State Water Holding Polish Waters
Regional Water Management Authority in Wrocław

ENVIRONMENTAL MANAGEMENT PLAN

Odra – Vistula Flood Management Project – 8524 PL

Environmental category B – according to OP 4.01 WB

Component 1:

Flood Protection of the Middle and Lower Odra

Sub-component 1B:

Flood Protection of the Middle and Lower Odra

Contract for works 1B.1/1 (a):

Reconstruction of the Odra River control infrastructure - adjusting to the III class of waterway, on the section from the village of Ścinawa to the estuary of the Nysa Łużycka River – Stage II

Issue	Date	Author	Reviewed by	Client's Approval
I	25th March 2019	Wojciech Lewandowski	Waldemar Krzysztof	

Odra – Vistula Flood Management Project

Cofinanced by:
World Bank, Loan Agreement No. 8524 PL
Council of Europe Development Bank, Loan Framework Agreement No. LD 1866
The European Union Cohesion Fund (OPIE 2014-2020)
State budget

ENVIRONMENTAL MANAGEMENT PLAN

Component: ***1 – Flood Protection of the Middle and Lower Odra***
Sub-component: ***1B – Flood Protection on the Middle and Lower Odra***
Contract: ***1B.1/1 (a) – Reconstruction of the Odra River control infrastructure - adjusting to the III class of waterway, on the section from the village of Ścinawa to the estuary of the Nysa Łużycka River – Stage II***

Project Implementation Unit:
State Water Holding Polish Waters
Regional Water Management Authority in Wrocław

Authors of the study:
State Water Holding Polish Waters
Regional Water Management Authority in Wrocław
PIO OVFMP

Technical support consultant –
Joint Venture: SWECO Consulting Sp. z o. o., SWECO Nederland B.V.

Wrocław, March 2019

TABLE OF CONTENTS

List of basic definitions and abbreviations used in the EMP

Name	Description
BP	World Bank Procedure (*Bank Procedure*)[1]
BSW	Body of Surface Water
BGW	Body of Ground Water
Consultant / Engineer / Contract Engineer	A company or a legal entity implementing the Technical Support Consultant Service as part of OVFMP Project
Contract / Contract for works / The Task	*Contract/Contract for works/The Task 1B.1/1 (a): Reconstruction of the Odra River control infrastructure - adjusting to the III class of waterway, on the section from the village of Ścinawa to the estuary of the Nysa Łużycka River – Stage II*
Contractor / Task Contractor / Contract Part Contractor	A company or a legal entity implementing *Contract for works 1B.1/1 (a): Re-construction of the Odra River control infrastructure - adjusting to the III class of waterway, on the section from the village of Ścinawa to the estuary of the Nysa Łużycka River – Stage II*
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
Environmental decision / DED	Decision on the environmental conditions
ESHS	Environmental, Social, Health and Safety[2]
ESMF	Environmental and Social Management Framework for OVFMP [3]
IMiGW – PIB	*Instytut Meteorologii i Gospodarki Wodnej – Państwowy Instytut Badawczy* (Institute of Meteorology and Water Management – National Research Institute)

[1] World Bank Operational Policy and Procedure are presented in document The World Bank Operational Manual, available on the website: *https://policies.worldbank.org/sites/PPF3/Pages/Manuals/Operational%20Manual.aspx*.

[2] Environmental, Social, Health & Safety in Procurement (*http://www.worldbank.org/en/projects-operations/products-and-services/brief/procurement-new-framework#framework*)

[3] Document available on the website OVFMP PCU, at: *http://www.odrapcu.pl/popdow_dokumenty_RPZSiSS.html*.
and on World Bank website, at: *http://documents.worldbank.org/curated/en/717671468333613779/Poland-Odra-Vistula-Flood-Management-Project-environmental-and-social-management-framework*.

Name	Description
Investor / Employer / PIU (from 1January 2018)	State Water Holding Polish Waters Regional Water Management Authority in Wrocław / OVFMP Project Implementation Unit
LA&RAP	Land Acquisition and Resettlement Action Plan
LSDP	Local Spatial Development Plan
OP	World Bank Operational Policy[1]
OPIE	Operational Program Infrastructure and Environment
ORBMP	Odra River Basin Management Plan
PAD	Project Appraisal Document[2] for OVFMP
PCU / OVFMP PCU	Project Coordination Unit / OVFMP Project Coordination Unit
PGW WP	*Państwowe Gospodarstwo Wodne Wody Polskie* (State Water Holding Polish Waters)
PIO / OVFMP PIO	OVFMP Project Implementation Office – an organisational unit allocated as part of PIU
POM	Project Operations Manual[3] for OVFMP
Project / OVFMP / OVFM Project	Odra-Vistula Flood Management Project
RDOŚ	*Regionalna Dyrekcja Ochrony Środowiska* (Regional Directorate for Environmental Protection)
Road administrator	An organizational entity carrying out public road administration responsibilities within the meaning of *the Act on Public Roads* or the responsibilities of private road administration
RZGW in Wrocław	*Regionalny Zarząd Gospodarki Wodnej in Wrocław* (Regional Water Management Authority in Wrocław)
SHP Plan	Safety and health protection plan
UBSW	Unified Body of Surface Water

[1] See footnote for BP (World Bank Procedure).

[2] Document available on World Bank website, at: *http://documents.worldbank.org/curated/en/320251467986305800/Poland-Odra-Vistula-Flood-Management-Project*.

[3] Document available on the website OVFMP PCU, at: *www.odrapcu.pl/lp.php?plik=doc/POM_PL.pdf*.

Name	Description
UE	European Union
World Bank / WB	International Bank for Reconstruction and Development / World Bank

List of abbreviated names of legal acts used in the EMP

The names of legal acts cited in the text of this EMP are provided in abbreviated versions. Full names of those legal acts are listed below.

Name in the text	Full name (with publication reference)
Birds Directive/BD	Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (EU OJ L 288 of 06.11.2007)
Construction Law	Act of 7 July 1994, Construction Law (consolidated text, Journal of Laws of 2017, item 1332, as amended).
Environmental Protection Law	Act of 27 April 2001 Environmental Protection Law (consolidated text: Journal of Laws of 2018, item 799)
EIA Regulation	Regulation of the Council of Ministers of November 9th, 2010 on projects likely to have significant effects on the environment (consolidated text: Journal of Laws of 2016, item 71)
2004 EIA Ordinance	Regulation of Council of Ministers of 9 November 2004 on the types of projects likely to have significant effects on the environment and detailed conditions for classifying a project as requiring an environmental impact report (Journal of Laws of 2004, No. 257 item 2573, as amended)
Habitats Directive/HD	Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (EU OJ L 206 of 22.07.1992, as amended)
Inland Fisheries Act	Act of 18 April 1985 on Inland Fisheries (consolidated text, Journal of Laws of 2018, item 1476).
Nature Conservation Act	Act of April 16th, 2004 on nature conservation (consolidated text: Journal of Laws of 2018, item 1614)
Public Road Act	Act of 21March 1985 on public roads (consolidated text: Journal of Laws of 2018, item 2068)
Waste Act	Act of December 14th, 2012 on waste (consolidated text: Journal of Laws of 2018, item 992)
Water Framework Directive (WFD)	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 (EU OJ L 327 of 22.12.2000, as amended)

Name in the text	Full name (with publication reference)
Water Law	Act of 20 July 2017 Water Law (consolidated text: Journal of Laws of 2018, item 2268)

EXECUTIVE SUMMARY

This Environmental Management Plan (EMP) concerns *Task 1B.1/1 (a) – Reconstruction of the Odra River control infrastructure - adjusting to the III class of waterway, on the section from the village of Ścinawa to the estuary of the Nysa Łużycka River – Stage II* which is part of Odra-Vistula Flood Management Project (OVFMP) and implemented as a Contract for Works *1B.1/1 (a)*.

