiza uwarunkowań zagospodarowania przestrzennego POM” (Olenycz et al. 2017). The analysis of the situation was extended by the results of the Static Acoustic Monitoring of the Baltic Sea Harbour Porpoise (SAMBAH) project and all other available data concerning the conservation status of marine mammal populations in the Baltic Sea as well as information on areas valuable and important due to their biological cycle in terms of time and space (e.g. projects implemented by World Wide Fund for Nature and Hel Marine Station of the Institute of Oceanography of the University of Gdańsk (SMIOUG). The assessment of the occurrence of marine mammals and the extent of the impact of the spatial development plan will also be based on National Environmental Monitoring data (Pilot Implementation of Monitoring of Marine Species and Habitats in 2015–2018), currently collected by IMG in consortium with DHI Polska Sp. z o.o. and TAXUS IT.

Description of the condition of **plants** was divided into the following categories:

- **underwater vegetation (macrophytes)** – it was characterised primarily on the basis of information contained in publication entitled “Analiza uwarunkowań zagospodarowania przestrzennego POM” (Olenycz et al. 2017) and expert knowledge enriched with new research results, which can be used in the Prediction, including without limitation data from benthos research in the area of planned wind farms Bałtyk Środkowy II and Bałtyk Środkowy III (Błęńska et al. 2014, 2015) as well as current SDFs of Natura 2000 areas.
- **terrestrial vegetation** – terrestrial vegetation was characterised primarily on the basis of the analysis of scientific publications that included studies of coastline vegetation, floristic reports and expert knowledge. This description was supplemented by information included in legislation (acts, regulations, directives), Standard Data Forms (SDFs) of Natura 2000 areas, reserve protection plans, nature inventories and environmental impact reports for investments carried out in the immediate vicinity of the sea.

Chapter 5 of the Prediction concerns **oceanographic and geological conditions**, in accordance with the scope of the description of the subject of the contract: bathymetry, wind, currents, waves, lighting, ice cover, climate changes, types of sediment and natural resources.

Due to the role of the sea level parameter for shaping the coastal zone, the authors found it necessary to extend the description of oceanographic conditions contained in the description of the subject of the contract to include this parameter. Description of this parameter has been expanded by the characteristics of storm surges. The outline of structure and shape of the Southern Baltic bottom is also presented, as well as natural resources, including areas of sand resources fit for artificial nourishment.

The assessment of the ecological status of the waters of the Polish Sea Areas was presented by reference to the Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (the so-called Water Framework Directive, hereinafter referred to as WFD) and the Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for Community action in the field of marine environmental policy (the so-called Marine Strategy Framework Directive, hereinafter referred to as MSFD) – two basic directives concerning the protection of waters and determining the water policy binding for the Member States, including Poland. The last assessment, the results of which are presented herein for transitional and coastal waters (according to the WFD) and for the open sea (according to the WFD), was conducted on the basis of available data collected in 2016 within the National Environmental Monitoring Programme (PMŚ) by an interdisciplinary team of specialists from Voivodeship Inspectorates of Environmental Protection, Branch of the Maritime Institute of Meteorology and Water Management – PIB Gdynia, Institute of Oceanology of the Polish Academy of Sciences and Maritime Fishery Institute – PIB commissioned by the General Inspectorate of Environmental Protection (Krzymiński et al. 2017): *Ocena Stanu Środowiska Polskich Obszarów Morskich Bałtyku na podstawie danych monitoringowych z roku 2016 na tle dziesięciolecia 2006–2015*. Quality assessment of 4 transitional water bodies and 11 coastal water bodies in 2016 conducted in accordance with the Water Framework Directive and Ordinance of the Minister of the Environment of 22 October 2014 on the Manner to Classify the Status of Surface Water Bodies and

Environmental Quality Standards for Priority Substances (Journal of Laws of 2014, item 1482 – currently repealed, replaced by the Ordinance of the Minister of the Environment of 21 July 2016 – Journal of Laws of 2016, item 1187), covered the assessment of ecological condition/potential, chemical condition and general condition of waters.

The assessment of the current state of the environment, in accordance with Article 8 of the Marine Strategy Framework Directive, is carried out for 11 features – descriptive indicators, for which the criteria of good state of the environment have been defined (Appendix 1, Marine Strategy Framework Directive). These are: C1 – biodiversity, C2 – non-indigenous species, C3 – commercially exploited fish and mollusc species, C4 – food chains, C5 – eutrophication, C6 – seafloor integrity, C7 – hydrographic conditions, C8 – pollutants and effects of pollution, C9 – harmful substances in fish and seafood, C10 – rubbish in the marine environment, C11 – underwater noise and other energy sources.

Descriptors are divided into two groups: state features (C1, C3, C4 and C6) and pressure features (C2, C5, C7, C8, C9, C10 and C11), which are considered equal. The assessment of the state of the environment is carried out in relation to the designated 6 HELCOM basins. The results of the assessment are presented by individual features or basic indicators (features C8 and C9), due to the lack of rules aggregation rules for the results of partial assessments of individual features into one general state assessment.

The assessment carried out in 2016 according to the above mentioned assumptions was based mainly on the results of the Sea Waters Monitoring Programme implemented in accordance HELCOM COMBINE guidelines, including monitoring of radioactive contamination (HELCOM MORS PRO) as well as measurements and observations carried out in the Maritime Branch of IMGW-PIB as part of the statutory activities of the Centre for Oceanography and Hydrosphere and Atmosphere Monitoring (in terms of: water mixing, water exchange, exposure to waves, etc.).

Description of the **state of atmospheric air** in the Pomeranian and West-Pomeranian Voivodships was prepared on the basis of data from atmospheric air monitoring carried out as part of the National Environmental Monitoring network by the Voivodeship Inspectorate of Environmental Protection in Gdańsk and Szczecin in 2016. An additional source of information for the description of this issue in coastal voivodeships was the detailed data contained in the Local Data Bank (BDL) and materials of the Central Statistical Office (GUS).

State of atmospheric air is not monitored in the Polish Sea Areas. Characteristics of this element of the environment in the Baltic Sea is based on information concerning the emission of air pollutants by sea transport – the main source of emission of gaseous and particulate air pollutants in the Polish Sea Areas. An analysis of data from the Annual Summary Reports for the European Commission concerning sulphur content in light fuel oil, heavy fuel oil, inland navigation vessel engine oil and marine fuel used in marine vessels in the period 2010–2015 is presented.

In addition, the Prediction includes information on the state of the environment in terms of atmospheric air and noise, which are subject to environmental impact assessment in accordance with the provisions of the EIA Act. The data from the website of the Chief Inspectorate of Environmental Protection (<http://www.gios.gov.pl/>) were used to describe the **state of the acoustic climate** in the coastal voivodeships. For sea areas, underwater noise was characterised on the basis

of data from HELCOM and the European BIAS (Baltic Sea Information on Acoustic Soundscape) project.

Selected fragments of the text, most important for the Prediction and concerning the issue of **storage sites, anthropogenic pressure and coastal protection** are quoted as in Appendix III-2, Part III of the condition analysis (Boniecka et al. 2017). In accordance with recommendation of the Regional Directorate for Environmental Protection concerning the scope of the Prediction, characteristics of the Southern Baltic coast types is presented together with the description of dynamic changes taking place in the coastal zone in different time intervals.

The description of waterside and underwater **landscape** in the Polish Sea Area was mainly based on publication entitled “Analiza uwarunkowań zagospodarowania przestrzennego POM” (Olenycz et al. 2017) and on landscape descriptions included in environmental impact predictions for projects concerning the Polish Sea Area and coastal zone. Scientific articles on waterside landscape of the Polish coast were also used.

Description of **climate** and **climate changes** was based on the study entitled “Warunki klimatyczne i oceanograficzne w Polsce i na Bałtyku Południowym” of 2012 (Jakusik E., Wójcik R., Pilarski M., Biernacki D. and Miętus M.).

This section describes factors which influence climate changes, presents climate change scenarios for Poland, sea level rise scenarios and ice scenarios as well as actions initiated by Poland to adapt to climate changes, developed on the basis of the Strategic Adaptation Plan until 2020 (SPA 2020).

Description included in section concerning **natural resources** is mainly based on two studies: “Uwarunkowania zagospodarowania przestrzennego polskich obszarów morskich w zakresie zagrożeń, przekształceń i ochrony brzegu morskiego (Part III, Appendix III-2) [in:] M. Matczak (ed.) Analiza Uwarunkowań Zagospodarowania Przestrzennego Polskich Obszarów Morskich” (Boniecka H., Gajda A., Kaźmierczak A.), of 2017, and “Uwarunkowania Oceanograficzne i Przyrodnicze (Part II). [in:] M. Matczak (ed.) Analiza Uwarunkowań Zagospodarowania Przestrzennego Polskich Obszarów Morskich” (Olenycz M., Michałek M., Brzeska-Roszczyk P., Osowiecki A., Piekiel P., Kruk-Dowgiałło L., Meissner W., Świstun K., Kałas M., Matczak M.), of 2017. This section describes the minerals resources in the Baltic Sea, areas of sand resources fit for artificial nourishment as well as CO₂ storage complexes and dumping sites.

Monuments and cultural heritage are described on the basis of the study (Olenycz et al. 2017), data from the Central Maritime Museum and analysis of lists of monuments from the lists of Voivodeship Monument Conservators.

The issue of **material assets** in the area of impact of the Plan’s provisions is inseparably connected with the level of social and economic development and access to the assets. This issue was characterised on the basis of the Statistics Poland data on maritime economy, contained in the Statistical Yearbook of Maritime Economy 2017 (<https://stat.gov.pl/>) and the study “Gospodarka morska w Polsce w latach 2015–2016”, 2017, Statistics Poland, Statistical Office in Szczecin, Warsaw, Szczecin.

Data included in the Local Government Official Vademecum were also used (<https://stat.gov.pl/statystyka-regionalna/statystyczne-vademecum-samorzadowca/>). On the basis of the functions provided for in the Plan, among the most important factors affecting material assets

and quality of life of coastal municipality residents the following should be considered: potential of maritime economy, level of unemployment, income of municipalities, remuneration for work or participation in the local fishery- and tourism-related economy (tourist facilities, recreational buildings, number of tourists). An important role of tourism was pointed out in municipalities having natural and landscape values with direct access to the sea, the development of which is closely related to the income of both the municipalities and residents; this translates into the possibility of purchasing material assets and increasing the quality of life. The issue of tourism in coastal municipalities is discussed by reference to the aforementioned data of the Statistics Poland and subject literature (Sokołowski 2014, Czerwiński 2006, Kaczmarek et al. 2002).

Description of the state of the environment of **protected areas** was prepared on the basis of the expert knowledge and using information SDFs for Natura 2000 areas, materials prepared within the framework of works on Natura 2000 marine area protection plans in the Gulf of Gdańsk, Vistula Lagoon, Coastal Waters of the Baltic Sea, Słowińska Refuge, Pomeranian Bay (Management Programme for Natura 2000 areas in the Vistula Outlet area, Management Programme for the Puck Bay area, Management Programme for the Vistula Lagoon area, Ławicki et al. 2012, Michałek and Kruk-Dowgiałło 2014a, Michałek and Kruk-Dowgiałło 2014b, Meissner et al. 2014a, Meissner et al. 2014b, www2) as well as established protection plans and plans of protection tasks.

The spatial scope covered by the description of the state of the land environment depended on the predicted range of possible impact of the Draft Plan's provisions. This range cannot be unambiguously determined by the distance from the coastline or by the types of included habitats, because depending on its shape, slope and width of individual habitat zones, the range of possible impact varies from several metres to several kilometres. Therefore, for the purpose of the Prediction, it was assumed that the impact range ends at the southern end of the last dune belt.

Cartographic methods

Version v.3 of the Prediction contains a set of 9 large-format maps:

- Map 1. Marine area affected by the “Draft Maritime Spatial Plan of the Polish Internal Sea Waters, Territorial Sea, and Exclusive Economic Zone in Scale 1:200,000” (covered by provisions of the Plan),
- Map 2. Land area affected by the Draft Plan,
- Map 3. Ecological corridors connecting the European Natura 2000 Network in Poland,
- Map 4. Areas of valuable nature in the Polish Sea Areas,
- Map 5. Legally protected areas analysed in the Prediction – areas of special birds protection,
- Map 6. Legally protected areas analysed in the Prediction – areas of special protection of habitats,
- Map 7. Legally protected areas analysed in the Prediction – national parks, nature reserves,
- Map 8. Sources of pressure imposed on areas of valuable nature in the Polish Sea Areas,
- Map 9. Number of functions allowed in basins.

Due to the very wide range of topics and the largeness of the Polish Sea Area, other maps are synthetic studies. They aim to organise and facilitate reading information and formulating

conclusions. The information included in the synthetic maps is presented in a grid of hexagons, where each unit reflects the area of 21.65 ha, 1 side of the figure equals 288.675 meters. A circle of diameter 500 m can be inscribed in the hexagon.

For the purposes of the synthetic map of valorisation of areas of valuable nature in Polish Sea Areas, areas valuable for the functioning of the ecosystem in terms of various aspects of the environment were selected. Therefore, 6 thematic groups have been distinguished and given a rank on a 3-stage scale (1–3), where higher rank means higher value for functioning of the environment. The value of particular ranks was determined by the Prediction team on the basis of the available research and literature. Valuable areas belonging to the 1st thematic group were deprived of overlapping places. In places where areas overlapped, the common part received the rank value of the area with higher value. Under this assumption, the maximum rank value that can be assigned to areas within one thematic group is 3 (Table 2.1). By superimposing 6 thematic groups the values of ranks are added together only in the case of overlapping areas from different thematic groups. In addition, in order to obtain a complete picture of areas valuable for all organisms, the marine parts of National Parks and Natura 2000 areas containing areas valuable for avifauna or mammals are included.

Table 2.1. Valorisation of areas with valuable nature within Polish Sea Areas

Names of areas with valuable nature by thematic groups	Rank of value
Areas valuable for macrophytes	
boulder field in the Słupsk Bank	3
rocky and sandy bottom – Orłowo Cliff	3
Puck Lagoon	3
Burzyńska and Długa Shallows in the Puck Bay	2
boulder field Rowy	1
Areas valuable for macrozoobenthos	
Słupsk Bank	1
Słupsk Furrow	1
Puck Bay	1
Areas valuable for ichthyofauna	
coastal zone	2
rocky bottoms	2
river outlets	1
Areas valuable for reproduction of cod and flounder populations	
Bornholm Deep	1
Gdańsk Deep	1
Słupsk Furrow	1
Areas valuable for avifauna	
marine part of the Woliński National Park	3
marine part of the Słowiński National Park	3
marine area within the borders of the PLB220005 Puck Bay area	3
marine area within the borders of the PLB220004 Vistula River Outlet area	3
marine area within the borders of the PLB990003 Pomeranian Bay area	3
marine area within the borders of the PLC990001 Słupsk Bank area	3
marine area within the borders of the PLB990002 Baltic Coastal Waters area	2
marine area within the borders of the PLB320002 Świna River Delta area	2
Eastern Near-Border Waters	1
Central Bank	1

Names of areas with valuable nature by thematic groups	Rank of value
Areas valuable for marine mammals	
Vistula River Outlet	3
Pomeranian Bay	3
coastal waters of the Middle Coast	2
Puck Bay	2
Rybitwia Shallow	1

Map 3 illustrates the network of ecological corridors connecting Natura 2000 areas in the northern part of Poland. The map was developed on the basis of data from the Mammal Research Department of the Polish Academy of Sciences in Białowieża (currently the Mammal Biology Institute).

The forms of nature protection operate on the basis of scientific knowledge and long-term practice in of national nature conservation. Each form plays a different role in the Polish nature conservation system, serves different purposes and is assigned a different conservation order and a different scope of limitations on usage. Conservation orders may vary within one conserved area.

The map of pressure sources presents in a simplified way the state of identified sources of pressure on the environment. This state is presented in a quantitative manner, as a sum of all existing sources of pressure within the limits of individual hexagons. The sources of pressure include a part of the basic functions contained in the Plan, which have a negative impact on the environment.

2.2 Environmental impact assessment method

Method of assessing impacts on components of the environment

In accordance with the EIA Act, the following procedure was adopted for the environmental impact assessment of the provisions of the Draft Plan:

- stage 1 – identification of predicted significant impacts (chapter 8.1)
- stage 2 – analysis of predicted significant impacts (chapter 8.2)
- stage 3 – assessment of predicted significant impacts (chapter 8.3)

Identification of predicted significant impacts

The starting point for work on the impact assessment was to determine the predicted significant impacts, which may result from implementation of the provisions of the Draft Plan concerning the so-called basin functions. 18 functions have been distinguished in the Draft Plan, of which 12 are basic functions and 6 are allowed ones (Table 2.2).

Following the Draft Plan, it was assumed that execution of a given function will involve specific human activities, and consequently, these activities will potentially affect particular components of the environment and Natura 2000 areas. Chapter 8.1 provides a table showing the identified potential impacts, focusing on significant negative and positive impacts.

Table 2.2. Basic and allowed functions of basins identified in version v.3 of the Draft Plan

Item	Function Name	Symbol
Basic Functions		
1.	Transport	T

Item	Function Name	Symbol
2.	Technical infrastructure	I
3.	Functioning of port or haven	Ip
4.	Protection of the environment and nature	O
5.	Acquisition of renewable energy	E
6.	Exploration, investigation of mineral and fossil resources and extraction from the resources	K
7.	National security and defence	B
8.	Coastal protection	C
9.	Multifunctional economic development	M
10.	Reserve for future development	P
11.	Reserve for future development with extraction allowed	Pw
12.	Environmentally conditioned local development	L
Allowed functions		
1.	Fishery	R
2.	Tourism, sport and recreation	S
3.	Cultural heritage	D
4.	Scientific research	N
5.	Aquaculture	A
6.	Artificial islands and installations	W

The term **impact** means any effect of the planned activity taking into account: human health and safety, flora, fauna, soil, air, water, climate, landscape, historical monuments or other structures, and interactions between these factors (Convention on Environmental Impact Assessment in a Transboundary Context, established in Espoo on 25 February 1991 – Journal of Laws of 1999, No 96, item 1110). As far as the role of the Prediction is concerned, **the identification of significant impacts is the most important**, as occurrence of these impacts will constitute one of the criteria during assessment of progress towards implementation of functions in each basin of the Polish Sea Areas assumed in the Draft Plan.

The term **significant negative impact** on the environment means negative measurable change in the condition or function of natural components, as assessed in relation to the initial condition. Such change is caused directly or indirectly by activity conducted by the entity using the environment.

The term significant negative impact on the Natura 2000 area means impact which may deteriorate (according to the EIA Act):

- condition of natural habitats or habitats of plant and animal species, for the protection of which the Natura 2000 area was designated,
- condition of species for which the Natura 2000 area was designated,
- integrity of the Natura 2000 area or its linkages with other protected areas.

For example, the impact on avifauna is understood as the impact on protected bird species, their habitats and objectives, protected objects and integrity of Special Protection Areas of Birds (SPA), as well as on coherence of the network of these areas. A negative impact on avifauna is understood as scaring birds, forcing them out of their habitats, increase in mortality, reduction of breeding success, hindering migration and changing its routes, significant disruption or destruction of the birds' food base, destruction of habitats of these animals, taking actions preventing achievement of the protection objectives of protected areas designated for bird protection, deterioration of protection status of protected objects in Special Protection Areas of Birds, reduced integrity of these areas or

cohesion of their network. Significance of the impact should be based on ornithological expert decision, after taking into account the specificity of a given impact, the size of the area where the negative impact on avifauna occurs, the sensitivity of particular species or habitats to such impact, the protection priority of these species and habitats, as well as other determinants which are considered significant by the expert team.

Analysis of predicted significant impacts

In this part of the work, on the basis of the experience of the experts who prepare this document and of the literature concerning environmental impact assessments (predictions, reports, expert opinions), content of basin sheets was analysed in terms of their potential impact on particular components of the environment.

Assessment of predicted significant impacts

In accordance with the provisions of the EIA Act, the following issues were taken into account in the assessment made for the purpose of this Prediction:

- differentiated relations between the function and the affected component of the environment – defined in the EIA Act as: direct, indirect, secondary and cumulative impact (definition modified according to Hałuzo et al. (2009) and Engel (2009):
 - direct relations (B) – result directly from the execution of function at the place of its application. The subject of the impact are components of the environment, and the effects of the impact are identified by determination of the transformed floor surfaces, lost natural habitats, the amount of air polluting emissions, the intensity of the emitted noise or sewage or waste introduced into the environment. Precise determination of the nature and range of the direct impact requires knowledge of how the area, where the activity will be implemented, is used and what kind of technology is used there. It disappears when the influencing factor subsides,
 - indirect, secondary relations (P) – result from indirect interaction between the functions executed in the basin and components of the environment, e.g. increased erosion on the adjacent sections as a result of execution of the coastal protection function. The subject of this impact can be both the local components of the environment and components distant from the area of activity. Indirect impact (P) does not disappear after the factor is eliminated,
 - cumulative relations (S) – sum of the effects of the implementation of various types of activities and plans, including those already implemented, considered together. They may cause predictable changes in the environment over a different period of time. The occurrence of a cumulative impact may result from the activities of insignificant impact, which combined, cause significant environmental effect.
- duration of impact on particular components of the environment – the impact defined in the EIA Act as: short-term, medium-term, long-term, permanent and temporary,
 - short-term (st), medium-term (mt), long-term (lt) impacts – duration of impact, for which the beginning and the end can be determined; the duration of the impact (short-, medium- and long-term) is relative to the natural cycles or changes in the components of

the environment affected by a specific factor; for the coastal protection function (C) or technical infrastructure (I) the duration of the impact equals the lifetime of the facility.

- permanent (p) and temporary (t) impact – duration of impact, the effects of which are noticeable for a long period of time and which do not disappear when the factor's influence is stopped – (p), an impact which is limited in time and ceases when the influence is stopped – (t).
- direction of impact – defined in the EIA Act as an impact: positive or negative with direction of the impact included – varied:
 - + positive impact, i.e. impact which improves or maintains the welfare of specific component of the environment,
 - - negative impact, i.e. impact which contributes to deterioration of the state of specific component of the environment,
 - -/+ negative and positive impact (varied) – type of impact where there are both negative and positive factors that affect the assessed component of the environment,
 - 0 no significant impact – due to limited spatial or temporal range no visible changes are caused in the state of the assessed component.

When assessing the impact of a specific function on a given component of the environment, a broader time perspective was taken into account.

The cumulative impact on the environment is understood as a sum of impacts of all basic and allowed functions in the Polish Sea Area.

In the Prediction, special areas of conservation and special protection areas of birds located directly in the Polish Sea Area and in the coastal zone, having contact with the area covered by the Draft Plan are described.

However, the impact of the provisions of the Draft Plan on objects protected in each of the areas will be fundamentally different in sea areas, directly bound by the provisions of the Draft Plan, and in land areas, where implementation of the Draft Plan will usually have an indirect and limited impact. The assessment has, therefore, been carried out by areas located in the immediate area covered by the Plan and areas not directly covered by the provisions of the Draft Plan.

As Special Protection Areas (SPAs) located in the coastal zone differ significantly in terms of habitat from areas located in sea basins, the detailed impact assessment covered only areas having at least 1% of their area within the range covered by the Plan. The minimum area of 1 ha (0,01 km²) tangential for basin and SPA area was determined as the criterion of location of a such basin within the SPA area. Due to the specificity of Special Areas of Conservation (SACs), the minimum area of 0,001 km² was taken into account.

On the basis of the expert knowledge regarding the environmental requirements of the particular conservation objects (primarily the impact of the natural dynamics of the sea) and taking into account the potential impacts that may be caused by the implementation of the activities included in the Draft Plan, only some of the species and habitats from the relevant Appendices to the Birds and Habitats Directives were selected for work on the impact assessment (see Chapter 8).

This approach has also been applied in the assessment of other plant and animal species (components of the environment).

Each of the Natura 2000 areas requires an individual analysis due to their natural and geographical specificity. Specific area was, therefore, the starting point for more detailed analyses, i.e. for the assessment of the impact on the particular protected species or natural habitat.

For the purpose of the assessment of impact of the provisions of the Draft Plan on Natura 2000 areas, the following criteria, developed among others according to the Natura 2000 area management manual (Engel et al. 2007) and Kruk-Dowgiałło et al. (2011), were taken into account:

- structure, functions and role of particular resources and natural values,
- area, representativeness and conservation status of priority and non-priority habitats,
- size of population, degree of isolation, conservation status of species (listed in Appendix II to the Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora – Official Journal L 206/7 of 22.7.1992, hereinafter referred to as the “Habitat Directive” and Appendix I to the Directive of the European Parliament and of the Council 2009/147/EC of 30 November 2009 on the Conservation of Wild Birds – Official Journal L 20/7 of 26.1.2010, hereinafter referred to as the “Bird Directive”),
- other natural values and functions identified within the area (Kistowski and Pchałek 2009).

Integrity assessment also takes into account the vulnerability and the availability of places necessary to perform certain life functions (e.g. feeding or breeding). The coherence refers, however, to the links between individual Natura 2000 areas, i.e. to ecological corridors which determine the spatial continuity of the network.

Additional methodological information concerning the assessment of the impact of the Draft Plan on Natura 2000 areas is provided in Chapter 8.

The authors of the Prediction analysed 95 basin sheets and, despite the complexity of the provisions contained therein, they prepared the assessment on this basis. The assessment methodology adopted in this Prediction is adjusted to the scale of the draft spatial development plan.

It is planned to draw up detailed plans in relation to ports, coastal basins as well as basins POM.85.M and POM.84.L. After the detailed plans are drawn up, it will be possible to develop a comprehensive assessment of impact of the provisions of the Plan on the environment.

2.3 Definitions of terms used in the Prediction

Definitions of terms included in Appendix No 1 to the Ordinance (General Provisions) were used to identify, analyse and assess significant impacts. The Draft Plan does not include definitions of terms defined in the provisions of the Enabling Act or other normative acts. Other definitions of terms relevant to the Prediction presented in Table 2.3.

Table 2.3. List of definitions used in the Prediction

Item	Term	Definition	Source of definition	Accepted definition
1.	Adaptation	Initiatives and measures to reduce the vulnerability of natural and human systems to the existing or expected effects of climate changes. There are different types of adaptation, such as anticipatory and reactive, private and public, or autonomous and planned adaptation. Examples include: erecting river dams or dykes, replacing more sensitive plants with more temperature resistant ones, etc.	Strategic Adaptation Plan for sectors and areas sensitive to climate changes by 2020 with 2030 perspective	According to the publication
2.	Basin	Designated part of the sea area.	Ordinance of the Minister of Maritime Economy and Inland Navigation and the Minister of Infrastructure and Construction of 17 May 2017 on the required scope of spatial development plans for internal sea waters, territorial sea and the exclusive economic zone (Journal of Laws of 2017, item 1025).	According to the Ordinance
3.	Accumulation	Accumulation and deposition of deposits as a result of impact of wind or water. The most basic form of aeolic (wind) accumulation is a dune.	Mizerski and Sylwestrzak (2002)	Dictionary definition (as amended)
4.	Anthropogenic pressure	All direct and indirect human activities leading to various (negative or positive) changes in the natural environment.	Mróz (ed.) (2010)	According to the publication
5.	Avifauna (ornitofauna)	All the birds present in a given area or environment.	Słownik Języka Polskiego PWN	Dictionary definition (as amended)
6.	Diving bentophagus	Species diving in search of food, which is benthos (a group of animal organisms associated with the bottom of aquatic habitats).	Słownik terminów biologicznych PWN	Dictionary definition (as amended)
7.	Biotope	Inanimate (abiotic) part of the ecosystem, the living environment of particular biocenosis (organisms), which transform the abiotic conditions into biotope in a specific way.	Herbich (ed.) (2004a)	According to the publication
8.	Sea coast	Area between the highest and lowest water level (the position of the water-line in relation to land), including a partly or fully flooded beach. This area on the land side is bounded by the foot of a dune or cliff. In the absence of these forms, the boundary is the farthest area reached by	Frankowski et al. (2009) Pruszek (2003)	According to the publications (as amended)

Item	Term	Definition	Source of definition	Accepted definition
		wave runup. The sea coast is commonly identified with the land directly adjacent to the sea, i.e. with forms that create it: cliffs, dunes, beach.		
9.	Material assets	Any object, device or installation intended to meet the needs of people.	Kruk-Dowgiałło et al. (2011)	According to the publication
10.	Large shallow bays	Basins of limited inflow of fresh water (as opposed to estuary), cut into the land, separated by land from an open sea and protected from the impact of waves. An important distinguishing feature is the presence of seagrass (<i>Zosteretea</i>) and pondweed (<i>Potametea</i>) groups.	Warzocha (2004a)	According to the publication
11.	Cultural heritage	The stock of immovable and movable objects together with relating spiritual values, historical and moral phenomena, considered as the basis for legal protection for the good of a particular society and its development and for their transmission to future generations, because of understandable and accepted historical, patriotic, religious, scientific and artistic values, which are important for identity and continuity of political, social and cultural development, commanding truths and commemorating historical events, cultivating a sense of beauty and community of civilisation.	Pruszyński (2001)	According to the publication
12.	Ecosystem	A system including all living organisms living in a defined area (biocenosis), organic matter and a non-living environment (biotope). The biocenosis and the biotope are functionally linked through the circulation of matter and energy flow.	Mróz (ed.), (2010)	According to the publication
13.	Erosion (abrasion)	Destruction of both the above and underwater part of the coast by waves and water currents, impacts of waves and rock material contained therein, as well as destruction by wind and ice. The intensity of erosion largely depends on local hydrodynamic conditions as well as nature and type of the coast.	Mróz (ed.), (2010) Frankowski et al. (2009)	According to the publications
14.	Eutrophication	The process of water reservoir fertilisation, consisting in an increase in the concentration of nutrients from auto- and allochthonous sources, which results in an increase in	Żmudziński (ed.), (2002)	According to the literature

Item	Term	Definition	Source of definition	Accepted definition
		the organic matter production rate.		
15.	Haul-out	A place where pinnipeds (seals) go ashore during the break between feeding and migration periods. This is also the place where seals go moulting and give birth to offspring. This place is also necessary for the animals to establish social relationships, regulate temperature of their bodies and rest.	Hoelzel (ed.), (2002)	According to the publication
16.	Diving ichthyophagus	Fish eating species, hunting for fish while diving.	Expert definition	According to the expert knowledge
17.	Ichthyofauna	All fish species in a given area or basin, e.g. Baltic Sea, Vistula Lagoon, Kashubian Lake District or upper Vistula River.	Żmudziński (ed.), (2002)	According to the literature
18.	Ichthyoplankton	Fish component of zooplankton consisting of eggs and larvae of fish free-floating in water (pelagic). In some periods and parts of water reservoirs the density of eggs (spawn) or larvae is so high that they form the main component of the plankton biomass and a part of meroplankton.	Żmudziński (ed.), (2002)	According to the literature
19.	Technical infrastructure	Cables, pipelines, hydrotechnical structures and other facilities and equipment used for: (a) safety of navigation, (b) exploration and identification of mineral and fossil resources or extraction and transportation of mineral and fossil resources, (c) energy acquisition and transmission, (d) defence.	Ordinance of the Minister of Maritime Economy and Inland Navigation and the Minister of Infrastructure and Construction of 17 May 2017 on the required scope of spatial development plans for internal sea waters, territorial sea and the exclusive economic zone (Journal of Laws of 2017, item 1025).	According to the Ordinance
20.	Initial stages of the coastal white dunes	The first stage of dune formation on the sea coast, built of a system of wrinkles or hilly, smooth sand surfaces in the higher part of the beach or in the vicinity of the sea-facing edge of the base of high dunes.	Namura-Ochalska (2004a)	According to the publication
21.	Integrity of Natura 2000 area	Consistency of structural and functional factors determining the sustainability of populations of species and natural habitats for the protection of which a Natura 2000 area was designed or designated.	Act of 16 April 2004 on Nature Conservation (consolidated text, Journal of Laws of 2018, item 1614, as amended)	According to the Act
22.	Bathing areas	Distinguished and marked sections of surface water,	Act of 20 July 2017 – Water Law (consolidated text,	According to the Act

Item	Term	Definition	Source of definition	Accepted definition
		designated by a resolution of the Council of the Municipality, used by a large number of bathers, provided that no permanent bathing prohibition has been issued in relation to such a bathing area.	Journal of Laws of 2018, item 2268, as amended)	
23.	Wash margin on a sea coast	A dike formed by organic remains washed by waves up a sea coast. It consists mainly seaweed remains. In addition, it may contain animal remains, e.g. dead fish or jellyfish, shells, as well as amber and remains originating from land (e.g. wood, terrestrial invertebrates remains). Due to the large amount of decomposing organic matter, this habitat is rich in nitrogen. Wash margin is a habitat for nitrophilic plants and detritiphaguses, and environment where waders feed.	Bobrowicz (2006)	According to the publication
24.	Clicks	The sound signals emitted by cetaceans. Harbour porpoises mostly use sound impulses of frequency 120–130 kHz, commonly referred to as clicks.	Richardson et al. (1995)	According to the literature
25.	Cliff	Geomorphological form created by sea abrasion, i.e. by cutting the lower part by waves and gravitational fall of the upper part. Cliffs were formed in places where the sea borders with slopes of glacial accumulation forms – moraine. Land-side border of the cliff is a prognostic range of geodynamic phenomena. A cliff which is permanently or periodically cut by storms is called an active (live) cliff, while a cliff located completely out of the range of waves is called a dead (inactive) cliff.	Herbich (2004b)	According to the publication (as amended)
26.	Climate	All weather phenomena in the area over a multiannual period. Determined on the basis of observations of various components, most often temperature, precipitation and wind measurements. The standard period is about thirty years.	Houghton et al. (2001)	According to the report
27.	Nature compensation	Set of activities covering, in particular, construction works, earthworks, soil reclamation, afforestation, tree planting or creation of vegetation clusters, leading to the restoration of the natural balance in specific area, compensation for damage done to the environment by	Act of 16 April 2004 on Nature Conservation (consolidated text, Journal of Laws of 2018, item 1614, as amended)	According to the Act

Item	Term	Definition	Source of definition	Accepted definition
		implementation of investment and preservation of landscape values.		
28.	Ecological corridor	Area that allows migration of plants, animals or fungi. It allows organisms to move from one habitat to another.	Act of 16 April 2004 on Nature Conservation (consolidated text, Journal of Laws of 2018, item 1614, as amended)	According to the Act
29.	Landscape	Landscape values – the ecological, aesthetic or cultural values of an area and along with associated land relief, creations and components of nature, shaped as a result of impacts of natural forces or human activity.	Act of 16 April 2004 on Nature Conservation (consolidated text, Journal of Laws of 2018, item 1614, as amended)	According to the Act
30.	Mixed forests and coniferous forests on coastal dunes	Natural or semi-natural forests (stable for a long time) as well as coastal dunes with well-developed forests and a set of characteristic forest plant species.	Namura-Ochalska (2004b)	According to the publication
31.	Bird breeding	Reproductive cycle of birds from nest building to chicks becoming independent.	Expert definition	According to the expert knowledge
32.	Nesting area	Area of bird breeding.	Expert definition	According to the expert knowledge
33.	Coastline	Coastline for natural watercourses, lakes and other natural water reservoirs is either an edge of a coast or a line of permanent grass growth, or a line that is established according to the average water level over at least the last 10 years.	Act of 20 July 2017 – Water Law (consolidated text, Journal of Laws of 2018, item 2268, as amended)	According to the Act
34.	Baseline of the territorial sea	A line joining the appropriate points which identify the lowest water level along the coast or other points designated in accordance with the principles set out in the United Nations Convention on the Law of the Sea, established in Montego Bay on 10 December 1982 (Journal of Laws of 2002, item 543).	Act of 21 March 1991 on Sea Areas of the Republic of Poland and Maritime Administration (consolidated text, Journal of Laws of 2018, item 2214, as amended)	According to the Act
35.	Mammal moulting	The process of periodic fur shedding by mammals (in the Baltic grey seal population this takes place between May and June).	HELCOM (2017)	According to the publication
36.	Macrophytes	Plants at least a few millimetres in size, completely immersed in water. These include macroalgae growing on hard seafloors (pebbles, breakwaters) and vascular plants rooted in soft seafloors (sandy, muddy).	Expert definition	According to the expert knowledge

Item	Term	Definition	Source of definition	Accepted definition
37.	Macrozoobenthos (benthic macrofauna)	Seafloor sediment dwelling invertebrates, living both on their surface and in the seafloor, remaining during the screening of seafloor sediment samples on a 1 mm mesh sieve.	Żmudziński (ed.) (2002)	According to the literature
38.	Bird migration	Movement of birds between the breeding and wintering areas; spring migration takes place from the wintering site to the breeding site; autumn migration takes place from the breeding site to the wintering site.	Expert definition	According to the expert knowledge
39.	Open sea	An open area of the Polish Baltic Sea coast, stretching from the beginning of the Hel Peninsula to Świnoujście.	Expert definition and terminology used in publications (Dubrawski and Zawadzka-Kahlau 2006; Dubrawski 2008)	According to expert knowledge and terminology used in publications
40.	Coastal white dunes	A white dune (foredune) is the first sandy bar from the sea side formed by the sand-retaining and stabilising psammophilous vegetation from a complex of coastal grasses <i>Elymo-Ammophiletum arenariae</i> Br.-Bl. et de Leeuw 1936.	Piotrowska (2002)	According to the publication
41.	Coastal grey dunes	A grey dune – the next zone of dune coast, located landwards of the white dune, stabilised by the psammophilous vegetation from the complex of strawflowers and sheep scabious <i>Helichryso-Jasionetum</i> Libb 1940.	Piotrowska (2002)	According to the publication
42.	Natura 2000 area	A special protection area of birds, a special protection area of habitats or an area of importance to the Community established for the protection of populations of wild birds, natural habitats or species being subject of interest of the Community.	Act of 16 April 2004 on Nature Conservation (consolidated text, Journal of Laws of 2018, item 1614, as amended)	According to the Act
43.	Special Protection Area (SPA)	An area designated, in accordance with the provisions of European Union law, for the protection of bird populations of one or more species in the wild, within the limits of which birds have favourable living conditions throughout their life, during any period or stage of development.	Act of 16 April 2004 on Nature Conservation (consolidated text, Journal of Laws of 2018, item 1614, as amended)	According to the Act
44.	Coastal protection	Human activity aimed at preventing the destruction of the coastline as a result of its erosion and seawater encroachment into the land. The basis for the coastal	Mazurkiewicz (2009), as expanded	According to the publication

Item	Term	Definition	Source of definition	Accepted definition
		protection is the ability to predict changes in the structure of the coast, both in natural conditions and in the neighbourhood of the implemented and existing maritime structures. The coastal protection area is a zone designated for maintaining the minimum level of safety and proper state of the coastal environment and the areas of accumulation of sands fit for artificial nourishment.		
45.	Environmental protection	Taking or failing to take actions to maintain or restore the natural balance; such protection consists, in particular, of rational shaping of the environment and management of environmental resources in accordance with the principle of sustainable development, counteracting pollution, restoring natural components of the environment to their proper state.	Act of 27 April 2001 – Environmental Protection Law (consolidated text, Journal of Laws of 2018, item 799, as amended)	According to the Act
46.	Omniphagus	Omnivorous species, which in the marine environment have a preference for fish, but most often collect waste from pre-treatment of fish on fishing vessels.	Expert definition	According to the expert knowledge
47.	Refuge	A place where conditions are for the existence of plants, animals or fungi in danger of extinction or rare species.	Act of 16 April 2004 on Nature Conservation (consolidated text, Journal of Laws of 2018, item 1614, as amended)	According to the Act
48.	Coastal belt	Land area adjacent to the sea coast, which consists of a technical strip and a protective strip.	Act of 21 March 1991 on Sea Areas of the Republic of Poland and Maritime Administration (consolidated text, Journal of Laws of 2018, item 2214, as amended) Ordinance of the Council of Ministers of 29 April 2003 on determining the minimum and maximum width of the technical and protective strip and the method of determining their borders (Journal of Laws of 2003, No 89, item 820, as amended)	According to the Act and the Ordinance
49.	Protective strip	Area in which human activity has a direct influence on the state of the technical strip. Established to limit the adverse effects of human activity, directly on the inland side of the technical strip, which affects the condition of this strip.	Act of 21 March 1991 on Sea Areas of the Republic of Poland and Maritime Administration (consolidated text, Journal of Laws of 2018, item 2214, as amended) Ordinance of the Council of Ministers of 29 April	According to the Act and the Ordinance

Item	Term	Definition	Source of definition	Accepted definition
			2003 on Determining the Minimum and Maximum Width of the Technical and Protective Strip and the Method of Determining Their Borders (Journal of Laws of 2003, No 89, item 820, as amended)	
50.	Technical strip	The zone of direct land-sea interaction; it is an area designated for maintaining the coast in a condition consistent with the needs of safety and environment protection.	Act of 21 March 1991 on Sea Areas of the Republic of Poland and Maritime Administration (consolidated text, Journal of Laws of 2018, item 2214, as amended) Ordinance of the Council of Ministers of 29 April 2003 on Determining the Minimum and Maximum Width of the Technical and Protective Strip and the Method of Determining Their Borders (Journal of Laws of 2003, No 89, item 820)	According to the Act and the Ordinance
51.	Sandy undersea shoals	Sandy shoals in the sub-litoral, remaining constantly submerged. The water depths rarely exceeds 20 m. Most often there is a lack of benthic vegetation, except for algae growing on single stones lying on the sand. A distinctive feature, however, are groups of benthic invertebrates with a large diversity of species.	Warzocha (2004b)	According to the publication
52.	Bird moulting	A cyclic process consisting in replacement of often worn feathers with newly grown ones.	Przybyliński (2014)	According to the publication
53.	Moulting place	A place where birds start to moult, often in larger groups.	Expert definition	According to the expert knowledge
54.	Beach	An accumulation form created under the influence of sea waters (currents, wave runup, etc.). It is formed as a result of depositing loose sandy or gravel material either by the sea or on the land side (river outlets), in places with appropriate morphological and hydrodynamic conditions. Expansion of beaches takes place as a result of aeolian processes.	Gradziński et al. (1986) Basiński et al. (1993)	According to the publications (as amended)
55.	Sub-basin	An area covered by the Plan comprising part of the basin for which allowed functions are defined or in which prohibitions or restrictions apply.	General provisions of the Plan	According to definition included in the Plan
56.	Underwater	Any cultural, historic or archaeological traces of human	UNESCO Convention on the Protection of	According to the Convention

Item	Term	Definition	Source of definition	Accepted definition
	cultural heritage	existence that are partly or in whole under water, periodically or permanently, for at least 100 years, such as, inter alia, vessels, aircrafts, other vehicles or parts thereof, together with the cargo.	Underwater Cultural Heritage of 2 November 2001.	
57.	Land surface	Natural topography, soil and sub-soil beneath it to the depth of human influence, where the term “soil” means the upper layer of the lithosphere, composed of mineral parts, organic matter, water, air and organisms, comprising the top soil along with the sub-soil.	Act of 27 April 2001 – Environmental Protection Law (consolidated text, Journal of Laws of 2018, item 799, as amended)	According to the Act
58.	By-catch	All organisms caught during fish harvest and fishing of specific usable species, which have not been a target of these activities. The main cause of large by-catch is the use of non-selective fishing methods.	Act of 19 December 2014 on Sea Fishery (consolidated text, Journal of Laws of 2019, item 586, as amended)	According to the Act
59.	Breeding birds	Birds which enter the breeding period in a specific area.	Expert definition	According to the expert knowledge
60.	Sea birds	Birds strongly associated with the marine environment, staying for most of the phenological period in the open sea away from the coast.	Chodkiewicz et al. (2016)	According to the publication (as amended)
61.	Water birds, water and march birds	Birds which are temporarily or permanently associated with water environment.	Chodkiewicz et al. (2016)	According to the publication (as amended)
62.	Wintering birds	Birds which stay at particular area (wintering ground) during a winter season.	Expert definition	According to the expert knowledge
63.	Migratory birds	Birds which regularly, periodically migrate between breeding grounds, where they breed, and wintering grounds.	Przybyliński (2014)	According to the publication
64.	Ecosocial development	Civilisation development on the basis of the principles of sustainable development. It assumes the inclusion of the natural environment into regional, national and global social and economic development.	Skowroński (2006)	According to the publication
65.	Biodiversity	Diversity of living organisms belonging to ecosystems, both within and between species, as well as diversity of ecosystems.	Act of 16 April 2004 on Nature Conservation (consolidated text, Journal of Laws of 2018, item 1614, as amended)	According to the Act
66.	Small-scale (artisanal)	Fishing from fishing boats up to 12 m long, which do not use towed fishing tools.	Regulation of the European Parliament and Council (EU) No 508/2014 of 15 May 2014 on the	In accordance with the Regulation

Item	Term	Definition	Source of definition	Accepted definition
	coastal fishing		European Maritime and Fisheries Fund (Article 3(14)).	
67.	Cultural fishery (traditional/craft)	Subsistence fishery, carried out on a small scale, in sea areas not far from the place of residence, from fishing vessels with no cabins, necessary for the maintenance of the coastal cultural landscape, contributing to keeping respect for fishing traditions rooted in local conditions and involving the participation of the family both in the ownership and in fishing activities.	Resolution of the European Parliament of 22 November 2012 on Small-Scale Coastal Fishing, Artisanal Fishing and the Reform of the Common Fisheries Policy (2011/2292(INI)).	According to the Resolution
68.	Natural habitat	A terrestrial or aquatic area, either natural, semi-natural or anthropogenic, designated on the basis of geographical, abiotic and biotic features.	Act of 16 April 2004 on Nature Conservation (consolidated text, Journal of Laws of 2018, item 1614, as amended)	According to the Act
69.	Stony and rocky seafloor (reefs)	A submerged underwater and elevated above the surrounding seafloor rocky bed in the sublittoral zone. Reefs favour a zonal distribution of plants and animals as well as high biodiversity.	Warzocha (2004c)	According to the publication
70.	Coastal salt plain	Halophilous meadows, pastures and semi-rushes in low-lying, often peated areas, under the influence of salty or brackish sea water, periodically or episodically flooded.	Herbich (2004c)	According to the publication
71.	Special protection area of habitats	An area designated, in accordance with the provisions of European Union law, for the permanent protection of natural habitats or populations of endangered plant or animal species, or for the restoration of natural habitats or favourable conservation status of these species.	Act of 16 April 2004 on Nature Conservation (consolidated text, Journal of Laws of 2018, item 1614, as amended)	According to the Act
72.	Coherence of Natura 2000 area network	Completeness of natural resources in the network and preservation of functional links between particular components of the network (i.e. Natura 2000 areas) at the level of the biogeographical region in a given country, to guarantee that protection of natural habitats and species is maintained in proper condition.	http://natura2000.org.pl (Website: Natura 2000 and tourism, E-learnign Course “Natura 2000 w ocenach oddziaływania na środowisko”)	According to the text in the informational and educational portal
73.	Standard Data Form (SDF)	A descriptive document, consolidated throughout the European Union, containing detailed information on individual Natura 2000 areas.	Development and Implementation Centre of State Forests in Bedoń (2017), available at http://www.encyklopedialesna.pl/haslo/standardowy-formularz-danych/	According to Encyklopedia Leśna
74.	Coastal zone	A surface running along the line of direct contact between	Pruszek (2003),	According to the publications

Item	Term	Definition	Source of definition	Accepted definition
		the land and the sea, which is subject to the dynamic impacts of sea waters. Within this zone, the coast and the nearshore are distinguished. The boundary of the coastal zone on the sea side is the depth at which the interaction of wave motion with the seafloor begins. On the land side it is determined by the maximum level of sea water inflow to the coast, reaching the foot of dune or cliff, and when there are no such formations, the boundary is the lome reached by the highest sea waves. The coastal zone is also an area of mixing and complex interaction of all major geospheres: atmosphere, lithosphere, hydrosphere, biosphere and human activity.	Mazurkiewicz (2009)	
75.	Stranding	A phenomenon of throwing dead animals ashore or setting cetaceans on the beach causing their death.	Expert definition	According to the expert knowledge
76.	Migration route	A special ecological corridor for animals.	Expert definition	According to the expert knowledge
77.	Bird migration route	An area through which birds move between breeding and wintering locations.	Expert definition	According to the expert knowledge
78.	Artificial nourishment	A method of coastal protection consisting in making up for the shortage of coastal zone sediment caused by marine erosion. It consists in taking sandy material from the sea area by dredgers and depositing it most often on the sea coast and a dune in order to rebuild the beach and dune belt and to make the nearshore more shallow.	Boniecka and Zawadzka (2006)	According to the publication
79.	Marine environment	A valuable heritage that must be protected, preserved and, as far as possible, restored in a way that ultimately maintains biodiversity and preserves the diverse and dynamic nature of oceans and seas that are clean, healthy and fertile. Coastal waters, including the seabed and subsoil, are an integral part of the marine environment.	Marine Strategy Framework Directive 2008/56/EC of the European Parliament and of the Council	According to the Directive
80.	Natural environment	A landscape including objects of inanimate nature as well as natural and transformed natural habitats together with plants, animals and fungi that occur therein.	Act of 16 April 2004 on Nature Conservation (consolidated text, Journal of Laws of 2018, item 1614, as amended)	According to the Act
81.	Navigation	A mandatory, recommended or usual water route	Expert definition	According to the expert

Item	Term	Definition	Source of definition	Accepted definition
	routes	including among others the Traffic Separation Systems (TSS) or Vessel Traffic Services (VTS) for vessels. The term “navigation route” also refers to water routes used by the Navy.		knowledge
82.	River outlets (estuaries)	The lower part of the river course bounded by a brackish water boundary and subject to tidal influence. In estuary sea water is diluted with fresh water from the land run-off. Outlets of Baltic rivers are defined as a subtype of an estuary due to the lack of tides, with the sea water pushed upstream (similar to tidal seas) by wind energy (so-called backwaters).	Warzocha (2004d)	According to the publication
83.	Coastal defences	Marine structures built on the coast of Polish Sea Areas, whose purpose is to halt the progress of marine erosion or to support the growth of the coast.	Ordinance of the Minister of Transport and Maritime Economy of 1 June 1998 on technical conditions for the maritime engineering structures and their location (Journal of Laws of 1998, No 101, item 645), Mazurkiewicz (2009), Pruszek (2003)	According to the Ordinance and the publications
84.	Landscape values	Ecological, aesthetic or cultural values of an area and along with associated land relief, creations and components of nature, shaped as a result of impacts of natural forces or human activity.	Act of 16 April 2004 on Nature Conservation (consolidated text, Journal of Laws of 2018, item 1614, as amended)	According to the Act
85.	Natural values	Elements of the environment created without or only to some extent with human intervention. Inanimate natural values include, e.g. climate, landscape, relief, water courses and reservoirs, whereas flora and fauna are values of animate nature.	Expert definition	According to the expert knowledge
86.	Transitional waters	A category of waters according to the water typology of the Water Framework Directive (EU WFD 2000) – they are parts of surface waters in river outlet areas which are partly saline due to the proximity of coastal waters, but still significantly influenced by freshwater inflows. These waters should meet high environmental standards by 2015 (e.g. the Gulf of Gdańsk belongs to transitional waters). The term transitional waters refers to surface	Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (OJEU L 327/1 of 22.12.2000)	According to the Water Framework Directive and the definition included in the Plan

Item	Term	Definition	Source of definition	Accepted definition
		waters in or near river outlets which, due to proximity of salt waters, show partial salinity, but still remain within the range of significant freshwater influences, and to the internal sea waters of the Gulf of Gdańsk.		
87.	Coastal waters	(1): A water category according to the water typology of the Water Framework Directive (EU WFD 2000) – means surface waters on the landward side of a line, each point of which on the seaward side is located in a distance of one nautical mile from the nearest point of the baseline from which the width of territorial waters is measured, extending, where appropriate, to the outer limit of transitional waters; these waters should meet high environmental standards by 2015. Coastal waters cover the area of surface waters from the coastline, whose external border is determined by the distance of one nautical mile on the seaward side from the baseline referred to in Article 5(2) of the Act of 21 March 1991 on Sea Areas of the Republic of Poland and Maritime Administration, excluding the internal sea waters of the Gulf of Gdańsk and adjacent territorial sea waters. If the range of the transitional waters is greater than the coastal water strip, the outer limit of that range constitutes the outer limit of the coastal waters.	Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (OJEU L 327/1 of 22.12.2000)	According to the Water Framework Directive and the definition included in the Plan
88.	Coast	A strip of land of unspecified width (up to several kilometres), which stretches between the coastline and the first major changes in the relief. According to other authors (Klimaszewski 1981, Pawłowski 1922), the coastline is a border strip of the land and the sea, including the above-water and underwater parts, affected by waves and currents. The latter definition is narrower in scope and closer to the concept of the coast.	Basiński et al. (1993)	According to the publication
89.	Coastal dune	System of wrinkles or hilly, smooth sand surfaces in the higher part of the beach or in the vicinity of the sea-facing edge of the base of high dunes. In terms of plant cover and soil, white and grey dunes are distinguished.	Herbich (2004a)	According to the publication

Item	Term	Definition	Source of definition	Accepted definition
90.	Natural resources	Components, i.e.: soil, mineral resources, water, living organisms, their communities and complexes, used for economic purposes, which either directly or after processing, satisfy human material needs.	Simonides (2008)	According to the publication
91.	Bird wintering	Presence of birds in particular area (wintering ground) during winter season.	Expert definition	According to the expert knowledge
92.	Bird wintering ground	Bird wintering area – an area where the birds stay from the end of autumn migration to the beginning of spring migration, which provides them with conditions suitable for surviving the winter period and is used by them over many years.	Expert definition	According to the expert knowledge
93.	Climate changes	A change in average values and/or variability of climate components, which lasts for a longer period, usually decades or more. A climate change can result both from natural internal processes and from external forces or permanent anthropogenic changes in composition of the atmosphere or methods of exploiting grounds. The United Nations Framework Convention on Climate Change (UNFCCC) defines a climate change in Article 1 as: “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods”.	Assessment of the impact of current and future climate changes on the Polish coastal zone and ecosystem of the Baltic Sea (2014)	According to the publication
94.	Coastline	A coastline for natural watercourses, lakes and other natural water reservoirs constitutes either an edge of a coast, a line of permanent grass growth, or a line established according to the average water level over at least the last 10 years.	Act of 20 July 2017 – Water Law (consolidated text, Journal of Laws of 2018, item 2268, as amended)	According to the Act

3 Information on the content and main objectives of the Draft Plan of the Maritime Spatial Plan of the Polish Internal Sea Waters, Territorial Sea, and Exclusive Economic Zone in Scale 1:200,000 together with its associations with other documents, including an assessment of the compatibility of the Draft Plan with planning documents at national and international level

The Draft Plan of the Maritime Spatial Plan of the Polish Internal Sea Waters, Territorial Sea, and Exclusive Economic Zone in Scale 1:200,000 was prepared in accordance with the Act of 21 March 1991 on Sea Areas of the Republic of Poland and Maritime Administration. This Act implements in Polish law the Directive of the European Parliament and Council 2014/89/EU of 23 July 2014 establishing a framework for maritime spatial planning (OJEU L 257/135 of 28.8.2014).

It takes into account the constitutional requirement (Article 5 of the Constitution of the Republic of Poland) that the Republic of Poland ensures protection of the environment, following the principle of sustainable development. This principle is legally defined in the Act of 27 April 2001 Environmental Protection Law and constitutes, in accordance with Article 1 of the Act of 27 March 2003 on Spatial Planning and Development, the binding basis for spatial planning.

The Draft Plan was prepared in accordance with the Ordinance of the Minister of Maritime Economy and Inland Navigation and the Minister of Infrastructure and Construction of 17 May 2017 on the required scope of spatial development plans for internal sea waters, territorial sea and the exclusive economic zone (Journal of Laws of 2017, item 1025).

The Draft Plan also takes into account other implementing acts, EU Directives, international conventions ratified by Poland as well as policies and strategies (including regional strategies) binding in Poland, presented and analysed in detail in document entitled *“Analiza uwarunkowań zagospodarowania przestrzennego polskich obszarów morskich”*. This also applies to recommendations of international organisations such as HELCOM and VASAB. In particular, the Draft Plan refers to the National Spatial Development Concept (NSDC 2030), the Maritime Policy of the Republic of Poland until 2020 with 2030 perspective, and other key national strategic documents (including: National Long-Term Development Strategy – Poland 2030 Third Wave, for Responsible Development adopted on 16 February 2016 by the Council of Ministers and the resulting Strategy for Responsible Development until 2020 (with 2030 perspective) (Polish Monitor of 2017, item 260), as well as nine integrated strategies, (draft) National Programme for the Development of a Low-Emissions Economy, National Development Strategy 2020 (Appendix to Resolution No 157 of the Council of Ministers of 25 September 2012) and the National Reform Programme for the implementation of the *“Europe 2020”* strategy (updated in 2016/2017 and accepted by the Council of Ministers on 26 April 2016).

The Draft Plan of the maritime spatial plan of the Polish internal sea waters, territorial sea, and exclusive economic zone in scale 1:200,000, territorial sea and part of the internal sea waters was

prepared taking into account the following **objectives** resulting from the above mentioned legal acts and strategic documents (Explanatory Memorandum to the Detailed Decisions):

- supporting sustainable development in the maritime sector, taking into account economic, social and environmental aspects, including improvement of the state of the environment and increasing resistance to climate changes;
- ensuring national security and defence;
- ensuring coordination between the entities and uses of the sea, coherent management of sea and coastal areas, including the Baltic Sea resources;
- increasing the share of the maritime economy sector in GDP and increasing employment in the maritime economy;
- strengthening of the position of Polish sea ports, improvement of the competitiveness of maritime transport and ensuring sea safety;
- efficient use of space, leaving as much space as possible for future use of the sea, including those which are currently unknown.

According to the assumptions of the National Spatial Development Concept 2030 the Plan should ensure effective use of marine areas and their development potentials for the achievement of general development objectives – competitiveness, increased employment, efficiency performance of the state and cohesion in the social, economic and territorial dimension in the long term.

The planning process was preceded by an analysis of the planning documents for the land part of the coastal areas. It covered two levels – regional and local. The analysis focused on the coastal areas and on statements/contents of significance for sea area planning, with special attention paid to the functions of the areas, status of protection, state of development, occurrence of hazards, infrastructural solutions, accessibility of the areas, and planned investments.

At the regional level, both the voivodship spatial development plans and the current strategic and programming documents were taken into consideration. At the local level the analysis was based on the studies of conditions and directions of spatial development of municipalities, local spatial development plans (in the coastal area), strategic studies and development plans of municipalities, as well as development plans of the ports, supplemented by available data and information. Some of the municipality documents taken into consideration were produced over 10 years ago, and many of them were not updated since then, which limited their usefulness for some aspects of the analysis.

Conclusions resulting from the existing draft protection plans for Natura 2000 areas have been taken into account in the preparation of document entitled *“Analiza uwarunkowań zagospodarowania przestrzennego POM”* in the part concerning *prohibitions, orders, limitations and permissions in methods of using maritime areas which result from separate regulations*. The analysis covered the rules concerning the forms of conservation of nature and its safety zones conservation, as well as the arrangements of protection plans referred to in the Act of 16 April 2004 on nature conservation, including draft protection plans. On the basis of the conclusions, some recommendations of the Plan were formulated, e.g. provisions on reed beds, the Gulf of Puck Gulls Shallow, provisions on technical infrastructure, new waterways, provisions on river outlets. Provisions of the protection plans are indicated as separate provisions. Generally it should be confirmed that the Draft Plan is consistent with planning documents at the national and international levels.

4 Definition, analysis and assessment of environmental protection objectives established at international, Community and national levels relevant to the Draft Plan and methods of their inclusion in the Draft Plan

The authors of the Draft Plan declare that, in accordance with the principle of sustainable development (defined in Article 3 of the Act of 27 April 2001 *Environmental Protection Law*), detailed decisions were developed with account taken of both activities resulting from the need for economic development and those aimed at protection of the natural environment, including maintenance and improvement of its ecological condition. The findings of the Draft Plan in the context of preservation and conservation of natural values are reflected in separate provisions, specific for each basin – prohibitions, conditions of use and recommendations, specified in the basin sheets. These provisions were aimed at meeting the requirements resulting from the necessity to take into account the objectives and tasks relating to environmental protection specified in a number of statutory and programme documents, i.e.:

1. Supporting sustainable development in the maritime sector, taking into account environmental aspects, including improvement of the state of the environment and increasing resistance to climate changes;
2. Ensuring coordination between the entities and uses of the sea, coherent management of sea and coastal areas, including the Baltic Sea resources;
3. Economical use of space.

A particular emphasis was placed on maintaining the continuity of protected areas designated to conserve natural resources valuable on a national and international scale, and to protect spawning as well as wintering and resting birds during migration.

The analysis of methods used to include the environmental protection objectives set at international, Community and national levels in the Draft Plan, carried out in this chapter, concerned the most important documents (Table 4.1). It should be stressed that the objective of the Draft Plan, due to its nature, does not refer directly to the environmental protection objectives set out in the analysed documents, except for the “Maritime Policy of the Republic of Poland until 2020”. However, provisions introduced in basin sheets in their part concerning conditions for the use of the basin indirectly, to some extent, implement recommendations concerning the conservation and preservation of biodiversity set out at international, Community and national levels. Provisions of the Draft Plan concerning the implementation of environmental objectives, without their identification in particular basins, are presented in Annex 1 to the Plan. The analysis of the effects of the provisions concerning the environmental objectives implemented in each basin sheet of the Draft Plan in the context of preservation and conservation of natural values and implementation of the imposed environmental objectives (including preservation and improvement of the ecological condition) is discussed in detail in Chapter 8.2.

5 Identification, analysis and assessment of potential changes in the state of the environment if the Draft Plan is not implemented

The lack of the maritime spatial development plan (i.e. distinguished basins with the functions which are or may be implemented therein; and determination of the development conditions) will affect the environment to a different extent, depending on the component of the environment and types of pressures exerted on a specific component. For most components of the environment, the current legal regulations ensure that the condition of the marine environment described in Chapter 5 of the Prediction is maintained. With further economic development and increasing demand for the use of sea space, the lack of the Plan will make it impossible to balance the interests of the use of sea space. If components of the spatial system and their mutual relations are not defined, significant sources of pressure negatively affecting the environment may accumulate in one area. Impossibility to define the ranks for different types of use and to ensure the cohesion of all suggested solutions may lead to unfavourable use of the environment and its resources, leading to deterioration of the current state.

An example can be the issue of coastal protection. This function was assigned to coastal sections under Act of 28 March 2003 on establishment of the multiannual programme “Programme of coastal protection” (consolidated text, Journal of Laws of 2016, item 678), and the issue of the impact of the provisions of the above mentioned Programme on the coastal zone environment was analysed in many aspects in the Environmental Impact Prediction prepared for this document (Boniecka et al. 2015). Recommendations and solutions proposed therein make it possible to minimise the negative impacts on the environment within the framework of the implemented tasks of coastal protection. The problems are, however, the increase of pressure on the coastal zone as a result of development of coastal municipalities towards the coast, uncontrolled tourist traffic and lack of implementation of the integrated coastal zone management system. In the studies of directions and spatial development of coastal municipalities the problems relating to dynamic changes of the coastal zone and threats from the sea side are observed; it does not translate, however, into the limitation of building in the close vicinity of the technical strip. This may be evidenced by a large number of applications submitted by coastal municipalities to the Draft Plan to take into account the construction of new piers.

Failure to work on the Draft Plan could lead to:

- Functional constraints in particular areas, including at the border line between the land and the sea, which would increase uncontrolled pressure exerted on the area, progressive degradation of marine, terrestrial and species habitats, as well as the transition of the natural landscape into the industrial one, devoid of features characteristic for the nature.
- Difficulties in the use of the marine environment and the coastal area on a sustainable level.
- Impossibility to limit the functions whose implementation is planned in erosion sections, which would additionally strengthen the unfavourable impacts on the environment of the coastal zone.
- Increased risk of conflicts between the users of the marine space, among which the most frequently mentioned are tanker transport (risk of oil spills), tourism and recreation,

extraction of raw materials and construction of wind farms, and thus a threat to the environment, especially to mammals and birds through lack of coordination of activities and the possibility of various types of failures.

- Increased pressure on coastal and offshore resources due to lack of integrated approach to planning and management.
- Reduced opportunities to achieve the good environmental status required by the Water Framework Directive and the Marine Strategy Framework Directive.
- Progressing threat to protected habitats and species.
- Increased impact on birds as a result of human activities, especially in the basins they use as feeding grounds, resting grounds, breeding grounds (coastal and sandy island areas), migration route resting areas or wintering grounds. This may result in reduction in the number of birds in basins they find valuable, which should be assigned the basic function of “environmental protection”, and in basins where functions that have a particularly negative impact on these animals will be allowed. As a result, the population status of many species that are permanently or periodically present in Polish Sea Areas may deteriorate.
- Use of the same sea space for many functions may result in the accumulation of their negative impact on birds, mammals or fish. Also, no basins would be designated as excluded from use for functions that could have a particularly negative impact on those organisms, where they could stay without significant disturbance from human activity. In the case of birds this may contribute to scaring them and forcing them out of their habitats, to deterioration of bird condition and increased mortality, to the reduction of successful breeding, to hindrance of migration and changes in the migration roots, and to the significant disruption or destruction of the birds’ food base over a larger area of the Polish sea area, comparing to the situation when the management plan for these areas is implemented. In the case of mammals, a decrease in their numbers can be observed, and in the case of fish, their breeding grounds may be destroyed.
- It is not possible to assess the extent to which zoobenthic or macrophytic communities in marine areas for which a mineral and fossil extraction license can be issued will be destroyed as a result of extraction activities.
- Increased scaring of sea birds and marine mammals, both in open waters and in the coastal zone, especially in areas where conditions are favourable to do water sports (increase in the number of high-speed vessels, development of infrastructure such as marinas, havens, etc.). This threat is intensified in the western part of the Gulf of Gdańsk. A potential negative factor are also the flooding and ice protection works carried out periodically at the Vistula outlet. They pose a local threat to successful breeding of some species of water and marsh birds and to the seals treating the shoals in the area of the Vistula outlet Przekop as haul-outs.
- Deterioration of the protection status of bird species, marine mammals and fish under protection of the protected areas and their habitats, lower integrity of Natura 2000 areas and lower coherence of their network, in case of discrepancies in the provisions already approved or planned protection plans for the protected areas in relation to various plans of use of these basins.

As far as the Polish sea area management is concerned lack of the maritime space management plan will potentially result in:

- uncontrolled development of the sea space,

- difficulties in making decisions by the state administration concerning various types of investments currently planned in Polish Sea Areas,
- no coordination between the entities and uses of the sea.

6 Identification, analysis and assessment of the existing environmental protection problems significant for the implementation of the Draft Plan, in particular those problems which concern areas protected under the Act of 16 April 2004 on Nature Conservation (consolidated text, Journal of Laws of 2018, item 1614, as amended)

The main environmental protection issues relevant to the implementation of the Draft Plan are:

1. Inconsistency of legal regulations concerning land and sea zone administration.
2. Necessity of cooperation between maritime, self-government and military administration and the Navy in terms of integrated management of Polish Sea Areas and the coastal belt.
3. Lack of integrated management of the protected areas – in accordance with Article 27a(2) of the Act on Nature Conservation (consolidated text, Journal of Laws of 2018, item 1614, as amended) the Director of the Maritime Office supervises the Natura 2000 areas or proposed areas significant to the Community designated in the sea areas, subject to Article 32(5) of that Act, which states that if the Natura 2000 area covers, in whole or in part, the area of a national park, then the Director of the National Park is in charge of the supervision of the Natura 2000 area within the national park. This results in the necessity of cooperation between individual institutions, and if it is missing, works relating to conservation of nature in Polish Sea Areas are either not carried out at all or are insufficient.
4. Lack of a spatial development plan for Polish Sea Areas, and thus the progressive degradation of the landscape, increasing spatial disorder and lack of clearly defined public interest when it comes to conflict resolution. As a result, until the spatial development plan for Polish Sea Areas is established, short-term solutions are preferred over the long-term ones, and contradictions between policies of particular sectors and areas of expertise in terms of using sea area and resources grow. For areas where spatial development is intensive and may give rise to numerous social conflicts, it will be important to elaborate more detailed plans.
5. Lack of protection plans for the protected sea areas located within the area covered by the Draft Plan. As a result, works relating to nature conservation in the protected areas will not be carried out at all or will be insufficient. To date, none of the developed protection plans has been approved, and for some Natura 2000 areas, works on them have still not been completed.
6. Excessive inflow of biogenic substances to the Baltic Sea from land-based sources resulting in a progressive eutrophication process. An increase in the concentration of nitrogen and phosphorus compounds results in an increase in the frequency of algal blooms and may indirectly cause the formation of oxygen deficits at the bottom and decrease in biodiversity. This is reflected in the unsatisfactory ecological status/potential of uniform parts of transitional and coastal waters.
7. Uncontrolled intensive tourism, sport and water recreation. This results in the degradation of valuable and sensitive environmental values due to the destruction of underwater, reed and coastal vegetation habitats, as well as frightening animals, pollution and littering.
8. Excessive exploitation of the animate and inanimate resources of the Baltic Sea beyond their capacity of self-renewal. This results in overfishing of commercially used fish species (sprat, cod, herring, flounder and salmon) and by-catch of species (including the protected ones) of

fish, birds and mammals that are not fishing targets. This affects the whole ecosystem through a negative impact on components of the marine trophic chain. In addition, aggregates – sand and gravel – are overexploited, which has an adverse effect on benthic organisms on the seafloor.

9. Environmental pollution through pollution with hazardous substances. This results in deterioration of water quality, increased animal mortality and destruction of plant habitats.
10. Pollution of the marine environment with domestic waste and litter.
11. Changes in the morphology (transformation of relief) of the seafloor in result of investments relating to the foundation of structures, dredging the fairways, underwater exploitation of aggregates and storage of the associated dredged spoil. This results in the fragmentation or destruction of habitats, increased mortality of benthic organisms, frightening of animals and release of harmful substances from sediments.
12. Changes in the hydrological conditions of the marine environment (temperature, salinity and sea level) as a result of climate change and as a consequence of some projects (underwater structures). This results in accelerated and more extensive coast destruction and increased risk of losing valuable areas of the coastal area. It can also lead to accumulation of sand in fairways and roadsteads. Significant changes in thermal system or salinity level of waters may also contribute to the loss of biodiversity through negative impacts on the distribution of species, their reproductive cycles, vegetation periods and interactions with the environment.
13. Increase in the amount of matter suspended in water as a result of sewage disposal, precipitation, surface run-off or dredging and disposal of dredged spoil. This results in the release of harmful substances from the seafloor, deterioration of water quality, changes in seafloor morphology, changes in current and wave patterns and changes in the species composition of benthic organisms.
14. Emission of underwater noise (from vessels, wind farms, drilling rigs). It frightens animals, disturbs communication between animals or has a negative impact on objects of cultural heritage.
15. Coastal reinforcement, which causes disturbance of the natural balance between erosion and accumulation processes in the coastal zone, forces artificial accumulation of sediments near breakwaters, groynes and piers.
16. Emissions of pollutants into the atmosphere (air quality standards are not met – suspended particulates PM₁₀, PM_{2,5} and benzo(a)pyrene) and progressive global warming process.
17. Introduction and spreading of non-indigenous species, whose expansiveness poses a threat to native species and the entire Baltic Sea ecosystem. The main source of non-indigenous species in the Baltic Sea is ballast water discharged from vessels.
18. Lack of detailed and comprehensive identification of nature and landscape resources and values due to insufficient environmental inventory data. This results in impossibility to conserve all habitats valuable because of their natural features and sites where valuable plant and animal species occur. It may have a negative impact on biodiversity and lead to the loss of valuable nature values.
19. Deterioration of the quality of human life as a result of negative changes in the environment, such as: increased pollution, noise, overexploitation of animate and inanimate resources.

The environmental problems identified above have also been identified as primary pressures in the Baltic Sea area by an international group of experts as part of the HELCOM HOLAS II project and the ongoing project entitled “State of the Baltic Sea. Holistic Assessment”. These are:

- Eutrophication,
- Hazardous substances,
- Marine litter,
- Underwater noise,
- Non-indigenous species,
- Species removal by fishing and hunting,
- Seafloor loss and disturbance.

In order to determine the areas particularly endangered by environmental protection problems, the main sources of pressures resulting from the current and planned use of Polish Sea Areas and the coastal area were inventoried on the basis of the document “Analiza Uwarunkowań Zagospodarowania Przestrzennego Polskich Obszarów Morskich” (part V – Opis dotychczasowego użytkowania akwenów morskich) (ed. M. Matczak, 2017).

The areas subject to pressures of various intensity levels have been identified, depending on the number of pressure sources (Table 7.1, Figure 7.1, Map No 6). During spatial analysis it was found that the areas of intensive pressure occur in areas under protection and areas of high natural value, which is also a significant problem for the environmental protection.

In course of the analysis of the pressure sources the following aspects were taken into account: existing technical infrastructure (cables, pipelines), licences issued for offshore mining, investments relating to coastal protection, port areas and marinas, designated navigation routes, waterways, approach fairways to ports, anchorages, dredged spoil dumping sites, zones used to ensure national security and defence (closed and periodically closed for shipping and fishing), as well as investments planned in the near future relating to wind and nuclear energy. Furthermore, areas where tourism, sport and recreation are important source of pressure were identified.

Table 7.1. Areas of natural value being under intensive pressure.

Item	Area	Source of pressure
1.	Świna River Delta	Offshore mining (issued licences)
		Marinas
		Coastal protection
		Port area
		Tourism, sport and recreation
2.	Boulder field of Rowy	Coastal protection
		Navigation route
		Port area
		Fairways to ports
3.	Bornholm Deep	Technical infrastructure (cables)
		Navigation route
4.	Gdańsk Deep	Navigation route
		Zones closed or periodically closed to navigation and fishing
5.	Słupsk Bank	Technical infrastructure (cables)
		Navigation route
6.	Central Bank	Offshore wind farms (issued decisions)
		Offshore mining (issued licences)
7.	Baltic Coastal Waters	Nuclear power plants (planned investment)
		Offshore mining (issued licences)

Item	Area	Source of pressure
		Technical infrastructure (cables)
		Dumping sites
		Anchorage
		Coastal protection
		Navigation route
		Port area
		Technical infrastructure (pipelines)
		Zones closed or periodically closed to navigation and fishing
		Fairways to ports
		Tourism, sport and recreation
8.	Ślupsk Furrow	Technical infrastructure (cables)
		Navigation route
9.	Śłowiński National Park	Coastal protection
		Tourism, sport and recreation
10.	Vistula River Outlet	Anchorage
		Coastal protection
		Port area
		Navigation route
		Tourism, sport and recreation
11.	Woliński National Park	Offshore mining (issued licences)
		Marinas
		Coastal protection
		Port area
		Tourism, sport and recreation
12.	Eastern near-border waters	Dumping sites
		Tourism, sport and recreation
13.	Pomeranian Bay	Offshore mining (issued licences)
		Technical infrastructure (cables)
		Dumping sites
		Anchorage
		Coastal protection
		Navigation route
		Port area
		Technical infrastructure (pipelines)
		Zones closed or periodically closed to navigation and fishing
		Fairways to ports
		Tourism, sport and recreation
14.	Puck Bay	Offshore mining (issued licences)
		Technical infrastructure (cables)
		Dumping sites
		Anchorage
		Marinas
		Sewage dumping sites
		Coastal protection
		Havens, quays
		Navigation route
		Port area
		Technical infrastructure (pipelines)
		Zones closed or periodically closed to navigation and fishing
		Fairways to ports
		Tourism, sport and recreation

The overview presented above shows that the most threatened areas (with the highest number of identified sources of pressure) are the coastal area (Natura 2000 area – PLB990002 Baltic Coastal Waters), the Puck Bay and the Pomeranian Bay.

From the analysis of the provisions of the Draft Plan carried out in terms of the defined problems, it can be concluded that it partially takes into account the existing environmental threats and formulates provisions which have the potential to contribute, directly or indirectly, to eliminating or minimising the identified problems (Chapter 8.2 and Appendix 3. – Explanatory memorandum to the detailed decisions concerning particular basins of the Plan).

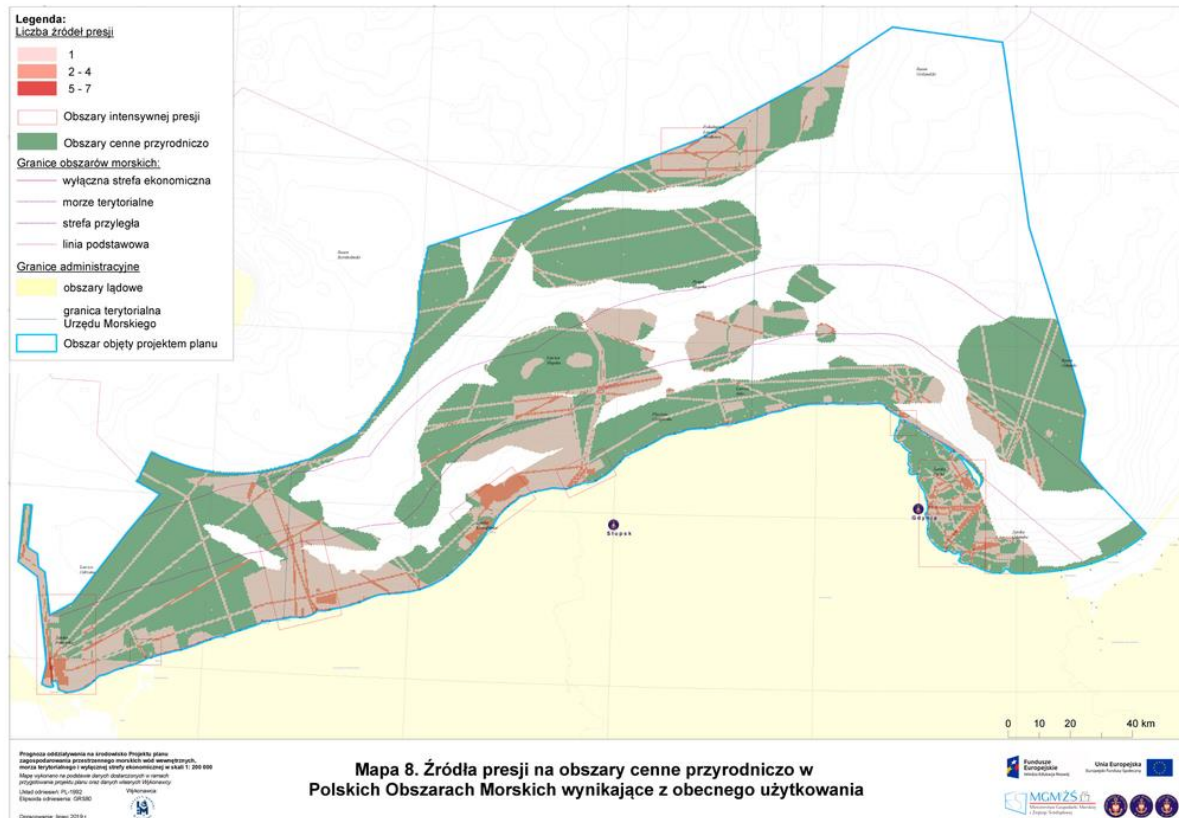


Figure 7.1. Sources of pressure imposed on areas of valuable nature in Polish Sea Areas resulting from the current use (prepared by IMG).

7 Identification, analysis and assessment of the predicted significant impacts of the findings included in the Draft Plan on the objectives and objects of conservation, the integrity and coherence of Natura 2000 areas and the environment

7.1 Assessment of predicted significant impacts

When assessing the impact of a given function on a component of the environment, comprehensive implementation of various projects was taken into account (in a broader perspective, and not only at the construction stage). The impact types defined in Chapter 2.2 are adopted.

7.1.1 Assessment of predicted significant impacts on the environment

Table 8.14. Assessment of predicted significant impacts on components of the environment

	Component of the environment	Symbol of function											
		T	I, Ip	O	E	K	B	C	R	S	N	A	W
1.	Biodiversity	-	-	+	-/+	-	0	-/+	-	-	0	-/+	-
2.	People (including health and living conditions)	-	-	+	+	-/+	+	-/+	+	-/+	0	-/+	+/-
3.	Animals												
3a.	Beach invertebrates	0	-	0	0	0	0	-/+	0	-	0	0	0
3b.	Amphibians and reptiles	0	-	0	0	0	0	-/+	0	-	0	0	0
3c.	Terrestrial mammals	0	-	0	0	-	-	-	0	-	0	0	0
3d.	Macrozoobenthos	-	-	0	-/+	-	0	-/+	-	0	0	-/+	-
3f.	Fish	-	-	+	-	-	-	-	-	0	0	-/+	-
3g.	Birds	-	-/+	+	-	-/+	-	-/+	-	-	0	0	-
3h.	Marine mammals	-	-	+	-	-	-	-	-	-	0	-	-
4.	Plants												
4a.	Dune vegetation	0	-	+	0	0	0	-	0	-	0	0	0
4b.	Cliff vegetation	0	-	+	0	0	0	-	0	-	0	0	0
4c.	Coastal wet meadow vegetation	0	-	+	0	0	0	-	0	-	0	0	0
4d.	Coastal reed vegetation	0	-	+	0	0	0	-	0	-	0	0	0
4e.	Macrophytes	-	-	+	-/+	-	0	-/+	0	-	0	-/+	-
5.	Water	-	-	0	0	-	0	0	0	-	0	-/+	0
6.	Air and acoustic climate	-	-	0	0	0	-	0	0	-	0	0	0

	Component of the environment	Symbol of function											
		T	I, Ip	O	E	K	B	C	R	S	N	A	W
7.	Land surface	0	-	0	-	-	0	-/+	-	0	0	0	-
8.	Landscape	0	-/+	+	-	-	0	-/+	-/+	-	0	-/+	+/-
9.	Climate	-	0	0	+	0	0	0	0	0	0	0	0
10.	Natural resources	0	0	0	+	-	0	-/+	-	0	0	+	0
11.	Monuments	0	-	+	-	-	0	-/+	-	-	0	-	-
12.	Material assets	+	+	+	+	-	0	+	+	+/-	0	0	+

(-) – negative impact, (+) – positive impact, (0) – no impact

Transport

Marine transport has indirect, direct and cumulative impact on the environment. Among the identified types of impacts exerted on particular components of the environment, the most frequent include those which may result in the introduction of non-indigenous species coming from the untreated ballast water discharged by vessels and directly relating to the operation of vessels, e.g. noise which scares off the marine mammals and birds.

The introduction of non-indigenous species can permanently or periodically change the ecosystem and cause changes in species composition and quantity by triggering food competition, occupying ecological niches or, for example, directly eating eggs, larvae or adult native fish species. In addition, intake of the new invasive species can indirectly affect the marine environment through changes in the trophic chain.

Transport and vessel traffic is currently the most important source of low frequency anthropogenic noise. The degree of impact of this function on marine mammals is closely related to the size and speed of the vessel. According to OSPAR 2009 the following division of noise generated by vessels has been introduced: small vessels and recreational boats < 50 m; noise of variable intensity: 160–175 dB re 1 μ Pa, medium-size vessels 50–100 m; 165–180 dB re 1 μ Pa at 1 m; < 1 kHz, large vessels > 100 m; 180 -> 190 dB re 1 μ Pa at 1 m; < 200 Hz. Results show that the most frequent noise generated by vessels has frequency below 1 kHz (Richardson et al. 1995). This is particularly important for harbour porpoises, a species sensitive to such sounds. Transport has also significant impact on seals, contributing to the scaring the animals off their resting places, moulding on boulders or from areas where they feed. The intensive vessel traffic also increases the risk of collisions between marine mammals. Noise generated by transport and traffic of vessels directly startles birds. On the shipping routes this impact is constant as a result of frequent passage of vessels. In this case, birds are forced out of their feeding grounds along the shipping routes. On the other hand, in the remaining areas (except for the shipping routes) the impact is temporary and birds scared by the individual vessels soon return to the area.

The negative impact of the transport function on water is manifested by the introduction of pollutants, both liquid (leakage of oil derivatives into the water, oils, sewage, cargo residues) and solid (litter, especially plastics). This will cause deterioration of habitat conditions and pose a threat to marine organisms. It may also contribute to deterioration of water quality in formal bathing areas. A direct impact of transport includes carbon monoxide emissions having direct harmful effects on both humans and the environment. An indirect impact is more difficult to identify and may include, among others, emissions of dust to atmosphere as a result of incomplete combustion of fuels. The dust content is indirectly related to respiratory and circulatory diseases. A climate change, with its complex causes and consequences, is a cumulative impact of several natural and anthropogenic factors in which transport plays a significant role.

Due to its location, transport has no measurable impact on terrestrial animal and plant species or parameters of terrestrial habitats situated close to the sea. The only exceptions can be marine traffic accidents, which are not included in the impact analysis in this Prediction. The development of the transport function generates an increase in access to material assets. The share of marine transport in the economic development is growing every year, bringing new jobs and increase in wages, and thus stimulating the development of the sphere of material assets. The impact is positive, indirect

and long-term. No significant impact of the transport function on the land surface and natural resources is expected. A list of expected significant impacts resulting from the implementation of the transport function in the Polish Sea Areas is presented in (Table 8.) together with the assessment of their impact on particular components of the environment.

Table 8.15. Characteristics and evaluation of predicted significant impacts relating to the implementation of the basic function of **Transport** in the Polish Sea Areas and their impact on the components of the environment.

Item	Component of the environment	Influence	Influence effects	Influence assessment
1.	Biodiversity	Ship traffic: regular, commercial vessels and oil tankers along with water pollution, air pollution and noise associated with them. Discharge of untreated water by vessels coming from other sea areas containing non-indigenous species. Growth of epiphytic plants on submerged parts of vessels.	Deterioration of habitat conditions and threat to marine organisms. Scaring off mammals and birds. Reduction of biodiversity due to the expansion of non-indigenous species. Destruction of vulnerable species.	D, mt I, It I, It I, It
2.	People (including health and living conditions)	Noise generated by vessel traffic. Air pollution: emissions relating to vessel operation.	Negative impact on human health. Lower quality of life.	D, I, t, It
3.	Animals			
3a.	Beach invertebrates	No influence	No impact	0
3b.	Amphibians and reptiles	No influence	No impact	0
3c.	Terrestrial mammals	No influence	No impact	0
3d.	Macrozoobenthos (benthic macrofauna)	Discharge of untreated water by vessels coming from other sea areas containing non-indigenous species. Growth of epiphytic animals on submerged parts of vessels.	Introduction of non-indigenous species and pathogens transported in vessel ballast tanks. Migration of organisms growing on submerged parts of the ship hull.	D, p I, p
3e.	Fish (ichthyofauna)	Discharge of untreated water by vessels coming from other sea areas containing non-indigenous species.	Changes in quantity and biomass, forcing out native populations of ichthyofauna caused by the expansion of non-indigenous animal and/or plant species.	D, I, It
3f.	Birds (avifauna, ornitofauna)	Regular ship, commercial vessel and tanker traffic. Noise generated by vessel traffic.	Scaring birds, increasing expenditure of their energy by making them fly off frequently, which may result in worse	D, t or p

Item	Component of the environment	Influence	Influence effects	Influence assessment
			condition, increased mortality and reduced bird breeding success.	
3g.	Marine mammals	Noise generated by vessel traffic.	Possible collisions with vessels, increased mortality of mammals, acoustic disturbances which scare mammals off, and in the case of harbour porpoises, disturbance of their echolocation abilities, and as a consequence, lowering the quality of marine mammals living environment.	D p
4.	Plants			
4a.	Dune vegetation	No influence	No impact	0
4b.	Cliff vegetation	No influence	No impact	0
4c.	Coastal meadows vegetation	No influence	No impact	0
4d.	Coastal reed vegetation	No influence	No impact	0
4e.	Macrophytes (benthic macroflora)	Discharge of untreated water by vessels coming from other sea areas containing non-indigenous species. Growth of epiphytic plants on submerged parts of vessels.	Possible introduction of non-indigenous species into the Polish Sea Areas. Migration of organisms growing on submerged parts of the ship hull.	I, It I, t
5.	Water	Water pollutants: liquid (leakage of oil derivatives into the water, oils, sewage, cargo residues) and solid (litter, especially plastics).	Deterioration of habitat conditions and threat to marine organisms. Bad condition of formal bathing areas – oil-derived pollutants.	D, p
6.	Air and acoustic climate	Regular ship, commercial vessel and tanker traffic.	Deterioration of ambient air quality by sulphur and nitrogen compounds (SO _x and NO _x), particulate matter (PM) and volatile organic compounds (VOC).	D, It
7.	Land surface – seafloor	No influence	No impact	0
8.	Landscape	No influence	No impact	0
9.	Climate	Air pollution: emissions relating to vessel operation.	Contribution to increase of the greenhouse effect and the ozone	D, It

Item	Component of the environment	Influence	Influence effects	Influence assessment
			hole.	
10.	Natural resources	No influence	No impact	0
11.	Monuments (including underwater cultural heritage)	No influence	No impact	0
12.	Material assets	Positive influence	Better access to material assets, increase in consumption.	I, It

D – Direct influence I – Indirect influence t – Temporary influence st – Short-term influence mt – Medium-term influence lt – Long-term influence p – Permanent influence 0 – No influence

Technical infrastructure, Functioning of port or haven

Due to the similar nature of the expected impacts of functions: technical infrastructure and functioning of port or haven (Table 8.1), this assessment concerns both of them. The main impact resulting from the execution of functions: technical infrastructure and functioning of port or haven, is disturbance of seafloor habitats during construction and removal of the technical infrastructure, and construction of breakwaters and quays. Other impacts relating to the construction of the infrastructure, e.g. noise, may lead to scaring birds and mammals off temporarily. However, these are usually short- to medium-term impacts, depending on the duration of works. Noise also accompanies the operation of ports, especially those of fundamental importance to the economy, where significant increase in cargo turnover is observed. Durable structural elements submerged in water, e.g. components of port infrastructure, constitute a substrate for the development of epiphytic organisms, which may locally contribute to qualitative and quantitative changes in biodiversity. In places where the works are carried out, macrophyte and macrofauna communities are destroyed. The effect of the impact, resulting from direct actions, depends on the type of conducted works and the type of sediment.

Works relating to laying or disassembling pipelines, cables, hydrotechnical structures and infrastructure providing safe access to ports can lead to destruction of spawning grounds, larvae nursing grounds or fish feeding grounds. Depending on the substrate removed from the seafloor, lithophilic, psammophilic or phytophilic fish habitats, in the case of small depths of up to 20 m where plants are present, may be destroyed. With the formation of a new substrate on the seafloor created by the elements of different structures, new fish habitats may emerge and interfere with natural biodiversity of seafloor sandy areas.

Construction and removal of technical and port infrastructure may result in a temporary reduction of diving bentophagous food base as a result of affecting the seafloor and causing, as a consequence, increase in suspended matter concentration in the water (affecting structure of benthic habitat – indirect, medium-term impact; decrease in water transparency and relating difficulties with finding food for birds using sight when diving for benthos – direct, short-term impact). Reduction of the food base of this group of birds is also connected with occupation of seafloor by hydrotechnical structures (indirect, medium-term impact). Construction and demolition works are also accompanied by increased vessel traffic and noise, which results in scaring birds off and forcing them out of their habitats; these works can also increase mortality and reduce breeding success of these animals (these are direct, medium-term impacts). On the other hand, the exploitation of infrastructure elevated high above the water surface, if it is vast or consists of a relatively large number of individual objects, is not only associated with scaring the birds off, but may also be a cause of difficulties during bird migration and increased mortality as a result of collisions (direct, long-term impact). All types of noise-generating works relating to the construction of technical infrastructure (pipeline structures, hydrotechnical structures, foundations for wind turbines, port-related structures, etc.) make marine mammals temporarily avoid such area. The impact is even more significant if the area of investment has been previously used as a feeding or breeding ground. The so-called “reef effect” should be mentioned as a positive impact, thanks to which the food base used by ichthyofauna, mammals and seabirds increases in the investment area. However, due to the scale of the impact, in the case of rich biodiversity it can be considered insignificant.

The impact of the technical and port infrastructure on the air and acoustic climate is related to the ship traffic within the port area, but also to its production or production and service activities. It leads to deterioration of air quality due to increased emissions of sulphur and nitrogen compounds (SO_x and NO_x), particulate matter (PM) and volatile organic compounds (VOC).

Also works relating to the maintenance of waterways (dredging), necessary for the safe functioning of ports and havens, contribute to deterioration of the temporary air quality and the acoustic climate. At the stage of construction of the port infrastructure (breakwaters, quays) and recreational infrastructure (piers, jetties) land surface, and consequently sediments, are affected. This leads to deterioration of habitat conditions and water turbidity. Linear infrastructure, if it does not protrude above the seafloor, will have a short-term impact on the change of the underwater landscape, only at the construction stage, by disturbing natural habitats being part of the sea landscape. Infrastructure that protrudes above the seafloor will have a long-term (permanent) and direct impact on the underwater landscape. Port infrastructure is associated with emergence of new elements in the sea, and therefore, has direct and long-term (permanent) impact on the landscape above the water level. A positive impact is possible as a result of modernisation of ports, quays (Kruk Dowgiałło et al. 2011). Technical infrastructure such as piers, jetties, observation towers or vehicle and pedestrian paths leading to the beach, as a material component of the tourist product, has a direct impact on the attractiveness of the region. It allows for the development of tourism, which has a positive impact on the labour market, lowers the unemployment rate, increases the income of residents and municipalities, which directly translates into the living standards of residents and the possibility of taking advantage of material assets. In municipalities where a port is located, development activities are concentrated. Ports, as large industrial plants, provide jobs, and that contributes to increase in the quality of life of the residents, and thus has a positive impact on material assets and people's living conditions. No significant impact of technical and port infrastructure functions on climate and natural resources has been observed.

The expansion of ports towards the sea under the morphological and lithodynamic conditions of the southern Baltic Sea, as well as the construction of structures for unloading and loading components relating to the construction of a nuclear power plant can generate erosion of the seafloor and sea coast in new sections and intensify it in areas where it already occurs.

The indicated locations for the construction of a nuclear power plant are situated in the dune section of the South Baltic coastline, where sections of erosion occur alternately with sections of accumulation. The most dynamic changes take place in the area of the Karwieńska Spit, i.e. east of the planned power plant. According to the analysis of cartographic materials (Zawadzka-Kahlau 1999), in the coast section between 132.0–138.5 km, 141.5–146.5 km and 149.0–153.0 km, the speed of coastline shifting towards land was between 0.26 and 0.66 m/year already in the past century. These sections were accompanied by short accumulation sections: 138.5–141.0 km and 146.5–149.0 km with the coastline growth rate of about 0.29 m/year.

The results of observations from the years 1988–1996/97 and 2004–2008 indicate an intensification of marine erosion processes, with a low ability to reproduce dunes in relatively quiet periods, especially in the eastern part of the spit. The effects of medium-term impact of all dynamic factors in the section between Karwia and Stilo showed a prevalence of erosion over accumulation (Zawadzka-Kahlau 2008).

On the basis of the monitoring data from 2015, deterioration of the state of the coast in the area of 132.5–149.0 km has been observed from 2012. There has been a significant acceleration of erosion processes. Two extensive erosion bays appeared on the coast (140.0–142.0 km and 143.0–146.5 km). According to the data from 2012, the coast along the whole analysed section has moved back by 18 m. The biggest changes have been noted in section 143.0–145.0 km, where the width of the beaches decreased by 38 m to 85 m.

These changes are in line with the long-term trends indicated by Zawadzka-Kahlau (2008) in her works. The accumulation of the beach in the summer period is not large enough to reconstruct the dune berms destroyed in stormy conditions.

On the basis of a comparison of the results of coastal monitoring from 2004 and 2012, it was estimated that in the section of 132.5–149.0 km the area of the agreed section A in 2012 decreased by 67 m² comparing to 2004. Except for four sections of the total length of 4 km (132.5–134.0 km, 135.0–136.0 km, 137.0–138.0 km and 143.0–143.5 km) the active area decreased. The biggest change has been noted in section 144.0–148.9 km. The seafloor in the analysed area is slightly sloped, by about 1.5%, and almost uniform, therefore, the sediment of rubble transport are representative for the whole area of interest. Calculations of sediment transport performed in 2015 (Szmytkiewicz ed., 2015) per 140.0 km indicated that there are two distinctive streams of sediment transport, the first of which is located at a distance of 100 m from the coast and the second at a distance of 300 m from the coast. The largest sediment transport of 80,000–100,000 m³ occurs with waves from NNE, WNW and NW directions. The annual transport of sediment from west to east is approximately twice as large as sediment transport from the east to the west (224,000 m³ to 128,000 m³). The total annual sediment transport is about 350,000 m³. After the nuclear power plant is built, this value will decrease. Building the power plant will disrupt the sediment transport along the coast, which will have a negative impact on the state of the coast, on the eastern side of the breakwaters.

Along the Polish coast, due to the predominant sediment transport towards the east, there are many examples of the disruptive impact of port breakwaters on the condition of the coastal zone (Kołobrzeg, Darłowo, Ustka, Łeba, Władysławowo). Inflow of sand into ports and necessity to carry out dredging works led to a deficit of coastal sediments and a gradual reduction of active forms of the nearshore, and consequently, to an increase in the rate of coastal erosion east of port breakwaters. As a consequence of the erosion and storm flooding risks in these sections, technical near-port coastal protection measures have been implemented for many years, where entire systems of protective structures now exist.

Moreover, in the existing erosion and accumulation system of the southern Baltic coast, erosion phenomena occur in other sections as well. As indicated above, these are the sections to the east of the planned construction of a new port associated with the erection of a nuclear power plant. In the coast section between Jastrzębia Góra and Karwia, ca. 4.0 km of a storm dike has been constructed, which results in a limited supply of sediments to the nearshore, a negative balance of sediments on the beach and necessity to replenish the sediments by artificial nourishment of the sea coast.

Both the construction of new breakwaters and further extension of the range of hard structures will significantly disrupt the morphological and lithodynamic processes in subsequent sections of the coastal zone of the sea.

This should be kept in mind when designing facilities accompanying the nuclear power plant, that would cross the zone of sediment transport (see also Chapter 8.2.3).

The planned extension of the external port of Świnoujście in the Natura 2000 “Wolin and Uznam” PLH 320019 and “Refuge in Pomeranian Bay” PLH 990002 areas and in the adjacent areas of valuable nature (design of container terminal at the stage of technical and programme concept) may generate negative impacts on some components of the environment. A piece of the beach and dune habitats to the east of the existing external port will undergo significant changes. The expansion of the port will reduce the influence of the sea in the form of storm restoration of habitats, especially the following ones: initial stages of white dunes (2110), wash margin on a sea coast (1210) and the coastal white dune habitats (2120), which will lead to their gradual degradation until they are completely gone. The coastal landscape and the space of the coastal area will also be further transformed, which may result in hindered access to the existing monuments and to the use of tourist and recreational assets of the coast. Already now, some residents of the right-bank part of Świnoujście are against this investment, which may give grounds for social conflicts (source: radioszczecin.pl, published on 02 May 2017). The source of potential social conflicts may also be a further limitation imposed on the use of the coastal area by fishermen. Conflicts may also arise between the investment and environmental protection or national security and defence.

The construction of the container terminal will also result in the increase in traffic within the land-based premises and the associated increase in noise and exhaust gas emissions. It will also cause the problem of increased ship traffic on the approach fairway to the terminal, which can increase the risk of equipment breakdowns and leaks of hazardous substances.

According to the Environmental Impact Report of the project consisting in the construction of the breakwater for the planned external port in Świnoujście (Mejszelis et al. 2008) and the Supplement to the Report (Spieczyński 2009), the area designated for the planned investment was supposed to become a new ground for fishing and activities relating to tourism and recreation, a place to form a sandy shoal (eastern part of the newly built breakwater) as a substitute habitat for benthic formations, birds and fry.

A list of expected significant impacts resulting from the implementation of functions technical infrastructure and functioning of port or haven in the Polish Sea Areas, is presented in Table 8. together with the assessment of their impact on particular components of the environment.

Table 8.16. Characteristics and evaluation of predicted significant impacts relating to the implementation of the basic function of **technical infrastructure and functioning of port or haven** in the Polish Sea Areas and their impact on the components of the environment.

Item	Component of the environment	Influence	Influence effects	Influence assessment
1.	Biodiversity	Noise generated during construction or removal of technical infrastructure, including port infrastructure (breakwaters, quays). Disturbance of the seafloor surface by anchoring and erecting various types of structures (piers, jetties) and port infrastructure (breakwaters, quays, dumping sites) on the seafloor.	Scaring animals off their habitats. Physical destruction of benthic communities as well as feeding and spawning grounds of ichthyofauna may lead to quantitative changes in the number species and habitats present, and thus, to reduction in biodiversity.	I, st, mt D, st, mt D
2.	People (including health and living conditions)	Noise generated during construction or removal of technical infrastructure, including port infrastructure (breakwaters, quays)	Noise generated during construction of technical infrastructure and during port operation has a negative impact on human health.	D, t, p
3.	Animals			
3a.	Beach invertebrates	Disturbance of natural habitats of beach and dunes during construction and dismantling technical.	Quantitative and qualitative changes in the population of invertebrate animals inhabiting the soil. Scaring off free-living species. Loss of food base, breeding grounds or nests.	D, mt
3b.	Amphibians and reptiles	Disturbance of natural habitats of beach and dunes during construction and dismantling technical. Noise generated during construction or removal of technical infrastructure, including port infrastructure (breakwaters, quays)	Acoustic disturbances which scare amphibians and reptiles off, disturbance of places where amphibian spawn and tadpoles occur, reduction of the quality of herpetofauna's living environment by increased anthropogenic pressure.	D, mt
3c.	Terrestrial mammals	Noise generated during construction or removal of technical	Acoustic disturbances which scare mammals off, and in the case of harbour porpoises, disturbance of their	D, mt

Item	Component of the environment	Influence	Influence effects	Influence assessment
		infrastructure.	echolocation abilities, and as a consequence, lowering the quality of marine mammals living environment.	
3d.	Macrozoobenthos (benthic macrofauna)	Disturbance of natural habitats and creation of new ones by means of permanent structural elements submerged in water – an “artificial reef” effect.	Modification of naturally occurring zoobenthic communities. Destruction of existing communities, emergence of new “artificial reef” communities.	D, mt
3e.	Fish (ichthyofauna)	Disturbance of the seafloor surface by anchoring and erecting various types of structures (piers, jetties) and port infrastructure (breakwaters, quays) on the seafloor and relating sediment structure disturbances.	In the case of significant turbidity of water and release of hydrogen sulphide from the sediments, local scare off and/or elimination of ichthyofauna species and destruction of spawning and nursery grounds may occur.	D, I, mt, It
3f.	Birds (avifauna, ornitofauna)	Disturbance of the seafloor surface by anchoring and erecting various types of structures (piers, jetties) and port infrastructure (breakwaters, quays) on the seafloor and relating sediment structure disturbances. Occupation of seafloor by hydrotechnical structures. Noise generated during construction or removal of technical infrastructure, including port infrastructure (breakwaters, quays). Increased vessel traffic Operation of technical infrastructure high above the water surface.	Reduction of diving bentophagus food base. Forcing birds out of their feeding and resting grounds, scaring them off, increasing expenditure of their energy by making them fly off frequently, which may result in worse condition, increased mortality and reduced bird breeding success. Forcing birds out of their feeding and resting grounds. Making migration of birds more difficult by creating a barrier; possible change of bird migration routes. Increased mortality due to collision with elements protruding high above the water surface.	D or I, st or mt I, mt D, mt D, It
3g.	Marine mammals	Disturbance of the seafloor surface by anchoring and erecting various types of structures (piers, jetties) and port infrastructure	Acoustic disturbances which scare mammals off, and in the case of harbour porpoises, disturbance of their echolocation abilities, and as a consequence, lowering the quality of marine mammals living environment.	D, mt

Item	Component of the environment	Influence	Influence effects	Influence assessment
		(breakwaters, quays) on the seafloor. Noise generated during construction or removal of technical infrastructure, including port infrastructure (breakwaters, quays).		
4.	Plants			
4a.	Dune vegetation	Disturbance of natural dune habitats during erection of various types of structures (piers, jetties) and port infrastructure (breakwaters, quays) on the seafloor.	Modification of naturally occurring communities. Physical destruction of vegetation. Invasion synanthropic taxa, alien in the habitat.	D, mt
4b.	Cliff vegetation	Introducing new artificial components submerged in water into the environment.	Change of habitat parameters results in an accelerated succession of vegetation towards communities characteristic of inactive cliffs.	D, lt
4c.	Coastal meadows vegetation	Disturbance of natural dune habitats during erection of various types of structures (piers, jetties) and port infrastructure (breakwaters, quays) on the seafloor.	Modification of naturally occurring communities. Physical destruction of vegetation. Invasion synanthropic taxa, alien in the habitat.	D, mt
4d.	Coastal reed vegetation	Disturbance of natural reed habitats during erection of various types of structures (piers, jetties) and port infrastructure (breakwaters, quays) on the seafloor.	Modification of naturally occurring communities. Physical destruction of vegetation. Permanent decrease of area occupied by reed communities.	D, lt
4e.	Macrophytes (benthic macroflora)	Disturbance of sediment structure during all kinds of seafloor works (e.g. installation and removal of infrastructure).	Physical destruction of natural macrophytic communities.	D, mt or p
5.	Water	Introduction of pollutants into water: liquid (crude oil, sewage, chemicals used for treatment of	Deterioration of habitat conditions and threat to marine organisms.	D, lt

Item	Component of the environment	Influence	Influence effects	Influence assessment
		water supplying the cooling system of the nuclear power plant) and solid (litter or post-production waste). Increase in water temperature in the area of water discharge from the cooling system of the nuclear power plant.		
6.	Air and acoustic climate	Increased vessel traffic and production and service activity in the port.	Deterioration of the acoustic climate and air condition.	D, It
7.	Land surface – seafloor	Disturbance of the seafloor surface by anchoring and erecting various types of structures (piers, jetties) and port infrastructure (breakwaters, quays, dumping sites) on the seafloor. Occupation of the coastal area for activities relating to port operation.	Deterioration of habitat conditions. Water turbidity. Reducing possibility of using the space for tourism and recreation.	D, It
8.	Landscape	Disturbance of the seafloor surface by anchoring and erecting various types of structures (piers, jetties) and port infrastructure (breakwaters, quays, dumping sites) on the seafloor. Introducing new artificial components submerged in water into the environment.	Changing above-water and underwater landscape by erecting new structures in the sea, such as port infrastructure. Changing the natural landscape of e.g. sea ports – possible improvement of landscape values as a result of modernisation of ports, quays. Destruction of benthic habitats where foundations are located.	D, It or p D, It or p D, p
9.	Climate	No influence	No impact	0
10.	Natural resources	No influence	No impact	0
11.	Monuments (including underwater cultural heritage)	Disturbance of the seafloor surface by anchoring and erecting various	Physical damage or destruction of cultural heritage (e.g. wrecks, underwater graveyards, sunken	D, It

Item	Component of the environment	Influence	Influence effects	Influence assessment
		types of structures (piers, jetties) and port infrastructure (breakwaters, quays) on the seafloor.	settlements, etc.) by ship anchors. Physical damage or destruction of terrestrial cultural heritage on the land.	
12.	Material assets	Introducing new artificial elements into the environment: piers, jetties, observation towers or vehicle and pedestrian paths leading to the beach. New jobs.	Increase in the benefits from the development of tourism, increase in income of residents of coastal municipalities, increase in the attractiveness of the region. Improving the quality and living conditions of people as a result of port or haven operation.	D, It

D – Direct influence I – Indirect influence t – Temporary influence st – Short-term influence mt – Medium-term influence lt – Long-term influence p – Permanent influence 0 – No influence

Protection of the environment and nature

Generally, taking into account the modified definition of function “protection of the environment and nature” contained in Appendix No 1 to the Ordinance (on the basis of the Environmental Protection Law Act and the Act on Nature Conservation), its potential positive impact on components of the environment as well as on human health and living conditions must be noted. However, it should be stressed that these impacts will depend on the degree of implementation of the provisions concerning the environmental protection aspect proposed in the Draft Plan.