The EMP presents, inter alia, the following information:

- A brief description of the OVFMP Project and its Component 1, which includes the Task in question (sections 1.1 and 1.2);
- a description of the Task constituting the subject of this EMP (chapter 2);
- characterization of institutional, legal and administrative conditions of Task implementation, including the current status of EIA procedures for the Task (chapter 3);
- a description of individual elements of the environment in the surroundings of the Task (chapter 4);
- a summary of the Environmental Impact Assessment for the Task (chapter 5);
- description of mitigation measures aimed at eliminating or limiting the potential negative environmental impact of the Task (chapter 6) along with tables presenting those measures (Appendix 1);
- a description of environmental monitoring measures binding on the Task (chapter 7) along with tables presenting those measures (Appendix 2);
- a description of the course of public consultations conducted at particular stages of developing the environmental documentation for the Task (chapter 8);
- a description of the organizational structure of EMP implementation (chapter 9);
- an EMP implementation schedule and a description of reporting procedures (chapter 10);
- a list of source materials cited in the EMP (chapter 11);
- a list of Appendices to the EMP (chapter 12);
- copies of administrative decisions regarding the environmental protection issued for the Task (Appendix 4).
- Requirements concerning earth masses excavated form the riverbed (Appendix 7).

Description of the Task

Task 1B.1/1 (a) Reconstruction of the Odra River control infrastructure - adjusting to the III class of waterway, on the section from the village of Ścinawa to the estuary of the Nysa Łużycka River – Stage II concerns to the reconstruction of the Odra River control infrastructure of the Lubuskie Voivodeship. State Water Holding Polish Waters, The Regional Water Management Authority in Wrocław is the Project Implementation Unit (PIU) for the Task.

Scope of the Task

The Task includes the reconstruction of a part of the Odra River infrastructure on the chosen sections in the Lubuskie Voivodeship. These works will embrace 341 groynes which will be reconstructed to various extent depending on their present technical conditions (reconstruction

of heads of groynes or heads with part or the whole bodies of groyne). In case of 65% of all groynes planned for reconstruction, the works will concern mainly the head and no more than 60% of the groyne body. Only 24% of all groynes within the Task will undergo the reconstruction of 80-100% of groyne body. In such cases, we can assume that the works will concern also the reconstruction of slopes of the river bank.

Within the river sections mentioned above, the Task includes also the removal of riffle materials in 11 places (detailed procedures regarding the handling of output excavated form the riverbed are outlined in Appendix 7 of the EMP). These measures will help to reduce the amount of sites of obstructive character and will improve the winter anti-ice protection operation and the navigation of icebreakers that take part in icebreaking. All these works constitute a continuation of the actions of the reconstruction of the Odra River control infrastructure within free-flowing Odra River[1] done by The Regional Water Management Authority in Wrocław in 2012-2015.

Institutional, legal and administrative conditions

The Task is implemented in accordance with relevant national provisions of environmental protection and the World Bank's policies with regard to its characteristics, anticipated potential environmental impact and location in relation to protected areas.

The status of EIA administrative procedures

The scope of investment covered by the Contract is included in the decision of the Mayor of Czerwieńsk dated 18 July 2011 on environmental conditions (Ref. No.: GGRiOS 7627-11/39/10/11) for the Task entitled: "Construction Design and Detailed Design for Reconstruction of river control infrastructure on the Odra River - Adaptation to the conditions of Class III waterway." This decision included also the scope of works embracing the reconstructions of some groynes located within Lower Silesia Voivodship (these works were carried out in 2012-2015 by RZGW).

The decision on environmental conditions was used in the proceedings that ended with the construction permit for the investment: the decision of Lubuskie Province Governor No. 108/13 dated 29.03.2013 (Ref. No.: IB-II.7840.108.2013.JMud).

The status of elements of the environment in the surroundings of the undertaking

As a result of works related to identifying the values of the natural and cultural environment it has been established that the Task implementation area and its surroundings are characterized by, inter allia, the following environmental conditions:

- the planned works are located within the boundaries of a Body of Surface Water (BSW) *of the Odra River from the Eastern Canal to the Czarna Struga River* RW60002115379, *the Odra from the Czarna Struga to the Nysa Luzycka River* RW6000211739 and within a Body of Ground Water (BGW) No. 68 (PLGW600068) and No. 78 (PLGW600078);

[1] free-flowing Odra River – section of the Odra River from lock in Brzeg Dolny (km 282.65) to the river's mouth in Dąbie Lake (km 741.5).

- the presence of the following was established in the Task implementation area and its immediate surroundings: 5 protected species of plants, 70 precious and protected animal species and 6 types of natural habitats listed in Annex I of EU *Habitats Directive*;
- in the Task implementation area there are following Natura 2000 sites: Dolina Środkowej Odry PLB080004, Nowosolska Dolina Odry PLH080014, Kargowskie Zakola Odry PLH080012, Krośnieńska Dolina Odry PLH080028 and other protected sites, like: Krzesin Landscape Park (Krzesiński Park Krajobrazowy), Area of Proteced Landscape 18 - Krośnieńska Dolina Odry, Area of Proteced Landscape 21-Nowosolska Dolina Odry,
- in the Task implementation area and its immediate surroundings there are no protected landmarks of high cultural value.

Summary of the Environmental Impact Assessment

Earth surface and landscape

Task implementation involves permanent transformation of the earth surface within river bank slopes (this is regarding some groynes that require excavating the so-called root trench). The works include the reconstruction of anthropogenic elements, such as groynes in the river bed, so that the existing landscape outline of the Odra River will not change. The major works support facilities will be located within the existing ports in Cigacice, Nowa Sól and Krosno Odrzańskie which will limit the negative impact on the earth surface and landscape.

Climate

Task implementation has no influence on the climate status.

Atmospheric air

The influence of Task implementation on the sanitary status of the air is limited in time to the construction stage and is not significant.

Soils and land

Execution of works will affect locally the condition of soils and land on a small scale and of low significance. The areas within the slopes of river bank will be occupied for the purpose of executing works such as reconstruction of the groynes together with the slope. The range of impact on soils and land will be local and scattered in the big area of the given section.

Surface water

The stage of Task implementation shall have a minor influence on the surface water status (by influencing the biological, hydromorphological and physico-chemical elements of water quality) but the influence shall be local and to an appreciable extent reversible so it shall not be significant or endanger the achievement of an environmental objective regarding the Body of Surface Water (BSW), where the Task will be implemented. At the operation stage, the Task does not generate new adverse effects on condition of surface water. Most biological elements, typical for big lowland river, will return to their original state after the work-related disturbance. The scope of the investment within the Contract 1B. 1/1 (a) was included in the *MasterPlan for the Odra River Basin* in Appendix 2, List No 1 *Investments which do not have negative impact on or degrade quality of water condition*, item 512, ID 1_486_O.

Groundwater

On account of its scope and nature, the Task does not generate negative impact on the groundwater status.

Acoustic climate

The Task does not have negative impact connected with noise emission on the areas under acoustic protection. The influence of Task implementation on the acoustic climate of surrounding areas is limited in time (to the construction stage only) and shall be of local nature.

Biotic nature

The Task implementation shall have an insignificant negative impact on 5 types of natural habitats, 2 protected plant species and several protected animal species (involving mainly scaring off and disturbing animals) occurring in the area of planned works. This impact, which is primarily related to the necessary scope of work regarding the reconstructed groynes, will be significantly reduced by the adoption of an appropriate work schedule and technology of work execution. The works will be performed beyond the breeding season of birds and spawning season of fish and beyond the main parts of vegetation periods. The works will be carried out in 11 separate sections[1] of the Odra River in the Lubuskie Voivodeship. Regarding the local nature of work and established dates for The Task implementation, the Task does not influence the status of Natura 2000 sites nor other protected areas or natural sites. The Task has very small thus insignificant impact on protected species of animals.