Protection of the environment and nature function may contribute to the reduction, and locally even to the almost complete elimination, of the negative impact of other functions of the Polish Sea Area on birds and their habitats, by reducing scare off rate and preventing them from being forced out of their habitats, by reducing bird mortality, increasing their breeding success, counteracting the impediments to bird migration and change of their migration routes, and counteracting the disturbances or destruction of their food base.

Activities relating to the protection of the environment and nature have a direct, positive impact on habitats and the state of the marine mammal population. Protection of habitats used by seals as resting, moulting and feeding grounds significantly improves their conservation status and overall condition of the population. In the case of harbour porpoise, protection their living and reproduction grounds as well as migration routes also has a significant positive impact on a small and threatened population.

Activities undertaken within the described function may also have a positive impact on fish, by protecting their spawning grounds and migration routes.

Protection of the environment and nature, on the basis of sustainable use of the protected areas or complete exclusion of such areas from use, contributes to the improvement or maintenance of a good condition of macrophytic communities as well as the improvement of the marine landscape values.

A list of expected significant impacts resulting from the implementation of the protection of the environment and nature function in Polish Sea Areas is presented in (Table 8.) together with the assessment of their impact on particular components of the environment.

Table 8.17. Characteristics and evaluation of predicted significant impacts relating to the implementation of the basic function of **protection of the environment and nature** in Polish Sea Areas and their impact on the components of the environment.

Item	Component of the environment	influence	Influence effects	Influence assessment
1.	Biodiversity	Minimising negative impact of basic and allowable functions. Supporting sustainable development of the polish sea areas.	Increasing biodiversity.	D or I It or p
2.	People (including health and living conditions)	Minimising negative impact of basic and allowable functions. Supporting sustainable development of Polish Sea Areas.	Protection of natural environment, which has a positive impact on human health, from being damaged.	I, It
3.	Animals			
3a.	Beach invertebrates	No significant influence	No impact	D, It
3b.	Amphibians and reptiles	No significant influence	No impact	D, It
3c.	Terrestrial mammals	No significant influence	No impact	D, It
3d.	Macrozoobenthos	No significant influence	No impact	0
3e.	Fish (ichthyofauna)	Minimizing negative impact of basic and allowable functions. Supporting sustainable development of the polish sea areas.	Improving condition of species and their habitats.	D, It
3f.	Birds (avifauna, ornitofauna)	Minimising negative impact of basic and allowable functions. Supporting sustainable development of the polish sea areas.	Reducing bird scare off rate and preventing them from being forced out of their habitats, reducing bird mortality, increasing their breeding success, counteracting the impediments to bird migration and change of their migration routes, and counteracting the disturbances or destruction of their food base.	D or I, st, mt or It

Item	Component of the environment	influence	Influence effects	Influence assessment
3g.	Marine mammals	Minimising negative impact of basic and allowable functions. Supporting sustainable development of Polish Sea Areas.	Protection of areas valuable to a species in terms of breeding and food acquisition.	D, It
4.	Plants			
4a.	Dune vegetation	Minimising negative impact of basic and allowable functions. Supporting sustainable development of Polish Sea Areas.	Improving condition of species and their habitats.	D, It
4b.	Cliff vegetation	Minimising negative impact of basic and allowable functions. Supporting sustainable development of Polish Sea Areas.	Improving condition of species and their habitats.	D, It
4c.	Coastal meadows vegetation	Minimising negative impact of basic and allowable functions. Supporting sustainable development of Polish Sea Areas.	Improving condition of species and their habitats.	D, It
4d.	Coastal reed vegetation	Minimising negative impact of basic and allowable functions. Supporting sustainable development of the polish sea areas.	Improving condition of species and their habitats.	D, It
4e.	Macrophytes (benthic macroflora)	Minimising negative impact of basic and allowable functions. Supporting sustainable development of Polish Sea Areas. Introducing restrictions on the use of areas of high natural value due to the presence or macrophytes or complete exclusion of such areas from use.	Improving/maintaining good condition of macrophytes.	D, It
5.	Water	No significant influence	No impact	0

Item	Component of the environment	influence	Influence effects	Influence assessment
6.	Air and acoustic climate	No significant influence	No impact	0
7.	Land surface – seafloor	No significant influence	No impact	0
8.	Landscape	Minimising negative impact of basic and allowable functions.	Improving the landscape value for the protection of those components of the environment that make up the landscape.	I, It
9.	Climate	No significant influence	No impact	0
10.	Natural resources	No significant influence	No impact	0
11.	Monuments (including underwater cultural heritage)	Supporting sustainable development of Polish Sea Areas.	Protecting object of cultural heritage.	0
12.	Material assets	Supporting sustainable development of Polish Sea Areas.	Maintaining natural and tourist values. Taking advantage of the asset that the nature is, developing a tourism product on the basis of natural resources.	D, It

D – Direct influence I – Indirect influence t – Temporary influence st – Short-term influence mt – Medium-term influence It – Long-term influence p – Permanent influence 0 – No influence

Acquisition of renewable energy

The product of the activities relating to the function of acquisition and accumulation of renewable energy are artificial constructions partially submerged in water, which during the lifetime on a wind farm provide a substrate for epiphytic organisms. The artificial reef locally affects the species diversity of biocenoses and bioproduction. It increases the food base for birds and fish, and creates new shelters for fry and phytophilous fauna (ecological niches). The negative effects of this function may include hindering migration (barrier effect) of ichthyofauna, mammals and birds, scaring them off and changing the natural taxonomic composition of marine species which would directly affect biodiversity in a short or long term. The function of acquisition and accumulation of renewable energy is to extract energy from resources the use of which will not cause their long-term deficit, as these resources recover in a short time. Reducing the use of fossil fuels has a long-term positive impact on humans, by reducing emissions of pollutants and greenhouse gases.

Due to its location, the function of acquisition and accumulation of renewable energy has no measurable impact on terrestrial animal and plant species or parameters of terrestrial habitats situated close to the sea. One exception to this may be the function of transmitting power from offshore to land – however, this is achieved by means of horizontal directional drilling to bypass or pass below the sensitive coastal habitats. Also, offshore wind farms may have a negative impact on terrestrial bird species by disturbing their migration through the sea areas and increased mortality due to collisions with wind farm components.

The extraction and accumulation of renewable energy is associated with the introduction of structures for power accumulation into the environment. These are primarily support structures for wind turbines. Construction of support structures has a similar effect on ichthyofauna to that of technical infrastructure. However, due to a one-time implementation and disassembly of the structure on a relatively small area of the seafloor and location of these works in open basins, no significant impact of this process on fish is expected. On the other hand, erection of the structure involves the creation of a new, hard substrate on the seafloor and, if the nature of sandy habitat is changed, biodiversity among fish species may increase in particular spots through the emergence of new ecological niches. However, this phenomenon is also local in nature, which makes the impact on the environment very dependent on the size of the investment. The impact of the discussed function is both direct and indirect, as well as long- and short-term, depending on the stage of the investment.

The impact of the function of acquisition and accumulation of renewable energy on marine mammals should be assessed at the stage of construction and removal of the investment. The construction of this type of construction is connected with the introduction of high noise levels to the marine environment as a result of mounting the construction on the seafloor. It results in a direct impact on marine mammals. It temporarily scares off marine mammals from the areas of construction, which were previously the place of their living or feeding grounds. Generated noise is a significant problem in the case of harbour porpoise, which is particularly sensitive to sounds introduced into the environment which may disturb its echolocation, lower the quality of environment where marine mammals live and make getting food impossible.

The impact of function of acquisition and accumulation of renewable energy on macrophytes should be assessed as positive or negative (Dziaduch et al. 2015 a and b). The submerged parts of newly

introduced substrates (hard substrate) are covered during the lifetime of the wind farm by complexes of plant organisms: invertebrates and macroalgae, which form the so-called artificial reef. The artificial reef locally affects the species diversity of biocenoses and bioproduction. This increases the food base for birds (the few that have not been scared off the farm area) and fish, and creates new shelters for fry and phytophilous fauna (living in areas of vegetation). Therefore, the appearance of an artificial reef on the structures can be considered as a positive phenomenon. On the other hand, however, natural ecological structures that occurred before the foundation of the farm are modified, which can be considered as negative. Duration of an impact of an artificial reef coincides with wind farm lifetime, where most frequently the assumed period is 20 years, so the impact can be considered as long-term one.

A significant impact of activities resulting from this function on land surface is expected. During erection of a wind farm, the original structure of the sediment will be disturbed as a result of the foundation being laid in the seafloor.

According to the decision on environmental conditions for the project entitled “Construction of the Offshore Wind Farm Baltic Central III” issued on 7 July 2016 by the Regional Directorate for Environmental Protection in Gdańsk, works carried out at the construction stage, in particular laying of foundations, laying of power cables and relating necessity of frequent anchoring, will disturb the seafloor sediment structure. This would result in rising large amounts of matter to be suspended in the water. Various types of substances, including pollutants and biogens, would be released into the water from the suspended matter. However, amounts of these substances would be relatively small. Furthermore, if layers of stones and boulders are laid around the foundations to prevent washing out, the composition of the sediment will change. Moreover, on the basis of the above decision, it has been established that zinc or aluminium used to protect the foundations against corrosion will penetrate the water. There is also a possibility of a slight increase in the temperature of water and sludge in the immediate vicinity of cables due to their heating. It was found that the project will generate sewage and waste. No standards are expected to be exceeded in this respect.

During construction, operation and removal of the farm, unplanned events may also occur, e.g. leakage of oil derivatives, which may contaminate the water and seafloor sediments. Potential contaminants will be largely dispersed in the water, and the amount of substances that can be possibly released as well as the probability of an emergency situation are small.

The construction of the OWF BSIII will also cause the seafloor area to be occupied within the boundaries of the farm, which will also make the access to mineral deposits difficult or impossible. During the construction works the seafloor sediments and structure will be disturbed, as a result of which they can be washed out or additionally covered. Also the sand from the discovered resources may be used as ballast for gravitational foundations or for the production of such foundations.

At the stage of construction of the OWF BSIII the most significant negative impacts on human and animal organisms will occur, especially the emission of noise and vibrations, associated with the driving in the foundation piles (of the highest intensity when driving in monopiles). The actual assessment of impact of the farm proved that the farm will not have a significant impact, provided that the minimising measures are applied, in the form of limiting the spread of underwater noise during the installation of the foundations by using an appropriate technology, e.g. a bubble curtain or

other solution ensuring that the noise level causing the temporary threshold shift (TTS) will not be exceeded and that the construction process will be properly organised, ensuring that at least once every two months there will be a break in the piling process, no shorter than 4 days, where these breaks may also result from the weather conditions.

It was found that the project will cause noise emissions, however, no standards are expected to be exceeded in this respect.

The results of the assessment of the above mentioned impacts on the environment indicate that the function of acquisition and accumulation of renewable energy will have no significant impact on water, air and acoustic climate, climate and natural resources. Significance of the overwhelming majority of the impacts has been defined as small or negligible.

Wind farm constructions implemented under the function of acquisition and accumulation renewable energy can diversify the marine landscapes. At the construction stage there will be a direct interference with the natural marine landscape with negative impacts on the seafloor by disturbing sediments, destroying boulders. However, these impacts will only be temporary (Dziaduch et al. 2015 a and b). At the stage of operation, both daytime and night-time landscapes will be modified, and impact assessment will depend on the location of the farm in Polish Sea Areas (Dziaduch et al. 2015 a and b).

The impact of function of acquisition and accumulation of renewable energy on material goods should be considered as direct, positive and long-term one, which results from establishing wind farms and their planned operation period of about twenty years. Decision to build a farm will imply the need to create new jobs, in particular in coastal regions, e.g. in the production of components, installations and operation of offshore wind farms. The development of offshore wind power sector by 2030 may generate PLN 60 billion of additional GDP, 77 thousand of jobs and PLN 15 billion of revenues to the state budget. This may bring benefits not only to coastal areas, but also, due to a developed supply chain, to companies from the whole country. Offshore wind power sector in Poland may influence the development and reconstruction of the shipbuilding and steel industries and become one of the factors that are going to stimulate economic development after 2020, when the current financial perspective of the European Union ends. The direct impact on the GDP of the Pomeranian and West-Pomeranian Voivodships together by 2030 may exceed PLN 7 billion – about 0.5% of the overall 10-year GDP for these regions. Moreover, over 10 thousand jobs may be created in these regions, which constitutes almost 7% of the total number of unemployed in these regions (Development of offshore wind energy in Poland, 2016). Also at the stage of the operation, the farms may constitute a source of income for local enterprises, and may be an additional impulse for the development of the tourism industry. The investments may also create opportunities for service and maintenance ports of the central Polish coast, from which the investments will be administered on a daily basis. Implementation of investments will also require specialised staff. It will be necessary to train new staff and improve their qualifications, which is also an added value of this function. Apart from the benefits relating to the emergence of new goods (wind towers, service vessels), increased tax revenues to the state budget and employment, coastal municipalities have a chance to significantly reduce unemployment, and thus, to reduce the differences in access to material goods and to even out social and economic differences between small towns and cities with ports of fundamental importance to the economy. A list of expected significant impacts resulting from the

implementation of the protection of the function of acquisition and storage of renewable energy in Polish Sea Areas is presented in (Table 7.1) together with the assessment of their impact on particular components of the environment.

Table 7.1. Characteristics and evaluation of predicted significant impacts relating to the implementation of the basic function of **acquisition of renewable energy** in Polish Sea Areas and their impact on the components of the environment

Item	Component of the environment	Influence	Influence effects	Influence assessment
1.	Biodiversity	Introduction of a new artificial component of the environment – components of wind farms and epiphytic vegetation growing over the submerged components to create “artificial reef”. Generation of noise (e.g. by increased vessel traffic, including large-sized equipment and machinery, involved in the construction of the farm and during installation of the structure).	Development of epiphytic flora and fauna unusual for the seafloor area, change in the natural taxonomic composition, increase in species diversity. Mortality of animals (birds) due to collisions – barrier effect. Scaring animals off and forcing them out of their habitats.	D, It D, It D, st, It
2.	People (including health and living conditions)	Provision of electricity.	Provision of electricity required in the industry and for everyday needs.	D, p
3.	Animals			
3a.	Beach invertebrates	No significant influence	No impact	0
3b.	Amphibians and reptiles	No significant influence	No impact	0
3c.	Terrestrial mammals	No significant influence	No impact	0
3d.	Macrozoobenthos (benthic macrofauna)	Introduction of a new artificial component of the environment – components of wind farms and epiphytic vegetation growing over the submerged components to create “artificial reef”.	Physical destruction of natural zoobenthic communities. Creating microhabitats conducive to the spread of non-indigenous zoobenthic species. Increase in bioproductivity in the area (artificial reef effect).	D, It
3e.	Fish (ichthyofauna)	Generation of noise (e.g. by increased vessel	Scaring off ichthyofauna, hindering its	D, I, st, It

Item	Component of the environment	Influence	Influence effects	Influence assessment
		traffic, including large-sized equipment and machinery, involved in the construction of the farm and during installation of the structure).	migration, change in the natural taxonomic composition, new ecological niches – increase in fish species diversity.	
3f.	Birds (avifauna, ornitofauna)	<p>Generation of noise (e.g. by increased vessel traffic, including large-sized equipment and machinery, involved in the construction of the farm and during installation of the structure).</p> <p>Introduction of a new artificial component of the environment – wind turbines.</p> <p>Destruction of benthic habitats, which is associated with e.g. disturbance of the birds' food base.</p>	<p>Scaring birds off and forcing them out of their habitats, including limited access to feeding grounds resulting in deterioration of bird condition and increased mortality.</p> <p>Hindering migration of birds by creating a barrier (especially if more wind farms are situated next to each other).</p> <p>Possible change in bird migration routes, increased collision-related mortality.</p>	<p>D, It</p> <p>D, It</p>
3g.	Marine mammals	Generation of noise (e.g. by increased vessel traffic, including large-sized equipment and machinery, involved in the construction of the farm and during installation of the structure).	Acoustic disturbances which scare mammals off, and in the case of harbour porpoises, disturbance of their echolocation abilities, and as a consequence, lowering the quality of marine mammals living environment.	D, p
4.	Plants			
4a.	Dune vegetation	No significant influence	No impact	0
4b.	Cliff vegetation	No significant influence	No impact	0
4c.	Coastal meadows vegetation	No significant influence	No impact	0
4d.	Coastal reed vegetation	No significant influence	No impact	0
4e.	Macrophytes (benthic macroflora)	Introduction of a new artificial component of the environment – components of wind farms and epiphytic vegetation growing over the submerged components to create "artificial reef".	<p>Changes in qualitative and quantitative structure of macrophytes.</p> <p>Local increase in biodiversity – the artificial reef will provide food for</p>	D, It

Item	Component of the environment	Influence	Influence effects	Influence assessment
			birds and fish, and create new shelters for fry and phytophilous fauna.	
5.	Water	No significant influence	No impact	0
6.	Air and acoustic climate	No significant influence	No impact	0
7.	Land surface – seafloor	Introduction of a new artificial element of the environment and relating sediment structure disturbances.	Disturbing original structure of the substrate. Deterioration of habitat conditions. Water turbidity.	D, p D, st
8.	Landscape	Introduction of artificial elements into the environment and landscape over and under the water.	Interference with the marine underwater natural landscape – disturbing original structure of the substrate. Change of daytime and night-time underwater landscape (mainly through wind farm lighting).	D, t, mt, p D, lt
9.	Climate	No significant influence	No impact	0
10.	Natural resources	No significant influence	No impact	0
11.	Monuments (including underwater cultural heritage)	Introduction of artificial hard substrates, i.e. structures, into the environment.	Physical damage or destruction of cultural heritage (e.g. wrecks, underwater graveyards, sunken settlements, etc.). Disturbance of exhibition and viewing qualities of historic objects on the land.	D, p
12.	Material assets	New jobs.	Better quality of life, more opportunities to satisfy material needs.	D, lt

D – Direct influence I – Indirect influence t – Temporary influence st – Short-term influence mt – Medium-term influence lt – Long-term influence p – Permanent influence 0 – No influence

Exploration, investigation of mineral and fossil resources and extraction from the resources

Exploration, investigation and extraction of mineral and fossil resources is usually carried out in open water areas. Execution of this function will have a direct impact on macrophytes. If works, such as aggregate extraction, are carried out in places where macrophytes are most abundant, i.e. in the stone and boulder area of Słupsk Bank and in the stone and boulder area of Rowy, then the macroalgae will be irreversibly destroyed. If the boulders and pebbles remain in the environment, the damaged macroalgae communities will be able to recover within a maximum of 3–4 years. As previous studies of macrophytes in open waters of Polish Sea Areas show, they may occur in the coastal area as well as at depths up to about 20 m, in the form of single specimens rarely distributed on the seafloor (Kruk-Dowgiałło et al. 2011, Osowiecki et al. 2012, Barańska et al. 2016). However, works carried out in these areas, even if they result in irreversible destruction of trace amounts of macrophytes, will not affect the population of macroalgae species and their resources in Polish Sea Areas (Olenycz et al. 2012).

The function of aggregate exploration, investigation and extraction may have a negative impact on water, land surface and natural resources. Extraction of sediments may result in changes in the chemical parameters of water by disturbing the sediment. This may increase water turbidity and release harmful substances and biogens from the sediment into the water, causing blooms. The uptake of sediment from the seafloor contributes to the formation of hollows in the seafloor that change its appearance and pattern of sea currents. This, in turn, entails deterioration of the habitat conditions of benthic organisms and damage to their populations. The extraction of minerals from the seafloor surface will cause depletion of natural resources.

Exploration and/or extraction of crude oil and gas from the seafloor involves the risk of spillage, which is a huge threat not only to marine fauna and flora but also to the whole environment and coastal ecosystem. Moreover, it would cause huge economic losses, especially in such sectors as fishing, tourism and recreation. No significant impacts of the function on the air and acoustic climate and climate in general have been identified. Landscape impacts associated with this function can have a direct and long-term (permanent) impact on the underwater landscape in locations where activities relating to the function are executed. If areas of natural value, e.g. macrozoobenthic or macrophytic communities, are found at the work site, they may be permanently deprived of their landscape values.

The main factor relating to the function of exploration, investigation and extraction of mineral and fossil resources, which can result in a permanent reduction of biodiversity at both species and habitat levels, are the mining works conducted at the seafloor, which disrupt the structure of sediments – thus, generating a number of impacts, which directly or indirectly contribute to the reduction of biodiversity. Observed phenomena include, among other things, scaring species off and forcing them out of their habitats, physical destruction of natural macrophytic or zoobenthic communities, which constitute a food base for diving bentophagus, and in the case of fish, scaring off or elimination of ichthyofauna species and destruction of its spawning grounds.

The exploration, investigation and extraction of mineral and fossil resources has both positive and negative impacts on humans, their health and living conditions. Acquisition of energy and building materials has a positive impact on the economy and living conditions of people. However, combustion of fossil fuels contributes to climate changes and increases pollution in the atmosphere, which can lead to an increase in the incidence of respiratory and circulatory diseases.

Due to its location, the function of exploration, investigation and extraction of mineral and fossil resources has no measurable impact on terrestrial animal and plant species or parameters of terrestrial habitats situated close to the sea. One exception to this may be the function of transporting mineral and fossil resources to the land – however, this is achieved by means of marine transport to the ports or horizontal directional drilling to bypass or pass below the sensitive coastal habitats.

Exploration, investigation and extraction of mineral and fossil resources is associated with the destruction of benthic habitats of ichthyofauna and turbidity of waters as a result of sediment disturbance. In particular, extraction of aggregates from large surfaces of the seafloor may lead to destruction of a fragment of benthic habitats where spawning grounds, larvae nursing grounds or fish feeding grounds may occur. Depending on the substrate removed from the seafloor, lithophilic, psammophilic or phytophilic fish habitats, in the case of low depths of up to 20 m where plants are present, may be destroyed. Execution of this function also involves carrying out works that may lead to water turbidity with disturbed sediment, which may scare off the adult fish and cause elimination of eggs and juvenile stages in the affected area.

Exploration, investigation and extraction of mineral and fossil resources, in terms of disturbance of seafloor as a result of mining activities, has the same impact on avifauna as described for the “Technical Infrastructure” function, i.e. reduction of diving bentophagous food base (affecting structure of benthic habitat – an indirect, medium-term impact; decrease in water transparency and related difficulties with finding food for birds using sight when diving for benthos – a direct, short-term impact). Implementation of this function in Polish Sea Areas is also associated with the intensification of vessel traffic and increase in noise level, resulting in birds being scared off (a direct, short-term impact in terms of exploration and investigation of mineral and fossil resources, a long-term impact in terms of extraction of mineral and fossil resources). Implementation of K-function may have a significant negative impact on avifauna, especially if it is located in areas particularly valuable for birds, such as Słupsk Bank. Moreover, as in the case of the “Coastal Protection” function, artificial nourishment with sand masses may force the birds out of their nesting, chick leading, feeding and resting grounds. If such activities are carried out during the breeding season, they may result in the destruction of nests, eggs and chicks. They may also reduce the area of shallow coastal waters, which are an important place where birds lead their chicks, feed and rest (Draft Ordinance of the Minister of the Environment on Establishing Protection Plan for the Natura 2000 PLB220004 “Vistula River Outlet” area). However, artificial nourishment of coast with sand masses also has a positive effect on water birds by increasing the area of beaches, which are the breeding ground for many of these species. Increase in the area of the beaches also results in expansion of habitats of birds, for which the beaches are feeding and resting grounds during migration and wintering (mainly waders). These impacts have been identified as direct and long-term.

The function of exploration, investigation and extraction of mineral and fossil resources has a negative and direct impact on marine mammals. Noise generated during exploitation of the resources affects the behaviour of these animals. Reaction to such a high level of noise introduced into the environment may either be temporary or may lead to permanent avoidance of the area by marine mammals. Noise can cause direct damage to marine mammals' hearing system, resulting in difficulties with food acquisition, or even death.

The function can have a significant, long-term direct and indirect impact on material assets. Mineral and fossil resources are economic goods, and their quantity is limited comparing to the needs. If they are exploited and managed in a rational manner, it is possible to both satisfy the basic needs of the society and ensure their further development or make receiving new economic goods possible. A list of expected significant impacts resulting from the implementation of the protection of the function of exploration, investigation and extraction of mineral and fossil resources in Polish Sea Areas is presented in (Table 7.219) together with the assessment of their impact on particular components of the environment.

Table 7.2. Characteristics and evaluation of predicted significant impacts relating to the implementation of the basic function of **exploration, investigation and extraction of mineral and fossil resources** in Polish Sea Areas and their impact on the components of the environment.

Item	Component of the environment	influence	Influence effects	Influence assessment
1.	Biodiversity	Introduction of additional components, such as: liquid substances (leakage of oil derivatives), into water by vessels. Disturbance of seafloor surface and related disturbances of sediment structure as a result of geological works and extraction of aggregates. Noise from the mineral exploration and extraction processes. Traffic of vessels required for geological works and extraction of aggregates.	Pollution of the marine environment. Decrease in the biodiversity of benthic organisms, change in their development conditions. Scaring off animals and forcing them out of their habitats.	D, I, mt, p D, I, mt, p In, It
2.	People (including health and living conditions)	Supply of energy and construction raw materials. Extraction of natural resources constituting an economic asset.	Supply of raw materials needed for the production of energy and used in the construction industry. The impact of environmental degradation on human body and quality of life.	D, I, mt, p
3.	Animals			
3a.	Beach invertebrates	No influence	No impact	0
3b.	Amphibians and reptiles	No influence	No impact	0
3c.	Terrestrial mammals	Noise from the mineral exploration and extraction processes.	Depending on the intensity and level of noise generated by implementation of the function, results can range from permanent or temporary forcing the animals out of their habitats, damage to the hearing system, or to death.	D, p
3d.	Macrozoobenthos (benthic macrofauna)	Disturbance of seafloor surface and relating disturbances of sediment structure as a result of geological works and extraction of aggregates.	Physical destruction of natural zoobenthic communities.	D, mt

Item	Component of the environment	influence	Influence effects	Influence assessment
3e.	Fish (ichthyofauna)	Disturbance of seafloor surface and relating disturbances of sediment structure as a result of geological works and extraction of aggregates.	In the case of significant turbidity of water and release of hydrogen sulphide from the sediments, local scare off and/or elimination of ichthyofauna species and destruction of spawning and larvae nursery grounds may occur.	D, p
3f.	Birds (avifauna, ornitofauna)	Disturbance of seafloor surface and relating disturbances of sediment structure as a result of geological works and extraction of aggregates. Noise from the mineral exploration and extraction processes. Traffic of vessels required for geological works and extraction of aggregates. Artificial nourishment of beaches with sand masses.	Periodic destruction of food base of diving bentophagus while extracting aggregates from the seafloor. Scaring birds off by vessels and increased noise level. Possible negative effects of artificial nourishment of beaches with sand masses: during the breeding season, destruction of nests, eggs and chicks, scaring birds off places where they breed, lead their chicks, feed and rest, out of the breeding season – scaring birds off their feeding and resting grounds, possible reduction of the area of shallow coastal waters, which are an important place for chicks to lead, feed and rest. Possible positive impact of artificial nourishment of beaches with sand masses: increase in the area of beaches which are bird breeding, feeding and resting ground.	D or I, st or mt D, st (exploration, investigation of mineral and fossil resources) or It (extraction of mineral and fossil resources) D, It
3g.	Marine mammals	Noise from the mineral exploration and extraction processes. Traffic of vessels required for geological works and extraction of aggregates.	Depending on the intensity and level of noise generated by implementation of the function, results can range from permanent or temporary forcing the	D, p

Item	Component of the environment	influence	Influence effects	Influence assessment
			animals out of their habitats, behavioural disorders of marine mammals – damage to the hearing system to death.	
4.	Plants			
4a.	Dune vegetation	No influence	No impact	0
4b.	Cliff vegetation	No influence	No impact	0
4c.	Coastal meadows vegetation	No influence	No impact	0
4d.	Coastal reed vegetation	No influence	No impact	0
4e.	Macrophytes (benthic macroflora)	Disturbance of seafloor surface and relating disturbances of sediment structure as a result of geological works and extraction of aggregates.	Physical destruction of natural macrophytic communities.	D, mt or p
5.	Water	Introduction of additional components, such as: liquid substances (leakage of oil derivatives), into water by vessels.	Water turbidity. Releasing to water harmful substances and biogens which cause blooming.	D, st
6.	Air and acoustic climate	No influence	No impact	0
7.	Land surface – seafloor	Disturbance of seafloor surface and relating disturbances of sediment structure as a result of geological works and extraction of aggregates.	Formation of hollows in the seafloor, changing the relief of the seafloor and near-bottom current system. Deterioration of habitat conditions and destruction of benthic organism population.	D, p
8.	Landscape	Disturbance of seafloor surface and relating disturbances of sediment structure as a result of geological works and extraction of aggregates. Introduction of new artificial elements into the landscape over and under the water.	Damage to those elements of the marine cultural landscape which have not yet been inventoried. Damage to seafloor habitats being a component of the landscape – reduction of natural and landscape values in specific basin.	D, p
9.	Climate	No influence	No impact	0
10.	Natural resources	Extraction of natural resources constituting an economic asset.	Depletion of natural resources. Oil spills have negative effects on flora	D, p

Item	Component of the environment	influence	Influence effects	Influence assessment
			and fauna, the coastline, the environment and economic sectors, such as fishing, tourism and recreation.	
11.	Monuments	Disturbance of seafloor surface as a result of geological works and extraction of aggregates.	Physical damage or destruction of cultural heritage (e.g. wrecks, underwater graveyards, sunken settlements, etc.).	D, p
12.	Material assets	Extraction of natural resources constituting an economic asset.	Reduction in the amount of natural resources.	D, lt

D – Direct influence I – Indirect influence t – Temporary influence st – Short-term influence mt – Medium-term influence lt – Long-term influence p – Permanent influence 0 – No influence

National security and defence

Military activities in closed basins will have no significant impact on changes in biodiversity at species and habitat levels.

Defence is a field of the national security, which covers counteracting political and military threats using the military services and national civil resources. In practice, defence means the possibility of repelling aggression and preparing the country for defensive actions. These actions have a positive impact on people by keeping them safe from a foreign aggressor.

The function of national security and defence is executed in the sea and has no measurable impact on terrestrial animal and plant species or parameters of terrestrial habitats situated close to the sea. Exceptions include scaring off certain species of terrestrial mammals due to military exercises with the use of explosives, mine detonations, etc.

National security and defence is a function that can directly affect ichthyofauna through detonation exercises. Explosions scare off and eliminate ichthyofauna within the range of impact, and the effect is dependent on the intensity of the exercises. Explosions can also lead to substrate transformations, which involve the destruction of fish habitats as described for seafloor transformations in relation to the technical infrastructure function. This function has a direct, short- and medium-term impact.

Conducting military exercises, during which the basin is subject to intensified vessel traffic and a significant increase in sound intensity (noise) as a result of firing and detonation of explosives, mines, missiles and deep-sea bombs, results in the birds being scared off. The consequence of this is an increase in energy expenditure in birds through frequent flying, deterioration in their condition, increased mortality and reduced breeding success. Regular and long-term (long-term impact) use of one basin as a training ground may lead to the exclusion of feeding grounds located within its boundaries (Chodkiewicz et al. 2016). This impact is of a direct nature. Activities relating to national defence and security will directly affect marine mammals through military exercises conducted in the area of training grounds. Both on the land and water detonations take place, introducing very intensive noise into the environment, which scares off animals, and in the case of the harbour porpoise can even cause damage to the hearing system. These are direct and short-term impacts which last as long as the activities on the training grounds. Activities relating to national defence and security do not affect macrophytes, as they are carried out outside the areas of plant occurrence. Military manoeuvres also affect people's health by worsening the acoustic climate and are a source of noise in the coastal area. It is a short-term impact, limited only to the duration of the manoeuvres. It has been found that the function of national security and defence does not affect water, land surface, climate or natural resources. The function of national defence does not have a negative impact on material assets. On the contrary, its implementation directly affects the maintenance of security of the country and its society. A list of expected significant impacts resulting from the implementation of the protection of the function of national security and defence in the Polish Sea Areas is presented in (Table 8.) together with the assessment of their impact on particular components of the environment.

Table 8.20. Characteristics and evaluation of predicted significant impacts relating to the implementation of the basic function of **National security and defence** in Polish Sea Areas and their impact on the components of the environment.

Item	Component of the environment	influence	Influence effects	Influence assessment
1.	Biodiversity	No significant influence	No impact	0
2.	People (including health and living conditions)	Ensuring safety	Provides protection for people from the external threats.	D, It
3.	Animals			
3a.	Beach invertebrates	No significant influence	No impact	0
3b.	Amphibians and reptiles	No significant influence	No impact	0
3c.	Terrestrial mammals	Noise generated during military operations and protection of territories, facilities and fairways for Navy vessels.	Scaring mammals off their habitats.	D, st
3d.	Macrozoobenthos (benthic macrofauna)	No significant influence	No impact	0
3e.	Fish (ichthyofauna)	Noise generated during military operations and protection of territories, facilities and fairways for Navy vessels.	Scaring off, permanent damage to organs or killing of fish by underwater detonations.	
3f.	Birds (avifauna, ornitofauna)	Noise generated during military operations and protection of territories, facilities and fairways for Navy vessels. Increased vessel traffic	Scaring birds off, exclusion of feeding grounds where military training grounds are located, increasing expenditure of bird energy by making them fly off frequently, which may result in worse condition, increased mortality and reduced bird breeding success.	D, It
3g.	Marine mammals	Noise generated during military operations and protection of territories, facilities and fairways for Navy vessels.	Scaring mammals off their habitats.	D, st
4.	Plants			
4a.	Dune vegetation	No significant influence	No impact	0
4b.	Cliff vegetation	No significant influence	No impact	0
4c.	Coastal meadows vegetation	No significant influence	No impact	0

Item	Component of the environment	influence	Influence effects	Influence assessment
4d.	Coastal reed vegetation	No significant influence	No impact	0
4e.	Macrophytes (benthic macroflora)	No significant influence	No impact	0
5.	Water	No significant influence	No impact	0
6.	Air and acoustic climate	Noise generated during military operations and protection of territories, facilities and fairways for Navy vessels.	Deterioration of the acoustic climate.	D, st
7.	Land surface	No significant influence	No impact	0
8.	Landscape	No significant influence	No impact	0
9.	Climate	No significant influence	No impact	0
10.	Natural resources	No significant influence	No impact	0
11.	Monuments (including underwater cultural heritage)	No significant influence	No impact	0
12.	Material assets	No significant influence	No impact	0

D – Direct influence I – Indirect influence t – Temporary influence st – Short-term influence mt – Medium-term influence lt – Long-term influence p – Permanent influence 0 – No influence

Coastal protection

Biodiversity may be affected indirectly or in a number of (positive or negative) ways by coastal protection activities, since, on the one hand, coastal protection activities may lead to changes in the species composition of plant and animal populations in the hinterland of the sea or, through its protection, to the preservation of diversity of species occurring in the coastal area. Artificial nourishment may affect biodiversity in the medium term, taking into account the water dynamics. For other activities a long-term impact is predicted. By protecting the land infrastructure, coastal protection has a positive impact on people, their health and living conditions. Only at the construction stage, this function has a negative, short-term impact through the emission of noise and pollution as well as temporary exclusion of access to beaches and sea coast. Coastal protection is executed in the littoral zone, including the eulitoral zone (up to 1 m depth), one of the most important zones for the juvenile stages of many species of ichthyofauna, and also a spawning ground for many species.

Implementation of this function may have a negative impact on ichthyofauna in two cases, depending on the type of conducted works. The first case are coastal defences associated with hydrotechnical structures. In this case, artificial reefs, which change the natural ecosystem of the Polish Sea Areas, mostly sandy littoral, are created. New ecological niches appear, often for new species in the adult form, which will feed on juvenile stages here. The second important aspect in terms of a negative impact of coastal protection is beach nourishment. If works are conducted in large section of an eulitoral zone, it makes the water turbid, which scares off the fish and eliminates eggs and juvenile stages. The impact of the discussed function is both direct and indirect, and short-term.

Coastal protection may affect avifauna both negatively and positively. Artificial nourishment of coast with sand masses and construction, expansion and maintenance of the coastal protection system may force the birds out of their nesting, chick leading, feeding and resting grounds. If such activities are carried out during the breeding season, they may result in the destruction of nests, eggs and chicks (Draft Ordinance of the Minister of the Environment on Establishing Protection Plan for the Natura 2000 PLB220004 "Vistula River Outlet" area). However, artificial nourishment of coast with sand masses also has a positive effect on water birds by increasing the area of beaches, which are the breeding ground for many of these species. Increase in the area of the beaches also results in expansion of habitats of birds, for which the beaches are feeding and resting grounds during migration and wintering (mainly waders). Coastal defences are also places where birds rest. These impacts have been identified as direct and short-term.

The function of coastal protection and activities relating to the construction of defences and beach maintenance have the potential to disturb the occurrence of marine mammals in protected sections of the coast. Depositing material to fortify or replenish beaches, especially in the case of seals, may scare marine mammals off and prevent them from resting and feeding. Wide, reconstructed beaches may also provide additional resting places for marine mammals. These impacts will be of short-term duration.

Coastal protection may have both a negative and positive impact on macrophytes in the areas where they occur in the highest quantities, i.e. in the Puck Bay (Kruk-Dowgiałło 2000, Kruk-Dowgiałło and Brzeska 2009, Natural Conditions 2004–2009). Such activities as artificial nourishment or coastal

protection will result in the medium-term destruction of plant communities at the seafloor. In the remaining coastal areas, these activities will be insignificant, because macrophytes do not occur in the work impact zone, as studies conducted to date show. If underwater sills are created, such as those currently in place in the Puck Bay (Gdynia-Orłowo) or on the central coast (Łeba, Ustka), the impact on macrophytes will be permanently positive, because the sills constitute an additional hard surface in the environment covered by the epiphytic vegetation (macroalgae), forming the so-called “artificial reef”. An artificial reef, on the one hand, has a positive impact because it affects the local increase in biodiversity and macrophyte biomass in the area. On the other hand, it has a negative impact by causing modifications of natural ecological structures that occurred before the sills were established.

At the construction stage, the erection of permanent coastal protection structures affects the land surface by occupation of part of the seafloor and changing its original structure. This leads to destruction of habitats of organisms living at the seafloor and to deterioration of their habitat conditions.

Impacts relating to the coastal protection are of different kind and may directly affect the landscape. Artificial nourishment along with supporting structures or coastal defences may have a negative impact on the landscape by introducing artificial components into the environment, thus disturbing the naturalness of the existing landscape. On the other hand, the artificial beach nourishment also influences the preservation of this morphological form, which is a favourable component of the landscape. It increases the resistance of the coast to the influence of hydrodynamic factors and allows for the development of the tourism and recreation function in coastal localities.

On the one hand, activities relating to coastal protection contribute to depletion of natural aggregate resources (sand extraction for artificial nourishment). On the other hand, the coastal protection structures in many coastal areas allow to reconstruct or maintain beaches and dunes. No significant impacts of the coastal protection function on the air and acoustic climate and climate in general have been identified. On the contrary, coastal protection is part of the measures indicated in the *Strategic Adaptation Plan for Sectors and Areas Sensitive to Climate Changes by 2020 with 2030 Perspective*, the so-called SPA2020, where one of the adaptation tasks is to protect the Baltic Sea coastline by increasing its resistance in the face of changing climate. The tasks of artificial beach nourishment or seawall construction increase the protection in areas most vulnerable to erosion and storm floods, thus reducing the effects of extreme events.

The coastal protection function has a direct and positive impact on the material assets accumulated in the coastal area. Urbanised areas cover approximately 170 km of the coastline. Large agglomerations such as Gdańsk, Gdynia, Świnoujście or Kołobrzeg are located there, along with port and port access infrastructure (breakwaters, quays, port facilities) as well as smaller ports and fishing harbours (e.g. Kuźnica, Puck, Łeba, Ustka, Darłowo, Mrzeżyno, Dziwnów, Jarosławiec, Rewal, Międzyzdroje). There are many seaside localities for which the main source of development is tourism and recreation. The most urbanised areas include the coastal area of the Gulf of Gdańsk, especially within the Tricity agglomeration, as well as a fragment of the coastline from Łazy to Gąski and a coastal area from Pogorzelnica to Łukęcin. The coastal municipalities are inhabited by more than 1 million people, and the coastal area is home to significant amount of material and non-material assets, including objects of cultural heritage (e.g. the ruins of the 15th century church in Trzęsacz) and

inanimate nature documentation sites. The predominant types of buildings in urbanised parts of the coastal area are single-family houses, residential buildings, guesthouses, tourism-related infrastructure and infrastructural objects intended for social purposes. About 1/3 of the Polish accommodation potential is concentrated in a small area. Within the strip connecting land to the sea and in the hinterland there is also a range of specialist and military structures. The basic objectives of the coastal protection, which are to prevent the erosion and flooding from the sea side and to ensure the minimum level of safety of the sea coast against the impact of the sea, are implemented under the Act on Establishment of the Multiannual Programme “Programme of coastal protection” (consolidated text, Journal of Laws of 2016, item 678). The Act guarantees contributions from state budget to the implementation of the tasks predicted in the programme, thus allowing for the protection of material assets accumulated in the coastal area and for systematic reduction of the scale of threats occurring in this area.

In accordance with Article 3(1) of the Act of 3 October 2008 *on sharing information about the environment and its protection, public participation in environmental protection and environmental impact assessment* (consolidated text, Journal of Laws of 2018, item 2081, as amended) proceedings were conducted on the assessment of the environmental impact of the programme, referred to as the Strategic Environmental Impact Assessment, under which the environmental impact prediction was developed (Boniecka et al. 2015). The Prediction identified the environmental effects of the implementation of tasks on the objectives and objects of protection of the Natura 2000 area network and components of the environment, which were also used in this assessment.

A list of expected significant impacts resulting from the implementation of the coastal protection function in Polish Sea Areas is presented in (Table 8.) together with the assessment of their impact on particular components of the environment.

Table 8.21. Characteristics and evaluation of predicted significant impacts relating to the implementation of the basic function of **coastal protection** in Polish Sea Areas and their impact on the components of the environment

Item	Component of the environment	influence	Influence effects	Influence assessment
1.	Biodiversity	Disturbance of sediment structure in result of dredging, artificial nourishment with sand masses. Noise generated during sand extraction, artificial nourishment with sand masses. Occupation of seafloor area, seafloor erosion, destruction of benthic habitats where foundations are located (submerged sills). Introduction of a new artificial component of the environment – epiphytic vegetation growing over the submerged components – submerged sills – to create an “artificial reef”.	Temporary reduction of biodiversity and deterioration of development conditions at work sites (scaring off animals). Change in coastline shape condition and in natural vegetation of flora and fauna. Change of the coastal environment through its protection – preservation of the diversity of species occurring in the coastal area. Changes in species composition of flora and fauna.	D, mt D, lt D, lt D, lt
2.	People (including health and living conditions)	Noise generated during sand extraction, artificial nourishment with sand masses. Protection of coastal buildings.	Protection of the coast and coastal infrastructure against the abrasion. Protection of people’s health, life and property.	I, lt
3.	Animals			
3a.	Beach invertebrates	Construction of coastal defences to protect against storm flooding and coastal erosion.	Possible negative impacts: physical destruction of habitats important for species having their habitat on a substrate in the spraying zone. Possible positive impact: increased beach area will	D, p

Item	Component of the environment	influence	Influence effects	Influence assessment
			expand the habitat area of invertebrates attached to this habitat.	
3b.	Amphibians and reptiles	Construction of coastal defences to protect against storm flooding and coastal erosion.	Possible negative impacts: Scaring amphibians and reptiles from their breeding, feeding and resting grounds important for thermal regulation. Possible positive impact: concrete or stone defences may increase the number of potential ground for nesting and resting which is important for thermal regulation.	D, st
3c.	Terrestrial mammals	Noise generated during sand extraction, artificial nourishment with sand masses. Construction of coastal defences to protect against storm flooding and coastal erosion.	Activities relating to the reinforcement and maintenance of beaches and supplying sand to provide a resting ground may result in marine mammals being scared off their resting and feeding grounds.	D, st
3d.	Macrozoobenthos (benthic macrofauna)	Disturbance of sediment structure in result of sand extraction and artificial nourishment with sand masses. Introduction of a new artificial component of the environment – epiphytic vegetation growing over the submerged components – submerged sills – to create an “artificial reef”.	Physical destruction of natural zoobenthic communities, creating microhabitats conducive to the spread of non-indigenous zoobenthic species, increase in bioproductivity in the area (artificial reef effect).	D, lt
3e.	Fish	Disturbance of sediment structure in result of sand extraction, artificial nourishment with sand masses.	Scaring off the fry living in the eulitoral areas and/or reducing their quantity and	D, l, st

Item	Component of the environment	influence	Influence effects	Influence assessment
			biomass.	
3f.	Birds (avifauna, ornitofauna)	Artificial nourishment of beaches with sand masses. Construction of coastal defences to protect against storm flooding and coastal erosion.	Possible negative impacts: during the breeding season, destruction of nests, eggs and chicks, scaring birds off places where they breed, lead their chicks, feed and rest, out of the breeding season – scaring birds off their feeding and resting grounds Possible positive impact: increase in the area of beaches which are bird breeding, feeding and resting grounds.	D, st
3g.	Marine mammals	Occupation of seafloor area, seafloor erosion, scaring mammals off and forcing them out of their habitats. Noise generated during sand extraction, artificial nourishment with sand masses.	Activities relating to the reinforcement and maintenance of beaches and supplying sand to provide a resting ground may result in marine mammals being scared off their resting and feeding grounds.	D, st
4.	Plants			
4a.	Dune vegetation	Disturbance of sediment structure in result of sand extraction. Artificial nourishment with sand masses.	Possible negative impacts: Physical damage to habitat area, especially the wash margin and foredunes. Possible positive impact: increase in the area of dune habitats.	D, p
4b.	Cliff vegetation	Construction of coastal defences to protect against storm flooding and coastal erosion.	Physical destruction to habitat area characteristic of active cliffs, initiation, acceleration of	D, lt

Item	Component of the environment	influence	Influence effects	Influence assessment
			succession or complete transformation of phytocenoses characteristic of inactive cliffs.	
4c.	Coastal meadows vegetation	Disturbance of sediment structure in result of sand extraction. Construction of coastal defences to protect against storm flooding and coastal erosion.	Physical damage to habitat area.	D, p
4d.	Coastal reed vegetation	Disturbance of sediment structure in result of sand extraction.	Physical damage to habitat area.	D, p
4e.	Macrophytes (benthic macroflora)	Disturbance of sediment structure in result of sand extraction, artificial nourishment with sand masses. Introduction of a new artificial component of the environment – epiphytic vegetation growing over the submerged components – submerged sills – to create an “artificial reef”.	Physical damage to vegetation on the seafloor. Changes in qualitative and quantitative structure of macrophytes. Local increase in biodiversity – the artificial reef will provide food for birds and fish, and create new shelters for fry and phytophilous fauna.	D, p
5.	Water	No influence	No impact	0
6.	Air and acoustic climate	No influence	No impact	0
7.	Land surface – seafloor	Construction of coastal protection systems. Hydrotechnical activities (river regulation, bank reinforcement) carried out at the natural outlet section of river channel. Construction of coastal defences to protect against storm flooding and coastal erosion.	Negative: deterioration of habitat conditions. Positive: reconstruction of beaches being habitat for such organisms as birds. Beaches constitute a natural protection of dune habitat and coast base.	D, lt
8.	Landscape	Introduction of new artificial elements into the landscape over and under the water.	Improvement of aesthetic values – harmonic co-existence	D, lt, mt

Item	Component of the environment	influence	Influence effects	Influence assessment
			with other components of the landscape – transformation of natural landscape (seawalls and pitchings). Change in the landscape due to the occupation of seafloor area – destruction of benthic habitats where foundations are located.	D, It
9.	Climate	No influence	No impact	0
10.	Natural resources	Extraction of deposits from the seafloor for artificial nourishment. Artificial nourishment and objects of coastal protection (permanent).	Negative: depletion of aggregate natural resources, change in seafloor features. Positive: reconstruction of beaches and maintenance of dune habitats, natural deposit reservoirs.	D, p
11.	Monuments (including underwater cultural heritage)	Disturbance of deposits in result of sand extraction or any works carried out at the seafloor, e.g. sand extraction during beach reconstruction.	Physical damage or destruction of cultural heritage (e.g. wrecks, underwater graveyards, sunken settlements, etc.).	D, p
12.	Material assets	Construction of coastal defences to protect against storm flooding and coastal erosion.	Coastal defences affect both the natural processes taking place in the coastal zone and the state of preservation of the material assets collected there. Storm floods and erosion processes are halted in sections with developed facilities, where both material assets and human health and	D, It

Item	Component of the environment	influence	Influence effects	Influence assessment
			life are at risk.	

D – Direct influence I – Indirect influence t – Temporary influence st – Short-term influence mt – Medium-term influence lt – Long-term influence p – Permanent influence 0 – No influence

Fishery

The most significant threat to biodiversity at the ecosystemic level resulting from fishery, which can contribute directly and in long term to the reduction of biodiversity in the Baltic Sea, is overfishing of harvested fish species, non-commercial (by-catch) and undersized fish. By-catch is also one of the main pressures of human activities on diving sea bird and mammal species. Another threat to biodiversity is the disturbance of natural seafloor habitats with fishing tools that disrupt the sediment structure. An impact of lesser importance for biodiversity may be the introduction of non-indigenous species or locally absent marine organisms into the marine areas.

Fishery is directly related to providing people with food, however, one should not forget about the indirect impact, which is more difficult to identify. Non-sustainable fishing leads to the overfishing of commercial fish resources, which may limit or completely prevent the ability to fulfil its primary function of providing food. Fishing also involves the destruction of benthic habitats, which in turn contributes to reducing the biodiversity of marine ecosystems. This can indirectly affect the lives of people and their future generations. Due to its location, the fishery function has no measurable impact on terrestrial animal and plant species or parameters of terrestrial habitats situated close to the sea. Fishing is the function that has the greatest impact on the condition of ichthyofauna. As a result of commercial fishing, fish are significantly depleted of the populations of the following species: cod, flounder, herring or sprat and many other fish species. Disturbing abundance of the selected populations of fish species may permanently prevent them from recovering to the optimum level which would guarantee the stability of the population. Another problem relating to overfishing even a few fish species is the disturbance of a trophic chain in the whole ecosystem, which can lead to permanent changes in populations of fish not only those of no commercial use. In addition to the direct impact of fishing on ichthyofauna, it also contributes to degradation of the seafloor. Bottom-trawling leads to seafloor fragmentation and disruption of the natural formation of seafloor habitats. The impact of the discussed function is both direct and indirect, and long-term. The current policy concerning fishery in the Baltic Sea does not guarantee the maintenance of welfare of ichthyofauna. Fishery leads to accidental by-catch of diving birds looking for food in fishing nets (diving bentophagus, diving ichthyophagus). Birds get entangled in the nets and cannot free themselves. This results in the increased mortality of these animals (direct, long-term impact as a result of continuous fishing in Polish Sea Areas). Fishery is considered to have a particularly negative impact on marine mammals. The main threat to marine mammals is considered to be a by-catch (Koschinski, 2002), which is thought to be the most significant source of mortality caused by human activity (Hammond et al. 2008, HELCOM 2013). According to data concerning by-catch and stranding collected by the prof. Krzysztof Skóra Marine Station of the Institute of Oceanography of the University of Gdańsk in Hel, a total of 66 harbour porpoises were by-catched between 1990 and 2009 (Marine Station and WWF databases). Both grey and harbour seals actively detect fishing gear in search for food. This behaviour leads to accidental by-catch. In Poland, fishermen inform the Marine Station of the Institute of Oceanography of the University of Gdańsk in Hel on a voluntary basis about seal by-catch cases. Between 1980 and 2010, 75 by-catches of these animals were reported, where in most of these cases gillnets were used. Furthermore, some of the observations of dead seals made by WWF Poland in years 2010–2012 on the Polish coast indicated that these animals were in by-catch. This was the case for 17 specimens. However, in no case could the cause of death be determined with certainty (WWF Poland, 2013). Considering the by-catch levels of marine mammals, we can conclude that by-catch in gillnets is a serious threat also for harbour porpoises (ASCOBANS 2016). Fishery has

no significant impact on macrophytes. Even when activities are carried out in the areas where plants occur, e.g. in the Puck Lagoon, they do not cause significant damage to the vegetation (e.g. by using fixed nets). Fishery has an influence on the seafloor surface by disturbing the original structure of the substrate during seafloor fishing. These activities contribute to deterioration of habitat conditions of organisms which occupy the seafloor. Disturbance of sediments also increases water turbidity. Fishery does not have a significant impact on water, air and acoustic climate, land surface or overall climate. If fishing with trawling tools is carried out in the place where components of nature valuable for their landscape occur, this function will directly contribute to destruction of the underwater landscape. In addition, fixed nets will have a direct and medium-term (limited to the time they are set) impact on the underwater landscape in the areas where they are used for fishing. Depending on the frequency, fishing activities may have significant and long-term negative effects on the landscape. Fishing vessels and the above-water components of fixed nets have a direct and long-term impact on the water surface landscape in the fishing port areas and in basins used as fishing grounds. Positive impacts on the landscape are associated with small-scale cultural fishing. The presence of fishing boats is an inseparable, traditional and recognisable element of the Puck Bay landscape. The most significant impact of fishery on material assets was related to Poland's accession to the EU. Poland's accession to the structures of the European Union in 2004 resulted in the need to adapt fishery to the EU standards, including reduction of fishing effort, size of fish being caught, fish species and changes in the fish processing industry itself. The introduction of catch limits entailed gradual reduction in the number of fishing vessels, departure of fishermen from the profession, and reduction in interest in running small, family fishing business. As a result, in 2013, the Polish fishing fleet consisted of 795 vessels, and over 10 years it decreased by 613 vessels, which relatively meant a reduction by nearly 44%. As a result of such an extensive reduction in the number of vessels, employment in the fishing sector should be reduced by more than a half compared to 2004. However, in reality, the employment reduction rate was much smaller. Many ship owners owned several fishing vessels and, despite scrapping some of their boats, they retained their jobs. Some of the fishermen who gave up their profession started a new business, mainly in tourism. Some of them retired. Only a small part of them became permanently unemployed (Nowaczyk 2015). In addition, the compensation received opened up new opportunities for development and employment in other branches of the maritime economy. An example is the situation in fish processing, where employment not only does not decrease, but even increases. New jobs are created, providing income to residents of coastal municipalities and increasing their wealth. The development of this function will have a positive impact on material assets, as Baltic fishing, mainly due to the population living in coastal areas, is the type of business activity that often remains the only source of income. A list of expected significant impacts resulting from the implementation of the fishery function in Polish Sea Areas is presented in (Table 8.) together with the assessment of their impact on particular components of the environment.

Table 8.22. Characteristics and evaluation of predicted significant impacts relating to the implementation of the basic function of **fishery** in Polish Sea Areas and their impact on the components of the environment

Item	Component of the environment	Type of influence	Influence effects	Influence assessment
1.	Biodiversity	Disturbance of seafloor with fishing tools. Exploitation of fish. Using fishing tools which do not provide sufficient selection.	Accidental death relating to commercial fishery. Mortality in a by-catch, especially among young specimen (fish, birds, mammals).	D, It D, It
2.	People (including health and living conditions)	Food supply	Fishery is a source of food for humans and has a positive impact of increasing diversity of foods consumed by humans.	D, It
3.	Animals			
3a.	Terrestrial invertebrates	No significant influence	No impact	0
3b.	Amphibians and reptiles	No significant influence	No impact	0
3c.	Terrestrial mammals	No significant influence	No impact	0
3d.	Macrozoobenthos	Disturbance of seafloor with fishing tools.	Damaging naturally occurring zoobenthic communities.	D, p
3e.	Fish	Disturbance of seafloor with fishing tools. Exploitation of fish. Using fishing tools which do not provide sufficient selection.	Disturbance of natural structure of zoobenthic communities which constitute feeding grounds for fish. Change in the quantitative structure of fish species caught for commercial purposes, and thus, disturbance of ichthyofauna trophic chain. These impacts may permanently prevent them from recovering to the optimum level which would guarantee the stability of the population.	D, I, It
3f.	Birds	Using fishing tools which do not provide sufficient selection.	Increased bird mortality by by-catch in the fishing nets.	D, It
3g.	Marine mammals	Using fishing tools which do not provide sufficient selection.	The growing conflict between the presence of marine mammals	D, p

Item	Component of the environment	Type of influence	Influence effects	Influence assessment
			(especially seals) and human activities may result in increased mortality and competition with fish stocks. Mortality in a by-catch, especially among young specimen.	
4.	Plants			
4a.	Dune vegetation	No significant influence	No impact	0
4b.	Cliff vegetation	No significant influence	No impact	0
4c.	Coastal meadows vegetation	No significant influence	No impact	0
4d.	Coastal reed vegetation	No significant influence	No impact	0
4e.	Macrophytes	No significant influence	No impact	0
5.	Water	No significant influence	No impact	0
6.	Air and acoustic climate	No significant influence	No impact	0
7.	Land surface – seafloor	Disturbance of seafloor with fishing tools.	Disturbing original structure of the substrate. Deterioration of habitat conditions of organisms which occupy seafloor. Water turbidity.	D, p
8.	Landscape	Disturbance of seafloor with fishing tools. Traffic of fishing boats being a component of cultural fishery.	Damage to natural underwater landscape. Change of landscape values under the influence of cultural fishery – enrichment the cultural landscape contributing to keeping respect for fishing traditions.	D, mt, lt D, lt
9.	Climate	No influence	No impact	0
10.	Natural resources	Exploitation of fish.	Reduction in the amount of fish resources.	D, lt or p
11.	Monuments	Disturbance of seafloor by anchoring.	Physical damage or destruction of cultural heritage (e.g. wrecks, underwater graveyards, sunken settlements, etc.) by ship anchors.	D, p
12.	Material assets	Disturbing resources. Earning money (new jobs).	Food supply.	D, lt, p

D – Direct influence I – Indirect influence t – Temporary influence st – Short-term influence mt – Medium-term influence lt – Long-term influence p – Permanent influence 0 – No influence

Tourism, sport and recreation

The development of the function of tourism, sport and recreation can reduce biodiversity at species and habitat levels. Activities relating to this function have a negative impact on the components of the environment, so the impact on biodiversity will also be negative. Examples include trampling, plucking plants, and consequently, destroying marine habitats or, in the case of animals, scaring them off the coastal zone. These impacts are direct and long- or medium-term (relating to the summer season).

Tourism, sport and recreation are interdisciplinary phenomena. Their development has a positive impact on the economy. In particular, they affect the hotel industry, gastronomy, tourism services, banking, commerce, municipal economy and communication. Tourism, sport and recreation cover different areas of human activity such as accommodation, food service activities, activities of tour operators, travel intermediaries and agents, creative cultural and entertainment activities, activities of libraries, archives, museums, sports, entertainment and recreation activities. However, tourism, sport and recreation, by concentrating large numbers of people in tourist destinations, can have a negative impact on the environment and on the residents of tourist destinations.

The function of tourism, sport and recreation implemented in the area of coastal habitats will cause: changes in the nature of habitats, impoverishment of their parameters, species impoverishment and then disappearance of phytocenoses. In addition to the direct impact on vegetation, increased tourist traffic translates into the invasion of non-indigenous invading species, destruction of wash margin habitats, damage to the coast by driving around with various types of mechanical vehicles, noise generation, etc. Initial phytocenoses and dune phytocenoses are the most vulnerable to these impacts. The change of coastal phytocenoses results in deterioration of living conditions for invertebrate and terrestrial vertebrate species. They are more and more often scared off and their resting, feeding and breeding ground tend to disappear. The entry of animal species associated with human settlements increases predation pressure. The impact is direct or indirect and short-, medium- and long-term, depending on the local type and size of the project.

The development of the function of tourism, sport and recreation will result in even greater people and vessel traffic, increased popularity of water sports and occupation of the coastal area by a tourism and recreation infrastructure. This would result mainly in scaring birds off and forcing them out of their habitats as well as reducing their breeding success. It may also result in an increase in the mortality of birds as a result of deterioration of their condition through frequent riding to flight relating to birds being scared off. These are direct and long-term impacts due to the occupation of the same areas for tourism, sport and recreation in subsequent seasons and the extension of the tourist season.

The function of tourism, sport and recreation can have a negative impact on marine mammals. In the case of seals, this is primarily related to their haul-out locations. Activities such as jet-skiing and fast boat trips can potentially cause the greatest disturbance. Small vessels moving irregularly at high speeds are an obstacle for the marine mammal trying to avoid collisions. In addition, they can generate higher frequency noise, which can be a problem for marine mammals (Richardson et al. 1995, Tasker et al. 2010).

The function of tourism, sport and recreation will pose a direct threat to macrophytes in areas that are used intensively for this function, e.g. the Puck Bay, whose extensive shallow areas are perfect for seasonal water sports such as sailing, windsurfing and kitesurfing. At the same time, it is a unique area in Polish Sea Areas due to the presence of underwater meadows. As a result of coastal tourism, and thus the expansion of marinas and formal bathing sites, seasonal destruction of macrophyte communities occurring most abundantly on the bottom of the Puck Lagoon and in the coastal area of the external Puck Bay may occur, which might turn into permanent damage in a long term. The impact of the function of tourism, sport and recreation will concern water, air and the atmospheric climate. Doing motor sports involves the introduction of both liquid (oil derivatives, oils and sewage) and solid (litter, especially plastics) waste into the water. This poses a threat to marine organisms and human health (deterioration of the sanitary condition of bathing water) and affects the deterioration of habitat conditions. Breakdowns of motorboats at a short distance from the coast may lead to deterioration of bathing water quality. An increase in the number and traffic of motorboats contributes to deterioration of ambient air quality by sulphur and nitrogen compounds (SO_x and NO_x), particulate matter (PM) and volatile organic compounds (VOC) and of acoustic climate in coastal areas. Such state of affairs in Polish Sea Areas is mainly related to the summer period, from May to September. It has been found that the function of tourism, sport and recreation does not affect land surface, climate or natural resources. Activities relating to tourism, sport and recreation have a direct impact on the natural seaside landscape, e.g. through people's gatherings, formal bathing areas or camping sites along the coast and constantly developed coastal infrastructure. The natural landscape is most affected during the summer season, therefore these impacts have been identified as medium-term ones (Kruk-Dowgiałło et al. 2011). Tourism, sport and recreation are the basic functions implemented by most of the coastal municipalities. The impact of this function implemented in Polish Sea Areas is positive and long-term as far as material assets are concerned. Among the residents of coastal municipalities, satisfaction with the development of tourism prevails and the opinion that thanks to it, the living conditions and quality of life of their residents, and thus their access to material goods, have improved. Unemployment has decreased, the residents' income from tourism has increased, construction, technical infrastructure and tourist development are growing. However, maximisation of profits from tourism, sport and recreation has also some disadvantages. Congestion, environmental degradation, conflicts over shrinking attractive space may lead to negative consequences, which in the future, if the principles of sustainable development are not respected, may lead to the reduction of income from tourism, sport and recreation, and thus lower the standard of living of the residents of coastal localities. A list of expected significant impacts resulting from the implementation of the tourism, sport and recreation function in Polish Sea Areas is presented in (Table 8.) together with the assessment of their impact on particular components of the environment.

Table 8.23. Characteristics and evaluation of predicted significant impacts relating to the implementation of the basic function of **tourism, sport and recreation** in Polish Sea Areas and their impact on the components of the environment

Item	Component of the environment	Type of influence	Influence effects	Influence Assessment
1.	Biodiversity	Noise generated by people and vessels. Seafloor and beach disturbance as a result of trampling, destruction and littering of habitats and beaches by tourists. Water pollutants: liquid (leakage of oil derivatives into the water) and solid (litter, especially plastics). Increased land and water traffic, including vessel traffic.	Reduction of biodiversity – avoidance of the basin by marine mammals as a result of exploitation and degradation of the natural environment of coastal regions (e.g. formal bathing areas) – reduction of habitat diversity. Scaring animals off as a result of increased people and vessel traffic.	D, mt I, mt
2.	People (including health and living conditions)	Noise generated by people and vessels. Water pollutants: liquid (leakage of oil derivatives into the water) and solid (litter, especially plastics).	Increase in the tourist traffic in areas of high ecological value leads to degradation of these areas. It allows resting in areas of high natural values.	D, I, t, mt
3.	Animals			
3a.	Beach invertebrates	Beach disturbance as a result of trampling, destruction and littering of habitats and beaches by tourists.	Reduction of the surface area or deterioration of habitats used as living, feeding and breeding grounds by invertebrates.	D, It
3b.	Amphibians and reptiles	Increased people and vessel traffic. Penetration of substrate (mainly beaches) by tourists. Seafloor and beach disturbance as a result of trampling, destruction and littering of habitats and beaches by tourists.	Reduction of the surface area or deterioration of habitats used as living, feeding and breeding grounds by amphibians and reptiles.	D, It

Item	Component of the environment	Type of influence	Influence effects	Influence Assessment
3c.	Terrestrial mammals	Increased land and water traffic, including vessel traffic. Beach disturbance as a result of trampling, destruction and littering of habitats and beaches by tourists.	Reduction of the surface area or deterioration of habitats used as living, feeding and breeding grounds by terrestrial mammals.	D, lt
3d.	Macrozoobenthos	No influence	No impact	0
3e.	Fish (ichthyofauna)	No influence	No impact	0
3f.	Birds (avifauna, ornitofauna)	Increased land and water traffic, including vessel traffic. Noise generated by people and vessels. Intensified practising of motor and non-motor water sports. Occupation of coastal area by tourism infrastructure (e.g. marinas, havens).	Scaring birds, increasing expenditure of their energy by making them fly off frequently, which may result in worse condition, increased mortality and reduced bird breeding success, forcing birds out of their habitats.	D, lt
3g.	Marine mammals	Increased people and vessel traffic. Noise generated by people and vessels.	Intensive tourist activity (including walking) results in temporary or permanent scaring birds off out of their resting and feeding grounds.	D, p
4.	Plants			
4a.	Dune vegetation	Increased people traffic. Occupation of coastal area by tourism infrastructure (e.g. marinas, havens). Dune disturbance as a result of trampling, destruction and littering of habitats by tourists.	Reduction of the surface area or deterioration of habitats. Degradation of phytocenoses, invasion of synanthropic species, including invasive taxa. Intensification of sea abrasion processes.	D, mt
4b.	Cliff vegetation	Increased people traffic – penetration of cliff top and slopes. Cliff disturbance as a result of trampling, destruction and littering of habitats by	Reduction of the surface area or deterioration of habitats. Degradation of phytocenoses, invasion of synanthropic	D, mt

Item	Component of the environment	Type of influence	Influence effects	Influence Assessment
		tourists.	species, including invasive taxa. Intensification of slope modelling processes – falls and landslides. Intensification of sea abrasion processes. Penetration of cliff top and slopes.	
4c.	Coastal meadows vegetation	Increased people traffic – trampling and driving over the surface. Occupation of coastal area by tourism infrastructure (e.g. marinas, havens). Use of habitat surface as beaches, barbecue grounds or a sport base. Dune and beach disturbance as a result of trampling, destruction and littering of habitats by tourists.	Reduction of the surface area or deterioration of habitats. Drying and disturbance of water balance. Degradation of phytocenoses, invasion of synanthropic species, including invasive taxa. Covering habitats with expansive species of grass or sedges. Disturbance of soil content in a substrate results in the withdrawal of halophilic species.	D, mt
4d.	Coastal reed vegetation	Dune and beach disturbance as a result of trampling, destruction and littering of habitats by tourists.	Reduction of the surface area or deterioration of habitats. Physical damage to plant species.	D, mt
4e.	Macrophytes (benthic macroflora)	Seafloor disturbance – trampling, plucking plants.	Physical damage to vegetation on the seafloor.	D, st or p
5.	Water	Water pollutants: liquid (leakage of oil derivatives into the water) and solid (litter, especially plastics).	Deterioration of habitat conditions and threat to marine organisms.	D, mt

Item	Component of the environment	Type of influence	Influence effects	Influence Assessment
			Bad condition of formal bathing areas – oil-derived pollutants.	
6.	Air and acoustic climate	Increased vessel traffic. Intensified practising of motor and non-motor water sports.	Deterioration of ambient air quality by sulphur and nitrogen compounds (SO _x and NO _x), particulate matter (PM) and volatile organic compounds (VOC).	D, mt
7.	Land surface – seafloor	No influence	No impact	0
8.	Landscape	Dune and beach disturbance as a result of trampling, destruction and littering of habitats by tourists. Introduction of artificial elements into the landscape over and under the water. Intensified practising of motor and non-motor water sports.	Formal bathing sites (crowded spaces and coastal infrastructure) – negative impact on landscape of the coastal area. Occupation of coastal area by infrastructure (e.g. marinas, havens). Damage to reed fields and other natural habitats that constitute landscape. Degradation of natural environment of seaside regions by numerous forms of active recreation.	D, mt
9.	Climate	No influence	No impact	0
10.	Natural resources	No influence	No impact	0
11.	Monuments (including underwater cultural heritage)	Disturbance of seafloor. Occupation of coastal area by tourism infrastructure (e.g. marinas, havens).	Physical damage or destruction of cultural heritage (e.g. wrecks, underwater graveyards, sunken settlements, etc.) by ship anchors and predatory diving.	D, p
12.	Material assets	Aiming to maximise profits from tourism, sport	Increase in income of residents	D, lt

Item	Component of the environment	Type of influence	Influence effects	Influence Assessment
		and recreation, impact on spatial development and transformation.	of coastal municipalities, increase in the attractiveness of the region, increase in consumption of goods.	

D – Direct influence I – Indirect influence t – Temporary influence st – Short-term influence mt – Medium-term influence lt – Long-term influence p – Permanent influence 0 – No influence

Scientific research

Works undertaken to acquire scientific knowledge can indirectly make a positive contribution to biodiversity, as they update knowledge about biological components and can contribute to their conservation, and thus, to increase in biodiversity. Activities relating to scientific research have no measurable impact on terrestrial animal and plant species and parameters of terrestrial marine habitats. Only the results of such research may have a significant positive impact on nature conservation, but activities preceding their obtaining should not affect the objects of the research.

It has been recognised that activities relating to scientific research do not pose a significant threat to birds, mainly due to their small area of influence. Results of these studies may have a significant positive impact on the protection of birds and their habitats, but this does not yet apply to the activities aimed at obtaining these results. Therefore, the lack of significant impacts of this function of Polish Sea Areas on birds was indicated. Scientific research should not pose a significant threat or impact on marine mammal populations. Scientific research of the seafloor and ichthyofauna, which consist in mainly collection of material samples (e.g. benthic organisms, fish, sediments), will not affect macrophytes or fish, as samples are taken locally from small areas or with limited fishing effort.

Due to the scale of the research activities, any impact from seafloor intervention works is considered to be insignificant for the underwater landscape.

A list of expected significant impacts resulting from the implementation of the scientific research function in Polish Sea Areas is presented in Table 8. together with the assessment of their impact on particular components of the environment.

Table 8.24. Characteristics and evaluation of predicted significant impacts relating to the implementation of the basic function of **scientific research** in Polish Sea Areas and their impact on the components of the environment

Item	Component of the environment	Type of influence	Influence effects	Influence assessment
1.	Biodiversity	No significant influence	No impact	0
2.	People (including health and living conditions)	No significant influence	No impact	0
3.	Animals			
3a.	Beach invertebrates	No significant influence	No impact	0
3b.	Amphibians and reptiles	No significant influence	No impact	0
3c.	Terrestrial mammals	No significant influence	No impact	0
3d.	Macrozoobenthos (benthic macrofauna)	No significant influence	No impact	0
3e.	Fish (ichthyofauna)	No significant influence	No impact	0
3f.	Birds (avifauna, ornitofauna)	No significant influence	No impact	0
3g.	Marine mammals	No significant influence	No impact	
4.	Plants			
4a.	Dune vegetation	No significant influence	No impact	0
4b.	Cliff vegetation	No significant influence	No impact	0
4c.	Coastal meadows vegetation	No significant influence	No impact	0
4d.	Coastal reed vegetation	No significant influence	No impact	0
4e.	Macrophytes (benthic macroflora)	No significant influence	No impact	0
5.	Water	No significant influence	No impact	0
6.	Air and acoustic climate	No significant influence	No impact	0
7.	Land surface – seafloor	No significant influence	No impact	0
8.	Landscape	No significant influence	No impact	0
9.	Climate	No significant influence	No impact	0
10.	Natural resources	No significant influence	No impact	0
11.	Monuments (including underwater cultural heritage)	No significant influence	No impact	0
12.	Material assets	No significant influence	No impact	0

D – Direct influence I – Indirect influence t – Temporary influence st – Short-term influence mt – Medium-term influence lt – Long-term influence p – Permanent influence 0 – No impacts
Impact – – Unspecified influence

Aquaculture

The type of impact of aquaculture depends on whether the aquaculture concerns plants or animals. Cultivation of plants will have an indirect and positive impact on the environment, as it will reduce the local concentration of biogens and the growing plants will provide a new habitat for fish and invertebrates. Moreover, it is the cultivation of endangered or rare plant species that may contribute to increase their resources in Polish Sea Areas. In the case of animal breeding, e.g. mussels or fish, water and sediments may be contaminated with faecal and organic matter, which will constitute, among others, an additional source of biogenic salts in the environment and contribute to the increase in eutrophication of waters in the breeding area. This may adversely affect the qualitative and quantitative structure of macrophytes. The duration of both positive and negative impacts of aquaculture depends on the time of cultivation or breeding. Aquaculture can have a significant impact on water by introducing artificial substrates, such as ropes, which are intended to increase the breeding area of e.g. bivalves. The external supply of food for the growth of aquaculture can contribute to the eutrophication of water and, consequently, to temperature changes.

A dangerous negative impact associated with aquaculture may be the introduction of new, market-oriented species into aquaculture – without previous gaining of knowledge. This may pose a threat to biodiversity at the level of the whole Baltic ecosystem. In uncontrolled situations bred organisms may enter the environment. These impacts are direct and may affect the qualitative structure of species on a long-term or permanent basis. Some impacts relating to fish breeding may be similar to those of terrestrial aquacultures. Fish farming, carried out in large ponds, is an extensive system that can generate semi-natural landscapes of high biodiversity value. Aquaculture can be an opportunity to increase biodiversity by creating new habitats for other species and support the sustainable development of endangered/rare species breeding. Algae cultivation, on the other hand, can have a positive impact on the environment by reducing eutrophication and increasing oxygenation of waters. The impact of the discussed function is both direct and indirect, and long-term (Gil 2009).

The main function of aquaculture is to provide people with food. Aquaculture has a positive impact on people, with the aim of increasing production of food, and to a lesser extent other products. It increases the availability of consumable fish and other usable organisms. However, intensive marine aquaculture also has a negative side. These breedings cause intense pollution of waters and the seafloor. Populations of cultivated or bred organisms, as a result of genetic drift and inbreeding, have a poor gene pool, and therefore, are susceptible to diseases and require large quantities of antibiotics, which are later consumed by humans.

Due to its location, aquaculture has no measurable impact on terrestrial animal and plant species or parameters of terrestrial habitats situated close to the sea.

Aquaculture can have a very negative impact on ichthyofauna. Aquaculture usually involves intensive breeding or cultivation of animal or plant organisms. Animal organism breeding results in the release into the environment of a significant amount of organic matter that increases the eutrophication of waters and significantly contributes to the hypertrophy of the basin where it is implemented. With the organic matter entering the waters, other bioactive substances, such as various types of medicines, including hormonal drugs and other substances enriching feed used for animal feeding, are also supplied. In uncontrolled situations bred organisms may enter the environment. Algae cultivation, on the other hand, can have a positive impact on the environment by reducing

eutrophication and increasing oxygenation of waters. The impact of the discussed function is both direct and indirect, and long-term.

Aquaculture is not expected to have a significant impact on avifauna. Aquaculture may have a minor positive impact on birds by increasing their food base locally (local eutrophication of water resulting in an increase in benthic biomass, use by birds of fish bred in aquaculture), but this impact is assessed as insignificant.

Aquaculture is also a function that has the potential to have a negative impact on marine mammals. The stage of preparation, i.e. dredging and adaptation of the basins prepared for it, during which noise is generated, should be taken into account. This, in turn, will have a direct impact on marine mammals, by scaring them temporarily or permanently off their feeding grounds. Pollutants coming out of the breeding directly to the basin may decrease the quality of the living environment and affect the food base of marine mammals.

The function of aquaculture has a significant impact on the air and acoustic climate, land surface, climate and natural resources. The impact on the landscape can be both positive and negative. At present, in Polish Sea Areas this function is planned for the future, but the types of impacts can be similar to inland breeding. On the one hand, by disturbing the seafloor structure and over-exploitation of aquaculture, the natural habitats of the underwater landscape may be destroyed. However, sustainable fish or macrophyte breeding is a system that can generate semi-natural landscapes of high aesthetic value and habitats of high ecosystem importance, to such extent that some of the Polish ponds have been included in the Natura 2000 network. Creation of new ecosystems may affect the landscape in a long-term perspective and become an excellent form of land use (Gil 2009). A list of expected significant impacts resulting from the implementation of the aquaculture function in Polish Sea Areas is presented in (Table 8.) together with the assessment of their impact on particular components of the environment.

Table 8.25. Characteristics and evaluation of predicted significant impacts relating to the implementation of the basic function of **aquaculture** in Polish Sea Areas and their impact on the components of the environment

Item	Component of the environment	influence	Influence effects	Influence assessment
1.	Biodiversity	Introduction of bred or cultivated organisms into the environment. Disturbance of seafloor with cultivation and breeding structures. Environmental pollution, including degradation of the local benthic environment as a result of sedimentation of organic matter from cultivation.	Threat to biodiversity (only if new species are released into the natural environment without control). Domestication of species and loss of genetic diversity. Possibility to enhance biodiversity through creation of new habitats for other species – sustainable species development.	D or I, It D, It
2.	People (including health and living conditions)	Environmental pollution, including degradation of the local benthic environment as a result of sedimentation of organic matter from cultivation.	By degradation, it has an indirect negative influence of people. Aquaculture has a positive impact on people by providing them with food and raw materials for cosmetics and pharmaceuticals.	D, I, It
3.	Animals			
3a.	Beach invertebrates	No significant influence	No impact	0
3b.	Amphibians and reptiles	No significant influence	No impact	0
3c.	Terrestrial mammals	No significant influence	No impact	0
3d.	Macrozoobenthos (benthic macrofauna)	Environmental pollution, including degradation of the local benthic environment as a result of sedimentation of organic matter from mussel farms. Decrease in concentration of biogens in water (plant cultivation).	Degradation of macrozoobenthos communities in breeding grounds as a result of changing sedimentary conditions. Creation of habitat for phytophilous macrofauna species.	D and O. It
3e.	Fish (ichthyofauna)	Environmental pollution, including degradation of the local benthic environment as a result of sedimentation of organic matter from cultivation. Increased water fertility and concentrations of bioactive substances such as drugs, hormones.	Degradation of macrozoobenthos communities in the area of fish feeding grounds. Increase in concentrations of harmful substances in fish from the natural environment in farming grounds.	D, I, It

Item	Component of the environment	influence	Influence effects	Influence assessment
		Possible escape of bred organisms to the environment. Reducing nutrient concentration in water and creating new habitats for fish (plant cultivation).	Obstacles on fish migration routes. Increase of reservoir trophy. Creation of habitat for phytophilous macrofauna species.	
3f.	Birds (avifauna, ornitofauna)	No significant impacts	No impact	0
3g.	Marine mammals	Noise generated during the process of preparing the basin for aquaculture.	Dredging and adaptation processes may involve the generation of noise, which can scare off marine mammals out of their living and feeding grounds, and reduce the quality of life of marine mammals through the introduction of pollutants from aquaculture into the basin.	D, p
4.	Plants			
4a.	Dune vegetation	No significant influence	No impact	0
4b.	Cliff vegetation	No significant influence	No impact	0
4c.	Coastal meadows vegetation	No significant influence	No impact	0
4d.	Coastal reed vegetation	No significant influence	No impact	0
4e.	Macrophytes (benthic macroflora)	Environmental pollution, including degradation of the local benthic environment as a result of sedimentation of organic matter from animal farms. Introduction of vegetation to aquacultures – reducing nutrient concentration in water and creating new habitats for fish (plant cultivation).	Animal breeding can shade the seafloor by developing organisms on structures. Changes in qualitative and quantitative structure of macrophytes – cultivation of endangered/rare species would contribute to increase in their resources.	I, st or mt or lt
5.	Water	Introduction of artificial substrates (e.g. ropes) into water to increase the area of aquaculture, food provision. Introduction of vegetation to aquacultures.	Negative: Change in the structure of water use. Water eutrophication, change of water temperature. Positive: Water treatment.	D, st

Item	Component of the environment	influence	Influence effects	Influence assessment
6.	Air and acoustic climate	No significant influence	No impact	0
7.	Land surface – seafloor	No significant influence	No impact	0
8.	Landscape	Introduction of artificial elements into the underwater landscape (e.g. ropes).	Creation of half-natural landscapes. Damage to natural habitats being a component of a natural landscape. Modification of the natural landscape as a result of seafloor disturbance during creation and operation of aquacultures. Changing landscape (possible improvement) as a result of spatial development.	D, lt
9.	Climate	No significant influence	No impact	0
10.	Natural resources	No significant influence	No impact	0
11.	Monuments (including underwater cultural heritage)	No significant influence	No impact	0
12.	Material assets	No significant influence	No impact	0

D – Direct influence I – Indirect influence t – Temporary influence st – Short-term influence mt – Medium-term influence lt – Long-term influence p – Permanent influence 0 – No influence

Artificial islands and installations

One of the impacts resulting from the function of artificial islands and installations that may have an indirect impact on biodiversity is the disturbance of marine habitats and benthic (seafloor) feeding grounds during their construction and disassembling. Other impacts relating to the construction and repair of artificial islands, e.g. noise, can lead to forcing birds and mammals out of their habitats temporarily. Usually these are short-term or medium-term impacts (depending on the duration of the works). Permanent structural components submerged in water, e.g. piers and jetties, will provide a substrate for the growth of epiphytic organisms, which may contribute to the quantitative change in species and habitats occurring there. The artificial reef locally affects the species diversity of biocenoses and bioproduction. This will be a direct and permanent impact. Such an impact can be considered insignificant for biodiversity due to its small scale.

Noise from artificial island and installation construction works reduces the comfort of people living in the vicinity of the construction site. On the other hand, artificial islands and installations such as piers, jetties and marinas that have already been constructed increase the tourist attractiveness of the place. Installations relating to the acquisition of renewable energy or hydrocarbons are aimed at obtaining energy or raw materials for the production of energy, which has a positive impact on national economy, and consequently, on people. The construction of artificial islands and installations, especially the construction of piers and jetties, has a negative impact on macrophytes. In the place where works are carried out, macrophyte communities become destroyed, which means the so-called loss of a fragment of the habitat takes place (Dziaduch et al. 2015c). The effect of the impact, resulting from direct actions involved in this function, depends on the type of conducted works, including the type of sediment being removed. If pebbles and boulders overgrown by macroalgae are removed from the environment then the effect will be permanent as the communities will be irreversibly damaged. If, on the other hand, the stones are moved to another area of the seafloor, the effect is likely to have a medium-term impact, as macroalgae will cover them again restoring their communities within 3–4 years. If a sandy sediment with vascular plants is dredged, the effect will be similar, as once the cables are buried in the seafloor, the sandy sediments can be replanted by the vascular plants. The erection of artificial islands and installations is associated with increased traffic of people and vessels, which results in birds being scared off and forced out of their habitats (a direct impact). This applies to each stage of implementation of these projects (construction, exploitation, possible removal), which translates into a long-term impact. As a result of the implementation of such objects, the seafloor is disturbed, and often also permanently occupied. As a result, there is a temporary disturbance of the food base of diving benthophaguses and ichthyophaguses or permanent loss of the surface of habitat used by these birds as a feeding ground. In addition, the erection of numerous or extensive structures highly above the water surface may result in the birds being scared off their habitat, disturbance of their migration and increase in birds mortality due to collisions. This function will have a direct impact on marine mammals. It relates to activities which introduce into the environment the noise generated during investment works, such as building wind turbines and their removal. It will directly scare off sea mammals occurring in the vicinity, preventing them from feeding and breeding in these areas. Moreover, the area will be avoided by marine mammals during their migration. Another aspect of significant influence is the increased vessel traffic in areas designated for the erection of artificial islands and installations. It is also associated with increased noise in the construction area and increased likelihood of collisions between vessels and marine mammals. Another issue is the disturbance of

seafloor in areas designated for such investments, and thus, the increase in water turbidity, which significantly reduces the quality of life of marine mammals.

The erection of artificial islands and installations is associated with increased traffic of people and vessels, which results in birds being scared off and forced out of their habitats (a direct impact). This applies to each stage of implementation of these projects (construction, exploitation, possible removal/liquidation), which translates into a long-term impact. As a result of the implementation of such objects, the seafloor is disturbed, and often also permanently occupied. As a result, there is a temporary disturbance of the food base of diving benthophaguses and ichthyophaguses or permanent loss of the surface of habitat used by these birds as a feeding ground. In addition, the erection of numerous or extensive installations highly above the water surface may result in the birds being scared off their habitat, disturbance of their migration and increase in birds mortality due to collisions.

The function of artificial islands and installations will have a significant impact on the land surface. During the erection of the installations on the seafloor (jetty, pier), the original structure of sediments of the seafloor will be disturbed as a result of anchoring the installation. This impact will pose a threat to seafloor marine organisms by deterioration of habitat conditions and increase in water turbidity. Chemicals and biogens may also be released from the sediment. This impact will be of short-term duration and will only take place at the construction stage.

No impact of the function on water, air and acoustic climate, climate and natural resources. Construction of artificial islands will have a short-term impact on the change of the underwater landscape, only at the construction stage, by disturbing natural habitats being part of the sea landscape. Artificial islands protruding above the seafloor will have a long-term (permanent) and direct impact on underwater and coastal landscape. This function is associated with emergence of new elements in the sea, and therefore, has direct and long-term (permanent) impact on the landscape above the water level. Artificial islands such as piers, jetties, observation towers or vehicle and pedestrian paths leading to the beach, as a material component of the tourist product, has a direct impact on the attractiveness of the region. It allows for the development of tourism, which has a positive impact on the labour market, lowers the unemployment rate, increases the income of residents and municipalities, which directly translates into the living standards of residents and the possibility of taking advantage of material assets. A negative impact on the local community and tourism is also possible as a result of the implementation of a nuclear power plant. By occupying the beach, limiting access to the coastal zone and recreation opportunities, the attractiveness of the area will decrease, and thus, the income of the local community will drop. A list of expected significant impacts resulting from the implementation of function of artificial islands and structures in Polish Sea Areas is presented in (Table 8.) together with the assessment of their impact on particular components of the environment.

Table 8.26. Characteristics and evaluation of predicted significant impacts relating to the implementation of the basic function of **artificial islands and structures** in Polish Sea Areas and their impact on the components of the environment

Item	Component of the environment	Influence features	Impact	Influence assessment
1.	Biodiversity	Noise generated during construction, repair or disassembly of artificial islands and by users of the created islands or structures (e.g. piers or jetties). Disturbance of seafloor (marine habitats) during construction, repair or disassembly of artificial islands. Introduction of a new and artificial component of the environment – a substrate to be covered by organisms.	Animals leaving their habitats – scaring off animals. Physical destruction of benthic communities as well as feeding and spawning grounds of ichthyofauna can lead to the reduction in biodiversity. Quantitative changes in the number species and habitats.	l, st, mt D, lt
2.	People (including health and living conditions)	Noise generated during construction, repair or disassembly of artificial islands and by users of the created islands or structures (e.g. piers or jetties). Introduction of a new and artificial component of the environment – a substrate to be covered by organisms.	The noise generated at the construction stage is a nuisance to humans and their organisms. Piers and jetties enable water tourism and operation of sports and passenger vessels. Wind farms are used to acquire renewable energy. Drilling platforms acquire energy resources. Increasing the tourist attractiveness of specific area by building piers, jetties and marinas.	D, st D, lt D, lt D, lt
3.	Animals			
3a.	Beach invertebrates	No influence	No impact	0
3b.	Amphibians and reptiles	No influence	No impact	0
3c.	Terrestrial mammals	No influence	No impact	0

Item	Component of the environment	Influence features	Impact	Influence assessment
3d.	Macrozoobenthos (benthic macrofauna)	Disturbance of sediment structure during all kinds of seafloor works. Introduction of a new and artificial component of the environment – a substrate to be covered by organisms.	Physical destruction of natural macrozoobenthic communities. Loss or creation of new benthic habitats – change in the natural character of benthic habitats.	D, mt or p
3e.	Fish (ichthyofauna)	Noise generated during construction, repair or disassembly of artificial islands and by users of the created islands or structures (e.g. piers or jetties). Introduction of a new and artificial component of the environment – a substrate to be covered by organisms.	Loss or creation of new benthic habitats which generate habitats and feeding grounds characterised by new features. This way, they make it possible to change the qualitative and quantitative composition of ichthyofauna. Scaring off fish and/or causing local mortality of fish from the impact area. Change in the natural character of benthic habitats, thereby, change in the benthophagus food base.	D, st and lt
3f.	Birds (avifauna, ornitofauna)	Disturbance of seafloor (marine habitats) during construction, repair or disassembly of artificial islands. Noise generated during construction, repair or disassembly of artificial islands and by users of the created islands or structures (e.g. piers or jetties). Introducing new artificial elements into the environment: piers, jetties, observation towers.	Scaring birds off and forcing them out of their habitats, including limited access to feeding grounds resulting in deterioration of bird condition and increased mortality. Disturbance of bird food base. Mortality as a result of collisions in case of structures protruding highly above the water surface. Making bird migration difficult	Mainly D, lt

Item	Component of the environment	Influence features	Impact	Influence assessment
			/ changing bird migration routes (barrier effect) in case of extensive structures protruding highly above the water surface – especially if many or extensive structures protruding highly above the water surface are in place, possible change of bird migration routes.	
3g.	Marine mammals	Increased vessel traffic in the area of the investment at all stages of the implementation, also during operation, generates noise and promotes the possibility of collisions with marine mammals. Noise generated during construction, repair or disassembly of artificial islands and by users of the created islands or structures (e.g. piers or jetties). Introduction of the suspension into the water.	As a result, marine mammals are being scared off their feeding and breeding grounds. It may also hinder the migration of marine mammals. Introduction of suspended matter into water reduces the quality of life of marine mammals.	D, lt
4.	Plants			
4a.	Dune vegetation	No influence	No impact	0
4b.	Cliff vegetation	No influence	No impact	0
4c.	Coastal meadows vegetation	No influence	No impact	0
4d.	Coastal reed vegetation	No influence	No impact	0
4e.	Macrophytes (benthic macroflora)	Disturbance of sediment structure during all kinds of seafloor works.	Physical destruction of natural macrophytic communities.	D, mt o p
5.	Water	No influence	No impact	0
6.	Air and acoustic climate	No influence	No impact	0
7.	Land surface – seafloor	Disturbing original structure of sediment during installation of a structure in the seafloor.	Disturbing original structure of the substrate.	D, mt D, st

Item	Component of the environment	Influence features	Impact	Influence assessment
			Deterioration of habitat conditions. Water turbidity, release of biogens and chemicals from sediments to the water.	D, st
8.	Landscape	Introduction of artificial elements into the landscape over and under the water. Disturbance of seafloor by structures mounted to it.	Change of the underwater landscape due to disturbance of the seafloor surface, destruction of seafloor habitats. Diversification and change of the natural landscape of the sea.	D, st, mt D, lt (p)
9.	Climate	No influence	No impact	0
10.	Natural resources	No influence	No impact	0
11.	Monuments (including underwater cultural heritage)	Introducing new artificial elements into the environment: piers, jetties, observation towers or vehicle and pedestrian paths leading to the beach.	Increase in the benefits from the development of tourism, increase in income of residents of coastal municipalities, increase in the attractiveness of the region.	D, lt
12.	Material assets	Introducing new artificial elements into the environment: piers, jetties, observation towers or vehicle and pedestrian paths leading to the beach.	Increase in the benefits from the development of tourism, increase in income of residents of coastal municipalities, increase in the attractiveness of the region. Possible negative impact on tourism and recreation caused by the construction of a nuclear power plant (occupation of beach area, limited access to the coastal area), resulting in lower	D, lt

Item	Component of the environment	Influence features	Impact	Influence assessment
			interest in the region and decreased incomes of the local community.	

D – Direct influence I – Indirect influence t – Temporary influence st – Short-term influence mt – Medium-term influence lt – Long-term influence p – Permanent influence 0 – No influence

7.1.2 Assessment of anticipated significant impacts on the protection objectives and protected objects for Natura 2000 areas

In general, significant negative impacts in relation to Special Protection Areas and Special Areas of Conservation in the Natura 2000 network prevent or seriously disturb the achievement of the designated protection objectives concerning these areas. Activities resulting from the implementation of particular functions in the basins may have a significant impact on maintenance of the proper state of protection of the protected objects in these areas, permanently or temporarily disturb the integrity of the area or disturb the cohesion of the network. The significant negative impact on the maintenance of the proper state of protection of the protected objects should be understood as leading to significant reduction or fragmentation of the area of habitat occupied by protected object, significant disturbance of stock of the protected population or its age structure, significant negative impact on the possibility of breeding, resting during migration, feeding, moulting or wintering of birds from these populations. On the other hand, the impacts characterised by a significant positive influence will result in a major facilitation of the implementation of the designated protection objectives concerning these areas, improvement of the protection status of the protected objects, increase in the area integrity or cohesion of areas that belong to the Natura 2000 network.

It should be assumed that the implementation of activities associated with functions set out in the Plan with respect to the protected objects in Natura 2000 areas will involve the impacts specified in Chapter 8.1.

8.3.2.1. Special Protection Areas of Birds (SPAs)

The assessment of the predicted significant impacts in relation to the objectives and protected objects of SPAs in the Natura 2000 network has been performed for the SPAs covered by spatial planning, i.e. PLB990003 Pomeranian Bay, PLB320002 Świna River Delta, PLB990002 Baltic Coastal Waters, PLC990001 Słupsk Bank, PLB220005 Puck Bay and PLB220004 Vistula River Outlet. A simplified assessment was also performed for SPAs outside the planning area but in its close vicinity.

The impact assessment took into account differences in protection needs and types of threats to breeding and non-breeding bird populations (wintering or migrating population). Breeding populations of waterfowls are protected within the areas PLB320002 Świna River Delta, PLB220005 Puck Bay and PLB220004 Vistula River Outlet. In relation to the designated functions of Polish Sea Areas, the threats to the breeding populations under protection in different SPAs are the same, although they may differ in their intensity. Non-breeding bird populations (wintering or migrating populations) are protected in all the six SPAs mentioned above. Also for the non-breeding populations, the same function of Polish Sea Areas involves the same potential threats, the actual intensity of which may vary between SPAs. Functions of Polish Sea Areas may affect the objectives and protected objects of a specific SPA, its integrity or the coherence of the Natura 2000 area network. The types of impacts of Polish Sea Area functions together with their effects and indication of their nature (positive, negative, differentiated, direct, indirect, permanent, temporary, short-, medium-, long-term, no significant impact) are the same for the protected objects of SPAs as for the “birds” component of the environment in Chapters 8.1 and 8.3.1 hereof. The following description further indicates which function of Polish Sea Areas may affect the protection objectives or integrity of a SPA or coherence of network of these areas. The decrease in the intensity of a potential impact

on the analysed areas as a result of the introduction of the Draft Plan was taken into account (developed on the basis of the map of designated basins and sub-basins, general provisions, explanatory memorandum to the detailed decisions concerning particular basins of the Plan and analysis of the provisions of the Draft Plan contained in Chapter 8.2 hereof).

In Table 8. the Special Protection Areas have been assigned with the basins, which are fully or partially located within them.

I. Special Protection Areas (SPAs) in the area covered by the Plan

Table 8.2. Summary of Special Protection Areas (SPAs) of the Natura 2000 network located within the range of potential impacts of the Draft Plan

Item	Natura 2000 PLB or PLC area	Basin*	
		Marking	Basic function
1.	PLB990003 Pomeranian Bay	09.B, 05.B	National security and defence
		02.C, 06.C, 07.C, 19.C	Coastal protection
		01.lp, 04.lp, 17.lp	Functioning of port or haven
		12.O	Protection of the environment and nature
		08.P	Reserve for future development
		11.Pw, 20.Pw, 13.Pw	Reserve for future development with extraction allowed
		10.T, 18.T	Transport
2.	PLB320002 Świna River Delta	03.O	Protection of the environment and nature
3.	PLB990002 Baltic Coastal Waters	27.B, 67.B	National security and defence
		19.C, 26.C, 31.C, 37.C, 38.C, 40.C	Coastal protection
		39.I	Technical infrastructure
		22.lp, 28.lp, 35.lp	Functioning of port or haven
		21.K, 25.K	Exploration, investigation of mineral and fossil resources and extraction from the resources
		32.O	Protection of the environment and nature
		24.P, 33.P, 41.P, 30.P	Reserve for future development
		20.Pw	Reserve for future development with extraction allowed
		23.T, 29.T, 36.T, 65.T, 34.T, 54.T	Transport
4.	PLB220005 Puck Bay	86.lp, 87.lp, 88.lp	Functioning of port or haven
		84.L	Environmentally conditioned local development
		85.M	Multifunctional economic development
		94.O	Protection of the environment and nature
5.	PLB220004 Vistula River Outlet	85.M	Multifunctional economic development
6.	PLC990001 Słupsk Bank	42.O	Protection of the environment and nature
		34.T	Transport

Due to the fact that the coastal area where water birds can breed is narrower and more limited in size than water areas suitable for wintering and resting of this group of birds during migration, and due to the fact that this area is more diversified in terms of habitats than the sea basins, the assessment of the impact of the Draft Plan on breeding bird populations has been carried out separately for each of Natura 2000 areas where such birds are under protection. On the other hand, the assessment of impact of the Plan on non-breeding populations of birds (wintering, migrating populations) was made jointly for all Natura 2000 areas where such birds are under protection, but taking into account the differences in the provisions of the Plan for each area.

Assessment of impact of the Draft Plan on water bird breeding populations (for areas PLB320002 Świna River Delta, PLB220005 Puck Bay, PLB220004 Vistula River Outlet)

The marine part of the area **PLB320002 Świna River Delta** coincides with the sea part of the Woliński National Park (WNP) and POM.03.O. basin. Protective measures undertaken by the national park allowed to maintain good condition of habitats suitable as breeding grounds for some water bird species (Table 5.18). The basic function of basin POM.03.O. is nature conservation, while the functions allowed within the basin include fishing (R), tourism, sport and recreation (S), cultural heritage (D) and scientific research (N). With regard to avifauna, the significant positive impact of the nature conservation function was indicated above. Implementation of the cultural heritage and scientific research functions (in relation to the activities carried out under the function and not the results of this research) will not have a significant impact on avifauna. On the other hand, activities relating to the implementation of the functions of fishing and tourism, sport and recreation can have a significant negative impact on bird species and their habitats, which is described in detail above (Chapter 8.3.1). The POM.03.O basin sheet does not indicate any prohibitions or limitations concerning execution of functions of fishery or tourism, sport and recreation, which are allowed for execution in the Woliński National Park to a limited extent. The areas within the boundaries of the Woliński National Park where fishing and tourist traffic are allowed are subject to separate regulations. However, among the threats to the implementation of the protection objectives in the area of the Woliński National Park, illegal fishing and increased tourist traffic as well as the need for greater control of this traffic, among others, due to illegal departures from the designated tourist routes, have been pointed out (Ordinance of the Minister of Environment of 22 February 2017 on the Protection Tasks for the Woliński National Park). This entails the possibility of occurrence of all the above mentioned threats to avifauna relating to implementation of functions of fishery and tourism, sport and recreation, which are not reduced in any way by the provisions contained in the Plan, and the possibility of occurrence of a significant negative impact of these functions on the objectives and objects of protection of the area PLB320002 Świna River Delta. In the basin it is prohibited to acquire renewable energy and to explore, investigate and extract mineral and fossil resources that could have a significant negative impact on avifauna, but this prohibition on implementation of these functions was not introduced by the Plan, but results from separate regulations. The Plan also does not introduce any new provisions concerning environmental protection and nature conservation, which would not result from the provisions of the law already in force and which could have a significant positive impact on the objectives and objects of protection of the area PLB320002 Świna River Delta. To sum up, the Draft Plan does not introduce any additional arrangements in this basin (other than the prohibitions binding in the Woliński National Park), which could limit the impact of the implementation of functions of Polish Sea Areas objectives and objects of protection of the area PLB320002 Świna River Delta and its integrity.

The objectives and objects of protection, integrity of the area PLB320002 Świna River Delta or its integrity with other areas in the network may also be affected by the provisions of the Draft Plan in relation to basin POM.02.C, which surrounds basin POM.03.O from the sea side. The basic function in basin POM.02.C is coastal protection, while the allowed functions are those marked with letters R, S, T, I, Ip, D, N, K and W. These functions include those (C, R, S, T, I, Ip, K and W) which may have a potentially significantly negative impact on the avifauna, including implementation of protection objectives, maintenance or improvement of protection status of the protected objects, preservation of the integrity of area PLB320002 Świna River Delta and its integrity with other SPA areas. Implementation of these functions close to the border with basin POM.03.O in a manner which would be transferred to this basin (e.g. with high noise intensity) may lead to significant disturbance in the achievement of the protection objectives or maintenance of the proper conservation status of the bird species and habitats protected in this SPA. It can also limit the integrity of the Natura 2000 network. Within the basin POM.02.C. the sub-basin 02.C.800S was also designated for the development of the tourism function, where creation of formal bathing areas and introduction of new elements of tourist infrastructure to selected locations were limited. Moreover, the borders of this basin (in accordance with previous recommendations of authors of the Prediction) have been moved away from the western side from the borders of area PLB320002 Świna River Delta (basin POM.03.O) so as not to promote the development of the tourism function in the areas where populations of breeding birds, protected within the indicated SPA, can nest and lead their young. With regard to function C in basin 02.C, apart from emergency situations, the execution of this function has been limited in a way that will significantly disturb bird breeding (in period from 1 March to 31 August). The same limitation was indicated for the erection of artificial islands and installations (function W). As part of the Ip function, sub-basin 02.300Ip was designated for a fishing haven in Międzyzdroje, where identical limitations were introduced. Location of the implementation of function K was limited to area and provisions included in license 9/2017/Ł, however, in relation to this function no prohibition was indicated for its implementation in a way that could disturb bird breeding. Indication of such limitation is particularly important in the context of the inclusion of artificial nourishment with sand masses as part of function K, the possible impact of which on birds during the breeding season was identified in Chapter 8.3.1. Function E is prohibited within the boundaries of the basin, but this is due to separate regulations. The Draft Plan does not introduce any additional limitations (which would not have resulted from separate regulations) for functions R and T in basin 02C, which may significantly affect the avifauna. The indicated limitations for the implementation of functions C, S, I and W in basin 02C are appropriate for the reduction of a negative impact of implementation of these functions on breeding populations of water birds protected within the area PLB320002 Świna River Delta. The lack, in the Draft Plan, of regulations concerning implementation of functions R and T in basin 02C is also acceptable when analysing the needs of objectives and objects of protection of area PLB320002 Świna River Delta at a level of the strategic document.

The following basins were designated in area **PLB220005 Puck Bay**: POM.84.L, POM.86.Ip, POM.87.Ip, POM.88.Ip and a fragment of basin POM.85.M. Authors of the Plan indicated the necessity to prepare detailed plans for basins having these basic functions assigned, i.e. for basins POM.84.L and POM.85.M, as well as for the coastal area covering the basins with the basic function of the functioning of port or haven (Ip), including basins 86.Ip, 87.Ip and 88.Ip. The basic function of basin POM.84.L is environmentally conditioned local development, and the allowed functions

include: aquaculture (A), scientific research (N), cultural heritage (D), technical infrastructure (I), functioning of port or haven (Ip), national security and defence, coastal protection (C), fishery (R), artificial islands and installations (W), transport (T), tourism, sport and recreation (S). The basic function of basin POM.85.M is multifunctional economic development (M), and the allowed functions are the same as in basin 84L. The basic function in basins POM.86.Ip, POM.87.Ip and 88.Ip is the functioning of port or haven. In basin POM.86.Ip the following functions are allowed: N, D, I, B, C, R, W, T, S. In basin POM.87.Ip the following functions are allowed: N, D, I, B, R, W, T, S. In basin POM.88.Ip the following functions are allowed: N, D, I, B, C, R, W, T, S.

In the Plan, a single basin (POM.84.L) with the basic function of environmentally conditioned local development was designated, “to ensure the spatial integrity of valuable sea area in terms of its natural values and to enable sustainable use of these values by human. The purpose of such designation is to implement one of the elements of the ecosystemic approach, i.e. a permanent and sustainable use of ecosystemic resources and services by current and future generations. Functions allowed in this basin include those which are synergic in relation to the environmentally conditioned local development, i.e. fishery, cultural heritage, tourism, sport and recreation and relating artificial islands and installations (i.e. mainly jetties), scientific research, technical infrastructure, functioning of port or haven, coastal protection and transport”. In basin 84L “aquaculture is also allowed, in particular to improve the state of the sea water environment, i.e. on the basis of macroalgae and mussel farming”.

Therefore, it is not possible to precisely determine the type of impacts generated by this function. For this reason, no assessment has been made for this function, including issues relating to avifauna. On the other hand, the definition of function of the multifunctional economic development (M) indicates the parallel implementation of economic functions (tourism, transport, port infrastructure development or fishery) and coastal protection. The types of impact generated by multifunctional economic development will therefore be the same as those of the listed functions and depend on the type of development. Therefore, no separate assessment has been prepared for this function, also with regard to avifauna. For the implementation of the functions marked with letters Ip, I, T, R, S and W, the possibility of a significant negative impact on avifauna has been indicated above in the present document (Chapter 8.3.1). For function C, this impact can be both significantly negative and positive. On the other hand, the activities carried out under functions D, N and A will not involve any significant impact on avifauna, including the objectives and objects of protection of area PLB220005 Puck Bay.