Cultural monuments and material goods

The works will not interfere directly with buildings and other structures included in the municipal register of monuments and/or the register of monuments, therefore, during the implementation and operation of the task there is no negative impact on such structures.

Human health and safety

The implementation of task does not generate significant hazard to human health and safety. These may occur in the case of breakdowns, catastrophes and other random incidents (e.g. pollutant leak, fire, finding unexploded ordnance, flood). There may exist higher risk of danger connected with works with the use of floating equipment and during the autumn-winter season.

The EMP defines appropriate conditions aimed at preventing hazards to human health and safety and minimizing their potential effects.

Mitigation and monitoring measures

Chapters 6 and 7 of an Appendix 1 and 2 to the EMP describe and present in tables a set of mitigation and monitoring measures aimed at eliminating or limiting the negative environmental impact of Task implementation and ensuring effective implementation of EMP conditions. Those measures contain conditions defined in the issued administrative decisions in the

[1] Undertakings planned in the framework of Contract 1B. 1/1 (a), which are in accordance with the *Civil engineering design of reconstruction of river control infrastructure of the Odra River – adjusting to the III class of waterway. Stage II* (2013) are described as 12 sections of works, however sections 5 and 6 are being *de facto* one continuous section of works and thus treated jointly and resulting in 11 sections altogether.

scope of environmental protection and additional conditions established when developing the EMP.

Public consultations

Chapter 8 of the EMP contains a report of public consultations conducted as part of procedures connected with environment impact assessment for the planned Task as well as public consultations od EMP, including:

- public consultations for the document entitled *Environmental and Social Management Framework (ESMF)* for OVFM Project (2015);
- public consultations conducted at the stage of issuing environmental decisions for the Task (2010-2011);
- public consultations for this Environmental Management Plan (2018).

1. INTRODUCTION

This Environmental Management Plan (EMP) concerns Task *1B.1/1 (a) Reconstruction of the Odra River control infrastructure - adjusting to the III class of waterway, on the section from the village of Ścinawa to the estuary of the Nysa Łużycka River – Stage II*, as part of Sub-component *1B* under Odra – Vistula Flood Management Project (OVFMP) and implemented as contract for Works *1B.1/1 (a).*

1.1. ODRA-VISTULA FLOOD MANAGEMENT PROJECT (OVFMP)

The Odra-Vistula Flood Management Project (OVFMP) is aimed at increasing the flood protection level of people living in selected areas of the Odra river basin and the Upper Vistula River basin as well as institutional strengthening of governmental administration in ensuring more effective protection against summer floods, winter floods and flash floods.

The project consists of five components (including three investment components and two institutional-organizational components):

Component 1 – Flood Protection of the Middle and Lower Odra, including:

Sub-component 1A – Flood protection of areas in Zachodniopomorskie Voivodeship;

Sub-component 1B – Flood Protection on the Middle and Lower Odra;

Sub-component 1C – Flood protection of Słubice City.

Component 2 – Flood Protection of the Nysa Kłodzka Valley, including:

Sub-component 2A – Active protection;

Sub-component 2B – Passive protection.

Component 3 – Flood Protection of the Upper Vistula, including:

Sub-component 3A – Flood protection of Upper Vistula towns and Kraków;

Sub-component 3B – Protection of Sandomierz and Tarnobrzeg;

Sub-component 3C – Passive and Active Protection in Raba Sub-basin;

Sub-component 3D – Passive and Active Protection in San basin.

Component 4 – Institutional Strengthening and Enhanced Forecasting

Component 5 – Project Management and Studies

Detailed information and additional documents concerning the OVFM Project are available on the website of the Odra-Vistula Flood Management Project Coordination Unit (*http://www.odrapcu.pl*) and on the website of the World Bank (*http://documents.worldbank.org/curated/en/docsearch/projects/P147460*).

1.2. FLOOD PROTECTION OF THE MIDDLE AND LOWER ODRA (COMPONENT 1 OF THE OVFMP)

Component 1 of OVFMP entitled *Flood protection of the Middle and Lower Odra River* aimed at providing flood protection against summer floods and winter floods around the towns along the Odra River.
Three Sub-components shall be implemented within the Component:

Sub-component 1A – Flood protection of areas in Zachodniopomorskie Voivodeship;

Sub-component 1B – Flood Protection on the Middle and Lower Odra;

Sub-component 1C – Flood protection of Słubice City.

Sub-component 1B consists of the following tasks:

- Task 1B.1/1 (a) – Reconstruction of the Odra River control infrastructure - adjusting to the III class of waterway, on the section from the village of Ścinawa to the estuary of the Nysa Łużycka River – Stage II,
- 1B1/1 (b) Reconstruction and modernization of river control infrastructure on the Odra River. Restoring the conditions of navigability of the waterway (1 bridge – Krosno Odrzańskie) Section: From the city of Scinawa to the mouth of the Nysa Luzycka River,
- 1B.1/2 Reconstruction and modernization of river control infrastructure on the Odra River. Adaptation to the conditions of Class III waterway. Section: from barrage in Malczyce to Ścinawa,
- 1B.2. Modernization works on boundary sections of Odra River to provide good condition for ice –breaking,
- 1B.3. Construction of docking-mooring infrastructure for the icebreakers: - 1B.3 Stage I: Construction of a docking-mooring base for the icebreakers – 1B.3 Stage II: Construction of docking-mooring infrastructure on Lower Odra River and boundary sections of the Odra River and new marking of the sailing route,
- 1B.4A. Improvement of flood water-flow from Dąbie Lake in winter,
- 1B.4B. Dredging of Klucz-Ustowo ditch,
- 1B.5. Reconstruction of bridges to ensure a minimum clearance,
- 1B.6. Flood protection of Nowa Sol and below Krosno Odrzanskie.

2. DESCRIPTION OF THE TASK

The Task constituting the subject matter of this EMP concerns the segmental reconstruction of river control infrastructure on Odra River on the section from the village of Ścinawa to the mouth of the Nysa Lużycka. State Water Holding Polish Waters Regional Water Management Authority in Wrocław is the Project Implementation Unit (PIU) for the Task.

2.1. LOCATION OF THE TASK

This investment includes selected sections of the so-called free-flowing Odra River. In total, works connected with reconstruction of groynes and removing of riffle material will be performed on 11 sections of the river (sections 5-6 are being treated jointly).

Table 1 Sections of the Odra River within scope of works of Contract 1B.1/1 (a)

Section number	Number of groynes	Location of section of groyne reconstruction	Location of section of riffle material removal	Capacity of riffle material for removal [approx. thousand m³]	District
1	122	km 500,7 – 493,0 (length 7,7 km)	km 500+018 – 500+150 (length 132 m), km 498+010 – 498+184 (length 174 m)	1 thousand m³, 3 thousand m³	słubicki, krośnieński
2	25	km 484,0 – 482,0 (length 2 km)	-	-	zielonogórski
3	49	km 540,0 – 537,0 (length 3 km)	km 538+137 – 538+234 (length 97 m)	2 thousand m³	krośnieński i zielonogórski
4	53	km 487,8 – 484,0 (length 3,8 km)	km 487+412 – 487+532 (length 120 m)	2 thousand m³	zielonogórski
5-6	29	km 490,3 – 493,0 (length 2,7 km)	km 490+367 – 490+492 (length 125 m)	3 thousand m³	zielonogórski
7	12	km 475,5 – 474,9 (length 0,6 km)	km 474+960 – 475+455 (length 495 m)	10 thousand m³	zielonogórski
8	20	456,8 – 456,0 (length 0,8 km)	km 456+192 – 456+627 (length 435 m)	9 thousand m³	zielonogórski