In the 84L basin sheet limitation was introduced for the execution of function S concerning the prohibition of establishing formal bathing areas and areas used for bathing, launching, mooring and anchoring of vessels for the purpose of the function: in the area of reed fields, in sub-basins 84.719.R (Płutnica River Outlet) and 84.720.R (Reda River Outlet), in the area of the Seagull Sandbar, in the reserves and their safety zones.

Implementation of functions I, C and W in this basin was limited to the way which “does not have a significant negative impact on bird breeding or does not affect the coast and other areas of the basin where birds breed in the period from 1 March to 31 August” and “does not have a significant impact on welfare of birds wintering and resting during migration and in the period when they occur in large numbers from the beginning of November to the end of April”.

Such a provision will significantly reduce a negative impact of the implementation of functions I, C and W in basin POM.84L on breeding populations of water birds, including the objectives and objects of protection of area PLB220005 Puck Bay. The basin sheet also includes no limitations concerning function T, which may have a significant negative impact on the objectives and objects of protection of area PLB220005 and its integrity. However, the function of transport is not the basic function in the basin (but only allowed one), and its execution within the closed bay is not likely to intensify significantly in the period for which the spatial development plan is created (10 years). Therefore, it can be assumed that during the period covered by the Plan the impact of function T in basin POM.84.L on breeding populations of water birds will remain at a level similar to the current one (no deterioration of the proper conservation status of breeding populations in area PLB220005 Puck Bay due to the implementation of function T at the same level as at present).

The POM.85.M basin sheet includes limitations on the implementation of functions I (also in sub-basin 85M.204I), C to the way which “does not have a significant negative impact on bird breeding or does not affect the coast and other areas of the basin where birds breed in the period from 1 March to 31 August”. Such a provision will significantly reduce a negative impact of the implementation of functions I, C and W in basin POM.84L on breeding populations of water birds, including the objectives and objects of protection of area PLB220005 Puck Bay. Moreover, the location of technical infrastructure (function I) and artificial islands and installations (function W) were prohibited in sub-basins 85M.901B, 85M.640C and 85M.641C, the first two of which are located within the area PLB220005 Puck Bay.

Implementation of function W was prohibited in sub-basins 85M.900D, 85M.901B, 85M.640C and 85M.641C. In the remaining part of the basin, implementation of this function was limited to methods which “do not have a significant negative impact on bird breeding or does not affect the coast and other areas of the basin where birds breed in the period from 1 March to 31 August”.

The 85M basin sheet contains no limitations concerning the implementation of functions R, T and S that could reduce a negative impact of these functions of Polish Sea Areas on objectives and objects of protection of area PLB220005 Puck Bay with respect to breeding populations of water birds and the integrity of the above-mentioned SPA.

In basin POM.87.Ip no prohibitions or restrictions on the implementation of functions I and W were introduced, while in basin 88.Ip the implementation of function W was limited to methods which “do not have a significant negative impact on bird breeding or does not affect the coast and other areas of the basin where birds breed in the period from 1 March to 31 August”.

An analogous limitation was introduced in basin POM.88.Ip, where the implementation of function C was allowed. It may reduce a negative impact of the implementation of functions I, C and W on breeding populations of birds, protected within the area PLB220005 Puck Bay. In basin POM.86.Ip implementation of functions I and W is limited to methods which “do not have a significant negative impact on bird breeding or does not affect the coast and other areas of the basin where birds breed in the period from 1 March to 31 August”.

In POM.86.Ip, POM.88.Ip and POM.87.Ip basin sheets there are no limitations on the implementation of functions T, R and S, which may have a significant negative impact on the objectives and objects of protection of area PLB220005 Puck Bay and its integrity.

The marine part of Natura 2000 area **PLB220004 Vistula River Outlet** is located within the boundaries of sub-basin 85M.714R, separated within basin POM.85M. At the request of authors of the Prediction, the borders of the adjacent sub-basin 85M.800S have been moved away so that this sub-basin did not pass through the area PLB220004 Vistula River Outlet. It is a highly important area (especially the Seagull Shoal reserve) for breeding populations of water birds. There are breeding colonies of the sandwich tern *Thalasseus sandvicensis*, which are unique on the national scale, and breeding colonies of the ringed plover *Charadrius hiaticula* – endangered and/or listed in Appendix I to the Birds Directive. On the other hand, in the POM.85M basin sheet (including area PLB220004 Vistula River Outlet), in relation to function S, there are no provisions that would introduce prohibitions, limitations or conditions concerning the use of the basin which could sufficiently limit a negative impact of tourism, sport and recreation on the avifauna, including the avifauna which uses sub-basin 85.M.800S. This sub-basin was designed for the development of the tourist function, which should not be developed within the boundaries of the Seagull Shoal Nature Reserve (located within the area PLB220004 Vistula River Outlet), in the coastal area which is a feeding and chick leading ground for birds breeding there and representing rare and valuable species. The authors of the Plan considered the claim, as evidenced by designation of sub-basin 85.M.714.R.

The basic function in basin POM.85.M is multifunctional economic development (M), and the allowed functions are those marked with letters C, T, R, S, I, Ip, B, D, N, W and A. Among these functions, those marked as T, R, S, I and W may significantly negatively affect the objectives and objects of protection of the SPA, its integrity or coherence with other areas in the Natura 2000 network. Function C can have both a significantly negative and a significantly positive impact on the avifauna. However, functions D, N and A do not have any significant effects on this group of animals (Chapter 8.3.1). In 85M basin sheet implementation of functions I, C and W was limited to methods which “do not have a significant negative impact on bird breeding or does not affect the coast and other areas of the basin where birds breed in the period from 1 March to 31 August”. This provision will limit a negative impact of the implementation of these functions on the objectives and objects of protection of area PLB220004 Vistula River Outlet in relation to the populations of breeding water birds and the integrity of the area and its coherence with other SPAs. In the POM.85.M basin sheet there are no limitations on the implementation of function T.

Assessment of the impact of the Draft Plan on non-breeding water bird populations (for Natura 2000 areas PLB990003 Pomeranian Bay, PLB320002 Świna River Delta, PLB990002 Baltic Coastal Waters, PLB220005 Pomeranian Bay, PLB220004 Vistula River Outlet, PLC990001 Słupsk Bank)

Within the boundaries of areas protected within the framework of the Special Protection Areas in the Natura 2000 network (SPAs), all possible functions provided for in the Plan (B, C, I, Ip, O, P, Pw, K, T, M, L) have been established as basic functions in the designated basins, except for function E, which is, however, a basic function in the basins adjacent to the SPAs. As a result, populations of non-breeding (wintering or resting during migration) water birds being under protection in these areas (PLB990003 Pomeranian Bay, PLB320002 Świna River Delta, PLB990002 Baltic Coastal Waters, PLB220005 Puck Bay, PLB220004 Vistula River Outlet, PLC990001 Słupsk Bank) may be exposed to the aforementioned (Chapter 8.3.1) significantly negative impacts resulting from the implementation of functions B, I, Ip, T and E and functions C and K, which, on the other hand, may also have a significantly positive impact on avifauna. Moreover, other functions, such as R, S and W, have been identified as functions allowed in these basins. Implementation of these functions may also involve a

significant negative impact on the objectives and objects of protection of SPAs in relation to populations of non-breeding water birds, as well as on the integrity of these areas or the cohesion of their networks. On the other hand, a negative impact of these functions of Polish Sea Areas may be reduced by introducing limitations on and conditions of the use of waters that overlap with SPAs. These provisions, included in the Draft Plan, are referred to in Chapter 8.2 hereof. The analysis of such restrictions and conditions of using the basins is presented below. It draws attention to the provisions which in any way contribute to reducing a negative impact of the implementation of functions of Polish Sea Areas on avifauna. It should be stressed, however, that for many basins the Plan proposes to regulate the methods of implementation of functions of Polish Sea Areas selectively, i.e. only for some of the functions allowed in a specific basin.

Function B

In basins POM.09.B, POM.05.B (within the boundaries of PLB990003 Pomeranian Bay) as well as POM.27.B and POM.67.B (within the boundaries of PLB990002 Baltic Coastal Waters) no acquisition of renewable energy is allowed. However, such prohibition in relation to offshore wind farms (having by far the biggest negative impact on birds from all methods of acquisition of renewable energy at sea) results from separate regulations. In basins POM.09.B, POM.05.B and POM.67.B, the possibility of exploration, investigation and extraction of mineral and fossil resources is not allowed, and in basin POM.27.B it is limited to the existing licences, which is mainly aimed at excluding possible conflicts between both functions (B and K), and not at protection of birds. Both activities relating to military exercises and most of the activities relating to the extraction of mineral and fossil resources scare the birds off. Therefore, the implementation of function B, instead of the possibility to implement function K, will not significantly change the impact on avifauna in these basins, including the objectives and objects of protection of areas PLB990003 Pomeranian Bay and PLB990002 Baltic Coastal Waters or their integrity. However, implementation of functions C, Ip and W in basin POM.27.B was limited to methods which “do not significantly affect the welfare of birds wintering and resting during migration and during the period when they occur in large numbers, from early November to late April”.

This prohibition will contribute to reducing a negative impact of functions C, Ip and W on the objectives and objects of protection of area PLB990002 Baltic Coastal Waters and on its integrity and coherence with other SPAs. The same impact with respect to function W will have the provision to exclude its implementation in sub-basin 27B.709R. In this sub-basin fishery (function R) is also prohibited during the period of increased migration of bi-environmental and migratory fish, which may result in a reduction of by-catch of birds from non-breeding populations protected in area PLB990002 Baltic Coastal Waters, but it cannot be determined until the exact period of the limitation is specified. In basin POM.27.B (within the boundaries of area PLB990002 Baltic Coastal Waters) sub-basin 27B.201I was designated. Apart from the area of sub-basin 27B.201I, in basin POM.27.B basin it is not allowed to lay linear elements of technical infrastructure. Designation of basin 27B.201I will have a positive impact on the objectives and objects of protection of area PLB990002 Baltic Coastal Waters, using the area of basin POM.27.B outside sub-basin 27B.201I (outside sub-basin 27B.201I, reduced bird scare off relating to construction and possible removal of the infrastructure). However, the accumulation of activities relating to construction and possible removal of linear technical infrastructure in sub-basin 27B.201I may lead to increased bird scare off rate within the boundaries of this sub-basin, which will not be without impact on the objectives and objects of protection of the

area PLB990002 Baltic Coastal Waters and its integrity (a negative impact within the boundaries of sub-basin 27B.201I). Therefore, the designation of sub-basin 27B.201I will result in a differentiated impact on bird species and their habitats in SPA PLB990002 Baltic Coastal Waters.

Function C

In basins POM.02.C, POM.06.C, POM.07.C, POM.19.C, POM.26.C, POM.31.C, POM.37.C, POM.38.C and POM.40.C (within the boundaries of areas PLB990003 Pomeranian Bay and PLB990002 Baltic Coastal Waters and in the immediate vicinity of area PLB320002 Świna River Delta) function E is prohibited, which, however, results from separate regulations. In basins POM.26.C, POM.31.C, POM.37.C, POM.38.C and POM.40.C (within the boundaries of area PLB990002 Baltic Coastal Waters) the exploration, investigation and extraction of mineral and fossil resources was restricted to the existing licence. Most of the activities included in the definition of this function (K) have a negative impact on avifauna, therefore, enforcement of the prohibition described above will result in reduction of the negative impact of function K on objectives and objects of protection of the area PLB990002 Baltic Coastal Waters and its integrity. In basins POM.02.C, POM.06.C, POM.07.C, POM.19.C, POM.26.C, POM.31.C, POM.37.C, POM.40.C and POM.38.C, there is also a limitation on the implementation of the basic function (C) and some of the allowed functions (K, W and I, including within the meaning of “line infrastructure” and “port infrastructure”). These function are limited to methods which “do not significantly affect the welfare of birds wintering and resting during migration and during the period when they occur in large numbers, from early November to late April”.

Such limitation will reduce a negative impact of functions C, K, W and I on the objectives and objects of protection of areas PLB990003 Pomeranian Bay, PLB320002 Świna River Delta and PLB990002 Baltic Coastal Waters as well as integrity of these areas and their coherence with other SPAs. In basins POM.02.C, POM.06.C, POM.07.C and POM.19.C hydrocarbon investigation and exploration are restricted to the existing licences. The above mentioned spatial limitation for the implementation of function K will contribute to the reduction of its negative impact on avifauna within the boundaries of areas PLB990003 Pomeranian Bay, PLB990002 Baltic Coastal Waters and, to a lesser extent, PLB320002 Świna River Delta. As regards the implementation of function R in basins POM.06.C, POM.07.C, POM.19.C, POM.31.C and POM.40.C, such implementation was limited in order to secure two-way migration of fish and the requirement was established to keep the following rivers open to provide migration opportunities to bi-environmental organisms: Rega, Błotnica, Czerwona, channel connecting the Jamno Lake with the sea, Łupawa, Piaśnica and Czarna Woda. However, the impact of the above mentioned provisions on the objectives and objects of protection of areas PLB990003 Pomeranian Bay and PLB990002 Baltic Coastal Waters as well as their integrity cannot be assessed due to lack of indication of the exact duration of the limitation (see Chapter 18.3).

Function I

According to the POM.39.I basin sheet (the only basin with function I assigned), located within the boundaries of area PLB990002 Baltic Coastal Waters, the acquisition of renewable energy is not allowed, which, however, results from separate regulations. Exploration, investigation and extraction of mineral and fossil resources are also prohibited in this area, which is mainly related to the reduction of a negative impact of the implementation of function K on the objectives and objects of protection of area PLB990002 Baltic Coastal Waters in relation to populations of non-breeding water

birds and on the integrity of this area (the definition of function K includes mostly such activities that may have a negative impact on avifauna, but also some activities with possible a positive impact on avifauna – see Chapter 8.3.1). In the POM.39.I basin sheet the implementation of functions C, W was limited to methods which “do not significantly affect the welfare of birds wintering and resting during migration and during the period when they occur in large numbers, from early November to late April”. Also these provisions of the Plan will reduce a negative impact of the implementation of functions of Polish Sea Areas on avifauna in basin POM.39.I (within the boundaries of area PLB990002 Baltic Coastal Waters). The Plan does not introduce any limitations on fishery and transport (functions R and T) in this basin. The Plan also fails to introduce any limitation on implementation of the function of tourism (function S), which could contribute to reducing a negative impact of this function on avifauna.

Function Ip

In basins, whose basic function is Ip, located within the boundaries of areas PLB990003 Pomeranian Bay (POM.01.Ip, POM.04.Ip, POM.17.Ip), PLB990002 Baltic Coastal Waters (POM.22.Ip, POM.28.Ip, POM.35.Ip) and PLB220005 Puck Bay (POM.86.Ip, POM.87.Ip and POM.88.Ip) acquisition of renewable energy is prohibited, which, however, results from separate regulations. In these basins, with the exception of POM.01.Ip and POM.17.Ip (within the boundaries of area PLB990003 Pomeranian Bay), exploration, investigation and extraction of mineral and fossil resources is prohibited according to the binding port regulations. On the other hand, in basin POM.01.Ip, exploration and investigation of hydrocarbons were limited to the area of the existing licence, which will reduce a negative impact of the implementation of function K on the avifauna of area PLB990003 Pomeranian Bay. Both in basin POM.01.Ip and basin POM.17.Ip, there are also introduced limitations on the exploration, investigation and extraction of mineral and fossil resources which require artificial islands and installations, and implementation of function K is limited to methods which “do not significantly affect the welfare of birds wintering and resting during migration and during the period when they occur in large numbers, from early November to late April”.

These provisions will contribute to reducing a negative impact of the implementation of functions K and W on the objectives and objects of protection of area PLB990003 Pomeranian Bay, its integrity and coherence with other SPAs. An analogous limitation was introduced in relation to the function W in basins POM.01.Ip, POM.04.Ip, POM.17.Ip, POM.22.Ip, POM.28.Ip and POM.35.Ip, which will reduce a negative impact of this function on the protected avifauna within the boundaries of areas PLB990003 Pomeranian Bay and PLB990002 Baltic Coastal Waters. Moreover, in basins POM.01.Ip, POM.04.Ip and POM.17.Ip it is prohibited to erect artificial islands and installations used for hydrocarbon extraction, which will reduce a negative impact of the implementation of functions W and K on the avifauna of area PLB990003 Pomeranian Bay. In basins 87Ip and 88Ip the introduced limitation on functions W and I (including function Ip) disrupts bird breeding but not the welfare of birds wintering and resting during migration (see Chapter 18.3). In basin 86Ip, on the other hand, the erection of artificial islands and installations (function W) and laying linear elements of technical infrastructure (function I) were limited “to the elements necessary to execute the port maintenance function”, which will reduce a negative impact of the implementation of functions W and I on the objectives and objects of protection of the area PLB220005 Puck Bay, its integrity and coherence with other SPAs. Implementation of function I in basins POM.01.Ip, 04.Ip, POM.17Ip, POM.22.Ip and POM.35.Ip was limited to methods which “do not significantly affect the welfare of birds wintering

and resting during migration and during the period when they occur in large numbers, from early November to late April”.

The same prohibition was introduced in basin 28Ip in relation to the implementation of function I meant as the “*port infrastructure*”. In all six basins listed above (POM.01.Ip, POM.04.Ip, POM.17.Ip, POM.22.Ip, POM.28.Ip, POM.35.Ip), apart from emergency situations, the works relating to the maintenance of safe access to the port and the development of infrastructure (function I) as well as the implementation of function C are limited to methods which “do not significantly affect the welfare of birds wintering and resting during migration and during the period when they occur in large numbers, from early November to late April”.

In basin POM.28.Ip laying elements of linear infrastructure elements is also limited to a designated sub-basin. The aforementioned prohibitions and limitations concerning the implementation of functions I and C will reduce their negative impact on the objectives and objects of protection of areas PLB990003 Pomeranian Bay and PLB990002 Baltic Coastal Waters and integrity of these areas. With regard to the implementation of function C in the areas adjacent to the area PLB220005 Puck Bay, prohibition was introduced in basin POM.88.Ip to implement this function in a way which disrupts bird breeding but not the welfare of birds wintering and resting during migration. This limitation, or any other limitation concerning implementation of function C, has not been introduced also in basin POM.86.Ip, where implementation of this function has been allowed (see Chapter 18.3). In the POM.86.Ip, POM.87.Ip and POM.88.Ip basin sheets, located within the boundaries of the area of PLB220005 Puck Bay, no limitations have been introduced with regard to the implementation of function R.

Function P

In basins POM.11.P (basin within the boundaries of area PLB990003 Pomeranian Bay), POM.24.P, POM.33.P, POM.41.P and POM.30.P (basin within the boundaries of area PLB990002 Baltic Coastal Waters) no acquisition of renewable energy is allowed. Such a provision will have a positive impact on the objectives and objects of protection of areas PLB990003 Pomeranian Bay and PLB990002 Baltic Coastal Waters, their integrity and coherence with the SPA network. In basins POM.33.P, POM.41.P and POM.30.P this limitation results from the provisions of the applicable law, however, for (fragments of) basins POM.24.P and POM.11.P is established by the provisions of the Draft Plan. A positive impact on the objectives and objects of protection and on the integrity of areas PLB990002 Baltic Coastal Waters and PLB990003 Pomeranian Bay will also result from prohibiting exploration, investigation and extraction of mineral and fossil resources in basins POM.41.P, POM.30.P and POM.11.P. In basins POM.24.P and POM.33.P the K function has been allowed, however, it has been forbidden to implement it using methods which “do not significantly affect the welfare of birds wintering and resting during migration and during the period when they occur in large numbers, from early November to late April”. This will contribute to reducing a negative impact of function K (most of the activities relating to function K entail a negative impact on avifauna; see Chapter 8.3.1) on the objectives and objects of protection as well as the integrity of the area PLB990002 Baltic Coastal Waters. The same limitation was imposed on the implementation of functions C (except emergency situations) and I in basins POM.11.P, POM.24.P and POM.33.P. Due to the above mentioned prohibition, a negative impact relating to implementation of functions I and C on non-breeding water bird populations protected in areas PLB990003 Pomeranian Bay and PLB990002

Baltic Coastal Waters will be reduced. In basins POM.11.P and POM.41.P, POM.30.P, sub-basins in which elements of linear infrastructure are to be concentrated have also been designated. This has a positive impact on the objects of protection of areas PLB990003 Pomeranian Bay and PLB990002 Baltic Coastal Waters, which are located in parts of basins POM.11.P, POM. 41.P and POM.30.P outside these sub-basins (scaring birds off as a result of construction works and possible removal of linear infrastructure is reduced). However, designation of the above mentioned sub-basins may lead to a decrease in the integrity of areas PLB990003 Pomeranian Bay and PLB990002 Baltic Coastal Waters due to intensified construction and removal works conducted therein. Therefore, the impact of such a provision is diversified.

Function Pw

In basins POM.08.Pw, POM.20.Pw and POM.13.Pw no acquisition of renewable energy is allowed. For some fragments of these basins, it is already provided in binding legal regulations, but for other fragments of basins POM.08.Pw, POM.20.Pw and POM.13.Pw, it was established by the provisions of the Draft Plan. Prohibiting implementation of function E in these basins will have a positive impact on the objectives and objects of protection of areas PLB990003 Pomeranian Bay and PLB990002 Baltic Coastal Waters, their integrity and coherence with other SPAs. In basins POM.08.Pw and POM.13.Pw, sub-basins in which elements of linear infrastructure are to be concentrated have been designated. The assessment of the impact of such a provision on avifauna has been included above (in this chapter where analysis of the provisions of the Draft Plan for basins with function P assigned was presented) – the impact is of a diversified nature. Implementation of functions C (except for emergency situations), I, K, W and “other” in POM.08.Pw, POM.13.Pw and POM.20.Pw basin sheets was limited to methods which “do not significantly affect the welfare of birds wintering and resting during migration and during the period when they occur in large numbers, from early November to late April”.

The aforementioned provision will reduce a negative impact of the implementation of these functions on the objectives and objects of protection of areas PLB990003 Pomeranian Bay and PLB990002 Baltic Coastal Waters in relation to populations of non-breeding water birds and on the integrity of these areas and their coherence with other SPAs.

Function K

In basins POM.21.K and POM.25.K (within the boundaries of area PLB990002 Baltic Coastal Waters) acquisition of renewable energy is not allowed, which, however, results from separate regulations. Implementation of function K in basin POM.21.K was limited to methods which “do not significantly affect the welfare of birds wintering and resting during migration and during the period when they occur in large numbers, from early November to late April”. This will contribute to the reduction of a negative impact of most of the activities included in the definition of function K on the objectives and objects of protection of the area PLB990002 Baltic Coastal Waters and on its integrity. However, such a limitation is not included in the POM.25.K basin sheet, which should be supplemented (see Chapter 18). The same limitation has been introduced in the POM.61.K basin sheet, which is not located within any of the Polish SPAs, but lies in the immediate vicinity of the Swedish SPA SE0330308 Hoburgs bank och Midsjöbankarna. This provision may reduce a negative impact of the implementation of function K on the objectives and objects of protection of the above mentioned area, which due to the continuity of the habitat may also use the waters of basin POM.61.K. The

Swedish area SPA SE0330308 Hoburgs bank och Midsjöbankarna is located on the Central Bank, the southern part of which is located within Polish Sea Areas. It should be assumed that as a result of presence of a shallow area in this region which promotes the growth of abundant food base for waterbirds, suitable feeding and resting conditions for birds also exist on the Polish side of the Central Bank. The SPA SE0330308 Hoburgs bank och Midsjöbankarna was designated for the protection of the Long-tailed duck, guillemot and common eider (Natura 2000 Network Viewer). The long-tailed duck *Clangula hyemalis* is an endangered species according to IUCN (VU category) and its population is decreasing. It is therefore important not to intensify pressure exerted on the basins which are used by these birds for feeding and resting (including basin 61.K). In basin 61.K, function R “using gillnets in a way which significantly disturb the reproduction of harbour porpoises” is also prohibited, but the duration of this limitation is not specified, and therefore, it is not possible to assess its indirect impact on non-breeding water bird populations.

Function T

In basins POM.10.T, POM.18.T, POM.29.T, POM.34.T, POM.54.T, POM.65.T, POM.93.T it is forbidden to lay linear elements of technical infrastructure outside the designated sub-basins (function I). In basins POM.10.T, POM.18.T, POM.23.T, POM.29.T, POM.34.T, POM.36.T, POM.54.T, POM.65.T, POM.93.T, the acquisition of renewable energy (function E) and exploration, investigation and extraction of mineral and fossil resources (function K) are prohibited. In POM.10.T and POM.18.T basin sheets, also hydrocarbon exploration and investigation were limited to the area USTRONIE N. In basin POM.23.T extraction of aggregates was limited to sub-basin 23T.404K. Moreover, in the basins POM.23.T, POM.29.T, POM.36.T, POM.65.T dredged spoil dumping is prohibited. However, provisions relating to the functions allowed in the above mentioned basins (other than the basic function) will not significantly reduce a negative impact on birds. Activities relating to these functions entail mainly bird scaring, the same way as activities associated with the basic function of transport do. Therefore, on shipping routes, which have been assigned the basic function T, vessels will keep scaring birds off, and the provisions of the Plan aimed at limiting the remaining functions of Polish Sea Areas will not significantly reduce this type of impact.

In addition, basin POM.93.T north of the area PLC990001 Słupsk Bank was designated in the Plan. It could be extended to the south through the aforementioned SPA. If regular navigation through the PLC990001 Słupsk Bank area was allowed, where unlike the coastal SPAs, the populations of non-breeding water birds are not significantly disturbed by human activities, significant negative impacts on objects of protection in the area would occur. One of species under protection in the aforementioned SPA is a wintering population of long-tailed duck. The global population of the long-tailed duck has been declining in recent years and the species has been classified as near threatened (IUCN 2017-3). The species is sensitive to marine pollution (especially fuel spills; BirdLife International 2018) and vessel traffic (Schwemmer et al. 2011).

Function M

In basin POM.85.M (the only basin with function M assigned), sub-basin 85M.800S was designated for the development of the tourism function (S). However, it does not decrease in any way a negative impact of function S on birds, including the objectives and objects of protection of the area PLB220005 Puck Bay and its integrity. This is due to the fact that sub-basin 85M.800S extends along the sea coast, where present and future activities concerning function S will be concentrated, which

will only be slightly dependent on designation of sub-basin 85M.800S in the Plan (especially in the Puck Bay area). In the POM.85.M basin sheet the implementation of functions I, C and W was limited to methods which “do not significantly affect the welfare of birds wintering and resting during migration and during the period when they occur in large numbers, from early November to late April”.

This limitation will help to reduce a negative impact of the implementation of functions I, C and W on the objectives and objects of protection of SPAs within the boundaries of Polish Sea Areas in relation to the populations of non-breeding water birds, as well as on the integrity of these areas and their coherence with other SPAs. In basin POM.85.M laying of linear elements within the scope of function I is limited to sub-basin 85M.204I. Designation of a limited part of marine space for the linear infrastructure may have a positive impact on birds (including objects under protection of the area PLB220005 Puck Bay). This is caused by the execution of activities for the construction and possible removal of linear infrastructure (activities resulting in scaring birds off) only in a limited space (sub-basin 85M.204I). However, such a provision may adversely affect the integrity of the area PLB220005 Puck Bay. The impact of the aforementioned provision on the avifauna may therefore be varied. Moreover, the location of technical infrastructure (function I) and artificial islands and installations (function W) was prohibited in sub-basins 85M.901B, 85M.640C and 85M.641C, the first two of which are located within the area PLB220005 Puck Bay. Implementation of function W was also excluded in sub-basin 85M.900D. The aforementioned limitation will result in the reduction of a negative impact of functions I and W in basins 85M.604C and 85M.900D on non-breeding water bird populations protected in area PLB220005 Puck Bay. On the other hand sub-basin 85M.901B will be designated for a military training ground, which leads to birds being scared off. With regard to function R in the 85M basin sheet, the use of selected fishing gear (including anchored gillnets) in sub-basin 85M.900D was prohibited and the period of fishing in sub-basin 85M.714R was limited (without providing a specific date). Sub-basin 85M.900D has a small area, but provisions in the Plan relating to it will contribute to reducing a negative impact of function R on non-breeding water bird populations in this area, located within the boundaries of area PLB220005 Puck Bay. Implementation of function E was prohibited in the area, however, this results from separate regulations. The exploration, investigation and extraction of mineral and fossil resources, i.e. execution of function K, whose impact on avifauna may be both negative and positive, depending on the type of activities included in the definition of this function, is also not allowed there.

Function L

Implementation of functions I, C and W in this basin was limited to methods which “do not significantly affect the welfare of birds wintering and resting during migration and during the period when they occur in large numbers, from early November to late April”.

Such a limitation will significantly reduce a negative impact of the implementation of functions I, C and W in basin POM.84.L on populations of wintering and migrating water birds, protected in the area PLB220005 Puck Bay. In basin 84L fishery (function R) was limited in the area of the Reda River and Plutnica River Outlets, where water birds accumulate in large numbers during wintering and migration. Such a limitation may significantly reduce a negative impact of the implementation of function R on the objectives and objects of protection of the area PLB220005 Puck Bay with respect to populations of non-breeding water birds and on its integrity. The 84L basin sheet, on the other

hand, includes no limitations concerning function T, which may have a significant negative impact on the objectives and objects of protection of area PLB220005 and its integrity. However, the function of transport is not the basic function in the basin (but only an allowed one), and its execution within the closed bay is not likely to intensify significantly in the period for which the spatial development plan is created (10 years). Therefore, it can be assumed that during the period covered by the Plan the impact of function T in basin POM.84.L on non-breeding populations of water birds will remain at a level similar to the current one (no deterioration of the proper conservation status of non-breeding populations in area PLB220005 Puck Bay due to the implementation of function T at the same level as at present).

Function E

Although the basins with function E assigned as a basic one do not overlap with the analysed SPAs, they are often adjacent to these areas. Basin POM.14.E neighbours the area PLB990003 Pomeranian Bay. Basin POM.43.E is located in close proximity to the area PLC990001 Słupsk Bank and may disturb migration of some bird species, such as *Alca torda*, to this area and away from it. The SPA is directly adjacent to basins basin POM.44.E and extensive areas of POM.45.E and POM.46.E, which, if tightly built-up with wind farms, will create a large barrier for birds during migration and will contribute to the exclusion of a large marine area from feeding and resting grounds of water birds. Basins POM.60E and POM.53.E are located at the Swedish border and in the vicinity of the Swedish SPA SE0330308 Hoburgs bank och Midsjöbankarna. The limitation imposed on the implementation of function I in such a way that *“the resting period of birds in waters of the basin during migration and wintering in the basin, i.e. between the beginning of November and the end of April, will be significantly disturbed”* was removed from the POM.14.E, POM.43.E, POM.44.E, POM.44.E, POM.45.E and POM.60.E basin sheets. This provision may result in an increase in a negative impact of function I on the avifauna, but it should be included in the basin sheets anyway (see Chapter 18). The same prohibition with regard to function W was included in the basin sheets of all six basins having function E assigned as a basic one. The limitation of the implementation of function I is also in a form of designation in basins POM.45.E and POM.60.E sub-basins intended *“for laying and maintenance of external connecting infrastructure of offshore wind farms”*. However, it should be remembered that basins having function E assigned as a basic are located outside the boundaries of Special Protection Areas and designating within their boundaries the aforementioned sub-basins will have no significant impact on the objectives and objects of protection of SPAs and their integrity. In basins POM.44.E and POM.45.E exploration, investigation and extraction of mineral and fossil resources were not allowed, whereas in basin POM.14.E exploration, investigation and extraction of hydrocarbons were limited to the area USTRONIE N. These provisions, however, will not have a significant positive impact on the avifauna, because the offshore wind farms in operation will force a significant part of birds out of the OWF areas, and the parallel works conducted there for the extraction of mineral and fossil resources would have no significant impact in a form of increasing the scare off rate of these animals. In the General Provisions the following provision was introduced: *“If it is necessary to establish a corridor for migrating birds, their exact route and size will be determined by the environmental impact assessments reports for the particular investments. It is recommended that the width of such a corridor is not less than 4 km and its axis is a straight line”*.

It will reduce a negative impact of function E on the objectives and objects of protection of areas PLC990001 Słupsk Bank, PLB990002 Baltic Coastal Waters and (to a lesser extent) PLB990003

Pomeranian Bay as well as the integrity of these areas and their coherence with other areas in the Natura 2000 network.

Function O

Indication of function O as a basic function in basins POM.03.O (PLB320002 Świna River Delta), POM.42.O (PLC990001 Słupsk Bank), POM.32.O (PLB990002 Baltic Coastal Waters) and POM.12.O (PLB990003 Pomeranian Bay) may contribute to better achievement of the protection objectives and to preservation or improvement of objects protected in SPAs within the boundaries of Polish Sea Areas, to the enhancement of their integrity or the coherence of the Natura 2000 network, provided that the provisions of the Plan will carry sufficient so-called “added value” to the regulations already introduced by the existing legislation and not only duplicate them. According to the provisions which introduce limitations on the implementation of functions of Polish Sea Areas, the Plan includes a limitation on laying technical infrastructure (function I) in basin POM.42.O (within the boundaries of area PLC990001 Słupsk Bank) to methods which “do not have a significant negative impact on bird breeding or does not affect the coast and other areas of the basin where birds breed in the period from 1 March to 31 August” and “do not significantly affect the welfare of birds wintering and resting during migration and during the period when they occur in large numbers, from early November to late April”. In basins POM.42.O and POM.12.O also implementation of function E is not allowed. With regard to function K in basin POM.42.O, its implementation is prohibited in the scope of “exploration, investigation and extraction of aggregates until the Natura 2000 area PLC990001 protection plan is adopted”. However, in basin POM.12.O, the execution of function K is forbidden (“Exploration, investigation and extraction of mineral and fossil resources is not allowed in the basin”). As far as function B is concerned, the provisions in the POM.42.O and POM.12.O basin sheets impose a limitation on activities relating to the military exercises, which “may be conducted outside the periods when migrating and wintering birds occur in the basin, from the beginning of November to the end of April”. All specified prohibitions will contribute to reducing a negative impact of the implementation of functions I, E, K and B on the objectives and objects of protection of areas PLC990001 Słupsk Bank and PLB990003 Pomeranian Bay as well as their integrity and coherence with other SPAs. Limitations on the implementation of functions Ip, C and W (prohibition of implementation in a manner which “does not significantly affect the welfare of birds wintering and resting during migration and during the period when they occur in large numbers, from early November to late April”) are included in the POM.92.O basin sheet, which has no borders with SPAs in the Natura 2000 network, but is located in the area IBA PLM4 Eastern Near-Border Waters, an important wintering area for water birds and their resting ground during migration. In relation to basins POM.03.O and POM.32.O, located within the boundaries of the marine parts of the Woliński National Park and area PLB320002 Świna River Delta as well as the Słowiński National Park and area PLB990002 Baltic Coastal Waters, the Plan does not propose any limitations on functions of Polish Sea Areas, other than those resulting from separate regulations. Therefore, provisions of the Draft Plan do not reduce a negative impact that functions of Polish Sea Areas allowed in basins POM.03.O and POM.32.O, within the boundaries of areas PLB320002 Świna River Delta and PLB990002 Baltic Coastal Waters have on the avifauna.

SPAs outside the area covered by the Plan

For SPAs situated outside, but in the neighbourhood of the planning area, which contain protected objects partially identical to those contained in the above mentioned planning areas, the general

direction of possible changes resulting from the implementation of functions has been defined. These areas include: PLB320009 Szczecin Lagoon, PLB320011 Kamień Lagoon and Dziwna River, PLB320010 Trzebiatów Coast, PLB220003 Słowińskie Coast and PLB280010 Vistula Lagoon. The area PLB220010 Bielawskie Bogs, whose object of protection is 0–1 pair of *Tringa glareola* (SDF of the area, updated: September 2011), a species whose migrating population is under protection in the area PLB220004 Vistula River Outlet (SDF of the area, updated: February 2017) was excluded from the analysis. The area was excluded due to a very sparse reproductive population of *Tringa glareola* that occurs there, and disturbance of its abundance could not be unequivocally proved by the introduction of the spatial development plan.

Some of the water birds forced out of Polish Sea Areas in connection with the implementation of one of the designated functions may migrate to other habitats suitable for them, including the areas of internal sea waters or surrounding inland reservoirs and their peripheries. In theory, a higher density of birds in relocation areas may negatively affect their condition, and thus, their survival and reproduction through an increased competition for food resources, overexploitation of the food base and behavioural interactions. However, the relationship between the density of water bird species and the capacity of their habitats is hardly ever studied and therefore poorly recognised. To apply the principle of precaution in an environmental impact assessment it is often assumed that habitats are used to their full capacity. Therefore, the loss of a habitat for a species is equivalent to reduction of its population by the number of specimens that exploited the lost habitat. Therefore, a permanent deportation of a certain number of birds from a Polish Sea Area would be equivalent to a reduction of their population by the number of birds deported. It is very difficult to determine the number of animals forced out of their habitats in connection with implementation of the spatial development plan for Polish Sea Areas due to the fact that the Plan assumes at the same time continuation of the activities already carried out within the framework of particular functions of Polish Sea Areas, as well as development of some functions in specific basins. Moreover, the SPAs located outside the planning area will be covered by yet non-existent, separate draft spatial development plans (e.g. the spatial development plan for the Vistula Lagoon), whose decisions will affect the avifauna in a way which is currently impossible to determine. Therefore it is impossible to determine how the implementation of functions of Polish Sea Areas will affect the objectives and objects of protection, integrity or cohesion of SPAs excluded from Polish Sea Areas, in the context of simultaneous implementation of other spatial development plans.

8.3.2.2. Sites of Community importance – Special Areas of Conservation (SACs)

The impact of the provisions of the Draft Plan on the objects of protection of individual areas is fundamentally different in marine areas, which are directly relating to the provisions of the Draft Plan and on land, where the implementation of the Draft Plan intentions will normally have an indirect and limited impact. Thus, as in the case of SPA, the assessment will be carried out by areas directly covered by the plan and areas outside the planning area, which however have a geometric link (contact) with the planning area. Moreover, on the basis of the expert knowledge of the environmental requirements of the particular conservation objects (primarily the impact of the natural dynamics of the sea) and taking into account the potential impacts that may be caused by the implementation of the activities included in the assessed document, only some of the species and habitats from the relevant Appendices to the Birds and Habitats Directives were selected for works on the impact assessment (Table 8. and Table 8.).

Table 8.28. Summary of natural habitats from Appendix I to the Birds and Habitats Directives affected by a potential impact of the Plan

Item	Natura 2000 area / Habitats*	1130 River outlets (estuaries)	1110 Sandy undersea shoals	1150 Lagoons and coastal lakes	1160 Large shallow bays	1170 Reefs	1210 Wash margin on a sea coast	1230 Cliffs along the Polish coast	1330 Coastal salt plain	2110 Initial stages of the coastal white dunes	2120 Coastal white dunes	2130 Coastal grey dunes	2160 Coastal dunes together with sea buckthorn bushes	2170 Coastal dunes together with downy mountain willow bushes	3150 Oxbow lakes and natural eutrophic water reservoirs	2190 Humid intradune hollows
1.	PLH990002 Refuge in Pomeranian Bay		X													
2.	PLH320019 Wolin and Uznam						X			X	X	X				
3.	PLH320017 Trzebiatów-Kołobrzeg Coastal Strip	X					X	X	X	X	X	X	X	X		
4.	PLH320059 Kopań Lake			X						X	X	X				
5.	PLH320068 Wicko Lake and Modelskie Dunes	X		X						X	X	X				
6.	PLH220100 Cliffs of Poddąbie						X			X	X	X				
7.	PLH220023 Słowińska Refuge					X				X	X	X				X
8.	PLH220018 Sarbska Spit									X	X	X				X
9.	PLH220003 Białogóra									X	X	X				X
10.	PLH220021 Piaśnica Meadows	X									X	X				
11.	PLH220072 Kashubian Cliffs						X	X								
12.	PLH 220032 Puck Bay and Hel Peninsula	X			X		X	X	X	X	X	X				
13.	PLH220105 Cliffs and Stone Reefs of Orłowo					X		X								
14.	PLH220044 Refuge at the Vistula River Outlet	X					X			X	X	X	X			
15.	PLH 280007 Vistula Lagoon and Vistula Spit						X			X	X	X				
16.	PLC990001 Słupsk Bank		X			X										

*bolded Natura 2000 areas are included in the planning range

Table 8.29. Summary of plant species from Appendix I to the Birds and Habitats Directives and animal species from Appendix II to the Birds and Habitats Directives affected by a potential impact of the Plan

Item	Natura 2000 area / Species*	plants	fish			mammals	
		Linaria odora	Twaite shad	Sichel	River lamprey	Harbour porpoises	Grey seal
1.	PLH990002 Refuge in Pomeranian Bay		X			X	X
2.	PLH320019 Wolin and Uznam		X				
3.	PLH320017 Trzebiatów-Kołobrzeg Coastal Strip				X	X	X
4.	PLH220052 Słupia Valley				X		
5.	PLH220100 Cliffs of Poddąbie	X					
6.	PLH220023 Słowińska Refuge	X	X	X	X	X	X
7.	PLH220018 Sarbska Spit	X					
8.	PLH 220032 Puck Bay and Hel Peninsula	X	X		X	X	X
9.	PLH220044 Refuge at the Vistula River Outlet	X	X	X	X	X	X
10.	PLH 280007 Vistula Lagoon and Vistula Spit	X	X	X	X	X	X

*bolded Natura 2000 areas are included in the planning range

In (Table 8.) the basic functions to be implemented in particular Special Areas of Conservation are presented.

Table 8.30. Basic functions in Natura 2000 Special Areas of Conservation (SACs)

Item	Natura 2000 PLH area*	Basins	
		Marking	Basic function
1.	PLH990002 Refuge in Pomeranian Bay	05.B, 09.B	National security and defence
		02.C, 06.C	Coastal protection
		01.Ip, 04.Ip	Functioning of port or haven
		12.O	Protection of the environment and nature
		08.P	Reserve for future development
		11.Pw, 13.Pw	Reserve for future development with extraction allowed
		10.T	Transport
2.	PLH320019 Wolin and Uznam	03.O	Protection of the environment and nature
3.	PLH320017 Trzebiatów-Kołobrzeg Coastal Strip	06.C	Coastal protection
4	PLH320059 Kopań Lake	27.B	National security and defence
5	PLH320068 Wicko Lake and Modelskie Dunes	27.B	National security and defence
6	PLH220052 Słupia Valley	28.Ip	Functioning of port or haven
7	PLH220100 Cliffs of Poddąbie	31.C	Coastal protection
8	PLH220023 Słowińska	31.C	Coastal protection

Item	Natura 2000 PLH area*	Basins	
		Marking	Basic function
	Refuge	32.O	Protection of the environment and nature
		33.P	Reserve for future development
9	PLH220018 Sarbska Spit	37.C, 38.C	Coastal protection
		39.I	Infrastructure
10	PLH220003 Białogóra	40.C	Coastal protection
11	PLH220021 Piaśnica Meadows	40.C	Coastal protection
12	PLH220072 Kashubian Cliffs	40.C	Coastal protection
13	PLH220032 Puck Bay and Hel Peninsula	63.Ip, 86.Ip	Functioning of port or haven
		84.L	Environmentally conditioned local development
		85.M	Multifunctional economic development
		66.C	Coastal protection
		94.O	Protection of the environment and nature
14	PLH220105 Cliffs and Stone Reefs of Orłowo	85.M	Multifunctional economic development
		87.Ip	Functioning of port or haven
15	PLH220044 Refuge at the Vistula River Outlet	85.M	Multifunctional economic development
16	PLH 280007 Vistula Lagoon and Vistula Spit	91.C	Coastal protection
		92.O	Protection of the environment and nature
17	PLC990001 Słupsk Bank	42.O	Protection of the environment and nature
		34.T	Transport

*bolded Natura 2000 areas are included in the planning range

I. Special Protection Areas (SPAs) in the area covered by the Plan

PLH990002 Refuge in Pomeranian Bay

In the area PLH990002, the Draft Plan assumes implementation of 7 basic functions: national security and defence, coastal protection, port infrastructure, protection of the environment and nature, reserve for future development, reserve for future development with extraction allowed and transport (Table 8.).

In the Refuge in Pomeranian Bay the habitat to be protected are **sandbanks which are slightly covered by sea water all the time (1110)**. The habitat 1110 is located entirely within basin POM.12.O, whose basic function is the **protection of the environment and nature**. In the Draft Plan there are no prohibitions or limitations on the use of the basin for fishery, transport, sport and recreation as well as cultural heritage. On the other hand, threats to the area PLH990002 relating to fishery were indicated in the Draft Plan for the protection of this area. A direct negative impact of **fishery** can be related to by-catch of marine mammals. According to the sea fishery regulations a prohibition on the use of active fishing tools in the area of the Odra Bank was established, which has a positive impact on habitat 1110.

On the other hand, **transport** may have an indirect impact on the habitat through the introduction of pollutants and non-indigenous species.

A direct and permanent impact of **transport** is observed in the case of marine mammals – **harbour porpoise** and **seal** – which are protected objects in area PLH990002 (possible collisions with vessels, increased mortality of mammals, acoustic disturbances which scare mammals off, and in the case of harbour porpoises, disturbance of their echolocation abilities, and as a consequence, lowering the quality of marine mammals living environment).

Implementation of function of **national security and defence** may lead to generation of noise and contribute to scaring off the marine mammals. No impact of the defence function on habitat 1110 is expected.

It is difficult to estimate the impact of the function of **reserve for future development with extraction allowed** on objects protected in the area PLH990002, because it will depend on the implementation of specific activities and investments unknown at this stage of works. Undoubtedly, the following provisions: “artificial islands, installations and structures for the extraction of hydrocarbons are prohibited within the borders of the territorial sea” and “it is forbidden to extract mineral and fossil resources using open-pit method in PLH area Refuge in Pomeranian Bay (excluding exploitation of the field B of deposit of sands with heavy minerals – Odra Bank)”, are of a preventive nature and can certainly contribute to the elimination of risks relating to mining operations.

An impact of **port infrastructure** and **coastal protection** on habitat 1110 (if it does not involve dredging of sand from the habitat) and the harbour porpoise will be negligible. Activities relating to the implementation of these function will have an indirect and short-term impact on seals (increased traffic in the coastal area at the time of works and the relating noise may scare of specimens from their resting grounds).

In the “Recommendations” part of the Basin Sheet, it was recommended to include a detailed analysis of the impact of the investments to be implemented in basin POM.12.O on **habitat 1110** in the environmental impact assessment reports for these investments. Moreover, it is recommended to hold any investment plans within borders of the basin until a protection plan of the area Natura 2000 Refuge in Pomeranian Bay is prepared and approved. Both of these provisions may indirectly affect the condition of the habitat in a positive way. However, these provisions, as mentioned, are recommendations and authors of the Projection are not able to state whether and to what extent they will actually be taken into account.

PLH320019 Wolin and Uznam

In the area PLH320019, the Draft Plan assumes implementation of 1 basic function – **protection of the environment and nature** (Table 8.). In addition, fishery, tourism, sport and recreation, cultural heritage and scientific research are allowed. Objects protected in the area include **terrestrial dune habitats (2110, 2120, 2130)**, **wash margin on sea coast (1210)**, which are not affected by the provisions of the Plan in its current form, and **twait shad**.

The whole area is located within the boundaries of basin POM.03.O, whose area additionally overlaps with the marine part of the Woliński National Park and where separate regulations (including

prohibitions and limitations) are in force. The Draft Plan does not introduce any additional regulations concerning protection of the environment and nature. In the Draft Plan there are also no prohibitions or limitations on the use of the listed basins for fishery, tourism, sport and recreation or cultural heritage. A potential positive impact of the Plan on a twait shad may be related to the prohibition of aquaculture, acquisition of renewable energy or exploration, investigation and extraction of mineral and fossil resources in the whole basin.

The planned extension of the external port in Świnoujście in the Natura 2000 “Wolin and Uznam” PLH 320019 area and other areas of valuable nature (design of container terminal at the stage of technical and programme concept) may generate negative impacts on some components of the environment. A piece of the beach and dune habitats to the east of the existing external port will undergo significant changes. The expansion of the port will reduce the influence of the sea in the form of storm restoration of habitats, especially the following ones: initial stages of white dunes (2110), wash margin on a sea coast (1210) and the coastal white dune habitats (2120), which will lead to their gradual degradation until they are completely gone. The coastal landscape and the space of the coastal area will also be further transformed, which may result in hindered access to the existing monuments and to the use of tourist and recreational assets of the coast. Already now, some residents of the right-bank part of Świnoujście are against this investment, which may give grounds for social conflicts (source: radioszczecin.pl, published on 2 May 2017). Further limitation imposed on the use of the coastal area by fishermen may also be a source of potential social conflicts. Conflicts may also arise between the investment and environmental protection or national security and defence.

The construction of a container terminal will also result in the increase in traffic within the land-based premises and the associated increase in noise and exhaust gas emissions. It will also cause the problem of increased ship traffic on the approach fairway to the terminal, which can increase the risk of equipment breakdowns and leaks of hazardous substances.

According to the Environmental Impact Report of the project consisting in the construction of the Breakwater for the planned external port in Świnoujście (Mejszelis et al. 2008) and the Supplement to the Report (Spieczynski 2009), the area designated for the planned investment was supposed to become a new ground for fishing and activities relating to tourism and recreation, a place to form a sandy shoal (eastern part of the newly built breakwater) as a substitute habitat for benthic formations, birds and fry.

PLH220023 Słowińska Refuge

In the area PLH220023, the Draft Plan assumes implementation of 3 basic functions – **protection of the environment and nature, coastal protection and reserve for future development** (Table 8.). In addition, fishery, tourism, sport and recreation, cultural heritage and scientific research are allowed. Objects protected in the area potentially affected by the provisions of the Draft Plan include terrestrial dune habitats (2110, 2120, 2130), humid intradune hollows (2190) and reef habitat (1170), and also: linaria odora, twait shad, sichel, river lamprey, harbour porpoise and seal.

The area PLH220023 is located within the boundaries of basin POM.32.O, whose area overlaps with the marine part of the Słowiński National Park and where separate regulations (including prohibitions and limitations) are in force. The Draft Plan does not introduce any additional regulations concerning

protection of the environment and nature here. In the Draft Plan there are also no prohibitions or limitations on the use of the mentioned basin for fishery, tourism, sport and recreation or cultural heritage. A potential positive impact of the assessed document on fish and mammal species listed above as well as on habitat 1170 may be related to the prohibition of aquaculture, acquisition of renewable energy or exploration, investigation and extraction of mineral and fossil resources in the whole basin POM.32.O.

Basin POM.31.C with the basic function of **coastal protection** is only partially located within the boundaries of the area PLH220023 Słowińska Refuge. The Act of 28 March 2003 on establishment of the multiannual programme “Programme of Coastal Protection” (consolidated text, Journal of Laws of 2016, item 678) at the height of the Refuge allows the implementation of the tasks within the scope of the Programme only in two sections: Rowy 1 (217.2–217.5 km) and Rowy 2 (217.5–219.0 km) reducing to minimum the possibility of the Programme tasks affecting objects protected in the area. To reduce the impact of the Programme tasks on the environment and preserve the natural coastal processes in sections where extensive investments are made, within the framework of the Environmental Impact Prediction for the purpose of amendment of the 2004–2023 multiannual programme entitled: “Programme of Coastal Protection” established by the Act of 28 March 2003 on the establishment of the multiannual programme “Programme of Coastal Protection” (Boniecka et al. 2015) it was possible to indicate some sections of the coast that should be excluded from the Programme. One of such sections, which was shortened, was Rowy 1. Initially, it covered 1200 m of coast within the boundaries of the Słowiński National Park. Eventually, only a 300 m long section located east of the Rowy port was indicated for the protection, which also limited the execution of tasks to artificial nourishment – protection method closest to natural processes occurring on a sea coast. A detailed analysis of the impact of the tasks provided for in the Programme on the protected objects occurring in the area is included in the Prediction mentioned above.

It is difficult to estimate the impact of the function of **reserve for future development** on objects protected in the area PLH320019, because it will depend on the implementation of specific activities and investments unknown at this stage of works.

PLH220032 Puck Bay and Hel Peninsula

In the area PLH220032, the Draft Plan provides for the implementation of the basic function: environmentally conditioned local development (basin POM.84L), which means activities *“for the preservation of traditions and the maintenance of local foundations for social and economic development of small coastal municipalities, taking advantage of cultural values and preserving the natural environment”*.

The functions allowed in the basin include: coastal protection, transport, fishery, tourism, sport and recreation, technical infrastructure, functioning of port or haven, cultural heritage, scientific research, artificial islands and installations, aquaculture, national security and defence. The types of impact generated by environmentally conditioned local development will therefore be the same as those of all the functions listed above (Table 8.) and depend on the type of development.

A number of habitats are protected in the Puck Bay and Hel Peninsula area. A habitat of the largest surface area and significance according to the Draft Plan is the large shallow bay (1160) and associated plant and animal communities (see also Chapter 5.16 and Table 8., Table 8.).

The Draft Plan does not establish any prohibitions or limitations on the use of the basin for implementation of cultural heritage and fishery functions. However, some rules concerning fishery established on the basis of separate regulations apply in the area. The use of active fishing gear is prohibited in the area.

A negative direct impact of **fishery** on habitat 1160 may result in increased mortality of fish species typical for the habitat due to fishing exploitation.

At the outlets of Reda and Plutnica rivers, sub-basins 84.719.R and 84.720.R have been designated to ensure the possibility of two-way fish migration, which is important for conservation.

The Draft Plan includes the following provisions in the context of environmental protection, which refer to most of the allowable functions (**coastal protection, technical and port infrastructure, scientific research, artificial islands and installations, aquaculture**): “implementation of functions is limited to methods/ways of use which do not endanger the ecological function of spawning grounds and the survival of early development stages (spawn and larvae) of commercial fish; do not significantly affect the welfare of birds wintering and resting during migration and during the period when they occur in large numbers, from early November to late April” (see Chapter 8.3.2.1). A potential impact of the provisions on objects protected in the area (including the habitat 1130 – river outlets) is positive and long-term provided that these rules are enforced.

For **coastal protection** activities provided for in the Act “Programme of Coastal Protection” are allowed. The detailed assessment of the impact of the tasks relating to coastal protection on objects protected in the area (large shallow bay, dune habitats, wash margin, salt plains, cliffs) is included in the document Environmental Impact Prediction for the Amendment of the Multiannual Programme for 2004–2023 entitled: “Programme of Coastal Protection” established by the Act of 28 March 2003 on establishment of the multiannual programme “Programme of Coastal Protection” (Boniecka et al. 2015).

A direct negative impact of **tourism, sport and recreation** on habitats in the Puck Bay and Hel Peninsula area is associated with increased people traffic. It results in physical destruction of habitat structure (dune habitats 2110, 2120, 2130 or habitat 1160) and relating vegetation, reduction of habitat area, deterioration of protection status, penetration of synanthropic species, including invasive ones, and intensification of abrasive processes on the coast. The impact is short-term in nature (tourist season) on the one hand, but on the other hand, its effects can be permanent. The POM.84.L basin sheet introduces limitation on the implementation of function of tourism, sport and recreation concerning the prohibition of establishing formal bathing areas in the area of reed fields, river outlets, reserves and their safety zones (except those agreed before the adoption of the Plan), and in the area of the Seagull Sandbar, which is very important in the context of conservation of the above mentioned habitats.

In the basin, however, it is allowed to locate elements of tourist infrastructure (piers, jetties) as agreed with the competent Director of the Maritime Office prior to the adoption of this Plan. The scale of the impact will depend on the type, location and number of implemented investments in tourist infrastructure.

Limitations on laying elements of **technical infrastructure** should be assessed positively.

An impact of **transport** is related to vessel traffic from and to ports and marinas and along one usual shipping route to the port in Jastarnia. Transport may affect the habitat of the large shallow bay through the introduction of pollutants into the water and may have a negative impact on the ecological condition of waters, and indirectly, on organisms occurring in the habitat.

In addition, significant pro-environmental recommendations have been proposed for the basin as a result of, among other things, the previous versions of the Prediction v.1, v.2 (see Chapter 18): “Due to very good conditions for the reproduction of commercial fish, it is recommended to extend the scope of the EIA report for activities carried out in the basin to include the impact of these activities on resources and recruitment of fish important for fishery. Due to the important role of the basin for migrating and wintering birds, it is recommended to include a detailed analysis of the impacts generated on these groups of birds in EIA reports for investments planned to be carried out in the basin. Due to the presence of natural habitat of large shallow bay it is recommended to include a detailed analysis of the impact of investments planned to be implemented in the basin on the condition of the natural habitat and relating plant and animal species, including reed fields, in EIA reports for these investments. In the detailed plan a target system of fairways in the basin should be developed and obtain a positive environmental impact assessment, also in relation to the tourist traffic it would generate.”

Within the boundaries of the area PLH220032 basin 94.O is designated, whose borders overlap with the marine part of the Beka nature reserve and its safety zone. The reserve is supervised by the Regional Director of Environmental Protection. When the protection plan is established by order of the Regional Director of Environmental Protection in Gdańsk, its provisions will be binding. After establishing by the Ordinance of the Minister of the Environment, the provisions of the protection plans for the Natura 2000 area PLH 220032 Puck Bay and Hel Peninsula will apply. The activities set out in the Draft Development Plan appear to be quite consistent with the content of the Draft Protection Plans (still informal).

Moreover, the basin is subject to permits, prohibitions and limitation relating to designation of the Coastal Landscape Park.

PLH220105 Cliffs and Stone Reefs of Orłowo

For the area PLH220105 the Draft Plan provides for the implementation of a basic function of multifunctional economic development (basin POM.85.M), which is defined as *“activities aimed at the development of the functions listed in §1(2)(22) in order to ensure the development of maritime economy of the Gdańsk-Gdynia-Sopot metropolitan area, in particular, ensuring conditions for the development of sea ports of fundamental importance for the national economy, ensuring high quality of life for the residents of the metropolitan area while maintaining the principles of the ecosystemic approach and the needs of coastal protection, excluding the function of acquisition of renewable energy”*. The functions allowed in the basin include: coastal protection, transport, fishery, tourism, sport and recreation, technical infrastructure, cultural heritage, scientific research, artificial islands and installations, aquaculture, functioning of port or haven, national security and defence. Basin POM.85.M is much larger than the PLH area Cliffs and Stone Reefs of Orłowo and covers the entire Gulf of Gdańsk. The types of impact generated by multifunctional economic development will therefore be the same as those of all the functions listed above (Table 8.) and depend on the type of

development. The second basic function in the area is functioning of port or haven (87.lp). Implementation of public purpose investment is planned in the form of maintaining access to the sea of the Port of Gdynia and expansion of the port infrastructure in basin 87.lp.

Objects protected in the area PLH Cliffs and Stone Reefs of Orłowo (**habitats 1170 – reefs and 1230 – cliffs along the Polish coast**) occur in sub-basin 85.800S intended for the development of **tourism function**. In the provisions concerning this sub-basin, there are limitations on the establishment of formal bathing areas in the context of human safety (they do not refer to nature conservation). In the entire sub-basin 85.800S it is allowed to locate elements of tourist infrastructure (piers, jetties) as agreed with the competent Director of the Maritime Office prior to the adoption of this Plan. It is difficult to estimate the scale of the environmental impact, because there are no information on actual amount, type or location of the infrastructure.

A direct negative impact of the **tourism, sport and recreation** function on the habitats will certainly be associated with increased tourist traffic. It results in physical destruction of habitat structure and relating vegetation, reduction of habitat area, deterioration of protection status, penetration of synanthropic species, including invasive ones, and intensification of abrasive processes on the coast. The impact is short-term in nature (tourist season) on the one hand, but on the other hand, its effects can be permanent.

In the area PLH220105 the amended Act on establishment of the multiannual programme “Programme of Coastal Protection (consolidated text, Journal of Laws of 2016, item 678) provides for the implementation of artificial nourishment and coast defences in two sections: New Port-Orłowo (69.2–81.1 km) and Redłowo-Kamienna Góra (83.5–85.3 km), including part of the coastline at the height of the Kępa Redłowska reserve. Objects protected in the area which may be affected by activities relating to the function of coastal protection include reefs, coastal cliffs along the Polish coast and forest habitats. The main threat to the flora and fauna of habitat Reef 1170 are not the activities relating to coastal protection, but the eutrophication of coastal waters resulting from the inflow of the Kacza River, whereas for the cliff habitat it is the stabilisation of the sea coast area, immobilisation of cliff fragments and inhibition of natural processes that normally occur in nature (Boniecka et al. 2015). A plan of conservation tasks for the Kępa Redłowska reserve (Order No 6/2010 of the Regional Director of Environmental Protection in Gdańsk of 7 April 2010) indicates the necessity to abandon the stabilisation of the sea coast area along the reserve (within a 500 m wide strip) using any methods, location of hydrotechnical objects, artificial changes in the bathymetry of the seafloor, except for situations threatening the common safety.

The Explanatory Memorandum to the Ordinance indicates the need for a detailed plan for POM.85.M. area.

PLH220044 Refuge at the Vistula River Outlet

For the area PLH220044 the Draft Plan provides for the implementation of a function of multifunctional economic development (**basin POM.85.M**), which is defined as *“activities aimed at the development of the functions listed in §1(2)(22) in order to ensure the development of maritime economy of the Gdańsk-Gdynia-Sopot metropolitan area, in particular, ensuring conditions for the development of sea ports of fundamental importance for the national economy, ensuring high quality of life for the residents of the metropolitan area while maintaining the principles of the ecosystemic*

approach and the needs of coastal protection, excluding the function of acquisition of renewable energy”. The functions allowed in the basin include: coastal protection, transport, fishery, tourism, sport and recreation, technical infrastructure, cultural heritage, scientific research, artificial islands and installations, aquaculture, functioning of port or haven, and national security and defence. Basin 85.M is much larger than the PLH area Refuge at the Vistula River Outlet and covers the entire Gulf of Gdańsk. The types of impact generated by multifunctional economic development will therefore be the same as those of all the functions listed above (see Table in Chapter 8.1) and depend on the type of development.

Objects protected in the Refuge, potentially affected by the Draft Plan, include dune habitats (2110, 2120, 2130 and 2160), wash margin on a sea coast (1210) and river outlets (1130), and also: linaria odora, twait shad, sichel, river lamprey, harbour porpoise and seal.

Dune habitats and wash margin occur within the boundaries of the designated sub-basin 85.800S intended for the development of the **tourism function**. In the provisions concerning this sub-basin, there are limitations on the establishment of formal bathing areas in the context of human safety (they do not refer to nature conservation). In the entire sub-basin 85.800S it is allowed to locate elements of tourist infrastructure (piers, jetties) as agreed with the competent Director of the Maritime Office prior to the adoption of this Plan. It is difficult to estimate the scale of environmental impact, as it will depend on the type, location and number of implemented investments in tourist infrastructure.

A direct negative impact of the **tourism, sport and recreation** function on the dune habitats will certainly be associated with increased tourist traffic. It results in physical destruction of habitat structure and relating vegetation, reduction of habitat area, deterioration of protection status, penetration of synanthropic species, including invasive ones, and intensification of abrasive processes on the coast. The impact is short-term in nature (tourist season) on the one hand, but on the other hand, its effects can be permanent. The wash margin is a very dynamic and ephemeral system dependent on the organic material deposited by the sea, which is affected by the provisions of the Plan only to limited extent.

Habitat 1130 is included in the planning in the context of sub-basins 85.714.R (Przekop Wisły Outlet) and 85.716.R (Wisła Śmieła Outlet). It is, however, designated for the purpose of ensuring possibility of migration for fish and other aquatic organisms. As a result, the provisions basically refer only to activities relating to bi-environmental organisms, not the habitat 1130, i.e. **majority of allowable functions** are limited to methods which do not endanger effective spawning and pre-breeding of fry of the commercial fish and take into account the necessity to secure proper functioning of spawning grounds. Implementation of the provisions may have a potentially positive impact on the twait shad, sichel or river lamprey. The requirement to keep the areas of river outlets open is also contained in the provisions binding for the voivodeship governments and municipalities.

The basin sheet contains the limitation on activities that may scare off the seals on sandy shoals protruding above the water surface created in the area of Przekop Wisły outlet, which, provided that the provisions are enforced, will have a positive impact on protected object.

For basin POM.85.M significant pro-environmental recommendations have been proposed for the basin as a result of, among other things, the previous versions of the Prediction v.1, v.2 (see Chapter 18):

“Due to the high dynamics of the processes occurring in the coastal zone it is recommended to expand the EIA report for activities in the basin to include the impact of these activities on the morphodynamic and lithodynamic processes taking place in the coastal zone and on the state of the coastal protection system. Due to very good conditions for the reproduction of commercial fish, it is recommended to extend the scope of the EIA report for activities carried out in the basin to include the impact of these activities on resources and recruitment of fish important for fishery. It is recommended to monitor the risk of fuel leakage from the sunken wrecks of Stuttgart and Franken and, if necessary, to take measures to enable the basic function to be implemented and infrastructural investments to be carried out”. The Explanatory Memorandum to the Ordinance indicates the need for a detailed plan for POM.85.M. area.

PLC990001 Słupsk Bank

The area PLC990001 is located entirely within the boundaries of the basin 42.O and two basic functions are provided for it: **protection of the environment and nature** and **transport**. The following functions are also allowed: fishery, tourism, sport and recreation, technical infrastructure, cultural heritage, scientific research and national security and defence. In the Słupsk Bank there are two habitats under protection: **sandbanks which are slightly covered by sea water all the time (1110)** and **reefs (1170)**.

In basin POM.42.O the functions of aquaculture, acquisition of energy and exploration, investigation and extraction of aggregates are not allowed until the protection plan is adopted, which may potentially have a positive impact on both habitats. No prohibitions or limitations have been established for fishery (allowed in the basin on the basis of separate regulations). A negative direct impact of **fishery** on a habitat may be related to seafloor disturbance with fishing tools. No conditions for **tourism, sport and recreation** have been established. The impact of this function on the area of the Słupsk Bank will depend on the degree of its future development, which in turn depends on degree of implementation of other functions (e.g. acquisition of renewable energy). The studies show a certain tourist attractiveness of offshore wind farm areas.

The Plan does not introduce any prohibitions or limitations concerning **transport**. This function may have an indirect impact on habitats through the introduction of pollutants and non-indigenous species into water. It should be noted that a new basin POM.93T has been designated north of the Bank, which may exacerbate the risks (see also Chapter 8.3.2.1).

Sub-basins 42.201.I and 42.206.I were designated in the basin for laying and maintenance of the linear elements of infrastructure. The scale of impact on the protected objects will depend on the application of solutions provided in the Plan to minimise: “laying new elements of infrastructure under the surface of the seafloor, or, if this is not possible for environmental or technological reasons, other permanent protection measures must be applied”. Implementation of function I involves the risk of physical destruction of benthic habitats (especially 1110).

The “Recommendations” part of the basin sheet indicates the important role of the Słupsk Bank for migrating and wintering birds, optimal conditions for the reproduction of commercial fish (spring and autumn herring and turbot populations) and the occurrence in the area of habitats 1170 (reefs) and 1110 (sandy undersea shoals). It was recommended to include a detailed analysis of impact on these environmental elements in EIA reports for the investments planned to be implemented in the basin. This recommendation is particularly important in relation to commercial fish stocks, which usually are not subject to EIA reports. Moreover, it is recommended to withhold any investment plans until the Protection Plan for the area PLC990001 is developed and approved. Both of these provisions may indirectly affect the condition of the habitat in a positive way. However, these provisions, as mentioned, are recommendations and authors of the Prediction are not able to state whether and to what extent they will actually be taken into account.

I. Special Protection Areas (SPAs) outside the area covered by the Plan

PLH320017 Trzebiatów-Kołobrzeg Coastal Strip

The area of PLH320017 is adjacent to the Draft Plan on the area of 0.007 km² (basin POM.06C, with the basic function of coastal protection). The detailed assessment of the impact of the tasks relating to coastal protection on protected objects in the area is included in the document Environmental Impact Prediction for the Amendment of the Multiannual Programme for 2004–2023 entitled: “Programme of Coastal Protection” established by the Act of 28 March 2003 on establishment of the multiannual programme “Programme of Coastal Protection” (Boniecka et al. 2015).

PLH320059 Kopań Lake

The area of PLH320059 is adjacent to the Draft Plan on the area of 0.008 km² (basin POM.27B, with the function of national defence and security). No significant impact of the provisions of the Draft Plan on the protected objects listed in (Table 8.) is expected.

PLH320068 Wicko Lake and Modelskie Dunes

The area of PLH320068 is adjacent to the Draft Plan on the area of 0.02 km² (basin 27.B, with the function of national defence and security). No significant impact of the provisions of the Draft Plan on the protected objects listed in (Table 8.) is expected.

PLH220100 Cliffs of Poddąbie

The area of PLH220100 is adjacent to the Draft Plan on the area of 0.008 km² (basin POM.31C, with the basic function of coastal protection). The detailed assessment of the impact of the tasks relating to coastal protection on protected objects in the area is included in the document Environmental Impact Prediction for the Amendment of the Multiannual Programme for 2004–2023 entitled: “Programme of Coastal Protection” established by the Act of 28 March 2003 on establishment of the multiannual programme “Programme of Coastal Protection” (Boniecka et al. 2015).

PLH220018 Sarbska Spit

The area of PLH220018 is adjacent to the Draft Plan on the area of 0.00003 km² (basins POM.C.37, POM.C.38 with the basic function of coastal protection). The detailed assessment of the impact of

the tasks relating to coastal protection on protected objects in the area is included in the document Environmental Impact Prediction for the Amendment of the Multiannual Programme for 2004–2023 entitled: “Programme of Coastal Protection” established by the Act of 28 March 2003 on establishment of the multiannual programme “Programme of Coastal Protection” (Boniecka et al. 2015).

Furthermore, in an area of 0.11 km² the area PLH220018 is adjacent to basin POM.39.I, for which the provisions are in the form of two alternatives (POM.39a.I and POM.39b.I). This basin is intended for the implementation of investments in nuclear power facilities and accompanying investments. Decisions concerning the location and method of implementation of the investment within function I should be made at the stage of decisions on environmental conditions and the comprehensive impact assessment should be carried out as a part of environmental impact assessment reports.

PLH220003 Białogóra

The area PLH220003 is adjacent to the Draft Plan on the area of 0.07 km² (basin POM.39.I with the basic function of technical infrastructure, for which the provisions are in the form of two alternatives, i.e. POM.39a.I and POM.39b.I). This basin is intended for the implementation of investments in nuclear power facilities and accompanying investments; implementation of investments in the transmission infrastructure of electricity produced in offshore wind farms. Decisions concerning the location and method of implementation of the investment within function I should be made at the stage of decisions on environmental conditions and the comprehensive impact assessment should be carried out as a part of environmental impact assessment reports.

PLH220021 Piaśnica Meadows

The area of PLH220021 is adjacent to the Draft Plan on the area of 0.00000225 km² (basin 40C, with the basic function of coastal protection). The detailed assessment of the impact of the tasks relating to coastal protection on protected objects in the area is included in the document Environmental Impact Prediction for the Amendment of the Multiannual Programme for 2004–2023 entitled: “Programme of Coastal Protection” established by the Act of 28 March 2003 on establishment of the multiannual programme “Programme of Coastal Protection” (Boniecka et al. 2015).

PLH220072 Kashubian Cliffs

The area of PLH220100 is adjacent to the Draft Plan on the area of 0.001 km² (basin POM.40C, with the basic function of coastal protection). The detailed assessment of the impact of the tasks relating to coastal protection on protected objects in the area is included in the document Environmental Impact Prediction for the Amendment of the Multiannual Programme for 2004–2023 entitled: “Programme of Coastal Protection” established by the Act of 28 March 2003 on establishment of the multiannual programme “Programme of Coastal Protection” (Boniecka et al. 2015).

PLH 280007 Vistula Lagoon and Vistula Spit

The area PLH 280007 Vistula Lagoon and Vistula Spit is, in a small part (0.003 km²) adjacent to basin POM.91C where implementation of the coastal protection function is planned. The detailed assessment of the impact of the tasks relating to coastal protection on protected objects in the area is included in the document Environmental Impact Prediction for the Amendment of the Multiannual

Programme for 2004–2023 entitled: "Programme of Coastal Protection" established by the Act of 28 March 2003 on establishment of the multiannual programme "Programme of Coastal Protection" (Boniecka et al. 2015). The area is adjacent to the newly designated basin 92O Eastern Near-Border Waters intended for bird protection (see also Chapter 8.3.2.1).

It should be noted that the area PLH 280007 should be subjected to a detailed environmental impact assessment after the spatial management plan for the Vistula Lagoon basin is prepared under another Project.

Integrity of PLH areas and coherence of the Natura 2000 network

Integrity of Natura 2000 area refers to the set of features, factors and processes associated with the area that may affect its protection objectives. These include without limitation: surface area; presence of important species and natural habitats as well as state of their conservation and protection; availability of feeding grounds, shelters, no obstacles in the migration routes; ecological conditions (e.g. state of waters), degree of habitat fragmentation; intensity of pressures and threats (Michałek and Kruk-Dowgiałło 2014, Michałek and Kruk-Dowgiałło 2015). Coherence means spatial connectivity with other Natura 2000 areas.

Taking into account the above criteria as well as Natura 2000 areas assessed in this Prediction, it should be concluded that the conditions for maintaining integrity and coherence are very diverse. Undoubtedly, attention should be paid to the trends and directions of development of Polish Sea Areas described in the Draft Plan. On the one hand, the Draft Plan sanctions numerous methods of use, on the other hand, it provides space for functions relating to future development, which have relatively broad definitions and their impact on objects protected in Natura 2000 areas is difficult to estimate. Factors having a negative impact on particular protected objects (plant and animal species, and habitats) are specific. In general, the largest scale of impact is typical for activities relating to physical disturbance and destruction of habitats (construction of technical infrastructure, including the acquisition and storage of renewable energy or exploitation of mineral and fossil resources). Tourism, which mainly contributes to the scaring animals off and trampling of habitats, transport, which causes water pollution and indirectly influences the condition of habitats, and fishery, should be indicated as significant threats as well. Certainly, each of Natura 2000 areas will require an individual analysis due to its natural and geographical specificity within the framework of detailed EIA reports for the implemented investments.

An extensive system of substantive as well as formal and legal mechanisms (although not yet used in the case of Polish Sea Areas) relating to planning seems to indicate that it should be an effective tool for the protection of areas of high natural values. In fact, ecological priorities are only one of many, which are a combination of specific interests of particular users of the space. Of course, the Draft Plan assessed in this Prediction contains provisions which have a potentially positive impact on the preservation of the integrity and coherence of the Natura 2000 network of areas, but this impact should be considered as insignificant. To a large extent, the Draft Plan indicates the conditions for the use of individual basins resulting from the already binding documents and normative acts. Protection plans are a tool which would measurably support the process of spatial planning in environmental protection, including objects protected in Natura 2000 areas. An important element of the protection plans are indications (guidelines) for the change of the studies of conditions and directions of spatial

development of municipalities, local spatial development plans, voivodeship spatial development plans, internal sea waters, territorial sea and exclusive economic zone development plans. At present, despite the submission of draft protection plans to the competent authorities for most of the areas within the scope of planning, none of these plans has been implemented and has no binding status.

8.4. Cumulative impacts

In this Prediction cumulative impacts are defined as “sum of the effects of the implementation of different types of activities and plans, including those already implemented, considered together”. These impacts will therefore result from the simultaneous implementation of activities under several functions (Figure 8.1, Map 9). An assessment of the predicted significant impacts of the functions defined in the plan (see Table 2.2) on the various environmental components: biodiversity, humans, animals, plants, water, air and acoustic climate, land surface including the seafloor, landscape, climate, natural resources, monuments including underwater cultural heritage, material assets and Natura 2000 areas is presented in Chapter 8.3.

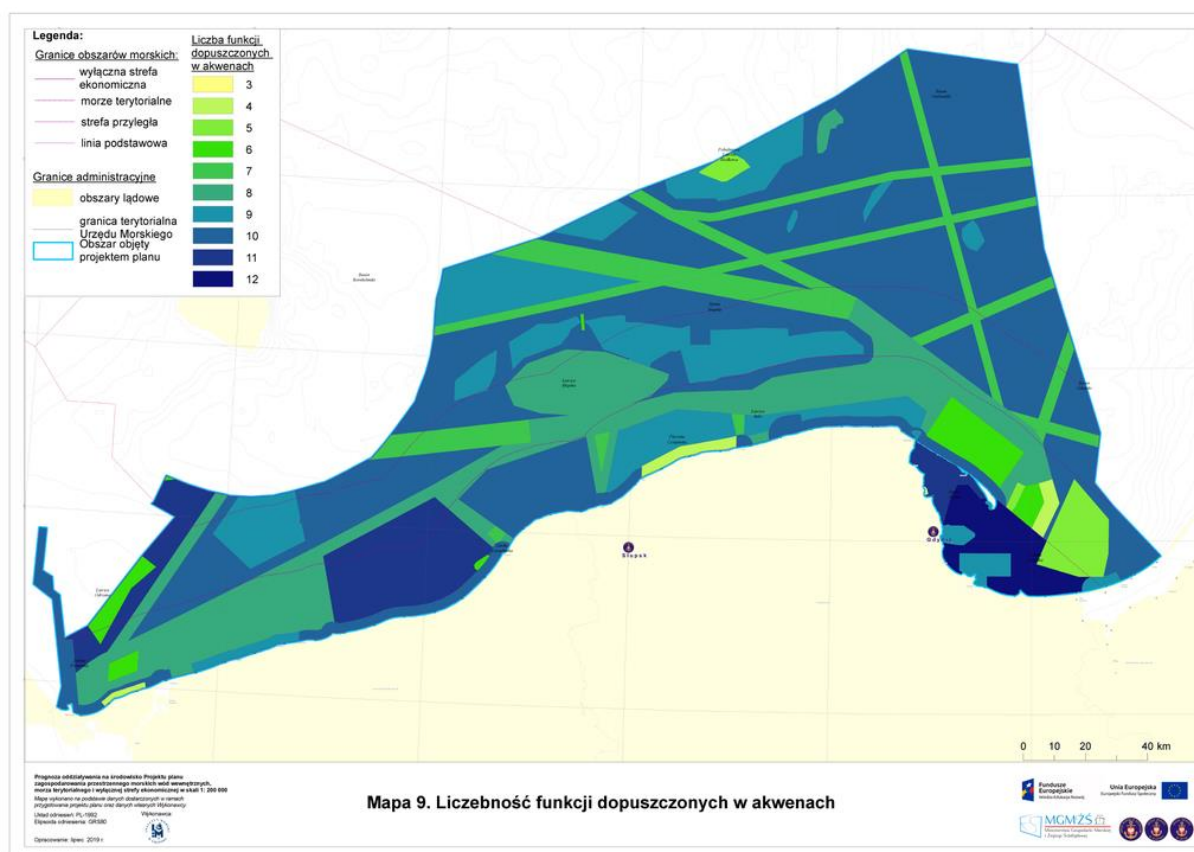


Figure 8.1. Number of functions allowed in each basin (on the basis of v.3 of the Draft Plan).

The analysis of basin sheets presented in the Figure above shows that the largest accumulation of functions (and related activities) occurs in basin POM.20.Pw, in the section from Kołobrzeg to Darłowo, in basin POM.11.Pw and in the area of the Gulf of Gdańsk (basins POM.84.L, POM.85.M).

A detailed plan is to be prepared for the Gulf of Gdańsk. The scope and scale of occurrence of cumulative impacts will depend on the schedule of implementation of particular activities

(investments) and applied technological solutions and solutions aimed at minimising the negative impact on the environment. A detailed assessment at this stage of strategic environmental impact assessment is possible within the scope presented in this document.

8 Determination, analysis and assessment of the state of the environment in areas affected by the anticipated significant impact

Taking into account the general nature of the provisions of the Draft Development Plan, as well as identification, analysis and assessment of the impact of the Draft Plan on the environment and Natura 2000 areas contained in Chapter 8, it was assumed that the condition of the environment in the areas affected by the predicted significant impact is consistent with the condition presented in Chapter 5 of the Prediction.

9 Alternative solutions indicated in the Draft Plan (including indication of the most beneficial options for the environment)

The Plan contains alternative detailed solutions. They concern the route of the Baltic Pipe gas pipeline and the location of the technical infrastructure for the implementation of investments accompanying nuclear power facilities. The ultimate selection of alternatives should be made by the public administration after detailed research. Once the final decision on the route of the pipeline has been made, only the selected option will be valid in the Plan. Two alternatives for the location of technical infrastructure for the execution of investments accompanying nuclear power facilities have also been considered. Two versions of basin sheets for basins POM.38.C, POM.39.I, POM.40.C and POM.41.P have been prepared and marked with the letters a and b. The analysis of basin sheets is contained in Chapter 8.2 of this Prediction. Once the decision on the final location of the nuclear power plant has been taken, only the selected option will be valid in the Plan (Explanatory Memorandum to the Detailed Decisions).

The decisions described above should be made before the final adoption of the Plan by an Ordinance. If this is not the case, no decisions will be taken in the basins covered by the alternatives that prevent or hinder the implementation of any of such alternatives (*ibidem*).

In order to identify the alternative which is the most beneficial for the environment, it is necessary to have a number of data **independent of the Draft Plan** (first of all, the results of environmental research, technical and technological conditions of the investment included, among other things, in the EIA reports). Identification of alternatives that would be best for the environment as far as the Baltic Pipe underwater gas pipeline and the nuclear power plant are concerned, is beyond the scope of this Prediction.

10 Information on possible transboundary environmental impacts of the Draft Plan

As part of the works on the Prediction, in accordance with the Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context (Journal of Laws of 2011, No 180, item 1074), the possibility of impact occurrence was analysed. Pursuant to the ESPOO Convention, i.e. the Convention on Environmental Impact Assessment in a Transboundary Context drawn up in Espoo on 25 February 1991. (Journal of Laws of 1991, No 96, item 1110) **transboundary impact** “means any impact, not exclusively of a global nature, within an area under the jurisdiction of a Party caused by a proposed activity the physical origin of which is situated wholly or in part within the area under the jurisdiction of another Party”.

The factor minimising the risk of a significant transboundary impact as a result of the Draft Plan is the obligation set out in Article 2(1) of the general provisions of the ESPOO Convention: “*The Parties shall, either individually or jointly, take all appropriate and effective measures to prevent, reduce and control significant adverse transboundary environmental impact from proposed activities.*”

The assessment of the possibility of transboundary impacts is based on the provisions of the basin sheets as well as the General Provisions (Appendix 1 to the Ordinance).

The conclusions on the possibility of occurrence of transboundary impacts were drawn by the authors of the Prediction on the basis of Chapter 8: Identification, analysis and assessment of the predicted significant impacts of the findings included in the Draft Plan on the objectives and objects of conservation, the integrity and coherence of Natura 2000 areas and the environment. The functions identified in the Plan as basic ones were considered. It should be emphasised that in the course of work on the Draft Spatial Development Plan together with the Prediction, the Parties had the opportunity to familiarise themselves with its results during international working meetings (see Chapter 17). Due to the pilot character of the work (this is the first spatial development plan for Polish Sea Areas together with the Prediction), the developed documents are an extremely important contribution to the development of the methodology of planning works.

Transport (T)

In the Draft Plan, 20 basins with the basic function of transport were distinguished. Activities relating to this function will not cause significant transboundary impacts. This function has been implemented in Polish Sea Areas for many years. Potential random events and accidents at sea, which may affect neighbouring countries, may be a problem. However, the response system to such threats is subject to other regulations. The possible designation of new navigation routes would increase the atmospheric pollution.

Functioning of port or haven (Ip)

The possibility of significant transboundary impacts was considered in two basins POM.01Ip and POM.90Ip designated for functioning of port or haven (Ip), located close to the borders with the Federal Republic of Germany and the Russian Federation.

In basin POM.01.Ip, the construction of the External Container Port in Świnoujście on the east side of the LNG Terminal is planned. However, due to its distance of about 4.0 km from the border with the Federal Republic of Germany, the investments will not have a significant transboundary impact. The EIA report for the investment relating to the construction of external port in Świnoujście along with LNG Terminal, directly adjacent to the planned investment and located closer to the border with the Federal Republic of Germany, showed that due to the location of the investment, as well as the local scope of its impact, limited only to the investment area – the scope of the activities and works concerned a relatively small area – initiation of transboundary proceedings is not necessary (Mejszelis et al. 2008).

Similarly, for the project entitled “Modernisation of the Świnoujście-Szczecin fairway to the Depth of 12.5 m”, according to the EIA report (Rydzkowski ed. 2015) a transboundary impact of the analysed investment on the environment is not possible due to the scope and nature of the this impact (air, noise) and the distance from the national borders (over 5 km). The environmental impact of the investment in question is limited to its immediate vicinity and it is local and reversible. The emission of gaseous pollutants into the air from vessels and equipment combustion engines will be of short duration. Additionally, the potential transboundary impact is limited by the dominant wind direction (WSW for Szczecin and Świnoujście). As stated in the Report (ibidem), during normal operation of the fairway there will be no negative transboundary impacts on individual components of the environment.

Moreover, the issue of possible transboundary impact on the environment was subject to additional analyses in this respect. Complements and analyses presented by the authors of the Report, including the estimated ranges of impact, do not indicate the possibility of changes in hydrological relations in the entire basin of the Szczecin Lagoon. The Szczecin-Świnoujście fairway has been functioning for many years in the environment, including the waters of the Szczecin Lagoon, without causing significant negative disturbances in the functioning of the whole water system, also in a transboundary context.

For the investment entitled “Modernisation of the Świnoujście-Szczecin fairway to the depth of 12.5 m” the conditions specified in the decision of the Regional Director of Environmental Protection in Szczecin No 6/2017 on environmental conditions of 14 June 2017, ref. No: WONS-OŚ.4211.17.2014.AT.35, apply. The decision specifies the conditions for the implementation of this investment and actions aimed at minimising the impact of this investment on the environment. The investor is also obliged to monitor the impact of the investment and carry out environmental supervision at the stage of implementation and nature monitoring before, during and after the investment is implemented.

As it is stated in the decision (...) “On the basis of the conducted enquiries, the Authority did not find that a significant transboundary environmental impact on the territory of Germany is possible in connection with the planned investment. Therefore, the local Authority did not find any prerequisites to conduct any enquiries concerning the transboundary environmental impact, pursuant to Article 104(1) of the Act of 3 October 2008 on Sharing Information About the Environment and its Protection, Public Participation in Environmental Protection and Environmental Impact Assessment (Journal of Laws of 2016, item 353, as amended)(...)”.

Currently, the process of social consultations and agreements for the draft provisions of spatial development plans for Polish Sea Areas (internal sea waters) is ongoing, together with EIA Predictions for the Szczecin Lagoon, the Kamień Lagoon and the ports of: Szczecin, Świnoujście, Police, Dziwnów and Trzebież, which are under the territorial competence of the Director of the Maritime Office in Szczecin.

The Szczecin Lagoon, the Kamień Lagoon and the port of Świnoujście can be affected by the provisions of the draft spatial management plan of Polish Sea Areas.

In the EIA Prediction for the draft solutions of the spatial management plan of Polish Sea Areas (internal sea waters) of the Szczecin Lagoon (Zalewska et al. 2019) no transboundary impacts were identified. The analysis of potential impacts in the Prediction showed that they will not cross the border of the Plan. When the Plan enters into force the type of use of the basin will not change. The Plan is aimed at organising the activities within the borders of the Szczecin Lagoon. For potential impacts on the environment minimising activities have been indicated (ibidem).

Similarly, no transboundary impact is expected in connection with implementation of the provisions of the draft spatial development plan of Polish Sea Areas (internal sea waters) of the Kamień Lagoon (Zalewska et al. 2019a).

The authors of the EIA Prediction (Zalewska et al. 2019b) drawn up for the draft spatial development plan of internal sea waters – the port of Świnoujście, do not predict any transboundary impacts in connection with the implementation of provisions of the Draft Plan. The analysis of potential impacts

showed that they will not cross the border of the Plan. For potential impacts on the environment minimising activities have been indicated (ibidem).

In basin 90Ip the Ip function – functioning of port or haven – is to be implemented, to enable the investment of building a navigation channel connecting the Vistula Lagoon with the Gulf of Gdańsk (the basin is intended for the construction of access infrastructure to the port of Elbląg) in the selected location Nowy Świat on the Vistula Lagoon and in the coastal area of the Gulf of Gdańsk. The reports by Pawelec (2015) and EKO-KONSULT (2018) found no possibility of significant transboundary impacts on territorial waters of the Russian Federation. Due to the distance of the planned investment entitled “Construction of water route connecting the Vistula Lagoon with the Gulf of Gdansk” in the selected location alternative Nowy Świat and the lack of significant transboundary impact of the investment on the environment of the Vistula Lagoon in the territory of the Russian Federation shown in detailed analyses and predictions, the agreement of 25 August 1993 by and between the Government of the Republic of Poland and the Government of the Russian Federation is not applicable (EKO-KONSULT 2018).

On the basis of the conducted analyses the authors of the Prediction conclude that the implementation of the basic function relating to the functioning of port or haven in basins neighbouring with the Federal Republic of Germany and the Russian Federation will minimise the possibility of significant transboundary impacts, as long as the principles of the protection of the environment and nature are maintained.

Technical infrastructure (I)

One basin was designated for the implementation of activities relating to technical infrastructure, more specifically, to the investment in the components of the cooling system of the nuclear power plant and the accompanying infrastructure of the nuclear power plant. Provisions included in the basin sheet will not generate any transboundary impacts, however, it should be stressed that the authors of the Prediction did not refer in detail to the investment in the form of construction of the nuclear power plant. Such assessment goes beyond the strategic impact assessment procedure of this development plan.

On the basis of the conducted analyses the authors of the Prediction conclude that laying of linear elements of technical infrastructure in other basins (neighbouring the Federal Republic of Germany and the Russian Federation) will minimise the possibility of significant transboundary impacts, as long as the principles of the protection of the environment and nature are maintained.

Protection of the environment and nature (O)

In the Draft Development Plan, 6 basins with the basic function of protection of the environment and nature were separated. The activities relating to the implementation of function of the protection of the environment and nature will cause no transboundary impacts.

Acquisition of renewable energy (E)

The Draft Plan identifies 7 basins intended for the acquisition of renewable energy, two of which neighbour Sweden. According to the definition of this function, acquisition of wind energy is allowed in these areas.

Birds that migrate due to their life cycles cross country borders many times a year. In the Baltic Sea area there are sea birds whose local breeding grounds are located on its coasts in EU countries (e.g.

herring gull, auk, guillemot, black guillemot and partially white-winged scoter). Apart from these, also birds from the northern European and Siberian populations (e.g. arctic loon, long-tailed duck, scoter, horned grebes and partially white-winged scoter) appear here during the non-breeding period. The implementation of function E in the shape proposed in the plan will create from the north a closed ring (POM.43.E, POM.44.E, POM.45.E) around Natura 2000 area Słupsk Bank. Additionally, areas POM.60.E, POM.53.E, together with the OWF investments on the Swedish side, may create an additional barrier for bird migration through this part of the Baltic Sea in the future, increasing the potential transboundary impact. On the Swedish side of the Central Bank region, the Natura 2000 area “Hoburgs bank och Midsjöbankarna” (SE0330308) was designated in December 2016. This area does not include the shallowest part of the Central Bank in Swedish waters, which is designated for the potential construction of an offshore wind farm. Provisions and regulations related to the Natura 2000 area “Hoburgs bank och Midsjöbankarna” will be included in the Swedish spatial development plan and may affect the development of wind energy industry on the Polish side of the basin.

It should also be noted that the results of radar research conducted during the ornithological monitoring preceding the issuance of the OWF Polenergia construction permits showed that the main migration routes of birds over this part of the Baltic Sea run along the north-east - south-west axis. As a result, the proposed development of the basins POM.43.E, POM.44.E, POM.45.E, POM.60.E and POM.53.E creates potential barriers situated across the main routes of bird seasonal migrations.

To sum up, no transboundary impacts are expected in case of a single OWF, but it should be expected that the probability of such impacts will increase in case of locating subsequent OWFs adjacent to each other and creating a large barrier. However, leaving at least 4 km wide corridors between the farm areas free of wind power plants will minimise the possible negative transboundary impact if several wind farms are located next to each other.

In the Polish spatial development plan, in order to minimise the impact of the OWF on the Swedish Natura 2000 area (SE0330308), it is prohibited to erect artificial islands and installations at a distance of less than 2 km from this area. Moreover, acoustic research is recommended in order to verify the intensity and time variability of harbour porpoise occurrence. If the area of the Central Bank is confirmed to be valuable for the species, it is recommended to “create a harbour porpoise conservation area”.

Certainly, any investment activities planned on both sides of the Polish-Swedish border require close cooperation at the stage of assessment procedures in order to develop appropriate minimisation measures.

Exploration, investigation of mineral and fossil resources and extraction from the resources (K)

An environmental impact assessment procedure, also in a transboundary context, is carried out for every planned activity likely to have a significant impact on the environment, the implementation of which involves a construction project or any other environmental intervention involving a change in the use of the area, including the extraction of minerals and fossil resources. In the draft development plan, 7 basins with the basic function (K) were separated. Moreover, exploration, investigation of mineral and fossil resources and extraction from the resources were allowed in other basins, with limitations described in the basins sheets.

Basin 61K is located in the area of the Central Bank (on the Swedish side, the Natura 2000 area SE0330308 is located nearby) and within the boundaries of the mining area South Central Bank –

Central Baltic for natural aggregate resource No 1658. The principles of use established in license No 3/2016, the environmental decision and the Mining Plant Maintenance Plan apply there.

Activities relating to the implementation of this function should cause no transboundary impacts, as long as limitations on the regions and methods of applied works (prohibition of erecting artificial islands and installations in selected basins) are obeyed, as provided for in the Plan. However, it is possible that emergency situations or catastrophes will occur, the effects of which (in the case of hydrocarbon extraction) may have a supra-local range and go beyond the border of Polish Sea Areas.

National security and defence (B)

In the draft development plan, 5 areas were designated for the function of national security and defence (B). After analysis of the basin sheets and general provisions of the draft plan it was found that the activities connected with the implementation of this function will not cause transboundary impacts.

Coastal protection (C)

In basins marked as “C”, according to the draft development plan of Polish Sea Areas, the function of coastal protection is being implemented. At the level of strategic environmental impact assessment of the “Programme of Coastal Protection” established by the Act of 28 March 2003 Establishment of the Multiannual programme “Programme of Coastal Protection”, in terms of activities relating to coastal protection no possibility of significant negative transboundary environmental impact was found (Boniecka et al. 2015).

Analysing individual tasks provided for under the Programme, no tasks were found which, according to the criteria of the Convention on Environmental Impact Assessment in a Transboundary Context, would have features of investments listed in Appendix I, i.e. which may cause significant negative transboundary impacts.

The analysis of the tasks planned under the Programme in the vicinity of the border with the Russian Federation on the Vistula Lagoon (which provides for the construction of new coastal defences) indicates that due to the recognition of the necessity to preserve the natural coastal processes forming high dune shores no new defences should be built on the Vistula Spit coast east of Krynica Morska, close to the Lagoon – i.e. also on the border with the Russian Federation. Moreover, the relative dynamic balance, low class of erosion hazards and high resistance of the coast do not indicate the need to protect this section of the coast. On the other side of the Lagoon, east of Nowa Pasłęka, a dyke already exists. The scope and the method of carrying out possible modernisation works on the dyke in direct neighbourhood of the border, as long as principles of the protection of the environment and nature are obeyed, will minimise the possibility of significant transboundary impacts (Boniecka et al. 2015).

The analysis of the tasks planned in the Szczecin Lagoon in the updated programme showed that there are no plans for new defences, only the existing ones are going to be modernised. Therefore the problem of potential transboundary impacts on the southern coast of the Nowoparpieńskie Lake, on the Polish side, almost completely undeveloped and protected against waves by the nearby Riether Werder Island, should not appear. On the other hand, a strip of reeds growing in the foreground of the dyke along the southern coast of the Polish part of the Uznam Island, which cuts deep into the Lagoon, ensures a significant minimisation of potential impacts resulting from

modernisation works of existing defences conducted near the border with the Federal Republic of Germany.

Multifunctional economic development (M)

This function is implemented in the Gulf of Gdansk. The functions allowed in this basin constitute a multifunctional economic development and include: transport, tourism, sport and recreation, artificial islands and installations, technical and port infrastructure, aquaculture, fishery, scientific research, coastal protection and cultural heritage conservation. Due to the considerable distance from the borders, no transboundary impacts generated by this function are predicted at this stage of the plan.

Reserve for future development (P)

The function of reserve for future development was specified as a basic function in 7 basins of Polish Sea Areas. Designation of these basins is aimed at maintaining the sea space in such state that in the future it would be possible to adopt each of the possible basic functions in this space in order to meet the interests and needs of future generations. Due to the fact that the direction of development of these basins is not known, at this stage of the assessment it is not possible to determine explicitly the transboundary impacts.

Reserve for future development with extraction allowed (Pw)

The function of reserve for future development with extraction allowed was specified as a basic function in 17 basins in the Draft Plan. It was allowed in all the basins with the basic function of reserve for future development located outside the territorial sea. Limitation of the function results from the needs of minimising conflicts with coastal tourism important for the development of coastal municipalities, as the platforms are objects which negatively influence the state of the sea landscape. This solution is also intended to ensure sustainable development in the maritime sector, coordination of activities of entities and methods of using the sea as well as coherent management of sea areas. The planning material indicates a high risk of pollution of coastal areas by oil spills as a result of random events involving platforms located close to the coast. Activities relating to the implementation of this function should not cause any transboundary impacts, as long as limitations on the regions and methods of applied works (including the mentioned prohibition of erecting artificial islands and installations in selected basins) are obeyed, as provided for in the Plan. However, the possibility of emergency situations or disasters outside the territorial sea should be taken into account. Then their effects may have a supra-local range and go beyond Polish Sea Areas.

Environmentally conditioned local development (L)

This function is implemented in the Puck Bay. In the basin functions synergic in relation to the environmentally conditioned local development are allowed. Due to the location of the basin, the function in question will not generate transboundary impacts.

11 Presentation of solutions aimed at prevention, limitation or natural compensation of negative environmental impacts, which may result from the implementation of the Draft Plan

Prevention in the sense of “not allowing for something” (Szymczak et al. 1981) describes a situation when there are no effects of the actions taken. At the stage of performing the strategic environmental impact assessment it was not possible to adopt many scenarios assuming different degrees of implementation of particular functions indicated in the Draft Plan (the plan includes 12 leading functions and many activities within them). It is practically impossible to indicate specific and rational solutions minimising the negative impact on the environment. The creation of different combinations of all the indicated activities relating to particular functions, taking into account selected factors which would show the planned investments more clearly, would go significantly beyond the statutory scope of the Environmental Impact Prediction. Pursuant to Article 52(1) of the EIA Act (consolidated text, Journal of Laws of 2018, item 2081, as amended): “The information contained in the Environmental Impact Prediction (...) should be developed in accordance with the state of contemporary knowledge and assessment methods, and adjusted to the content and degree of detail of the draft document and the stage of adoption of this document in the process of developing draft documents relating to this document”.

Referring to the diagnosed problems with establishing the implementation of specific intentions in specific locations, and following the precautionary principle, the authors of the Prediction assumed that the presentation of solutions aimed at prevention, limitation or compensation of negative environmental impacts for specific activities in specific basins should take place at the stage of proceedings relating to environmental impact assessments and concern investments indicated in the Ordinance of the Council of Ministers of 9 November 2010 on type of projects likely to have significant effects on the environment (consolidated text, Journal of Laws of 2016, item 71).

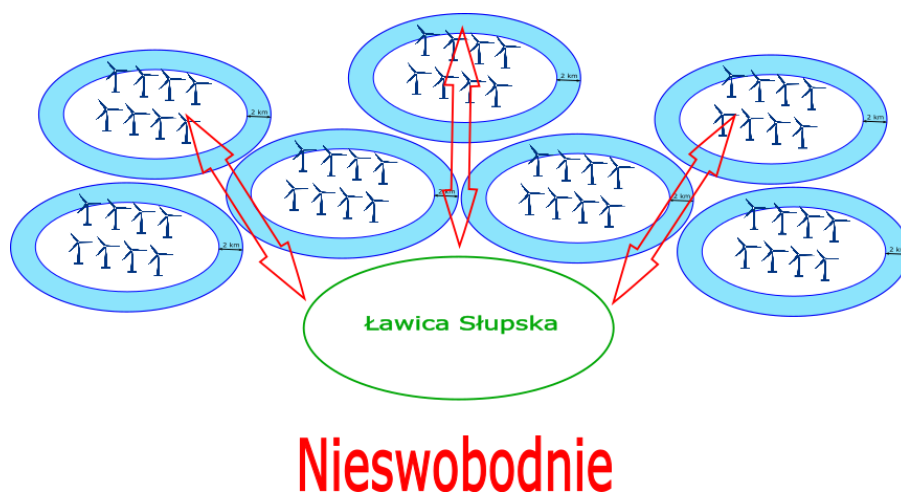
However, the solutions proposed in the Draft Plan and each of the Appendices, resulting from the application of the ecosystem approach, may contribute to preventing or reducing negative environmental impacts. Each time these solutions will need to be verified, including possible extension of their scope at the level of implementation of individual activities. The selected provisions can be found below (see also Chapters 4 and 8.2). Some of them are included in particular basin sheets, others, after numerous discussions, are of a general nature.

1. Sub-basins of particular importance for the welfare of ichthyofauna (areas close to river outlets) have been designated and methods of function implementation have been limited to those that do not endanger the functions of the fish migration corridor and take into account the need to secure bidirectional migration of fish.
2. In respective basins the functions were limited to methods that do not endanger the ecological function of spawning grounds and the survival of early development stages of fish (eggs and larvae) of commercial species.
3. In basins, where the collected planning material indicates presence of large numbers of birds, functions were limited to methods which do not significantly affect the welfare of

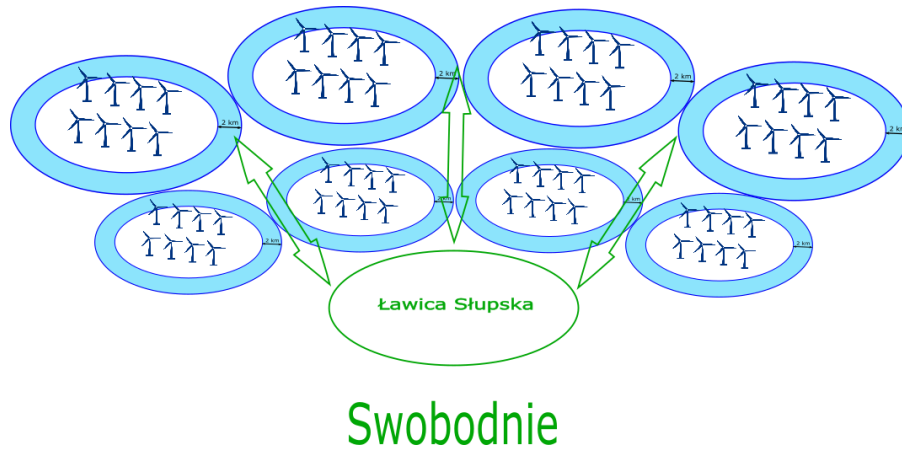
wintering and resting birds during migration and during their occurrence in large numbers from the beginning of November to the end of April.

4. In basins where the planning material indicates good conditions for bird breeding, the functions were limited to methods which do not have a significant negative impact on bird breeding or does not affect the coast and elements of infrastructure where birds breed in the period from 1 March to 31 August.
5. In basins where the planning material indicates good conditions for reproduction and nursing of young harbour porpoises, works and activities that could disturb this process were limited. Moreover, it is recommended to conduct acoustic research to identify the presence of mammals and underwater noise monitoring.
6. Only coastal protection activities provided for in the Programme of Coastal Protection were allowed.
7. After activities which disturbed the habitat integrity have been completed, it is required to restore the habitat to its original state.
8. The location of individual wind turbines should take into account corridors for flight of migrating birds with a minimum width of 4 km (2 km from the last turbine in a row), whose exact direction and size will be determined as part of the EIA report for each of the investments.

Such a corridor must enable birds to fly freely between Natura 2000 areas (Figure 7.2). Free flight between areas in the Natura 2000 network means possibly the shortest and straightest line connecting the areas in the basin of the Baltic Sea important for migrating water birds, helping to maintain the coherence of the Natura 2000 network. The figure below does not present the adopted solutions, it only illustrates the problem.



Słupsk Bank, no-free flight



Słupsk Bank, free flight

Figure 7.2. The concept of the corridors between the OWFs for the free flight of birds

The previous versions of the Prediction and previous versions of the Draft Plan recommended to move the OWFs development line away from the SPAs by at least 2 km. This is justified by the fact that most bird species avoid the areas occupied by the wind turbines and their vicinity within 2 km from the external turbines (Petersen et al. 2006, Fox et al. 2006). Birds are scared off by wind turbines and forced out of their habitats. Locating a OWF at a distance of less than 2 km from the borders of SPAs could result in forcing protected bird species out of the part of SPAs adjacent to the OWF. This would result in a potentially significant negative impact of function E on the avifauna, including protected bird species, their habitats and objectives, protected objects and integrity of Natura 2000 areas, as well as on coherence of the network of these areas (as a result of the barrier on the migration routes of birds). The recommendation concerns OWFs, for which no administrative decisions have been issued yet or for which it does not contradict the decisions already issued. Currently the recommendation concerns the Natura 2000 area SE0330308.

The main problem for marine mammals relating to human activities in the area covered by the Plan is underwater noise. This noise is related to activities undertaken within the functions of technical infrastructure (I), acquisition of renewable energy (E), artificial islands and installations (W), exploration, investigation and extraction of mineral and fossil resources (K). It is therefore necessary to protect marine mammals from such significant negative impacts. In the case of functions I, E, W, the intensified negative effects will take place at stages of construction and removal of the investment. During operation the noise generated by small wind turbines (up to 2 MW) has relatively low intensity of frequencies below 1 kHz (Wahlberg and Westerberg 2005, Thomsen et al. 2006). Works relating to the construction of technical infrastructure or infrastructure for the acquisition of renewable energy, such as wind turbines, pipelines, hydrotechnical structures, or the use of equipment for the exploration of mineral and fossil resources should be carried out outside the breeding period of marine mammals, which in the case of grey seals falls in February–March and in the case of harbour porpoises in the summer season in May–July. In the case of activities involving the introduction of large amounts of noise into the sea, appropriate measures should also be taken to minimise the negative impacts directly at the source of noise. Moreover, a frequently used method is also a gradual forcing the marine mammals out of the areas where works relating to such investments are planned. This is of particular importance in the case of harbour porpoises, which are

extremely sensitive, especially to impulsive noise introduced into the water. In the selected basins it is recommended to systematically conduct acoustic research to identify the presence of marine mammals and underwater noise monitoring.