Section number	Number of groynes	Location of section of groyne reconstruction	Location of section of riffle material removal	Capacity of riffle material for removal [approx. thousand m³]	District
9	13	454,8 – 454,2 (length 0,6 km)	km 454+260 – 454+703 (length 443 m)	11 thousand m³	zielonogórski
10	10	431,2 – 430,8 (length 0,4 km)	km 430+773 – 431+000 (length 227 m)	5 thousand m³	nowosolski
11	2	429,5 – 429,4 (length 0,1 km)	km 429+456 – 429+588 (length 132 m)	1 thousand m³	nowosolski
12	6	427,6 – 427,5 (length 0,1 km)	km 427+470 – 427+590 (length 120 m)	2 thousand m³	nowosolski
Total	341	21,8 km	2,5 km	cca. 49 thousand m³	

The Task concerns the reconstruction of 341 groynes on the sections in the total length of 21,8 km, where the removal of riffle material will take place in the total length of 2,5km and estimated cubic capacity of circa 49 thousand m³. The length of the Odra river between the town of Nowa Sól and the mouth of Nysa Łużycka River to the Odra River, where construction works will take place, is of 112.5km long. However, the works will be carried out in separate sections which do not form compact complex of building site. The length of particular sections varies from 7.7 to 0.1km whereas the distance between them varies from several to more than 1 km. Such distribution of construction works limits the adverse impact on the environment due to its dispersed intensity and undisturbed sections in between.

All 11 sections of the Odra River are located in Lubuskie Voivodeship, in the following districts:

- Nowa Sól (nowosolski district)
- Krosno Odrzańskie, Gubin, Trzebiechów (krośnieński district)
- Cybinka (slubicki district)
- Bojadła, Zabór, Czerwieńsk, Sulechów, Zielona Góra (zielonogórski district).

2.2. DESCRIPTION OF THE TASK

The purpose of the investment is to reduce the number of sites of obstructive character and to improve the winter anti-ice protection operation and the navigation of icebreakers that take part in icebreaking. In consequence, it will reduce the risk of flooding caused by ice dam.

The scope of the investment within the Contract 1B. 1/1 (a) was included in the *MasterPlan for the Odra River Basin* in Appendix 2, List No 1 Investments which do not have negative impact on or degrade quality of water condition, item 512, ID 1_486_O[1].

The main obstacle in carrying out the effective icebreaking works in winter in the section of the free-flowing Odra River in Lubuskie Voivodship is the insufficient depth of the riverbed for the navigation of icebreakers. Effective icebraking works in the Odra River can be carried out only with the use of high-power icebreakers of strengthened hull, which, while moving up the river, provide the free-flow of the ice. Units of this kind have the draught of 1,8 m or more which results in effective icebreaking.

There were 14 places of ice blockage posing a risk of flood in the section of the Odra River included in the Task (IMGW-PIB 2015). Typical places of ice jams were also identified by RZGW in Wrocław.

Scheduled works will supplement the actions taken in 2012-2015 by RZGW in Wrocław within free-flowing Odra River in Lower Silesia Voivodship.

The navigation infrastructure of the free-flowing Odra River in the form of transverse hydraulic structures was developed on the large scale in the 19th century in order to improve sailing conditions on the river. Most of the sections of the river were left for many years without proper maintenance or reconstruction which caused significant deterioration of existing transverse hydraulic structures in the riverbed. The technical condition of these hydraulic structures is bad as it is estimated that big part of the infrastructure is almost entirely destroyed and average degree of damage concerns 35% of groynes.

The damage of river control infrastructure has significant impact on flow disorders in the river which consequently leads to sedimentation of riffle material and creation of shallows in the riverbed. Places with reduced depth create so called flow bottleneck for sailing equipment including ice-breakers. The existing condition of the river control infrastructure results both in gradual deterioration in navigation on the river and in effectiveness of ice-breaking actions. Taking into consideration such aspects as conditions of the river control infrastructure, locations of the riffle materials and establishment of Natura 2000 network on the sections under concern, it has been decided to reconstruct existing river control infrastructure (groynes).

After inventory of more than 5000 hydraulic structures covering the entire section of the Free Flowing Odra River, 341 groynes lying in the Odra River in Lubuskie Voivodeship have been chosen to undergo reconstruction. Due to the fact that the works will concern the reconstruction of existing groynes, the scope of works will vary depending on the degree of their damage. In some cases it concerns the reconstruction of the head of the groyne but in others, the structures need the reconstruction of the body. In total, the groynes chosen for the Task, in the

[1] In the *Masterplan for the Odra River Basin* the undertaking was placed under the name Reconstruction and modernization of river control infrastructure of free-flowing Odra River - reconstruction and modernization of river control infrastructure - to adapt the Odra River section from Malczyce to the mouth of the Nysa Luzycka River to the conditions of Class III waterway.

whole section from Nowa Sól to the mouth of Nysa Łużycka River to the Odra River cover 19.63 ha.

Table 2 The scope of works concerning reconstruction of groyne body within the Task 1B.1/1 (a).

The extent of reconstruction of groyne structure (%)	Number of groynes	The percentage of the total number of groynes
5-20%	128	**38%**
20-40%	50	**15%**
40-60%	42	**12%**
60-80%	38	**11%**
80-100%	83	**24%**

Source: Civil engineering design of reconstruction of river control infrastructure of the Odra River – adjusting to the III class of waterway. Stage II.

The above table shows that in case of 65% of all groynes planned for reconstruction, the works will embrace the head of groyne and no more than 60% of the body of groyne. This scope of works is presented also in Figure 1. These works will not concern the reconstruction of the river bank slope thus will not affect the habitats of animal species. Moreover, only 24% of all groynes within the Task need reconstruction in 80-100% of the groyne body (83 groynes). We can assume that in case of these groynes, the intervention works on the river bank slopes will be inevitable.

Regarding the scope of works concerning the reconstruction of groynes, most of works will be carried out with "the access from water" technology without the need of occupying the areas of the river bank slopes (Figure 2). Reconstruction of groyne heads and partial reconstruction of their bodies do not interfere into the river bank slopes, thus do not destroy habitats of animal and plant species.

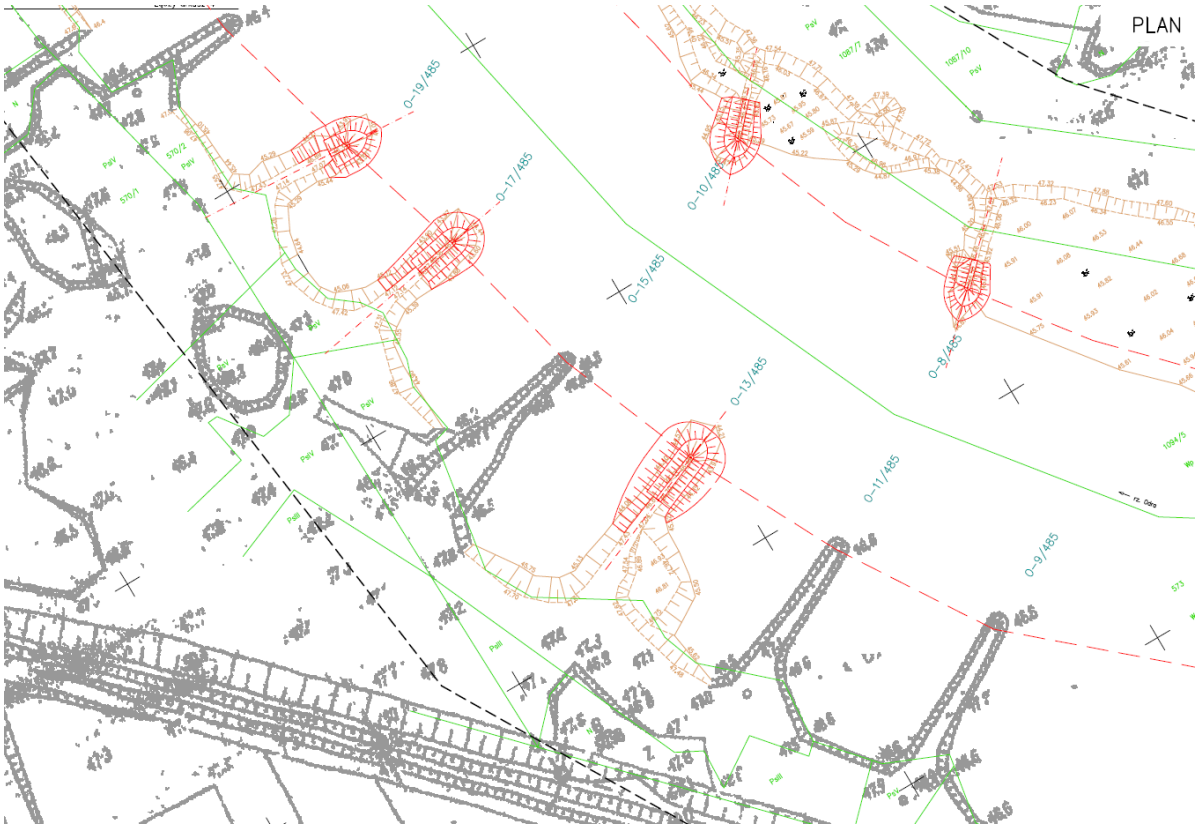

Fig.1 Groynes chosen for reconstruction within section no 4. Visible diversification of the scope of works in particular groynes.

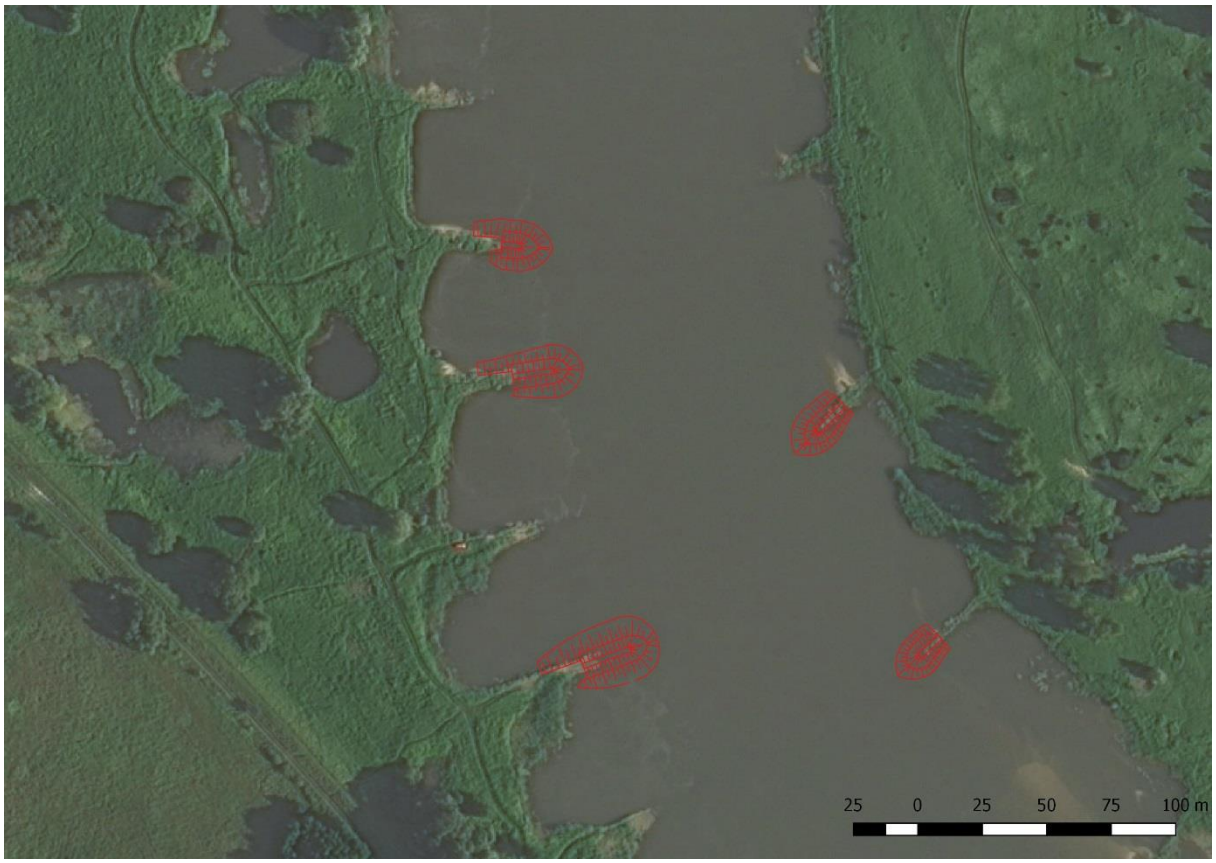

Fig. 2 Groynes chosen for reconstruction within section no 4 – view based on the orthophotomap.

In the first phase of the planned Task, the geodetic works will be carried out, and then the reconstruction of groynes will follow together with the removal of riffle material. Stone and fascine will be the main materials used for the construction of the groynes. It will be obtained outside the areas of work. However, it is possible to use the materials obtained from reconstructed groynes (stone) if the Contractor verifies that materials are suitable for construction and meet the relevant conditions related to environmental protection. Most works will be performed with the use of floating equipment adapted to such specialist tasks.

Land areas in the inter-embankment of the Odra River can be occupied only locally in places where there is no technical possibility to use floating equipment in reconstruction of groynes and such reconstruction concerns also the intervention in the river bank slopes (maximum up to 24% of all groynes). In such cases, heavy equipment will be transported to the destination by river in order to perform works on these groynes exclusively where the reconstruction of their bodies and slope are necessary. The reconstruction of the groynes will cause the local backwater in the inter-groyne zone which will be especially observed in low and average flow of the water. Therefore, the range of the ground water levels in the adjacent area will also change.

However, the use of "access from water" technology in majority cases will help to reduce adverse impact on earth surface and habitats in the inter-embankment zone. It will also reduce negative impact of the land traffic connected with transport of materials or relocation of heavy equipment. Transport of materials for groynes reconstruction will be carried out only with the means of the river.

The ports in: Krosno Odrzańskie, Cigacice, Nowa Sól will be used as support facilities and storage places for the materials used in the works.

The architectural and construction solutions are typical, reliable in practise and commonly used for corresponding regulatory work in lowland rivers. The groyne body will be reconstructed so that the head of groyne can reach the current level of water MAW (Mean Average Water from multiple years). Elements of river control infrastructure lying above MLW (Mean Low Water from multiple years) will be supported in a form of rip rap.

The groyne body will be reconstructed with regard to its geometry and protected with the use of cobblestone (the head of groyne) and rip rap (the slope of groyne) against damage done by flowing water. Both cobblestone layer and rip rap layer will be laid on geotextile to make them resistant to mechanical damage done by flowing water. The head of groynes will be covered with cobblestones and the joints will be filled with granite rubble. The slopes below the MAW will be supported by rip rap of armourstone with a diameter greater than 0.30 m, which will be further wedged with armourstone of smaller fraction. The groynes will be further strengthened with wooden pole palisade to the MAW level and approx. at the MLW level.

Taking into account that the reconstruction will cover only to selected sections of groynes, the regulatory widths will remain unchanged.