12 Presentation of alternative solutions to those contained in the Draft Plan together with justification of such selection and description of methods of the assessment used for making selection, or explanation why there are no alternative solutions

The legal basis which serves as a tool that ensures the coordination of activities having various spatial effects of social, economic and environmental nature is the Act on Sea Areas of the Republic of Poland and Maritime Administration (consolidated text, Journal of Laws of 2018, item 2214, as amended), which is an implementation of the provisions of Directive 2014/89/EU of the European Parliament and of the Council of 23 July 2014 establishing a framework for maritime spatial planning into the Polish legislation. According to the Directive, EU Member States were obliged to develop spatial development plans by 31 March 2021. The Act also includes provisions necessary for the preparation of spatial development plans for Polish Sea Areas, which do not result directly from the Directive, but are required for its full implementation. A failure to draw up an appropriate draft plan would thus constitute a failure to meet the obligations arising from the spatial planning legislation. On the other hand, a failure to adopt a properly drafted plan may result in an increase in the risks to social and economic development as well as to the marine environment.

Taking into account formal, legal, environmental, natural and social conditions, there is no possibility of using the alternative option 0 – not drawing up a draft plan.

The purpose of the Draft Spatial Development Plan for the Internal Sea Waters, Territorial Sea and Exclusive Economic Zone in scale 1:200,000 is to support the sustainable development of sea areas, for example, by pointing out the areas and specifying how various maritime spatial development methods could co-exist and be kept in spatial order. The development of sea areas results from the overlapping of spatial planning decisions and other management decisions with regard to sea areas (such as protection plans for Natura 2000 areas, decisions of the International Maritime Organisation on traffic TSS separation, establishments of maximum fishing limits, etc.) and spatial plans of sea areas should not replace these decision-making processes.

The Draft Plan contains decisions that determine the co-existence of various ways of using the sea areas without losing the possibility to execute tasks assigned to sectors considered as priority ones, and that ensure safe use of each basin. The Draft Plan is of a pilot nature, so on the one hand, it sanctions and organises development methods that are currently applied in Polish Sea Areas, but on the other hand, it indicates the areas which are not managed by any public processes other than spatial planning. The Draft Plan neither invalidates any validly issued spatial decisions, nor does it constitute a basis or instrument for changing the issued permits.

The alternative solutions proposed below, as well as detailed proposals for changes in the provisions contained in the Recommendations chapter (Chapter 18), have been drawn up to the

previous versions of the Draft Plan and have been partially taken into account in version of the Plan of 22 April 2018 under assessment herein. The authors of the Prediction are no longer proposing new alternatives at this stage.

In a part of the basin sheets, i.e. “Principles for Using the Basin”, the provisions resulting from the binding documents or normative acts have been included. In individual basins orders, prohibitions and limitations specified in these acts are in force, and the Draft Plan should somehow supplement these provisions so that the objectives specified in the Draft Plan could be achieved, including: *“ensuring resilience of non-recoverable resources and environmental processes in the perspective of the current and next generations”*.

- Environmental protection should be treated as a condition (and not as a basic function in a limited number of basins) and be the basis for planning; whether or not it is a legally protected area. Some areas of natural value (e.g. Eastern Near-Border Waters) are not under protection, which, however, does not diminish their importance and appropriate provisions should be introduced for them.
- With regard to designated basins C, to reduce the pressure on the sea environment and reinforce the function – protection of the environment and nature – for one of them, basin POM.02.C, the alternative can be to reduce its area in favour of basin POM.03.O which covers the sea part of the Woliński National Park. It is proposed to include a part of basin POM.02.C surrounding the basin POM.03.O on the sea side into this basin (POM.03.O), which will additionally secure the objectives and objects of protection of area PLB320002 Świna River Delta. Moreover, the Programme of Coastal Protection (consolidated text, Journal of Laws of 2016, item 678) does not provide for implementation of any protection tasks in this area, which additionally justifies this solution.
- As an alternative solution, on the map of the Draft Plan the possibility of designating area POM.92.O as a part separated from basins POM.91.C and POM.80.P. was initially indicated. The map was not enclosed with the basin sheet for basin POM.92.O beforehand, therefore it was impossible to analyse the correctness of provisions for this basin. However, the basin was then designated and a basin sheet was prepared for it. It should be stressed that basin POM.92.O has borders with area IBA PLM4 Eastern Near-Border Waters, which is an important feeding and resting ground for water bird population during wintering and migration, including the white-winged scoter *Melanitta fusca*, which according to IUCN is an endangered species (IUCN 2017-3). Therefore, it was justified to adopt the original alternative solution assuming the designation of basin POM.92.O and to create a basin sheet for this basin, in which prohibitions, limitations or conditions for the implementation of particular functions of Polish Sea Areas were included concerning the need to take into account the significance of bird habitats in the economic activity of this area.
- For the area adjacent to the Słupsk Bank, where function E is allowed (POM.44.E, POM.45.E and POM.46.E), it was proposed to introduce the requirement to leave at least 4 km wide corridor(s), free of structures relating to the power plants, between the offshore wind farms (OWF), located appropriately, taking into account the identified main directions of bird migration to wintering grounds in autumn and from wintering

grounds in spring along the line NE-SW (Keslinka et al. 2017). These corridors would minimise the risk of creating a barrier effect restricting access to Natura 2000 areas: PLC9900001 Słupsk Bank, PLB9900002 Baltic Coastal Waters and PLB9900003 Pomeranian Bay for populations protected in these areas. It should be noted that such corridors(s) may arise “naturally” at the stage of the construction project, e.g. if after deep drilling it turns out that the geological structure of the seafloor in some areas does not allow for foundations of the power plant to be placed on it. Thus, the need to create special corridors to facilitate bird migration will largely depend on the final shape of the designed offshore wind farms. The corridor width of at least 4 km results from doubling the distance of 2 km from external wind turbines in the OWF (2 km on each side of the migration route), in which a high rate of birds being scared off is observed. Most sea birds bypass the operating wind farms at a distance of up to 2 km (Petersen et al. 2006, Fox et al. 2006). This is also true for the long-tailed duck *Clangula hyemalis*, whose wintering population is protected in PLC9900001 Słupsk Bank, PLB9900002 Baltic Coastal Waters and PLB9900003 Pomeranian Bay areas, and is an endangered species according to IUCN (IUCN 2017-3). A barrier in the form of a single farm would not be significant for the migration of adult birds and to wintering grounds located in the area of the Słupsk Bank, the Baltic Coastal Waters or the Pomeranian Bay. However, in the situation when a large area for the acquisition of renewable energy, especially an OWF, is located at the northern and north-eastern end of the Słupsk Bank, and between the wind farms there are no migration corridors free of the turbines, a large barrier on the migration route of birds will be created, which may lead to changes in these routes. Such a barrier will also make it more difficult for the birds to fly locally, e.g. in search of food. Birds will bypass areas occupied by the wind turbines or try to fly between rows of them to a lesser extent (this is less likely as water birds usually bypass such objects by 2 km). Adult birds will most likely be able to get used to the presence of wind farms (the so-called habituation phenomenon), however, for young, inexperienced birds migrating towards wintering grounds for the first time in their lives, bypassing the extensive barrier may be a problem, leading to their higher mortality rate during their first year of life (Clark and Martin 2007; Redmond and Murphy 2012; McKim-Louder et al. 2013). Therefore, it cannot be excluded that in the absence of migration corridors on the migration route of most sea bird species in this region (NE-SW), the extensive barrier in the form of a group of wind farms on the northern and north-eastern slopes of the Słupsk Bank could have a significant negative impact on the protected bird species and their habitats as well as on the objectives, protected objects and integrity of Natura 2000 areas: PLC9900001 Słupsk Bank, PLB9900002 Baltic Coastal Waters and PLB9900003 Pomeranian Bay, and the coherence of the SPA network. Along the route of the above mentioned corridors it is possible to install a power grid, because such an installation will not have any impact on birds during operation of the OWF, and at the construction and disassembly stage its impact on the sea birds will not be so significant (especially with the simultaneous introduction of time limitation for the construction and disassembly works in relation to the technical infrastructure – prohibition to carry out the works “in a way which significantly affects the welfare of birds wintering and resting during migration and during the period when they occur in large numbers, from early November to late April”).

- A limitation should be introduced to move the outer border of the wind turbines within OWFs away from the SPAs by at least 2 km. This is justified by the fact that most bird species avoid the areas occupied by the wind turbines and their vicinity within 2 km from the external turbines (Petersen et al. 2006, Fox et al. 2006). Birds are scared off by them and forced out of their habitats. Locating an OWF at a distance of less than 2 km from the borders of SPAs could result in forcing protected bird species out of the part of SPAs adjacent to the OWF. This would result in a potentially significant negative impact of function E on the avifauna, including protected bird species, their habitats and objectives, protected objects and integrity of Natura 2000 areas, as well as on coherence of the network of these areas (as a result of the barrier on the migration routes of birds) (see also Chapter 8). With respect to version of the Draft Plan presented to the Prediction Team at this stage of work, this limitation relates primarily to areas PLC990001 Słupsk Bank, PLB990003 Pomeranian Bay, as well as to the Natura 2000 area located in Sweden – SE0330308 Hoburgs bank och Midsjöbankarna. However, it should be emphasised that this limitation should apply to all SPAs covered by the Draft Maritime Spatial Plan of the Internal Sea Waters, Territorial Sea and Exclusive Economic Zone in Scale 1:200,000 and to the area SE0330308 Hoburgs bank och Midsjöbankarna (due to a possible transboundary impact). The recommendation concerns OWFs, for which no administrative decisions have been issued yet or for which it does not contradict the decisions already issued.

The activities relating to the functions included in the Draft Plan do not indicate specific investments, their location in designated basins, deadlines or implementation techniques, for which variants can be planned, including alternative solutions. However, the lack of possibility to indicate an alternative variant for some of the activities provided for in the Draft Plan at the current stage of works does not mean that it is not possible to indicate variants at the level of implementation of specific investments. Alternative solutions here may regard a detailed arrangement of components, technical infrastructure facilities, methods of implementation and sub-activities, technical and technological solutions or the used materials.

The Draft Plan also does not indicate which of its provisions are of a priority nature, which of them will be implemented with greater or lesser probability. Therefore, it should be pointed out in this place as a difficulty resulting from the limited information and knowledge resources. It is not possible to adopt many scenarios assuming different degrees of implementation of particular functions indicated in the Plan and various methods of their implementation (the Plan includes 12 leading functions and many activities within them). It is practically impossible to indicate any specific and rational alternative at the stage of the strategic environmental impact assessment. The creation of different combinations and variations of all the indicated activities relating to particular functions, taking into account selected factors which would show the planned investments more clearly, would go significantly beyond the statutory scope of the Environmental Impact Prediction. Pursuant to Article 52(1) of the EIA Act (consolidated text, Journal of Laws of 2018, item 2081, as amended): “The information contained in the Environmental Impact Prediction (...) should be developed in accordance with the state of contemporary knowledge and assessment methods, and adjusted to the content and degree of detail of the draft document and the stage of adoption of this document in the process of developing draft documents related to this document”.

Referring to the diagnosed problems with establishing the implementation of specific intentions in specific locations, and following the precautionary principle, the authors of the Prediction assumed that the presentation of alternative solutions in specific basins should take place at the stage of proceedings relating to environmental impact assessments and concern investments indicated in the Ordinance of the Council of Ministers of 9 November 2010 on type of projects likely to have significant effects on the environment (consolidated text, Journal of Laws of 2016, item 71).

13 Comments and conclusions collected during national and international consultation meetings as well as comments from the Contracting Authority

Works on the Prediction were consulted during the following national and international meetings:

- On 18–19 October 2016 (the first international consultation meeting),
- On 8 March 2017 (the first national consultation meeting),
- On 4 October 2017 during the second national consultation meeting,
- On 6–7 November 2017 during the second international consultation meeting,
- On 5 July 2018 during the third national consultation meeting,
- On 4-5 June 2019 during the third international consultation meeting,
- On 6 June 2019 during fourth national consultation meeting.

Moreover, at each stage of works, the Prediction Team received comments from the Contracting Authority.

13.1 Proposals and comments to the Prediction collected during the first international consultation meeting

During the first international consultation meeting, which took place on 18–19 October 2016 in Gdańsk, comments and suggestions were made concerning mainly the Draft Plan. The following three proposals concerning issues relating to the Prediction were presented:

1. Representatives of the Sweden presented the cumulative environmental impact assessment method and proposed to apply it in Poland.

Response to the comment:

The Cumulative Impact Assessment method used by Sweden is a very good tool for preparing environmental impact assessments, but due to insufficient knowledge of the method, the Cumulative Impact Assessment method developed by the Prediction Team, on the basis of many years of experience and described in Chapter 2 in version v.1 will be used in the Prediction.

2. In addition, the Swedish Party informed that the Swedish Environmental Protection Agency is currently collecting data on bird migration which constitutes basis for HELCOM recommendation 34E/1 “Safeguarding important bird habitats and migration routes in the Baltic Sea from negative effects of wind and wave energy production at sea”. Maps showing bird migration routes were supposed to be available mid-2017, but have not yet been made available on the HELCOM website so far.

Response to the comment:

Once the maps of bird migration routes in accordance with HELCOM Recommendation 34E/1 are available, they will be included in subsequent versions of the Prediction, if the Contracting Authority allows access to these maps and their use in the Prediction.

3. Representatives of the Germany indicated the necessity to take into account the objects of protection and provisions of the protection plans for the protected sea areas located on the German side in the planned development of the port of Szczecin-Świnoujście.

As regards the inclusion of the objects of protection in German waters in the Prediction for the planned development of the port of Szczecin-Świnoujście, this issue will be analysed at the level appropriate to the rank of the strategic document – the Prediction. A detailed analysis of the impact of the port development on the objects of protection in German waters should be included in the EIA Report for this investment.

13.2 Proposals and comments to the Prediction collected during the second international consultation meeting

The second international consultation meeting, which took place on 6–7 November 2017 in Warsaw, focused mainly on proposals relating to transboundary impacts. These have been contained in Chapter 11 of the Prediction v.1 – *Information on possible transboundary environmental impacts of the Draft Plan*.

13.3 Report from the Fourth National and the Third International Consultation Meeting

The meeting was held on 4–6 June 2019 in Warsaw. **At the international meeting, the Contractor presented information concerning:**

- environmental data collected for the Prediction
- Prediction (v.3)
- predicted possible transboundary impacts of the Draft Plan.

Below there is an excerpt from the Protocol (in English and Polish) of the meeting prepared by the Planning Team, including the discussion (questions and answers) on the Predictions, together with supplementary information.

- *Kai Trümpler* mentioned that the EU provided the statement on the German site-development Plan on OWE, there were numbers of different issues that should be better pressed in German SEA, like cumulative impact. He asked if such topic will be presented in the Polish SEA. He asked if such topic will be presented in the Polish SEA. *Piotr Pieckiel* (PL) answered yes. He mentioned that the Polish SEA has about 300 pages and added that the version presented is still a draft.

Supplementation of the answer:

In Polish SEA is included chapter concerning cumulative impact. It is defined as changes to the environment caused by the combined impact of all defined in Plan functions (main and allowed). The basins with numbers of the main and allowed functions have been showed on the map. The most significant cumulative impact is noted in the Gulf of Gdansk and in the coastal zone.

- *Kai Trümpler* asked about the OWF near the German border that have impact on German Natura 2000 areas. *Piotr Pieckiel* said that such issue is noticed and will be discussed. *Kai Trümpler* asked how big impact will the development areas have on the Natura 2000 area and will Poland provide such information. *Andrzej Cieślak* (PL) cleared out that in terms of international discussion the right entity is the Polish Ministry of Marine Economy and Inland Navigation and such question should be addressed to Katarzyna Krzywda. *Kai Trümpler* clear out that these questions are also addressed to all Polish partners. *Katarzyna Krzywda* pointed out that the address showed by *Piotr Pieckiel* is the address to the expert (ppieckiel@im.gda.pl). Maritime Institute is a contractor and contract will be over very soon. To get the official answer from Poland such query should be addressed to the authority.

Supplementation of the answer:

The nearest to the German border basin with the main function “producing and storing renewable energy” is 14E (13 km from the border). It is necessary to underline that OWF in this area will not create extended barrier like in the area of the Central Bank or Słupsk Bank so significant negative impact probably will be limited. Currently it is difficult to predict detailed impacts because lack of technical information about OWF in this area (or even lack of information on location decision issued by the authority). Proposed by Polish SEA team solution concerning at least 4 km width should be considered as mitigation measures (within EIA).

- *Jan Schmidtbauer Crona* (SE) asked how have been interpreted or what assumption have been made regarding the implementation of the Plan. *Piotr Pieckiel* (PL) answered that it is difficult to make EIA according to Polish law. At the moment there is no negative proposal that would damage the environment. Nature is allowed all over the Plan. *Jan Schmidtbauer Crona* asked about relation of the effects to the environmental target like good environmental status. *Piotr Pieckiel* doubted that MSP can be solution for changing it. He added that he is a ichthyologist and not the team leader of the SEA. *Andrzej Cieślak* (PL) added that the MSP does a lot to protect the space from bad uses by introducing some restrictions.

Supplementation of the answer:

The starting point for the assessment of the negative impacts of the plan was definitions of the functions (main and allowed) and activities within functions. Assessment has a general, strategic character. Propositions of the monitoring of the implementation of the Plan (a rather impact of the plan) based on existing programs first of all the State Environmental Monitoring (SEM). There is difficult to connect in the direct way impact of the plan to the environmental target (indicated in e.g. MSFD). Some prohibitions or restrictions may affect in positive way. Other provisions (depends on the way of its future implementation) may lead to negative impact to the marine environment. Detailed impact (negative as well as positive) will be assessed in future EIA for specified activities. That's clear that plan is great tool for coordination functional and territorial variety of spatial activities and for implementation investment projects in more sustainable way.

- *Bettina Käppeler* (DE) asked how did the SEA team planned the ecosystem based approach in the analysis and does the SEA include monitoring evaluation concept. *Piotr Pieckiel* (PL) explained that he is not the right person to answer that question.

Supplementation of the answer:

Proposal of monitoring is included in SEA report. Conception largely bases on existing scheme and monitoring programmes (e.g. water quality monitoring or nature monitoring). The new Polish State Environmental Monitoring programme covers the years 2016–2020 and is obviously adapted to the time perspective of Polish and European strategic documents concerning the environment, such as: the national strategy “Energy Security and the Environment – perspective until 2020”, Decision of the European Parliament and of the Council on a General Union Environment Action Programme to 2020 “Living well, within the limits of our planet” (also called the 7th Environmental Action Programme), “Biodiversity Strategy until 2020”, “Thematic Strategy on Air Pollution”, a resolution of the Council of Ministers on the adoption of National Development Strategy 2020 as well as a Communication of the Commission – “Europe 2020: A European strategy for smart, sustainable and inclusive growth”. Besides, following questions should be answered:

How provisions of the plan are implement?, Whether minimizing measures are applied?, Whether is possible to indicate changes in the environment pointed out in SEA report?

- *Larisa Danilova* (RU) asked if there are analyses for the areas IP. *Piotr Pieckiel* (PL) answered yes, because every basin and function has their analysis.
- *Natalia Zajqc* (PL) added that the Ministry is responsible to have transnational actions and the Ministry will contact the countries affected by the Plan. Also the impact will be checked. She

stated that the document will be send to countries and she count on the response. Poland is in the middle of the MSP adaptation and needs time to introduce the countries contacts.

- Holger Janßen (DE) admitted that Poland faces the same problem like Germany. He suggested to aware the native conservation authorities from Germany. *Katarzyna Krzywda* (PL) explained that on Thursday (6.06) there will be national meeting regarding the Polish MSP. On this meeting there will be representatives from polish environmental protection authorities and the SEA team, both of which have contact to German counterparts or other Baltic States counterparts. Such authority will contact countries as quick as possible, when the document will be ready.

Presentation of the Environmental Impact Prediction (version 3), *Piotr Pieckiel* (Maritime Institute in Gdańsk)

- 1) Methodological assumptions
- 2) Scope and objectives of the Prediction
- 3) Comments to the Draft Plan v. 3

Discussion:

Kai Trümpler mentioned that the EU provided them with a statement on the German Wind Areas Development Plan 2019. The plan highlighted many issues that should be better presented in the Prediction to this document, such as a cumulative impact. He asked if such a topic would be presented in the Polish Prediction.

Piotr Pieckiel (PL) answered yes. He emphasised that the Polish SEIA includes ca. 300 pages and added that the presented version is still a draft.

Supplementation of the answers: The Polish EIA Prediction for the development plan includes an entire chapter on cumulative impacts. They were defined as “the sum of the effects of various types of activities and plans, including activities implemented previously, considered jointly”. The analysis of the basin sheets shows that the largest accumulation of functions (and relating activities) occurs in the coastal zone of Polish Sea Areas on the section from Darłowo to Ustka and in the area of the Gulf of Gdańsk.

Kai Trümpler asked about the area planned for wind energy near the German border, and which will have an impact on German Natura 2000 areas – how much impact will development areas have on the Natura 2000 area and whether Poland will provide such information. *Piotr Pieckiel* said that this issue has been noticed and will be discussed.

Supplementation of the answers:

Basin 14 E (13 km from the border) is the basin for wind energy development which is located closest to the border between Poland and Germany. In this area, the future OWFs will not create such a wide barrier as it is in the case of the Słupsk Bank or the Central Bank, so the negative significant impacts will probably be smaller. Currently, however, it is difficult to assess in detail the scale of these impacts, as there are no location decisions as well as technical information regarding the project. The authors of the Prediction proposed a minimising solution in the form of through corridors, which should be considered at the stage of evaluation proceedings for individual projects.

Andrzej Cieślak (PL) explained that in the context of international discussion, the appropriate entity is the Ministry of Maritime Economy and Inland Navigation, and such a question should be addressed to Katarzyna Krzywda.

Katarzyna Krzywda pointed out that the address indicated by Piotr Pieckiel is the address to the expert (ppieckiel@im.gda.pl). The Maritime Institute in Gdańsk is a contractor, and the contract will end soon. To obtain an official answer from Poland, such a question should be addressed to the authorities.

Jan Schmidtbauer Crona (SE) referred to the presented list of problems and challenges facing the SEA and asked what assumptions were made in assessing the impact of implementing the Plan (e.g. assuming the maximum use of designated areas, which can be easy when assessing the impact of wind energy development, but quite difficult, e.g. when assessing the impact of hydrocarbon extraction) and what risks have been identified/analysed for the planned functions. Jan Schmidtbauer Crona asked how the objectives and effects of the Draft Plan were linked to environmental objectives, such as good environmental status (GES).

Piotr Pieckiel doubts that the spatial development plan being prepared may change it. Piotr Pieckiel (PL) replied that it is difficult to make an SEA in accordance with Polish law, especially due to the complexity of the Draft Plan (a large number of basins and sub-basins), while the nature of the Plan is strategic. He emphasised that there are currently no proposals for actions in the Draft Plan that could harm the environment.

Supplementation of the answers:

The starting point for the assessment of significant negative impacts were the definitions of individual functions and those relating to the function of the action. The assessment was of a general strategic nature. Proposals concerning predicted methods of analysing consequences of the Development Draft Plan and frequency of this analysis are based on environmental monitoring programmes implemented in Poland. It is difficult to link the Plan's impact on environmental objectives directly (e.g. GES indicated in DRSM). Some restrictions or prohibitions will have a positive impact, other provisions will have a negative impact. However, the scale of impact will depend on the degree of Plan implementation and its implementation. A detailed impact assessment on the environment will be possible as part of the assessment procedures for individual projects implemented as part of the functions indicated in the Plan. It is obvious that the plan is a good coordination tool for the use of space (in both functional and spatial aspects), and to implement projects in a sustainable manner.

Andrzej Cieślak (PL) added that the Draft Plan does a lot to protect the marine environment, introducing certain restrictions on functions that have potentially negative impacts. He emphasised that spatial planning solves only spatial problems and not all area problems.

Bettina Käppeler (DE) asked how the Prediction Team implemented the recommendation to use the ecosystem approach in the Plan, in analyses and whether the SEA includes the concept of monitoring assessment. Piotr Pieckiel (PL) explained that he is not the right person to answer this question.

Supplementation of the answers:

One chapter of the Prediction is provided for the proposals concerning predicted methods of analysing consequences of the Development Draft Plan and frequency of this analysis. Those are based on environmental monitoring programmes implemented in Poland. The State Environmental Monitoring Programme covers the years 2016–2020 and naturally adapts to the time perspective of

Polish and European strategic documents relating to the environment, such as Strategy “Energy Security and the Environment – a perspective by 2020”, decision of the European Parliament and the Council on the general EU environment action programme to 2020 “Good quality of life, taking into account the limitations of our planet” (called the Seventh Environment Action Programme), “Strategy for the protection of biodiversity for the period up to 2020”, “Thematic strategy for air pollution” or, Resolution of the Council of Ministers on the adoption of the National Development Strategy 2020 and Commission Communication “Europe 2020 (Polish Monitor of 2014, item 469). Moreover, the questions that should be asked in the context of this issue are as follows: how are the Plan provisions carried out, are the minimising measures applied, are the changes in the environment consistent with the predictions included in the Environmental Impact Prediction?

Larisa Danilova (RU) asked if there were analyses for areas with the function of “port infrastructure”.

Piotr Pieckiel (PL) answered yes – an analysis was carried out for each basin and the proposed function.

Natalia Zajqc (PL) added that in the case of ESPOO consultations, the responsible authority is the General Directorate for Environmental Protection, and this institution will contact countries that may experience the consequences of implementing the Draft Plan. Before sending the spatial development plan for Polish Sea Areas to everyone, these consequences will be checked again – to ensure the accuracy and correctness of the distributed documents. She emphasised that she counts on the countries’ answers – Poland is in the process of planning and needs time to make adjustments to meet the deadline set by the directive.

Holger Janßen (DE) admitted that Poland is facing the same problem as Germany. He suggested that environmental protection authorities be included as early as possible at the stage of determining the scope.

14 Recommendations to the “Draft of the Maritime Spatial Plan of the Polish Internal Sea Waters, Territorial Sea, and Exclusive Economic Zone in Scale 1: 200,000” made at all stages of the works

14.1 Recommendations to the “Draft of the Maritime Spatial Plan of the Polish Internal Sea Waters, Territorial Sea, and Exclusive Economic Zone in Scale 1: 200,000”, to version of 23 January 2018

On 23 January 2018 the Contractors of the Prediction received from the Maritime Office in Gdynia documentation of the Draft Plan version v.1.

The main text of the Draft Plan documentation, version 1, consisted of 38 pages. This document was not verified by the Authors of the Draft Plan from an editorial point of view and contained numerous linguistic errors, which made its analysis and assessment considerably more difficult.

The following recommendations, contained in the Prediction submitted to the Contracting Authority on 6 March 2018, have been made for version 1 of the Draft Plan:

General comments and recommendations:

There are no clear definitions of each of the functions or the scope of activities that are included in them. Some of the activities are associated with several functions at the same time, which makes their evaluation very difficult (e.g. construction and extension of piers or breakwaters belong both to the function of technical infrastructure, port infrastructure and tourism, sport and recreation. Moreover, piers and breakwaters are at the same time artificial islands and installations).

Activities allocated to particular functions are described in different ways: e.g. by an activity – exploration, extraction and by a thing - a basin, a formal bathing area, or by a statement that a specific activity is allowed or not. Such a diversified descriptions of activities relating to functions creates confusion and makes the document difficult to understand.

Provisions concerning prohibitions or limitations on the use of particular areas included in basin sheets are mixed with provisions contained in the part “Conditions for the use of the basin”, which makes them unclear.

At the outset, the Draft Plan states that the document takes into account the constitutional requirement to ensure environmental protection as well as the principle of sustainable development. In the meantime, designation of basins was introduced according to the principle that “there can only be one basic function in each basin, but apart from it there can also be many allowed functions”. Such principle leads to a priori valuation of certain functions at the expense of others, including the protection of the environment and nature, both at the sea and, perhaps first and foremost, on the land.

The function of the protection of the environment and nature has been assigned as a basic function to 4 basins where it overlaps, partially or fully, with the sea part of the protected areas (national parks, Natura 2000 areas). Therefore, separate regulations resulting from, e.g. the Act on Nature Conservation, are already in force in these areas.

Environmental protection should be treated as a condition (and not as a basic function in a limited number of basins) and be the basis for planning; regardless of the fact if it refers to a legally protected area. Some areas of natural value (e.g. Eastern Near-Border Waters) are not under legal protection, which, however, does not diminish their importance and appropriate provisions should be introduced for them. Other environmentally valuable areas have been identified in version v.0 of the Prediction and the way they were included in the Draft Plan should be considered as insufficient.

In this Environmental Impact Prediction it is noted that “the provisions of the Draft Plan directly indicate that functions involving activities which may always significantly or potentially significantly affect the environment, may be located in Polish Sea Areas”. These activities will be covered by an obligation to carry out an environmental impact assessment or impact assessment on Natura 2000 areas by virtue of the law, or such obligation will be imposed by the competent authority on the basis of the conditions listed in Article 63(1) or pursuant to Article 96(1) of the Act of 3 October 2008 (consolidated text, Journal of Laws of 2018, item 2081, as amended). These procedures should specify the methods of natural compensation adequate to the losses.

Due to the fact that the environmental protection plan is not included in the Draft as a condition in all Polish Sea Areas, the Prediction Team, at the stage of version v.1, **recommends introducing the following amendments to the provisions:**

Function B

Recommendation: For the condition of using basin B-2 with the following wording: *“activities and functions of significant impact on bird breeding, implemented in those coast sections and other places in the basin where bird breeding takes place, must be carried out outside the breeding period”*, a limiting time frame for the activities and functions for the period from 1 March to 15 August must be introduced.

Justification: Although the current provision in the basin sheet translates into a positive effect on breeding bird populations, it is imprecise, if no time frame is specified.

Function C

Recommendation: The explanatory memorandum (Glossary) to the Plan should define the concept of the **coastal protection system and the proper state of the coastal protection system**. Moreover, a provision should be introduced to prohibit exploration, investigating and extraction of hydrocarbons and minerals and fossil resources within a distance of up to 3 km from the coast, i.e. in basins intended for the implementation of function C – coastal protection.

Recommendation: Execution of the “Programme of Coastal Protection”, mentioned in basin sheets for basins C, should be based on the principle of selective coastal protection, i.e. the protective activities should be carried out in those sections, where condition has been assessed on the basis of the results of environmental research with particular consideration of natural conditions, including protected areas and ecological, infrastructural and economic corridors, whereas the remaining sections of the coast should be left in their natural condition.

Recommendation: In the basin sheets for basins C-3 and C-9 it is necessary to include a prohibition on carrying out activities and implementing functions which would have a significant impact on bird breeding during a breeding period.

Justification: In most basin sheets of basins with function C, there are provisions concerning the need to carry out activities and implement functions that have a significant impact on bird breeding outside the breeding period. Such a condition has been indicated for basins C-1, C-2 and C-4 to C-7. However, such an indication has not been specified for basins C-3 and C-9.

Recommendation: For the provision *prohibition on carrying out activities and implementing functions which would have a significant impact on bird breeding* in the basin sheets for basins C-1, C-2, C-3, C-4, C-5, C-6, C-7, C-9, a time frame for bird breeding period must be specified – from 1 March to 15 August.

Justification: The time frame of the bird breeding period has not been indicated for the aforementioned provision, making it imprecise. The time frame of the bird breeding period can be established for the period between 1 March and 15 August.

Recommendation: The area of sub-basin S-170 should be reduced so that its boundaries are at least 1 km away from basin O-1.

Justification: The basin sheet for basin C-1 (surrounding basin O-1) indicates that *implementation of function S is allowed, provided that principles of the protection of nature are respected and good environmental condition is maintained*, which is, however, an imprecise statement. Sub-basin S-170 has also been designated for the development of function S. However, it surrounds from two sides (west, east) the coastal area of the area PLB320002 Świna River Delta and Woliński National Park, i.e. the area where water birds can breed. Sub-basin S-170 designated in this manner may have a significant negative impact on the breeding success of objects protected in the area PLB320002 Świna River Delta and on the achievement of the protection objectives of both this area and Woliński National Park.

Recommendation: The borders of basin C-1 should be verified and the idea of designating this basin in front of the Woliński National Park should be abandoned.

Justification: It will undoubtedly influence the improvement of the natural resources of the protected area of the Baltic Sea (BSPA).

Recommendation: in basin C-4 located in front of the Kopań Spit, due to erosive nature of coast in this region (in years 1963–1983 the base of the dune was retreating at a speed of 0.84 m.year⁻¹), **it should be prohibited** to introduce new elements of tourist infrastructure without any additional conditions.

Justification: Decisions on the location of the tourist infrastructure in basins C should be preceded by a detailed analysis of the morphology and lithodynamics of the coastal area as well as integrated coastal area management planning, including spatial development of the hinterland. In the absence of Integrated Coastal Zone Management plans (ICZM) and in the absence of spatial development plans of coastal areas for many fragments of the coastline, the introduction of unclear and imprecise provisions may lead to an increase in erosion areas and affect the extension of coastal protection, which violates the HELCOM Recommendations: 15/ protection of the coastal area and 16/3 protection of natural dynamics of the coastal area.

The transition of the environment to another, unstable state, due to the disruption of processes by coastal defences and other infrastructure created so far, and also as a result of rising sea level and increase in the number and frequency of extreme hydrodynamic phenomena requires an in-depth analysis covering the entire coastline from Piaski to Świnoujście.

Without the study of the current dynamics of coastlines of the southern Baltic Sea provisions contained in the Draft Plan, which restrict the *“introduction of new elements of tourist infrastructure (piers, jetties) to locations which meet the requirements of maintaining the proper state of the coastal protection system”*, and in another place of the same basin sheet state that *“(…) it is prohibited to locate new elements of tourist infrastructure (piers, jetties) in places which do not meet the requirements of maintaining the proper state of the coastal protection system (…)”* **are not justified in the view of both maintenance of natural processes that occur in the coastal area and integrated coastal area management.**

Function I

Recommendation: For the condition of using basin I-1 with the following wording: *“activities and functions of significant impact on bird breeding, implemented in those coast sections and other places in the basin where bird breeding takes place, must be carried out outside the breeding period”*,

a limitation time frame for the activities and functions for the period from 1 March to 15 August must be specified.

Justification: The aforementioned provision translates into a positive impact of the provisions of the Draft Plan on populations of breeding birds, but is imprecise as it does not indicate any time frames for the limitation.

Recommendation: The following limitation should be included in the basin sheet for basin I-1 and in the basin sheets for other basins where the function of technical infrastructure (marked with letter I) is allowed, having borders with SPAs and with the IBA PLM4 area, where primary object of protection are non-breeding water bird populations: works relating to the construction or liquidation of technical infrastructure, which do not have a significant negative impact on bird breeding, should be carried out outside the period when wintering and resting birds during migration occur in large numbers, i.e. outside the period from the beginning of November to the end of April.

Justification: Provision included in the basin sheet for basin I-1 with the following wording: *“activities and functions of significant impact on bird breeding, implemented in those coast sections and other places in the basin where bird breeding takes place, must be carried out outside the breeding period”* refers to activities and functions taking place on the coast or in the coastal area of the sea, which will have a significant impact on bird breeding. However, it should be remembered that basin I-1 is located within the boundaries of the Natura 2000 area PLB990002 Baltic Coastal Waters, where non-breeding (wintering, migrating) water bird populations are protected, not the breeding populations of these animals. This is due to the high anthropogenic pressure in this section of the sea coast at the time when birds could breed there and, as a consequence, a low number of water bird pairs attempting to nurse their young there. On the other hand, the populations of water birds wintering and resting during migration in the waters of this basin are so abundant and valuable that they were put under protection of the SPA.

Recommendation: In the basin sheet for basin M-1 the following limitation should be included: works involving construction or removal of technical infrastructure, carried out within the boundaries of the area PLB220004 Vistula River Outlet should be carried out only outside the period from April 1 to August 31.

Justification: The area PLB220004 Vistula River Outlet is, first of all, a unique breeding ground for water birds that breed there between 1 April and 31 August. The proposed provision also results from the proposals contained in the draft protection plan for this SPA.

Function Ip

Recommendation: The condition for the implementation of the activities in basins Ip-1, Ip-2, Ip-3 (within the boundaries of the area PLB990003 Pomeranian Bay), Ip4, Ip-5, Ip-6 (within the boundaries of the area PLB990002 Baltic Coastal Waters), Ip-12 and Ip-13 (within the boundaries of the area PLB220005 Puck Bay) with the following wording: *“activities and functions of significant impact on bird breeding, implemented in those coast sections and other places in the basin where bird breeding takes place, must be carried out outside the breeding period”* should be supplemented with a limiting time frame, i.e. from 1 March to 15 August. Moreover, in the limitation, the existing wording *“and other places in the basin”* should be replaced with the following wording *“and on the elements of infrastructure”*.

Justification: The aforementioned provision is imprecise in terms of time frames of the limitation. Birds may breed on the coast or on the elements of infrastructure. This entry is particularly important in basins Ip-12 and Ip-13 bordering the area PLB220005 Puck Bay, where breeding populations of water birds are protected (in areas PLB990003 Pomeranian Bay and PLB990002 Baltic Coastal Waters only non-breeding bird populations are under protection; SDF forms of the areas, updated: February 2017). Therefore, appropriate clarification of the provision and its observance may have a positive impact on the achievement of the conservation objectives, the maintenance or improvement of the proper condition of the protection of objects protected in the area PLB220005 Puck Bay and its integrity.

Function K

Recommendation: The content of the condition of use of basin K-1 in the Draft Plan with the following wording: *“activities and functions of a significant impact on bird breeding, implemented in those coast sections and other places in the basin where bird breeding takes place, must be carried out outside the breeding period”* should be supplemented with a limiting time frame, i.e. from 1 March to 15 August.

Justification: The aforementioned provision translates into a positive impact of the provisions of the Draft Plan on populations of breeding birds, but is imprecise – it does not indicate any time frames for the limitation.

Recommendation: In the basin sheet for basin K-2 located near the Swedish SPA SE0330308 Hoburgs bank och Midsjöbankarna, the content of the condition of use of the basin with the following wording: *“Activities and functions that generate the disturbance factors shall be implemented outside the bird migration period”* should be supplemented. The following provision should be introduced: *“Activities and functions that generate the disturbance factors shall be implemented outside the period of bird resting in the basin waters during migration and outside the wintering period they spend in the basin, i.e. outside the period between the beginning of November and the end of April”*.

Justification: Although the provision already contained in the Draft Plan reduces the negative impact of the extraction function on migrating water bird populations, it does not reduce the negative impact of the implementation of this function on wintering water bird populations and does not indicate the time frames for the limitation. The period between the beginning of November and the end of April can be considered as the period when populations of migrating and wintering water birds occur in largest numbers in the high sea basins. The Swedish area SPA SE0330308 Hoburgs bank och Midsjöbankarna is located on the Central Bank, the southern part of which is located within Polish Sea Areas. It should be assumed that as a result of presence of a shallow area in this region, which favours the growth of an abundant food base for water birds, suitable feeding and resting conditions for birds also exist on the Polish side of the Central Bank. The SPA SE0330308 Hoburgs bank och Midsjöbankarna was designated for the protection of the long-tailed duck, guillemot and common eider (Natura 2000 Network Viewer). A long-tailed duck *Clangula hyemalis* is an endangered species according to IUCN and its population is decreasing. It is therefore important not to intensify pressure exerted on the basins which are used by these birds for feeding and resting (including basin K-2).

Function M

Recommendation: The content of the condition for the implementation of activities and functions in basin M-1 with the following wording: *“activities and functions of a significant impact on bird breeding, implemented in those coast sections and other places in the basin where bird breeding takes place, must be carried out outside the breeding period”* should be supplemented with a limiting time frame, i.e. from March to 15 August.

Justification: The provision is imprecise in terms of the time frames of the water bird breeding period which can be accepted as period between 1 March and 15 August.

Recommendation: The boundaries of sub-basin M-1:S-170 should be changed, i.e. sub-basin M-1:O-248 should be enlarged to reach the sea coast and should not contain (according to the detailed map in version v.1.7 of the Draft Plan) sub-basin M-1:S-170 within its boundaries.

Justification: In the coastal area of the Vistula River Outlet area the tourist infrastructure is not yet as developed as in other parts of the sea coast, e.g. in the Puck Bay area. This translates into high importance of the Natura 2000 area PLB220004 Vistula River Outlet (especially the Seagull Shoal reserve) for populations of breeding water birds. This is where breeding colonies of unique on the national scale sandwich terns *Thalasseus sandvicensis* and ringed plovers *Charadrius hiaticula* occur. It is worth mentioning here that a sandwich tern, in addition to being under strict species protection, is included in the list of birds in Appendix I of the Birds Directive. On the other hand, in the basin sheet for basin M-1 (including area PLB220004 Vistula River Outlet), in relation to function S, there are no provisions that would introduce prohibitions, limitations or conditions concerning the use of the basin which could sufficiently limit the negative impact of tourism, sport and recreation on the avifauna. Within the boundaries of basin M-1 sub-basin M-1:S-170 was designed for the development of the tourist function, which should not be developed within the boundaries of the nature reserve (Seagull Shoal), the coastal area which is a feeding and chick leading ground for birds breeding there and representing rare and valuable species.

Function L

Recommendation: The content of the condition of use of basin L-1 with the following wording: *“activities and functions of a significant impact on bird breeding, implemented in those coast sections and other places in the basin where bird breeding takes place, must be carried out outside the breeding period”* should be supplemented with a limiting time frame, i.e. from 1 March to 15 August.

Justification: The provision is imprecise in terms of the time frames and does not specify when the water bird breeding period falls. This period can be defined as between 1 March and 15 August.

Function E

Recommendation: The content of the condition of use of basins E-3, E-4 and E-5 with the following wording: *“Activities and functions that generate the disturbance factors shall be implemented outside the bird migration period”* should be supplemented. The provision should be as follows: *“Activities and functions that generate the disturbance factors shall be implemented outside the period of bird resting in the basin waters during migration and outside the wintering period they spend in the basin, i.e. outside the period between the beginning of November and the end of April.”*

Justification: The provision contained in the Draft Plan contributes to reducing the negative impact of function E on migrating water bird populations. However, it does not reduce the negative impact of implementation of this function on wintering water bird populations and does not specify any time

frames for the limitation. The period between the beginning of November and the end of April can be considered as the period when populations of migrating and wintering water birds occur in largest numbers in the high sea basins.

Recommendation: The following provision should be introduced as a condition for the use of basins E-1 and E-2: “Activities and functions that generate the disturbance factors shall be implemented outside the period of bird resting in the basin waters during migration and outside the wintering period they spend in the basin, i.e. outside the period between the beginning of November and the end of April.”

Justification: A similar provision has been included in the basin sheets for other basins having function E assigned (E-3, E-4 and E-5), but it has not been included in the basin sheets for basins E-1 and E-2, which should be supplemented.

Recommendation: In the basin sheets of basins with function E assigned, adjacent to the Słupsk Bank (basins E-4 and E-5), it is necessary to include the requirement to leave a corridor(s) between the offshore wind farms (OWF) free of wind turbines. This provision should also specify that such corridor(s) must be at least 4 km wide and run along the NE-SW axis.

Justification: If a vast area to the north and north-east (basins E-4 and E-5) from the boundary of the area PLC990001 Słupsk Bank is occupied by wind power plants, an extensive barrier for birds will emerge. It will scare the birds off, hinder their migration (change of bird migration routes, increase of their energy expenditure during migration, worse condition, which may result in increased mortality) and increase the risk of collisions of birds with operating turbines. The designation of corridors between offshore wind farms will reduce the surface area of the barrier formed by the OWF complex and, consequently, the negative impact of the implementation of function E on the avifauna, including the objectives and objects of protection of the area PLC990001 Słupsk Bank (but also PLB990002 Baltic Coastal Waters and PLB990003 Pomeranian Bay), the integrity of the SPA(s) and the cohesion of SPA network. Such a provision is consistent with the identified main directions of migrating bird migration autumn to wintering grounds and in spring from wintering grounds along the NE-SW line (Keslinka et al. 2017). The width of the corridor(s) has been set to at least 4 km, as most bird species avoid the areas occupied by the power plants and their vicinity within 2 km from the external power plants (Petersen et al. 2006). Therefore, migrating birds must be provided with 2 km of turbine-free space (from the flight axis) on each side (2 km on each side gives 4 km in total).

Recommendation: In the basin sheets of basins with function E assigned (E-1 to E-5) it should be prohibited to locate wind turbines at a distance of less than 2 km from Special Protection Areas. This restriction applies to all SPAs covered by the Draft Spatial Development Plan of Polish Sea Areas and to the area SE0330308 Hoburgs bank och Midsjöbankarna (due to possible transboundary impact). The recommendation concerns OWFs, for which no administrative decisions have been issued yet or for which it does not contradict the decisions already issued.

Justification: Most bird species avoid the areas occupied by the wind turbines and their vicinity within 2 km from the external turbine (Petersen et al. 2006). Birds are scared off by them and forced out of their habitats. Locating an OWF at a distance of less than 2 km from the borders of SPAs could result in forcing protected bird species out of the part of SPAs adjacent to the OWF. This would result in a potentially significant negative impact of function E on the avifauna, including protected bird species, their habitats and objectives, protected objects and integrity of Natura 2000 areas, as well as on coherence of the network of these areas (as a result of the barrier on the migration routes of

birds). With respect to version of the Draft Plan presented to the Prediction Team at this stage of work, this limitation relates primarily to areas PLC990001 Słupsk Bank, PLB990003 Pomeranian Bay, as well as to the Natura 2000 area located in Sweden – SE0330308 Hoburgs bank och Midsjöbankarna.

Function O

Recommendation: A provision in the basin sheet for basin O-4 imposing a limitation on function B during the period of birds staying there for wintering and resting during their migration should be supplemented with the time frames of the limitation. These time frames should be defined as from the beginning of November to the end of April. Therefore, in the period from the beginning of May to the end of October function B can be implemented in this basin in full range.

Justification: The provision in the Draft Plan is not precise, i.e. it does not specify the time frames of the limitation. The period between the beginning of November and the end of April can be considered as the period when populations of migrating and wintering water birds occur in largest numbers in the high sea basins.

Recommendation: It is necessary to adopt a variant solution consisting in distinguishing a basin O-5 and to creating a basin sheet for it, containing the entries influencing the reduction of negative influence of the functions allowed in the basin on the populations of migrating and wintering water birds.

Justification: As an alternative solution, on the map of the Draft Plan the possibility of designating area O-5 as a part separated from basins C-9 and P-8 was indicated. The map was not enclosed with the basin sheet for basin O-5, therefore it is impossible to analyse the correctness of provisions for this basin. It should be stressed, however, that basin O-5 borders with area IBA PLM4 Eastern Near-Border Waters, which is an important feeding and resting ground for the water birds population during wintering and migration.

Recommendation: Instead of “bird breeding” [*singular form in Polish*] the plural form of this term should be used in the provisions [*applies to Polish version, to mark the difference the wording “breeding cycles” was used in the English version*]. This applies, for example, to the widely used provision with the following wording: “activities and functions of a significant impact on bird breeding, implemented in those coast sections and other places in the basin where bird breeding takes place, must be carried out outside the breeding period”. The correct wording should be as follows: “Activities and functions of a significant impact on bird breeding cycles, implemented in those coast sections and other places in the basin where bird breeding cycles takes place, must be carried out outside the breeding period (outside the period from 1 March to 15 August).”

Justification: The proposal of amendment to the provision provides an appropriate definition of the concept.

Recommendation: Specify the entries in the “Recommendations” part of those basin sheets, where the protection of the environment and nature is indicated as a basic function.

Justification: In these basin sheets it was recommended to include a detailed analysis of impact of the planned investments on habitats 1110 and 1170 in the EIA reports and it was recommended to refrain from any investment plans until the protection plans are developed and approved. Both of these provisions may indirectly affect the condition of habitats in a positive way. However, these

provisions are of a recommendation nature and authors of the Prediction are not able to state whether and according to what procedures they will actually be applied.

Recommendation: Designating in the Draft Plan some basins that would be totally excluded from fishing exploitation in order to protect commercial fish resources.

Justification: The Draft Plan lacks identified and designated basins dedicated to the protection of fishing resources under the activity *“securing areas important for the protection of commercial fish resources”* for the function of Fishery. The function of Fishery is an allowed function and fishing is allowed in all Polish Sea Areas, with the exception of only local limitations to the basic function, resulting mainly from the current or future infrastructure, or from the basic function of the protection of the environment and nature. With the current state of stocks of some fish important for fishery, such as cod, Polish fishery has not been able for many years to catch the allocated limits, despite their annual reduction. Also the stocks of flounder, a species not yet covered by the limits, show symptoms of overfishing (Kauzebski 2017). In such a situation, the absence of provisions in the Draft Plan concerning the conservation of fishing resources will prevent from achieving its objective of *“permanent and sustainable use of ecosystem resources and services by current and future generations”*. Therefore, in addition to the technical means of resource conservation provided for in separate regulations on fishery, the areas permanently excluded from fishing exploitation and particularly important for the conservation of intact basic stocks of economically valuable fish species should be designated.

Recommendation: The provisions concerning the protection of spawning grounds and fish nursing grounds should be further specified in the basin sheets. To secure potential spawning and fry nursing grounds, it is necessary to indicate specific actions and functions which have a negative impact on the spawning process, eggs and juvenile stages of fish, and to specify the time frames when these actions cannot be carried out.

Justification: The provision in basin sheets under *“Conditions for the use of the basin”* relating to the conservation of fish stocks: *“The activities and functions that disrupt the spawning and fry nursing in the spawning grounds and areas important for nursing the fry of commercial fish, and in areas where no fish spawning stock inventory has been carried out, must be implemented in a way which does not significantly affect the spawning success of the commercial fish”*, is too general and may therefore be ineffective. The proposed provision should be introduced in the following section of a basin sheet: *“Prohibitions or limitations on the use of specific areas.”* A similar protection should also apply not only to fish species considered as commercial, but also to those which constitute their food base.

Recommendation: The provisions on ensuring migration corridors for water organisms should be further specified in the basin sheets. In the case of the provision on the implementation of activities and functions having an impact on the seafloor outside the period of intensive migration, specific periods of the year important for the migration of individual aquatic organisms should be indicated. In section *“Prohibitions or limitations on the use of specific areas”* for sub-basins in the basin sheets, it should be prohibited to carry out activities and implement functions that may adversely affect migrating fish and other aquatic organisms, including prohibition of fishing, during periods of their migration. In the case of bi-environmental fish, both the period of migration of adult specimens to the spawning ground and their return after spawning and the period of migration of juvenile specimens should be taken into account.

Justification: Provisions in the basin sheets on ensuring migration corridors for migratory organisms, such as:

“Activities and functions affecting the seafloor, taking place at river outlets (migration corridors for fish and other aquatic organisms), must be carried out outside the period of increased migration of fish and other aquatic organisms” (Conditions for the use of the basin)

“Sub-basins (...) are designated for the purpose of ensuring possibility of migration for fish and other aquatic organisms” (Conditions for the use of the basin)

“Requirement is established to keep the (...) outlet open to provide migration opportunities to bi-environmental organisms” (Arrangements binding for self-governments of voivodeships and municipalities)

are general in nature and may therefore be ineffective. The designation of sub-basins to ensure migration opportunities for aquatic organisms, even with the requirement (for local governments) to keep the routes open, has no real effect.

Recommendation: Within the areas valuable for the occurrence of harbour porpoise, such as the Pomeranian Bay area and the South Central Bank, after the licences expire, limitations or prohibitions should be introduced in relation to the implementation of the **function of exploration, investigation and extraction of mineral and fossil resources (K)**.

Justification: The results of the SAMBAH project have shown that the area of the Central Bank (basin K2) is important for the protection of the Baltic harbour porpoise population. It has been shown that during the summer period harbour porpoises concentrate in this area, most likely for reproduction.

14.2 Recommendations to the “Draft Plan of the Maritime Spatial Plan of the Polish Internal Sea Waters, Territorial Sea, and Exclusive Economic Zone in Scale 1:200,000” resulting from the course of works on the Draft Plan and the Prediction after the comments from the Contracting Authority (4 April 2018)

On 4 April 2018, a working meeting of the Prediction Team and the Draft Plan Team was held at the Department of Water Ecology. The purpose of the meeting was to discuss the amendments to the draft spatial development plan resulting from: comments of the Contracting Authority and the Environmental Impact Prediction (version of 6 March 2018) together with recommendations contained therein (see Chapter 18.1).

At the meeting it was agreed that the **recommendations proposed in the Prediction (Chapter 18.1) will be included** in the Draft Plan to be submitted to the Contracting Authority on 23 April 2018. In addition, it was decided that certain proposals need to be specified/modified:

Modified recommendations:

Function B

Recommendation: It is recommended to remove the condition of use of basin B.2 with the following wording: *“activities and functions of significant impact on bird breeding, implemented in those coast sections and other places in the basin where bird breeding takes place, must be carried out outside the breeding period.”*

Justification: The current provision in the basin sheet translates into a positive impact on breeding bird populations, however, basin B-2 is located within the boundaries of the SPA PLB990003 Pomeranian Bay, where wintering and migrating water bird populations, not their breeding populations, are under protection.