The following general guidelines for the technology of groyne reconstruction have been adopted. The mattress of the geotextile will be fascinated mattress. Fascine mattresses will be submerged to lay on geotextile with a weight of 400g/m². The mattresses will be made by stacking fascine layers on wooden grill, on which grating will be formed by fascine bunches. Once the desired height is reached, frameworks reinforced with wooden fence will be made, to be backfilled with stone or other material that puts weight on the mattress during submerging. All production of fascine bunches will be performed on floating barges. The structure of a groyne root trench (within the bank slope) will be protected with armourstone laid on geotextile.

A typical reconstructed groyne along with characteristic ordinates is shown in the drawings in Appendix 6 of the EMP.

As part of the implementation of the Task, works will be carried out to remove riffle material which will mainly involve extracting bottom material (trailing rubble) with the use of excavators working on appropriate pontoons. This material, after prior examination of its quality, will be transported by barges to the selected ports and further to the dumping site, according to the prior classification of material. (detailed procedures regarding the handling of earth masses excavated form the riverbed are outlined in Appendix 7 of the EMP). Dredging works will be carried out in 11 sections of the riverbed (within the sections where groyne reconstruction takes place) which cover totally 2,5 km and take 2,2% of the length of whole section of the Odra River included in the Task 1B.1/1 (a).

Works connected with the riffle materials removal will cover relatively small section of the river and the impacts of the works will be local and limited to the construction period only.

In determining the scope of dredging works on selected sections, guidelines were followed on the required operating parameters of inland waterways included in the Regulation of the Council of Ministers of 7 May 2002 on the classification of inland waterways (Journal of Laws of 2002, No. 77, item 695), i.e. the width of the sailing route – 40 m, minimum transit depth - 1,8 m. Detailed procedures regarding the handling of output excavated form the riverbed are outlined in Appendix 7 of the EMP.

3. INSTITUTIONAL, LEGAL AND ADMINISTRATIVE CONDITIONS

3.1. INSTITUTIONS INVOLVED IN TASK IMPLEMENTATION

The Task Investor is the State Water Holding Polish Waters Regional Water Management Authority in Wrocław, which acts on behalf of and for the benefit of the State Treasury. Moreover, at the construction and operation stages, Task implementation may require the involvement of public administration at the central, regional and local levels. For current coordination of the Project implementation by PIU, an organizational unit called Odra-Vistula Flood Management Project Coordination Unit was established.

3.2. BINDING NATIONAL LEGAL ACTS CONCERNING THE ENVIRONMENT

Under Polish law the investment process with regard to the environmental protection is governed by about a dozen of acts and regulations. Appendix 3 presents a list of selected primary legal acts related to the abovementioned issue and binding in the period of the works on the EMP. The number and content of the legal acts listed there may change when the national environmental protection provisions are amended. In each case, the Contractor is obliged to observe all legal binding regulations in Poland throughout the duration of the Contract.

3.3. THE EIA PROCEDURE IN POLAND

A description of the Environmental Impact Assessment procedure binding under Polish law is included in the *Environmental and Social Management Framework (ESMF)*, published, *inter alia*, on the websites of the Odra-Vistula Flood Management Project Coordination Unit[1] and the World Bank[2].

3.4. GUIDELINES OF THE WORLD BANK

The Task in question is co-financed by the World Bank and its implementation conditions with regard to the environmental protection comply with WB *Operational Policies and Bank Procedures* concerning the environmental protection, including, *inter alia*, the following policies and procedures: *OP/BP 4.01* (concerning the Environmental Impact Assessment), *OP/BP 4.04* (concerning natural habitats) and *OP/BP 4.11* (concerning cultural resources).

The source texts of the abovementioned policies and procedures are included in a document entitled *The World Bank Operational Manual*[3] and their descriptions are presented, *inter alia*, in the *Environmental and Social Management Framework (ESMF*).

[1] At: *http://www.odrapcu.pl/popdow_dokumenty_RPZSiSS.html*.

[2] At:*http://documents.worldbank.org/curated/en/717671468333613779/Poland-Odra-Vistula-Flood-Management-Project-environmental-and-social-management-framework*.

[3] At: *https://policies.worldbank.org/sites/PPF3/Pages/Manuals/Operational%20Manual.aspx*.

3.5. CURRENT STATUS OF EIA PROCEDURES FOR THE TASK

As required by national legislation a decision on environmental conditions for the Project implementation has been obtained for the Task.

According to the classification included in the *EIA Regulation of 2004* (applicable at the time of initiating the procedure for obtaining an environmental decision), the undertaking has been included in group II, that is undertakings that might have potentially a significant impact on the environment and for which conducting an Environmental Impact Assessment may be required before issuing a decision on environmental conditions.

In the course of the procedure for the issuance of environmental decision, having considered the opinions of the Regional Directors of Environmental Protection in Wrocław and Gorzow Wielkopolski, and the opinions of the State Sanitary Inspectors in Zielona Gora, Krosno Odrzanskie, Slubice, Nowa Sol, Glogow, Lubin, Legnica, Wola, Sroda Slaska, Gora, the authorities conducting the proceedings decided to carry out an environmental impact assessment.

The proceedings concerning issuing a decision on the environmental conditions during which the environmental impact assessment was carried out were completed by the decision of the Mayor of Czerwiensk of 18 July 2011 on environmental conditions (Ref. No.: GGRiOŚ 7627-11 / 39/10/11 - Appendix 4a to the EMP). By a decision dated 28 November 2011, the Mayor of Czerwiensk corrected an obvious writing mistake in the decision of 18 July 2011 (Ref. No.: GGRiOŚ 7627-11 / 44/10/11 - Appendix 4b to the EMP). The decision of 18 July 2011 embraces wider range of investment than it was determined in the Contract 1B.1/1 (a). This is due to the fact that the reconstruction of river control infrastructure within free-flowing Odra river was included at the project application stage for the issuance of the comprehensive decision on environmental conditions concerning reconstruction of 415 groynes and removal of 17 riffle materials. So-called first stage of works embracing reconstruction of 74 groynes and removal of 6 riffle materials on the section of free-flowing Odra River in Lower Silesia Voivodship was accomplished by RZGW in Wrocław in 2012-2015.

Copies of the above mentioned administrative decisions issued in 2011 are shown in Appendix 4a and 4b to the EMP.
The decision in question on environmental conditions was used in the administrative procedure, which was completed by the construction permit: decision of Lubuskie Voivode No 108/13 dated 29 March 2013 (Ref. No.: IB-II.7840.108.2013.JMud).

Regardless of the above, the Contractor is obliged to obtain all subsequent administrative decisions and permissions if it becomes necessary during Task implementation.

4. DESCRIPTION OF ELEMENTS OF THE ENVIRONMENT IN THE SURROUNDINGS OF THE TASK

4.1. EARTH SURFACE AND LANDSCAPE

The Task is located in Lubuskie Voivodeship in the valley of a large lowland river, outside the built up areas and only on small portions of land in their vicinity. Considering the physical-geographical division of Poland (Kondracki 2004), the planned investment will be implemented in 3 mesoregions: northern part of Pradolina Głogowska (*Glogow Proglacial Stream Valley*), western part of Kargowska Valley and eastern and western parts of Middle Odra River Valley.

Within the area of the Task implementation, the Odra River flows through a broad, flat valley with numerous old river beds, a network of drainage ditches and flood embankments. The river itself is subject to control with modification of natural structure of the riverbed and transverse hydraulic structures. The inter-embankment has diversified micro-terrain features, such as numerous ponds and hollows that determine micro-habitat areas for plant and animal species.

The Odra River bed, together with its inter-embankment zone, is currently characterized by considerable landscape potential. The landscape structure of the river valley (surrounded by flood embankments) has retained its predominant natural and anthropogenic features.

The landscape of the large lowland river is diversified by such natural elements as: dune shafts with coniferous forests on fluvial terraces, oxbow lakes with floodplain and rush vegetation, riparian forest complexes, wet meadows, hydrophilous tall herb fringe communities. The anthropogenic elements include: flood embankments, groynes, trims at bank slopes, bridges, viaducts, harbours, crossings. The immediate vicinity of project implementation sites comprises predominantly agricultural areas (meadows, wasteland and fields) or forests, wooded areas or areas covered with riparian herb growths.

4.2. CLIMATE

The Lubusz Land, where part of the Task will be implemented, belongs to the Lower Silesian-Lubusz climate region. This region is among the warmest in the country. The analysed area is within the reach of three air masses: polar, arctic and tropic. The climate is regarded as belonging to the moderate climate zone with transitional characteristics between the marine and the continental climates. The characteristic feature of the climate is a large variety of weather types.

Due to the high proportion of forest land (49.2% of the area [1]) and a considerable proportion of agricultural land (about 40% of the voivodeship's area) and waters, Lubuskie Voivodeship is characterized by a mild climate and lower annual air temperature fluctuation, with the domination of western winds.

[1] GUS [*Central Statistical Office*], as of December 31, 2015

An important factor shaping the climatic conditions within the Odra Valley is morphology and land management. The Odra Valley is an ecological corridor conducive to fast air exchange. Due to the increased humidity, phenomena such as mist and hard rime are more frequent.

4.3. SANITARY STATUS OF ATMOSPHERIC AIR

The sanitary condition of atmospheric air is presented on the basis of the results of the annual assessment of air quality in Lubuskie Voivodeship in 2016[1]. Anthropogenic emissions, including emissions from the industrial and power plants, the so-called low emissions generated by local economy (boiler houses, individual fireplaces and private businesses) and transportation emissions are the main source of pollutant emissions into the air in the Lubuskie Voivodeship. According to the Central Statistical Office data for the year 2015 the dust emission in Lubuskie Voivodeship from the plants classified as particularly burdensome amounted to 0.9 thousand Mg (tons), which constituted 2% of the total mass of dust pollution emission in Poland. The so-called low emissions from households, small boiler houses, craft workshops have a significant impact on air quality in built-up areas and are difficult to assess precisely. In built-up areas and along communication routes the emission is related to the movement of cars and such pollutants as: nitrogen oxides, carbon monoxide, carbon dioxide and aromatic hydrocarbons (especially benzene) as well as dust containing lead, cadmium, nickel and copper compounds. With regard to PM10 atmospheric aerosol particles emission in Lubuskie Voivodeship, the main source of pollution is surface emission (communal-living sources). In the case of benzo[a]pyrene, the emissions from communal-living sources is the main source of emissions, while the transportation emissions (from the district and municipal roads) has the lower share.

According to the of air quality assessment in 2016 (measurements from 7 fixed air monitoring stations) the high concentration of PM10 atmospheric aerosol particles and benzo[a]pyrene contained in it exceeding permissible and target levels specified in the corresponding regulations is a major problem in Lubuskie Voivodeship.

The immediate vicinity of Task implementation sites comprises predominantly green areas, hence there are no significant sources of pollutant emissions into the air.

4.4. GEOLOGICAL STRUCTURE

In terms of geological structure, the area of the Task implementation together with the surroundings is located within the pre-Sudetic monocline, completely covered with tertiary and quaternary sediments of high thickness. Quaternary sediments are mainly represented by glaciation-related sediments. These are glacial deposits in the form of glacial till (mainly bottom and front moraines) as well as fluvio-glacial deposits (including fluvio-glacial sands, sands and gravel that form eskers and kames). The bottom of the Odra River Valley itself is covered by Holocene fluvial deposits in the form of sand and gravel.

[1] Annual assessment of air quality in Lubuskie Voivodeship based on the emmission tests conducted in 2016, WIOŚ [*Voivodeship Inspectorate for Environmental Protection*] 2017

4.5. SOILS AND LAND

The Task is located within the inter-embankment of the Odra River and includes, first of all, the river bed, bank slopes and a riparian zone. The floodplain area comprises predominantly alluvial soils and typical habitats of willow-poplar forests. These are river mounds formed on sand and river gravel, with a permeable, slightly acidic soil profile.

In the riparian zone there are sandy alluvial soils and medium alluvial soils. A new accumulation level was formed in the river bed, the so-called post-regulation zone that includes the spacing between groynes. Its height ranges from 1 m to about 2 m. The width of the level in sections is several dozen meters. This level is periodically flooded. It is composed of sandy and alluvial sediments. These are habitats of rushes and riparian herb growths. Typical silts have developed in the area of the evorsion hollows and the uncovered river bottom. Some of existing groynes were overbuilt with sandy material carried by the river. Fragments of washed out groynes feed the river bed load, forming rapids in sections.

4.6. SURFACE WATER

The current hydrological regime of the Odra River section of Task implementation is largely determined by river's regulation in 18th and 19th centuries. The Odra River current was shortened in many sections by making ditches around the bends. There are 4 water gauge stations in the section covered by the Task: Nowa Sol, Cigacice, Nietkow and Polecko.

At the section from Cigacic to Slubice, the average annual mean flows (SSQ) of 1951-2010 have increased from 225 m3/s to 306 m3/s, i.e. 81 m3/s with an increase of the catchment basin by more than 13 600 km². In Nowa Sol, the lowest average annual flow was 103 m3/s in 1990 and the maximum volume was 395 m3/s in 1977 (with a multi-year average of 208 m3/s). In Cigacice (from 108 m3/s in 1990 to 418 m3/s in 1977 with an average of 223 m3/s), in Polecka (from 134 m3/s in 1990 to 459 m3/s in 1977 with an average of 258 m3/s). Thus, the difference between the lowest and the highest average annual flow is around 390%[1].

Arrangements stemming from *Odra River Basin Management Plan (ORBMP)*

The planned investment is located within two Bodies of Surface Water (BSW):

- The Odra River from the Eastern Canal to the Czarna Struga River RW60002115379,
- The Odra River from the Czarna Struga River the Nysa Luzycka River RW6000211739.

BSW are of the abiotic type 21 (large lowland river) and are designated as strongly changed bodies of waters. The main reasons for the designation of the Oder River as strongly changed are the morphological changes of the bed resulting from adapting to the navigation function and from protection of surrounding areas against flooding.

The Odra River BSW from the Eastern Canal to the Czarna Struga River is a strongly changed BSW, the condition of which is assessed as bad. The environmental objective for this BSW is to achieve a good water status by achieving a good ecological potential and the possi-

[1] www.bip.lubuskie.pl/system/obj/22499_Opracowanie_Wody_Powierzchniowe.doc

bility of migration of aquatic organisms in the section of a significant watercourse - the Odra River within the BSW and good chemical status. Derogation from Art. 4 (7) WFD has been designated for the undertaking planned for implementation within the BSW: *"1_582_ O Reconstruction and modernization of river control infrastructure of free-flowing Odra River - reconstruction and modernization of river control infrastructure - to adapt the Odra River section from Malczyce to the mouth of the Nysa Luzycka River to the conditions of Class III waterway."*

The Odra River from the Czarna Struga to the Nysa Łużycka River is a strongly changed BSW, the condition of which is assessed as bad. The environmental objective for this BSW is to achieve a good water status by achieving good ecological potential and the possibility of migration of aquatic organisms in the section of a significant watercourse - the Odra within the BSW and a good chemical status. BSW is at risk of not achieving environmental targets according to WFD. Derogations from Art. 4.4 and 4.5 of the WFD were set down with the following justification: "*lack of technical capability*. *There is low emission pressure in the BSW basin. The Action Program envisages the following actions: Verification of the environmental program for the municipality with a view to detailed identification and, as a result, limiting this pressure so that the indicators consistent with good values can be achieved. However, given the time needed to implement this action, then the concrete corrective measures and the time needed for the implemented measures to produce measurable results, good status can be achieved by 2027."*

It was also pointed out with regard to this BSW that the project entitled "1_582_ O of reconstruction and modernization of river control infrastructure - reconstruction and modernization of the regulatory infrastructure of free-flowing Odra River - to adapt the Odra River section from Malczyce to the mouth of the Nysa Luzycka River to the conditions of Class III waterway" poses a risk of failure to achieve the environmental objectives.