Function C

Provisions in the basin sheets concerning basins C 6, C 8 and C 9 (old basin designations), which refer to the provisions of the Act of 28 March 2003 on *establishment of the multiannual programme “Programme of Coastal Protection”* (consolidated text, Journal of Laws of 2016, item 678) in section Principles for using the basin, require verification. At the height of basins C6 and C9, the Act does not provide for the implementation of the *Programme tasks “(...) concerning the construction, development and maintenance of systems used for the protection of coast against sea erosion and flooding from the sea side (...)”* (Appendix to the Act), and for basin C8 these tasks are limited to the Hel Peninsula area from its base to H 23.5 km. Imprecise provisions may lead to their incorrect interpretation to the detriment of the environment.

On the basis of the Ordinance of the Minister of Maritime Economy and Inland Navigation of 17 November 2017 on minimum levels of coastal protection and the route of the borderline for the protection of the coast (Journal of Laws, item 2266), it can be provisionally assumed that the coast sections indicated in Appendix No 1, for which the required safety level is set at “not more than 20”, should remain in their natural state.

Recommendation: For the provision *prohibition on carrying out activities and implementing functions which would have a significant impact on bird breeding* in the basin sheet for basin C-1, a time frame for water bird breeding period must be specified – from 1 March to 31 August.

Justification: The time frame of the bird breeding period has not been indicated for the aforementioned provision, making it imprecise. The time frame of the bird breeding period can be established for the period between 1 March and 31 August. Basin C-1 surrounds basin O-1, which constitutes a marine part of the Woliński National Park and the Natura 2000 area Świna River Delta (PLB320002). Objects protected in the indicated Natura 2000 area include breeding populations of water birds. Therefore, also in the coastal area of basin C-1 these birds may try to breed and their success may depend on the provisions of the Plan established for basin C-1. The previously recommended time frames of the limitation has been changed from the period of 1 March to 15 August to the period of 1 March to 31 August to align the provisions. The breeding period of water birds protected in the area PLB220004 Vistula River Outlet has been defined, also in the draft protection plan for this area, as the period from 1 March to 31 August. Therefore, in all the amended recommendations this period was adopted as the appropriate time frames of water bird breeding period.

Function I

Recommendation: It is recommended to remove the condition of use of basin I-1 with the following wording: *“activities and functions of significant impact on bird breeding, implemented in those coast sections and other places in the basin where bird breeding takes place, must be carried out outside the breeding period.”*

Justification: The aforementioned provision translates into a positive impact of findings of the Draft Plan on breeding bird populations, however, basin I-1 area overlaps with SPA PLB990002 Baltic Coastal Waters, where protected objects include populations of birds wintering and resting during migration rather than breeding populations. Therefore, the basin sheet for basin I-1 should contain provisions that will reduce the negative impact of particular functions on Polish Sea Areas on populations of wintering and migrating water birds.

Recommendation: In the basin sheet for basin I-1 and in the sheets for other basins where the function of technical infrastructure is allowed (marked with letter I), having borders with SPAs and IBA PLM4 area where mainly non-breeding water birds populations are under protection (PLB990003 Pomeranian Bay, PLB990002 Baltic Coastal Waters, PLC990001 Słupsk Bank, PLB220005 Puck Bay, IBA PLM4 Eastern Near-Border Waters), the following limitation should be included: *“Works relating to the construction or removal of technical infrastructure which do not have a significant negative impact on bird breeding, should be carried out outside the period when wintering and resting birds during migration occur in large numbers, i.e. outside the period from the beginning of November to the end of April.”*

Justification: Provision included in the basin sheet for basin I-1 with the following wording: *“activities and functions of significant impact on bird breeding, implemented in those coast sections and other places in the basin where bird breeding takes place, must be carried out outside the breeding period”* refers to activities and functions taking place on the coast or in the coastal area of the sea, which will have a significant impact on bird breeding cycles. However, it should be remembered that basin I-1 is located within the boundaries of the Natura 2000 area PLB990002 Baltic Coastal Waters, where non-breeding (wintering, migrating) water bird populations are protected, not the breeding populations of these animals. This is due to the high anthropogenic pressure in this section of the sea coast at the time when birds could breed there and, as a consequence, a low number of water bird pairs attempting to nurse their young there. On the other hand, the populations of water birds wintering and resting during migration in the waters of this basin are so abundant and valuable that they were put under protection of the SPA.

Function Ip

Recommendation: The condition for the implementation of activities in basins Ip-12 and Ip-13 (within the boundaries of the area PLB220005 Puck Bay) with the following wording: *“activities and functions of a significant impact on bird breeding, implemented in those coast sections and other places in the basin where bird breeding takes place, must be carried out outside the breeding period”* should be supplemented with a limiting time frame, i.e. from 1 March to 31 August. Moreover, in the limitation, the existing wording *“and other places in the basin”* should be replaced by words *“and on the elements of infrastructure”*.

Justification: The aforementioned provision is imprecise in terms of time frames of the limitation (water bird breeding cycles: 1 March to 31 August). Birds may breed on the coast or on the elements of infrastructure. The borders of basins Ip-12 and Ip-13 are adjacent to the area PLB220005 Puck Bay where water bird breeding populations are under protection (SDF of the area, updated: February 2017). Therefore, appropriate clarification of the provision and its observance may decrease a negative impact of the implementation of the function of Polish Sea Area on the avifauna and have a positive impact on the achievement of the conservation objectives, the maintenance or

improvement of the proper condition of the protection of objects protected in the area PLB220005 Puck Bay and its integrity.

Function K

Recommendation: It is recommended to remove the condition of use of basin K-1 in the Draft Plan with the following wording: *“activities and functions of a significant impact on bird breeding, implemented in those coast sections and other places in the basin where bird breeding takes place, must be carried out outside the breeding period.”*

Justification: Basin K-1 is located within the boundaries of the SPA PLB990003 Pomeranian Bay, where wintering and migrating water bird populations, not their breeding populations, are under protection.

Function L

Recommendation: The content of the condition of use of basin L-1 with the following wording: *“activities and functions of a significant impact on bird breeding, implemented in those coast sections and other places in the basin where bird breeding takes place, must be carried out outside the breeding period”* should be supplemented with a limiting time frame, i.e. from 1 March to 31 August.

Justification: The provision is imprecise in terms of the time frames and does not specify when the water bird breeding period falls. This period can be defined as between 1 March and 31 August.

Function E

Recommendation: The following provision should be included in basin sheets for basins having function E assigned, adjacent to the Słupsk Bank (basins E-4 and E-5): *“Corridor(s) should be left between the offshore wind farms (OWF) free of the power plants. Such a corridor(s) must be at least 4 km wide and run along the NE-SW axis (whereas the direction of axis of the corridor may be modified in the decision on environmental conditions of the permission for the project implementation, on the basis of the pre-completion analyses for each of the investments).”*

Justification: If a vast area to the north and north-east (basins E-4 and E-5) from the boundary of the area PLC990001 Słupsk Bank is occupied by wind power plants, an extensive barrier for birds will emerge. It will scare the birds off, hinder their migration (change of bird migration routes, increase of their energy expenditure during migration, worse condition, which may result in increased mortality) and increase the risk of collisions of birds with operating power plants. The designation of corridors between offshore wind farms will reduce the surface area of the barrier formed by the power plant complex and, consequently, the negative impact of the implementation of function E on the avifauna, including the objectives and objects of protection of the area PLC990001 Słupsk Bank (but also PLB990002 Baltic Coastal Waters and PLB990003 Pomeranian Bay to and from which the birds can migrate through the area of basins E-4 and E-5), the integrity of the SPA(s) and the cohesion of the SPA network. Such a provision is consistent with the identified main directions of migrating bird migration in autumn to wintering grounds and in spring from wintering grounds in this area along the NE-SW line (Keslinka et al. 2017). The width of the corridor(s) has been set to at least 4 km, as most bird species avoid the areas occupied by the power plants and their vicinity within 2 km from the external power plants (Petersen et al. 2006, Fox et al. 2006). Therefore, migrating birds must be provided with 2 km of power plant-free space (from the flight axis) on each side (2 km on each side gives 4 km in total).

Function O

Recommendation: Instead of “bird breeding” [*singular in Polish*] the plural form of this term should be used in the provisions [*applies to the Polish version*]. This applies, for example, to the widely used provision with the following wording: “*activities and functions of a significant impact on bird breeding, implemented in those coast sections and other places in the basin where bird breeding takes place, must be carried out outside the breeding period.*” The correct wording should be as follows: “*Activities and functions of a significant impact on bird breeding cycles, implemented in those coast sections and other places in the basin where bird breeding cycles takes place, must be carried out outside the breeding period (outside the period from 1 March to 15 August).*” In addition, the proposal for a provision provides an appropriate time frames for the limitation.

Justification: The proposal of amendment to the provision provides an appropriate definition of the concept. As mentioned above, the time frames of the limitation has been modified at this stage of works and set to the period from 1 March to 31 August.

Recommendation concerning the new basin in the area of the Słupsk Furrow: In the area of the Słupsk Furrow, a special area of conservation should be designated for commercial fish resources (basin or sub-basin R) in order to protect and increase the fish resources in Polish Sea Areas, particularly in the coastal area. It is recommended to introduce the following provision in the basin sheet: “Commercial fish resources should be protected by excluding from fishing the area of the Słupsk Furrow, including fishing squares O-9, P-9.”

Justification: The Słupsk Furrow is the main channel containing saline and well-oxygenated water situated far from coastal pollution sources characterised by a significant degree of naturalness. The inflows moving to the east through the Słupsk Furrow are of significant importance for the ichthyofauna, as well as for the macrozoobenthos that inhabit the seafloor below the halocline. The unique environmental conditions (mainly temperature, salinity and oxygenation) in the Słupsk Furrow are beneficial for the spawning of pelagic cod and flounder. In addition, the area of the Słupsk Furrow is an attractive feeding ground for commercial fish. Due to the environmental values of the area, fish are concentrated in a limited area and are subject to strong fishing pressure. To sum up, the Słupsk Furrow is a valuable area in terms of nature, which must be protected by relevant provisions, including, first of all, limitation of pressure on the ichthyofauna resources.

14.3 Recommendations to v.1 of the “Draft Maritime Spatial Plan of the Polish Internal Sea Waters, Territorial Sea, and Exclusive Economic Zone in Scale 1:200,000” (of 23 April 2018)

General remark: In the Draft Plan, the terms “condition of the environment” and “no deterioration of this conditions” appear most often, whereas the term “nature conservation” is not taken into account, and these are not equal terms. Moreover, “sustainable development” does not mean that many functions exist in a given area, but that these functions are implemented in accordance with the principles of nature conservation.

The remaining recommendations along with justification and commentary being the declaration of the Contractor concerning the inclusion of these elements in v.1. of the Draft Plan are included in Table 7.3.

• Table 7.3. Recommendations to v.1 of the draft spatial development plan

Item	Recommendation	Justification	Commentary on the declaration of the Draft Plan Contractor regarding the inclusion of recommendations
Comments to the text part of the Plan			
1.	<p>The following definitions should be introduced in the text part of the Plan – General Provisions of the Plan:</p> <ul style="list-style-type: none"> – seafloor integrity – condition and range of occurrence of seafloor habitats together with the consideration of pressures on these habitats. In addition, seafloor integrity consists of morphological forms such as breaker bars and nearshore slope, which should not be disturbed; – habitat integrity – a set of features, factors and processes which may affect its conservation status. These are in particular: the total area of the habitat; occurrence of valuable species and habitats and their conservation status; accessibility of feeding grounds, shelters, openness of migration routes; ecological conditions (e.g. water conditions), degree of habitat fragmentation; intensity of pressures and threats. 	There are no relevant definitions in the Draft Plan documentation and these are relevant for justification why certain limitation/prohibitions should be introduced.	Included
2.	<p>The following definitions should be modified in the text part of the plan – the Explanatory Memorandum to the Plan: coastal protection, coastal protection system, proper state of the coastal protection system, as follows:</p> <ul style="list-style-type: none"> – coastal protection – maintenance of the coastal protection system in a state ensuring the coastal safety level the required by law, monitoring and research of the current 	The change of the wording of this definition is necessary due to the fact that the definition included in the text of the Plan does not include the essence of the concept of	Included

Item	Recommendation	Justification	Commentary on the declaration of the Draft Plan Contractor regarding the inclusion of recommendations
	<p>state of the coast and protection of accumulations of sands for the artificial nourishment against use for purposes other than coastal protection.</p> <p>– coastal protection system – the coastal protection system should be understood as: the foredune, beach and nearshore up to the area of breaker bars, together with possible coastal protection structure system. The slope of the cliff is not part of the protective system, it is an element of the coast hinterland.</p> <p>– proper state of the coastal protection system – ensuring a minimum level of coastal safety required by law (ordinance) as well as a limit line of protection by means of a coastal protection system.</p>	<p>coastal protection, which is not only the construction and maintenance of defences, but also the achievement of the level of coastal safety required by the ordinance.</p> <p>The coastal protection system is not only structures, but first of all, the natural coastal area with its morphological forms with parameters ensuring the required safety level. Protective structures are only a consequence of the required safety level, resulting from the erosion processes and flood hazards. Such definition was used in the Strategy for coastal protection.</p> <p>The proper state of the coastal protection system requires maintaining appropriate parameters of morphological forms which guarantee resistance to storms with a certain probability of occurrence, and in particular not introducing disturbances which may impair the natural resistance of the coastal area to hydrodynamic factors. If the natural protection system does not achieve the required level of safety in the coast sections with developed facilities, decision is made to use the coastal protection structures.</p>	<p>Included</p> <p>Included</p>
3.	Include a Preamble in the Explanatory Memorandum to the detailed decisions concerning particular basins of the Plan, where the	The aforementioned provision was introduced on page 7 of the text part of the Draft Plan. There is no mention of	Included

Item	Recommendation	Justification	Commentary on the declaration of the Draft Plan Contractor regarding the inclusion of recommendations
	following provision will be included: "In the whole area covered by the Draft Plan, the following functions are implemented: national security and defence, and protection of the environment and nature."	this in the basin sheets. Taking into account the complexity of the Draft Plan document, there is a risk that this recipients will not pay a proper attention to this information.	
4.	The following addition to the definition of function "Reserve for future development" should be introduced: (...) "to meet the interests and needs of future generations in terms of land development, but also in terms of nature conservation and the protection of animated and non-animated resources."	In the current definition of function "Reserve for future development", only the economic aspect is taken into account, but there is no information about the necessity of providing space also for the environmental protection and nature conservation purposes.	Included
5.	The definition of function "Environmentally conditioned local development" should be added a phrase (...) "and consist, in particular, in taking care of areas valuable in terms of nature and providing opportunities of nature conservation."	The definition is missing a reference to nature conservation. There are three protected areas in the basin, the protection objectives of which should be taken into account during the implementation of the activities under all permissible functions.	Included
6.	The following phrase should be added to the definition of function "Multifunctional economic development": after the words "(...) which should be implemented simultaneously (...)": "but also taking care of areas valuable in terms of nature and providing opportunities of nature conservation".	The definition is missing a reference to nature conservation. Whereas the basin contains five Natura 2000 areas, the protection objectives of which should be taken into account during the implementation of the activities under all permissible functions.	Included
Comments to the basin sheets			
Function C – coastal protection			
1.	It is recommended to add the following provision: "due to the high	Decisions on the location of any, not only tourist,	Included

Item	Recommendation	Justification	Commentary on the declaration of the Draft Plan Contractor regarding the inclusion of recommendations
	<p>dynamics of the processes occurring in the coastal area it is recommended to expand the EIA report for activities in the basin to include the impact of these activities on the morphodynamic and lithodynamic processes taking place in the coastal area and on the state of the coastal protection system” in section Recommendations of the basin sheets for basins C.</p>	<p>infrastructure in basins C should be preceded by a detailed analysis of the morphology and lithodynamics of the coastal area as well as integrated coastal area management planning, including spatial development of the hinterland. In the absence of spatial development plans for the coastal area in many fragments of the coastline, the introduction of soft and imprecise records may lead to an increase in erosion areas and affect the extension of the scope of coastal protection, which violates the HELCOM recommendations: 15/ protection of the coastal area and 16/3 protection of natural dynamics of the coastal area. The transition of the environment to another, unstable state, due to the disruption of processes by new infrastructure and coastal defences constructed by now, and also as a result of rising sea level and increase in the number and frequency of extreme hydrodynamic phenomena requires an in-depth analysis of state of the coastal area, covering the entire coastline from Piaski to Świnoujście.</p> <p>Without the study of the current dynamics of coastlines of the southern Baltic Sea provisions contained in the Draft Plan, which restrict the “introduction of new elements of tourist infrastructure (piers, jetties) to locations which meet the requirements of maintaining the proper state of the coastal protection system”, and in another place of the same basin sheet state that “(...) it is</p>	

Item	Recommendation	Justification	Commentary on the declaration of the Draft Plan Contractor regarding the inclusion of recommendations
		prohibited to locate new elements of tourist infrastructure (piers, jetties), artificial islands and installations in places which do not meet the requirements of maintaining the proper state of the coastal protection system (...)” are of very general nature in the view of both maintenance of natural processes that occur in the coastal area and integrated coastal area management.	
2.	In the basin sheet for basin 38C there should be a prohibition to implement functions C, W and I in a way which “significantly affects the welfare of birds wintering and resting during migration and during the period when they occur in large numbers, from early November to late April”.	Basin 38C lies within the boundaries of the area PLB990002 Baltic Coastal Waters, where non-breeding (wintering, migratory) water bird populations are protected. The period when water birds occur in this area in large numbers can be set to period between the beginning of November and the end of April. Similar limitation has been introduced in basin sheets of other basins having borders with the area PLB990002 Baltic Coastal Waters (19C, 26C, 31C, 37C and 40C), but not in the basin sheet for basin 38C. Implementation of functions C, W and I may have a negative impact on the objectives and objects of protection of the area PLB990002 Baltic Coastal Waters and its integrity and coherence with other SPAs.	Included
3.	The exact duration of the limitations on the implementation of function R in basins 06C, 07C, 19C, 31C and 40C should be indicated.	As regards the implementation of function R in basins 06C, 07C, 19C, 31C and 40C, it was prohibited in the listed sub-basins “during the period of increased migration of	Not included at the stage v.1 of the Draft Plan

Item	Recommendation	Justification	Commentary on the declaration of the Draft Plan Contractor regarding the inclusion of recommendations
		bi-environmental and migratory fish” and the requirement was established to keep rivers: Rega, Błotnica, Czerwona, channel connecting the Jamno Lake with the sea, Łupawa, Piaśnica and Czarna Woda open to provide migration opportunities to bi-environmental organisms. These provisions are imprecise in terms of their duration. However, the impact of the above mentioned provisions on the objectives and objects of protection of areas PLB990003 Pomeranian Bay and PLB990002 Baltic Coastal Waters as well as their integrity cannot be assessed due to lack of indication of the exact duration of the limitation.	
Function Ip – port infrastructure			
1.	The prohibition of the implementation of activities in basins Ip-12 (87lp) and Ip-13 (88lp) (within the boundaries of the area PLB220005 Puck Bay) should be modified using the following wording: “it is prohibited to implement functions in a way which significantly disturbs bird breeding, that is in the period from 1 March to 31 August, by generating an impact on the coast and other areas of the basin where the birds breed”. In the limitation, the existing phrase “and other areas of the basin” should be replaced with phrase “and on the elements of infrastructure”.	Birds may breed on the coast or on the elements of infrastructure. The borders of basins Ip-12 and Ip-13 (currently 87lp and 88lp) are adjacent to the area PLB220005 Puck Bay where water bird breeding populations are under protection (SDF of the area, updated: February 2017). Therefore, appropriate clarification of the provision and its observance may decrease a negative impact of the implementation of the function of Polish Sea Area on the avifauna and have a positive impact on the achievement of the conservation objectives, the maintenance or improvement of the	Included

Item	Recommendation	Justification	Commentary on the declaration of the Draft Plan Contractor regarding the inclusion of recommendations
		proper state of the protection of objects protected in the area PLB220005 Puck Bay and its integrity.	
2.	In the basin sheet for basin 86lp it is necessary to include the prohibition of implementation of functions C, I and W “in a way which significantly disturbs the breeding of birds (during the period from 1 March to 31 August), affecting the coast and elements of infrastructure where these birds breed”.	Basin 86lp lies within the boundaries of the area PLB220005 Puck Bay, where breeding water bird populations are also under protection. The basin sheet for this basin does not contain any limitations on the implementation of functions C, I and W, that could reduce their negative impact on water bird breeding populations.	Included
3.	In the basin sheet for basins 86lp, 87lp and 88lp there should be a prohibition to implement functions W, I and C “in a way which significantly affects the welfare of birds wintering and resting during migration and during the period when they occur in large numbers, from early November to late April”.	Such a prohibition was introduced for other basins with function Ip assigned as a basic one, located within the boundaries of SPAs, but not for basins 86lp, 87lp and 88lp. Basins 86lp, 87lp and 88lp are located in the area PLB220005 Puck Bay, where non-breeding (wintering, migratory) water bird populations are under protection as well.	Included
4.	It is recommended to remove from the basin sheet for basin 01lp the prohibition to implement functions K and W “in a way which significantly disturbs bird breeding, that is in the period from 1 March to 31 August, by generating an impact on the coast and other areas of the basin where the birds breed”.	In the area PLB990003 Pomeranian Bay protected objects include only non-breeding (wintering and migratory) water bird populations, not the breeding ones.	Included
5.	The exact duration of the fishing prohibition in sub-basins 04lp.701R, 17IP.705R, 22IP.708R, 28IP.709R and 35IP.711R “during the period of increased migration of bi-environmental and migratory fish” should	This provision is imprecise in terms of its duration. Without specifying the exact duration of the prohibition it is not possible to assess the impact of this provision on	Not included at the stage v.1 of the Draft Plan

Item	Recommendation	Justification	Commentary on the declaration of the Draft Plan Contractor regarding the inclusion of recommendations
	be indicated.	the objectives and objects of protection of areas PLB990003 Pomeranian Bay and PLB990002 Baltic Coastal Waters and their integrity.	
Function K – exploration, investigation of mineral and fossil resources and extraction from the resources			
1.	In the basin sheet for basin 02C it should be prohibited to implement function K: “in a way which significantly disturbs the breeding of birds (during the period from 1 March to 31 August), affecting the coast and elements of infrastructure where these birds breed”.	In basin 02C location of function K was limited to the WOLIN area, however, in relation to this function no prohibition was indicated for its implementation in a way that could disturb bird breeding. Indication of such limitation is particularly important in the context of the inclusion of artificial nourishment with sand masses as part of function K, the possible impact of which on birds during the breeding season was identified in Chapter 8.3.1. The indicated limitation of function K in the area may reduce the negative impact of the implementation of this function on the objects and objectives of protection of the area PLB320002 Świna River Delta in relation to water bird breeding populations and integrity of this SPA.	Included
2.	In the basin sheet for basin 25K there should be a prohibition to implement function K “in a way which significantly affects the welfare of birds wintering and resting during migration and during the period when they occur in large numbers, from early November to late April”.	It was prohibited to implement function K in basin 21K “in a way which: significantly affects the welfare of birds wintering and resting during migration, i.e. during the period when they occur in large numbers, from early November to late April”. This will contribute to the reduction of the negative impact of most of the activities included in the definition of function K on the objectives	Included

Item	Recommendation	Justification	Commentary on the declaration of the Draft Plan Contractor regarding the inclusion of recommendations
		and objects of protection of the area PLB990002 Baltic Coastal Waters and on its integrity. However, such limitation is not included in the basin sheet for basin 25K, which should be supplemented, as this basin is also contained in the area PLB990002 Baltic Coastal Waters, where water bird non-bearing populations are under protection.	
3.	Basin 93T, located north of PLC990001 Słupsk Bank, should be removed from the Plan.	Introduction of basin 93T into the Draft Plan may result in a significant negative impact on the population of objectives and objects of protection of the area PLC990001 Słupsk Bank and the integrity of this SPA, including the wintering population of long-tailed duck. This species has been classified as near threatened (category VU according to the IUCN list, v.2017-3) due to declining number of specimen. The area PLC990001 Słupsk Bank is an important wintering ground for this species. Moreover, establishing this basin may result in posing a threat to the two habitats that occur in the area of the Słupsk Bank: sandy undersea shoals and reef (see Chapters 8.3.2 and 12).	Not included at the stage v.1 of the Draft Plan
Function M – multifunctional economic development			
1.	In the Recommendations part of the basin sheet the following provision should be introduced: "a comprehensive assessment of the	In the basin it is allowed to embed elements of tourist infrastructure (piers, jetties) as agreed with the	Included

Item	Recommendation	Justification	Commentary on the declaration of the Draft Plan Contractor regarding the inclusion of recommendations
	environmental impact tourism infrastructure-related investments is recommended”.	competent Director of the Maritime Office prior to the adoption of this Plan. The scale of the impact on the environment and nature of the basin will depend on the type, location and number of implemented investments in tourist infrastructure.	
2.	From the perspective of the environmental protection of the Gulf of Gdańsk (a basin which is subject to many pressures, and at the same time, an area valuable in terms of nature) the construction of new outlets of sewage systems to its waters should be completely limited and the sewage treatment plants operating in the area should be modernised and used.	The only limitation concerning the laying of linear elements of the linear infrastructure to the outlets of the sewage equipment used for discharging sewage into sea waters, concerns only the requirements of maintaining the proper state of the coastal protection system.	Not included at the stage v.1 of the Draft Plan
3.	The content of the limitation included in the basin sheet for basin 85M (and other basin sheets containing the same provision) on the implementation of functions I, C and W, should be modified from: “prohibited/limited (...) in a way which significantly disturbs bird breeding, that is in the period from 1 March to 31 August, by generating impact on the coast and other areas of the basin where the birds breed” to: “prohibited/restricted (...) in a way that: significantly disturbs the breeding of birds during the period from 1 March to 31 August, affecting the coast and the infrastructure on which the birds breed”.	This provision is imprecise as no “other areas of the basin where the birds breed” are indicated. Birds may breed on the coast or on the elements of infrastructure.	Included
4.	It is recommended to remove the provisions concerning the limitation of implementation of functions D, N and A due to the needs of avifauna from the basin sheet for basin 85M (and basin sheets for	As indicated in Chapter 8.3.1 hereof, functions D, N and A will not have a significant impact on avifauna. Therefore, it is not necessary to introduce limitations on	Included

Item	Recommendation	Justification	Commentary on the declaration of the Draft Plan Contractor regarding the inclusion of recommendations
	other basins, if applicable) (provisions with wording: “it is forbidden (...) in a way which: significantly affects the welfare of birds wintering and resting during migration, i.e. during the period when they occur in large numbers, from early November to late April; [or]significantly disturbs bird breeding, that is in the period from 1 March to 31 August, by generating impact on the coast and other areas of the basin where the birds breed”).	implementation of these functions due to the needs of avifauna, but they may hinder the achievement of economic goals, obtaining data based on scientific research or protection of cultural heritage.	
Function L – environmentally conditioned local development;			
1.	In the Recommendations part of the basin sheet the following provision should be introduced: “a comprehensive assessment of the environmental impact tourism infrastructure-related investments is recommended”.	The basin sheet for basin 84L introduces limitation on the implementation of function of tourism, sport and recreation concerning the prohibition of establishing formal bathing areas in the area of reed fields, river outlets and in reserve hinterland, which is very important in the context of conservation of the above mentioned habitats. In the basin, however, it is allowed to embed elements of tourist infrastructure (piers, jetties) as agreed with the competent Director of the Maritime Office prior to the adoption of this Plan. The scale of the impact will depend on the type, location and number of implemented investments in tourist infrastructure.	Included
2.	From the perspective of the environmental protection of the Puck Bay (a basin of specific hydrological, geomorphological conditions and high value for nature aspect) the construction of new outlets of sewage systems to its waters should be completely limited (rather the	The only limitation concerning the laying of linear elements of the linear infrastructure to the outlets of the sewage equipment used for discharging sewage into sea waters, concerns only the requirements of maintaining	Not included at the stage v.1 of the Draft Plan

Item	Recommendation	Justification	Commentary on the declaration of the Draft Plan Contractor regarding the inclusion of recommendations
	sewage treatment plants operating in the area of the Gulf of Gdańsk should be modernised and used).	the proper state of the coastal protection system.	
3.	The content of the limitation included in the basin sheet for basin 84L on the implementation of functions I, C and W, should be modified from: “prohibited/limited (...) in a way which significantly disturbs bird breeding, that is in the period from 1 March to 31 August, by generating impact on the coast and other areas of the basin where the birds breed”. A correct provision should have the following wording: “prohibited/restricted (...) in a way that: significantly disturbs the breeding of birds during the period from 1 March to 31 August, affecting the coast and the infrastructure on which the birds breed”. The identical modification should be introduced in all the other basin sheets where such provision is contained.	Instead of “bird breeding” [<i>singular form in Polish</i>] the plural form of this term is the correct one [<i>applies to Polish version, to mark the difference the wording “breeding cycles” was used in the English version</i>]. This provision in its current form is imprecise as no “other areas of the basin where the birds breed” are indicated. Birds may breed on the coast or on the elements of infrastructure.	Included
Function E –acquisition of renewable energy			
1.	In the basin sheet for basin 46E it should be prohibited to implement functions I and W in a way which “significantly disturbs the resting period of birds in waters of the basin during migration and wintering in the basin, i.e. between the beginning of November and the end of April”.	The aforementioned prohibition of functions I and W has been introduced for basins 14E, 43E, 44E, 45E, 60E. Only one basin sheet (46E) with basic function E does not include it. The aforementioned prohibition will contribute to reducing the negative impact of function I on avifauna, including objectives and objects of protection of SPAs and their integrity.	Not included at the stage v.1 of the Draft Plan
2.	In the basin sheets of basins with function E assigned (14E, 43E, 44E, 45E, 46E, 60E) it should be prohibited to locate wind power plants at a distance of less than 2 km from Special Protection Areas. This	The majority of bird species avoid areas built up with the power plants and their vicinity within 2 km from external power plants (Petersen et al. 2006). Birds are scared off	Included

Item	Recommendation	Justification	Commentary on the declaration of the Draft Plan Contractor regarding the inclusion of recommendations
	restriction applies to all SPAs covered by the Draft Spatial Development Plan of Polish Sea Areas and to the area SE0330308 Hoburgs bank och Midsjöbankarna (due to possible transboundary impact). The recommendation concerns OWFs, for which no administrative decisions have been issued yet or for which it does not contradict the decisions already issued.	by wind power plants and forced out of their habitats. Locating OWFs at a distance of less than 2 km from the borders of SPAs could result in forcing protected bird species out of the part of SPAs adjacent to the OWFs. This would result in a potentially significant negative impact of function E on the avifauna, including protected bird species, their habitats and objectives, protected objects and integrity of Natura 2000 areas, as well as on coherence of the network of these areas (as a result of the barrier on the migration routes of birds). With respect to version of the Draft Plan presented to the Prediction Team at this stage of work, this limitation relates primarily to areas PLC990001 Słupsk Bank, PLB990003 Pomeranian Bay, as well as to the Natura 2000 area located in Sweden – SE0330308 Hoburgs bank och Midsjöbankarna.	

15 Summary to the FINAL version of the Draft Plan of July 2019 (v.3)

Works on the Prediction between November 2016 and July 2019 were a multi-stage process, closely linked to the planning workflow. The need to prepare the Prediction and the draft development plan simultaneously, on the one hand, made it possible for the pro-environmental solutions proposed by the Prediction Team to be discussed on an ongoing basis and included in the Draft Plan, but on the other hand, such a course of action made it significantly more difficult to refer to the latest version of the Draft Plan, as it was subject to constant significant modifications. Modifications of the concept concerned the designation, numbering of basin sheets, and most importantly, the provisions themselves and their place in the basin sheets. Another significant aspect for the implementation of particular Tasks in the Project were also formal, legal and legislative conditions binding for both Teams. Modifications introduced in the draft development plan v.3 of July 2019 resulted in the necessity to re-evaluate the changes in the provisions of v.3 in comparison with the previous versions of the project. The types of impacts generated by the individual functions indicated in the subsequent versions of the plan have, as a rule, not changed (see Chapter 8.1 of this Prediction). However, the detailed provisions as well as their rank (place in the Draft Plan document) have changed.

As a result, the Draft Plan is the result of the Planning Team's concept, the comments made during consultations and the recommendations of the Prediction Team made and discussed at all stages of work (see Chapters 18 and 19 of the Prediction). The authors of the Prediction considered it necessary to emphasise a few more aspects that are important in the context of the impact of provisions on the environment.

The function of protection of the environment and nature has a rank of a basic function in 6 basins. It constitutes about 3.85% of Polish Sea Areas. However, it does not mean that in the remaining part of Polish Sea Areas the importance of environmental protection and nature conservation should be marginalised, especially in the context of the provisions included in Appendix 1 to the Ordinance: *"In the whole area covered by the Plan, the following functions are implemented: national security and defence, and protection of the environment and nature"* and *"Environmental protection is an important condition of the implementation of any activities in particular basins, whether or not it is a legally protected area"*. However, the degree of respect for this concept by Decision-Makers and Users of the sea space can only be assessed in practice.

Special attention should be paid to the future use of the sea space within the framework of broadly defined functions: reserve for future development and reserve for future development with extraction allowed, which in total cover about 53% of Polish Sea Areas. Along with the increase of knowledge concerning particular components of the marine environment, as well as in the course of making decisions on future investments in the areas designated for the future development, it may turn out to be necessary to designate new areas, where the function of the protection of the environment and nature will be priority one. In order to meet the assumptions of "sustainable development", certainly a part of Polish Sea Areas should remain completely undeveloped so that it is possible to preserve the marine environment in its natural state, which, however, has not been included in the Plan. In the final version of the Plan, the share of function of reserve for future

development with extraction allowed has increased (this function has been allowed in all the basins, whose basic function was reserve for future development located, outside the territorial sea). At the moment, structures used for the exploration, investigation and extraction of hydrocarbon resources are allowed in seventeen basins. In the *Explanatory Memorandum to the Detailed Decisions* it was indicated that the limitation of the function to the specified sub-basins results from the need to minimise conflicts with coastal tourism important for the development of coastal municipalities. Moreover, the limitation is to minimise the risk of pollution of coastal areas with oil spills as a result of random events. However, it should be reckoned that together with an increase in the degree of permanent development of Polish Sea Areas (all types of structures) the risk of emergencies or disasters outside the territorial sea increases. Effects of such events may have a supra-local range and go beyond Polish Sea Areas. Moreover, attention should be paid to allowing the implementation of the extraction function in basin 92.O, where the extraction can be carried out either from places located outside the basin or without the use of artificial islands and installations. Due to lack of information concerning the technology of works, it is difficult to assess potential negative environmental effects. While making future decisions concerning ways of development, it should be noted that basin 92.O coincides with the borders of IBA PLM4 “Eastern Near-Border Waters” area which is an important place for feed and rest of water bird during their wintering and migration.

Within the boundaries of basins having function of the protection of the environment and nature assigned, there are marine Natura 2000 areas, where separate regulations apply. According to the law, protection plans should be drawn up and approved for these areas. In the course of works on the development of the protection plans for Natura 2000 areas and as a result of environmental research conducted for this purpose, it may be necessary to change their borders. This will result in the simultaneous necessity to verify the spatial development plan in this respect.

The draft plan assessed in this Prediction includes reference to significant public purpose investments (among other things, ports and havens, hydrocarbon transport facilities, projects relating to the investments in nuclear power plants). In accordance with the assumptions of the strategic environmental impact assessment, these investments have not been subject to a detailed environmental impact assessment. Following the adopted methodology (Chapter 2), the assessment was carried out at the function level. In some cases the Planning Team indicates the necessity of making a decision on the provisions and designations at sub-basin level at the stage of the so-called detailed plans (e.g. in the detailed plan a target system of fairways in the basin should be developed and obtain a positive environmental impact assessment). Another example of postponement of the decision on the use seems to be the provisions on fishing in the basins intended for the acquisition of renewable energy (*“until the rules on fishing in the basin are developed, it is prohibited to fish in safety zones of any construction and in places threatening the safety of internal connection infrastructure”*) or aquaculture, where *“detailed location as well as technological and technical solutions should be indicated at the stage of the construction design”*.

As mentioned at the beginning of this Chapter, detailed provisions, including those of environmental importance, have been modified several times. For example, the limitations, revised by the Planning Team, introduced to ensure the ecological function of spawning grounds and survival of commercial fish in their early stages, and to protect the migration of bi-environmental organisms, are now of a general nature, but provide an indication for the competent authorities to take these elements into account when making administrative decisions. Their effect will therefore be positive, provided that

they are respected. It is important to emphasise that, although basin sheets contain no provisions concerning specific time frames, the future assessment of the impact of activities carried out in sub-basins R should cover the periods of migration of bi-environmental organisms (as indicated in the previous version (v.1) of the Draft Plan) and be relevant for the decisions. In addition, the recommendations contained in the basin sheets have introduced important provisions recommending that the scope of the EIA reports was extended to include commercial fish stocks (as currently defined in the *General Provisions*).

In the recommendations of the previous versions of the Prediction it was recommended to move the OWF development line away from the SPAs by at least 2 km. This is justified by the fact that most bird species avoid the areas occupied by the power plants and their vicinity within 2 km from the external power plants (Petersen et al. 2006, Fox et al. 2006). Birds are scared off by wind power plants and forced out of their habitats. Locating OWFs at a distance of less than 2 km from the borders of SPAs could result in forcing protected bird species out of the part of SPAs adjacent to the OWFs. This would result in a potentially significant negative impact of function E on the avifauna, including protected bird species, their habitats and objectives, protected objects and integrity of Natura 2000 areas, as well as on coherence of the network of these areas (as a result of the barrier on the migration routes of birds). The conducted analyses show that the recommendation now refers to the Natura 2000 area SE0330308, as the location of the remaining basins E already takes into account an appropriate distance from the boundaries of the protected areas. Moreover, significant changes have been introduced in the provision which refers to the proposed minimising solution on the 4 km wide corridor for migrating birds, which at the moment, exists in a form of recommendations and is included in the General Provisions to the Plan. The degree of its implementation will depend on the results of environmental procedures conducted for the purpose of particular investments (OWFs). The guaranteed open routes and possibility of flying free for birds will depend on the results of the pre-investment research, and the course and directions of the identified migrations may differ in particular seasons, depending on weather conditions and other environmental variables.

The Spatial Development Plan of Polish Sea Areas sets the framework for future use of the space, but does not replace existing regulations, including those relating to environmental protection. Procedures for issuing administrative decisions (location, environmental, etc.) will be conducted on the basis of appropriate documentation, relevant to specific proceeding. However, the importance of pro-environmental solutions indicated in the spatial development plan should be emphasised and the best possible use should be sought.

16 Summary in non-specialist language

This Prediction v. 3 refers to the following documents of the Draft Plan:

- ❖ version v. 0 of 22 May 2017;
- ❖ version v. 1 of 23 January 2018, then amended on 23 April 2018 as a consequence of comments made by the Contracting Authority and recommendations of the team responsible for development of the Prediction;
- ❖ version v. 2 of 22 August 2018;
- ❖ version v. 2 of 22 November 2018;
- ❖ version v. 3 of 22 April 2019;
- ❖ **version v. 3 of July 2019**, including:
 - Appendix 1 to the aforementioned Ordinance, i.e. General Provisions;
 - Appendix 2 to the aforementioned Ordinance, i.e. Detailed Decisions (Basin Sheets);
 - Appendix 3 to the aforementioned Ordinance, i.e. Explanatory Memorandum to the Detailed Decisions.

The Prediction includes:

1. information on the content, main objectives of the Draft Plan and its associations with other documents,
2. information on methods used during development of the Prediction,
3. proposals concerning predicted methods of analysing consequences of the provisions of the Draft Plan and frequency of such analysis,
4. information on possible cross-border environmental impacts,
5. summary in a non-specialist language,
6. information concerning basins which are valuable in terms of nature, including areas protected under the Act of 16 April 2004 on Nature Conservation (Journal of Laws of 2018, item 1614, as amended),
7. presentation of spatial phenomena and interactions of these phenomena on maps,
8. statement of the head of the team of authors on meeting the requirements set out in Article 74a(2) of the EIA Act,
9. recommendations to the Draft Plan

Furthermore, in connection with the Prediction the following aspects have been identified, analysed and evaluated:

1. the existing state of the marine environment in the area covered by the Draft Plan,
2. potential changes in the state of the environment if the Draft Plan is not implemented,
3. the state of the environment in areas affected by the expected significant impact,
4. existing environmental protection problems significant for the implementation of the Draft Plan, including without limitation those problems which concern areas protected under the Act of 16 April 2004 on Nature Conservation (Journal of Laws of 2018, item 1614, as amended),
5. environmental protection objectives established at the international, Community and national levels, significant for the Draft Plan, and the ways in which these objectives and other environmental problems have been taken into account during development of the Draft Plan,

6. the expected significant impacts of the Draft Plan's findings (including: direct, indirect, secondary, cumulative, short-, medium- and long-term, permanent, temporary, positive and negative impacts) on the objectives and objects of conservation and the integrity and coherence of Natura 2000 areas, as well as on the environment, including without limitation:
 - biodiversity,
 - people,
 - animals,
 - plants,
 - water,
 - air and acoustic climate,
 - land surface, including seafloor,
 - landscape,
 - climate,
 - natural resources,
 - monuments, including underwater cultural heritage,
 - material assetstaking into account dependencies between components of the environment and impacts on these elements (effects of Draft Plan's findings on the marine environment and a land covered by the impact area).
7. alternative solutions indicated in the Draft Plan together with an indication of the most beneficial options for the environment,
8. the degree of compliance of the Draft Plan with planning documents at the national and international level, as well as other documents important for the preservation and protection of the environment,
9. potential social conflicts arising from the implementation of the provisions of the Draft Plan.

Extremely important elements of the Prediction necessary to ensure sustainable development of the use of Polish Sea Areas will be:

10. solutions aimed at preventing and limiting negative impacts on the environment, which can be a result of the implementation of the Draft Plan, in particular on the objectives and objects of protection of Natura 2000 areas, and the integrity and cohesion of these areas,
11. alternatives to solutions contained in the Draft Plan, together with justification for their choice and a description of the assessment methods which led to this choice or an explanation of the lack of alternatives, including an indication of the difficulties encountered due to technical deficiencies or gaps in contemporary knowledge, taking into account the objectives, geographical scope of the document and the objectives and objects of protection of Natura 2000 areas, as well as the integrity and coherence of these sites.

In addition, the Prediction contains Chapter 17, which brings together the comments and conclusions of the first, second and fourth national consultation meetings, the first, second and the third international consultation meetings, the public consultation as well as comments on the Prediction received from the Contracting Authority at all stages of work.

Chapter 18 of this Prediction contains the comments and recommendations of the Author Team to the Draft Plan added at all stages of works. It shows the course of the planning process and the workload in the Project. Chapter 19 has also been left in the document. Its purpose was to analyse and evaluate changes introduced in each version of the plan. These changes were of both strategic

nature – they covered designation of the basins, and detailed nature – they referred to specific provisions in the basin sheets. Some of them concerned the environmental aspects and were included in version of the Plan of July 2019 which is being assessed here.

Chapter 21 provides a **summary of the final Draft Plan v.3. of July 2019**.

The scope of the Prediction is derived from type, scope and degree of detail of the basic document (here: the Draft Plan). The approach to the method of strategic document assessment results from the role of this assessment, which is considered an instrument ensuring the inclusion of environmental aspects and sustainable development into the mainstream of decision-making processes at the level of the European Union and individual countries.

Difficulties in the preparation of the Prediction resulted from the interpretation of a new management instrument, i.e. the draft spatial development plan for Polish Sea Areas and the need to develop an assessment method for such a spatially extensive area as Polish Sea Areas (it was not possible to transpose the methodologies developed for land use planning documents).

The planning process was preceded by an analysis of the planning documents for the land part of the coastal areas. It covered two levels – regional and local. The analysis focused on the coastal areas and on statements/contents of significance for sea area planning, with special attention paid to the functions of the areas, status of protection, state of development, occurrence of hazards, infrastructural solutions, accessibility of the areas, and planned investments.

At regional level, both the voivodeship spatial development plans and the current strategic and programming documents were taken into consideration. At the local level the analysis was based on the studies of conditions and directions of spatial development of municipalities, local spatial development plans (in the coastal area), strategic studies and development plans of municipalities, as well as development plans of the ports, supplemented by available data and information. Some of the documents taken into consideration were produced over 10 years ago, and many of them were not updated since then, which limited their usefulness for the analysis. Generally it should be confirmed that the Draft Plan is consistent with planning documents on the national and international level.

The solutions of the Draft Plan in the context of preservation and conservation of natural values are reflected in separate provisions, specific for each basin – prohibitions, conditions of use and recommendations, specified in the basin sheets or in the provisions of General Provisions included in Appendix 1 to the Draft Plan. These provisions were aimed at meeting the requirements resulting from the necessity to take into account the objectives and tasks relating to environmental protection specified in a number of statutory and programme documents.

Taking into account formal, legal, environmental, and social conditions, there is no possibility of using the alternative option 0 – not drawing up a draft plan. The Draft Plan contains decisions that determine the co-existence of various ways of using the sea areas without losing the possibility to execute tasks assigned to sectors considered as priority ones (according to legal acts and strategic documents referred to in the Explanatory Memorandum to the Plan), while ensuring safe use of each basin. The Draft Plan is of a pilot nature, on the one hand, it sanctions and organises development methods that are currently applied in Polish Sea Areas, but on the other hand, it indicates the areas which are not managed by any public processes other than spatial planning. The Plan neither

invalidates any validly issued spatial decisions, nor does it constitute a basis or instrument for changing the issued permits.

In particular basins orders, prohibitions and limitations specified in a number of normative acts are binding, and the Plan should somehow supplement these provisions so that the objectives specified in it could be achieved, including: *“permanent and sustainable use of ecosystem resources and services by current and future generations”*. The alternative solutions proposed in the Prediction concerned this aspect.

The Plan contains alternative detailed solutions concerning the areas designated for the construction, expansion and servicing of the Baltic Pipe gas pipeline as well as the technical infrastructure for the implementation of investments accompanying nuclear power facilities. In order to identify the alternative which is the most beneficial for the environment, it is necessary to have a number of data independent of the Draft Plan (first of all, the results of environmental research, technical and technological conditions of the investment included, among other things, in the EIA reports). Identification of alternatives that would be the most favourable for the environment as far as the Baltic Pipe underwater gas pipeline and the nuclear power plant are concerned, is beyond the scope of this Prediction.

The Prediction identifies the most important environmental problems and pressures. The analyses show that the most threatened areas (with the highest number of identified sources of pressure) are the coastal area (Natura 2000 area – PLB990002 Baltic Coastal Waters), the Puck Bay and the Pomeranian Bay.

The draft spatial development plan assessed in this Prediction includes reference to significant public purpose investments (among other things, ports and havens, hydrocarbon transport facilities, projects relating to the investments in nuclear power plants). In accordance with the assumptions of the strategic environmental impact assessment, these investments have not been subject to a detailed environmental impact assessment.

The following procedure was adopted for the environmental impact assessment of the provisions of the Draft Plan:

- stage 1 – identification of predicted significant impacts (chapter 8.1)
- stage 2 – analysis of predicted significant impacts (chapter 8.2)
- stage 3 – assessment of predicted significant impacts (chapter 8.3)

The starting point for the works on the impact assessment was to determine the predicted significant impacts, which may result from implementation of the provisions of the Draft Plan concerning the so-called basin functions. 18 functions have been distinguished in the Draft Plan, of which 12 are basic functions and 6 are allowed ones. Following the Draft Plan, assumption was made that execution of a given function will involve specific human activities, and consequently, these activities will potentially affect particular components of the environment and Natura 2000 areas. Scale and scope of the impact vary (Chapter 8.3). The analysis of basin sheets shows that the largest accumulation of functions (and related activities) occurs in basin POM.20.Pw, in the section from Kołobrzeg to Darłowo, in basin POM.11.Pw and in the area of the Gulf of Gdańsk (basins POM.84.L, POM.85.M). A detailed plan is to be prepared for the Gulf of Gdańsk. The scope and scale of occurrence of cumulative impacts will depend on the schedule of implementation of particular

activities (investments) and applied technological solutions and solutions aimed at minimising the negative impact on the environment.

The conditions for maintaining the integrity and cohesion of the Natura 2000 areas assessed in this document are very diverse. Undoubtedly, attention should be paid to the trends and directions of development of Polish Sea Areas described in the Draft Plan. On the one hand, the Plan sanctions numerous methods of use, on the other hand, it provides space for functions relating to future development, which have broad definitions and their impact on objects protected in Natura 2000 areas is difficult to estimate. Factors having a negative impact on particular protected objects (plants, animals, habitats) are specific. In general, the largest scale of impact is typical for activities relating to physical disturbance and destruction of habitats (construction of technical infrastructure, including the acquisition and storage of renewable energy or exploitation of mineral and fossil resources). Tourism, which mainly contributes to the scaring animals off and trampling of habitats, transport, which causes water pollution and indirectly influences the condition of habitats, and fishery, should be indicated as significant threats as well. Certainly, each of the Natura 2000 areas will require an individual analysis due to its natural and geographical specificity within the framework of detailed EIA reports for the implemented investments.

An extensive system of substantive as well as formal and legal mechanisms (although not yet used in the case of Polish Sea Areas) relating to planning seems to indicate that it should be an effective tool for the protection of areas of high natural values. In fact, ecological priorities are only one of many, which are a combination of mainly specific interests of particular users of the space. Of course, the Draft Plan assessed in this Prediction contains provisions which have a potentially positive impact on the preservation of the integrity and cohesion of the Natura 2000 network of areas, however, these provisions are mostly recommendations. Therefore, authors of the Projection are not able to state whether and to what extent they will actually be taken into account by decisive persons.

To a large extent, the Draft Plan indicates the conditions for the use of individual basins resulting from the already binding documents and normative acts. Protection plans are a tool which would measurably support the process of spatial planning in environmental protection, including objects protected in Natura 2000 areas. An important element of the protection plans are indications (guidelines) for the change of the studies of conditions and directions of spatial development of municipalities, local spatial development plans, voivodeship spatial development plans, internal sea waters, territorial sea and exclusive economic zone development plans. At present, despite the submission of draft protection plans to the competent authorities for most of the areas within the scope of planning, none of these plans has been implemented and has no binding status.

In the chapter concerning information on possible transboundary environmental impacts of the Draft Plan, upon analysis of activities assigned to specific function, it was proved that such impacts can potentially occur in the future in connection with the following functions: (P) reserve for future development (dependent on the implemented investments), (Pw) reserve for future development with extraction allowed and (E) acquisition of renewable energy.

The function of reserve for future development with extraction allowed was specified as a basic function in 17 basins in the Draft Plan. Activities relating to the implementation of this function should not cause any transboundary impacts, as long as limitations on the regions and methods of applied works (including the prohibition of erecting artificial islands and structures in selected basins) are obeyed, as provided for in the Plan. However, the possibility of emergency situations or disasters

outside the territorial sea should be taken into account. Then their effects may have a supra-local range and go beyond Polish Sea Areas.

At this stage of works, no transboundary impacts in connection with function of acquisition of renewable energy (E) are expected in case of a single OWF, but it should be expected that the probability of such impacts will increase in case of locating subsequent OWFs adjacent to each other and creating a large barrier. Therefore, to avoid transboundary impacts in areas intended for the acquisition of renewable energy, an application of minimising measures indicated by the Prediction Team (corridors between the OWFs free of any structures) should be considered.

The analysis of the effects of the execution of the provisions of the draft spatial development plan of Polish Sea Areas (monitoring) must allow for the assessment: how its provisions are executed, whether the minimising measures are applied, whether the changes in the environment are as predicted in the Environmental Impact Prediction, and whether and what changes in the provisions should be made. The proposed methods of monitoring concern the social, economic and environmental aspects.

Potential social conflicts, which may occur in the area covered by the Draft Plan, mostly refer to the future use of the marine space, and thus, to the emergence of new infrastructure relating to both mining and energy. This conflicts with the current traditional use of these areas by fishing and marine transport industries. However, it should be borne in mind that these conflicts do not arise directly from the provisions of the Draft Plan, but are the result of decisions concerning locations that are already issued, which are only taken into account in the developed Plan. Although it is assumed that the Draft Plan will help to resolve or reduce spatial conflicts, the authors of the Plan do not consider a conflict to be a situation where there is no possibility of simultaneous use, in time or space, or developing a specific space for two uses, and which was previously defined within the existing legislation.

Some provisions of the Plan are of pro-environmental importance and may provide guidance to future authorities responsible for issuing environmental decisions for individual investments. Thus, they may contribute to the reduction or minimisation of potentially negative impacts relating to the implementation of a given function in a basin, provided that they are observed and implemented.

The function of the protection of the environment and nature (O) currently covers ca. 3.85% of Polish Sea Areas. This does not mean, however, that in the remaining part of Polish Sea Areas its importance should be marginalised. Particular attention should be paid to the future use of maritime space within the broadly defined P and Pw functions, which occupy about 54% of Polish Sea Areas. Along with the increase of knowledge concerning particular components of the marine environment, as well as in the course of making decisions on future investments in the areas designated for the future development, it may become necessary to designate new areas, where the function of the protection of the environment will be a priority one. In order to meet the assumptions of “sustainable development”, certainly a part of Polish Sea Areas should remain undeveloped so that it will be possible to preserve the environment in its natural state.

The Spatial Development Plan of Polish Sea Areas sets the framework for future use of the space, but does not replace existing regulations, including those relating to environmental protection. Procedures for issuing administrative decisions (location, environmental, etc.) will be conducted on the basis of appropriate documentation, relevant to specific procedures. However, the importance of

pro-environmental solutions indicated in the Plan should be emphasised and their possibly full implementation should be strived for.