In the area of *the Odra River BSW from the Eastern Canal to the Czarna Struga River* and *the Odra River BSW from the Czarna Struga River to the Nysa Luzycka River*, there are also detailed environmental objectives determined by the existence of protected areas included in the lists referred to in Art. 113 sec. 4 of the Water Law Act, such as in particular:

- The areas susceptible to eutrophication caused by pollution originating from municipal sources (concerning the entire area of Poland),
- The areas designated for the conservation of natural habitats or species for which the maintenance or improvement of water quality is an important factor in their protection (e.g. Natura 2000 sites, Krzesiński Landscape Park).

Arrangements resulting from MasterPlan for the Odra River Basin

The scope of the investment within the Contract 1B. 1/1 (a) was included in the MasterPlan in Appendix 2, List No 1 Investments which do not have negative impact on or degrade quality of water condition, item 512, ID 1_486_O *Reconstruction and modernization of river control infrastructure of free-flowing Odra River - reconstruction and modernization of river control infrastructure - to adapt the Odra River section from Malczyce to the mouth of the Nysa Luzycka River to the conditions of Class III waterway.*

4.7. GROUNDWATER

In Lubuskie Voivodeship, ordinary groundwater is found in the Cenozoic formations. The main usable aquifer stratum is located in quaternary formations and also tertiary in the south of the voivodeship.

Quaternary aquifer stratum form, among other things, sediments in contemporary river valleys (especially in the Odra River, the Warta-Notec Rivers, the Bobr River, the Kwisy River, etc.) and in their proglacial stream valleys. The water table is free and is clearly connected hydraulically with surface water. Quaternary aquifer stratum includes also fluvio-glacial deposits (sandurs) and intermoraine deposits (areas covered with glacial till which are fuelled from moraine hills) as well as Early Pleistocene fossil valleys.

Within the analyzed part of the Odra Valley or in the immediate vicinity of the aquifer stratum, there are 3 Main Groundwater Reservoirs:

- Nr 150 Warszawa–Berlin (Kolo–Odra) Proglacial Stream Valley
- Nr 302 Barycz–Głogów (W) Proglacial Stream Valley
- Nr 149 Krosno–Gubin Sandur

Taking into account the conditions of the ORBMP, the area under examination is located in particular within the body of ground water (BUW) No. 68 (PLGW600068) and No. 78 (PLGW600078) as well as adjacent to or near BUW no. 58 (code: PLGW600058), No. 69 (PLGW600069), No. 76 (PLGW600076), No. 77 (PLGW600077). However, according to the results of groundwater monitoring, both quantitative status and qualitative status of the analyzed BUW is good. In accordance with the ORBDMP provisions the above BUW are not at risk of failure to meet environmental targets.

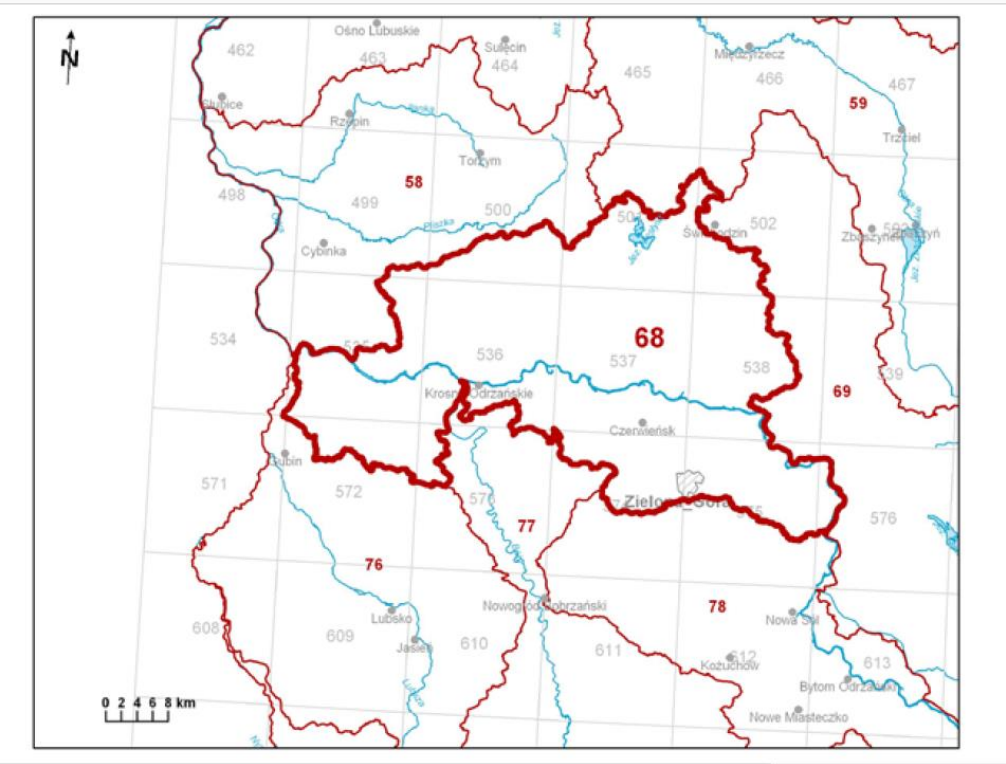

Figure 3 Location of BUW No. 68 and 78.

4.8. ACOUSTIC CLIMATE

Industrial noise and traffic noise are the primary sources of noise in the Task implementation area. Most of river sections of Task implementation are generally located outside of significant noise sources (built-up areas with extensive road network, industrial plants). The analysis of the SEM (*State Environmental Monitoring*) data included in the reports of the Voivodeship Inspectorate for Environmental Protection in Zielona Góra concerning the traffic noise in 2012-2016 indicates that in the area of the undertaking no source of traffic noise has been identified.

4.9. BIOTIC NATURE

At the stage of elaboration of this EMP and designing the scope of mitigation measures, the results of research on the condition of the natural environment have been utilized. That additional data extended the scope of knowledge in relation to data included in the Environmental impact report and available at the stage of environmental impact assessment. In particular, data from field inventories carried out in 2017 within the section of the free-flowing Odra River within the borders of the Lubusz Voivodship were utilized, as well as documentation of the management plans for Natura 2000 sites and the GIS nature databases.

4.9.1. PROTECTED NATURAL HABITATS AND SPECIES

There are 6 types of natural habitats at the site of the Task implementation and its immediate surroundings:

1) 3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* – type vegetation,
2) 3270 Rivers with muddy banks with *Chenopodion rubric* p.p. and *Bidention* p. p. vegetation,
3) 6430 Hydrophilous tall herb fringe communities of plains and the montane to alpine levels,
4) 6440 Alluvial meadows of river valleys of the *Cnidion dubii*,
5) 91E0* Alluvial forests with *Alnus glutionosa* and *Fraxinus exelcior* (*Alno-Padion, Alnion incanae, Salicion albae)*,
6) 91F0 Riparian mixed forests of *Querqus robur, Ulmus laevis* and *Ulmus minor, Fraxinus excelsior* or *Fraxinus angustifolia*, along the great rivers (*Ulmenion minoris*).

Environmental inventory conducted on the stage of drafting Environmental Impact Assessment Report and EMP (in growing season of 2017) showed that in the vicinity of places of construction works there are mainly sites hosting priority natural habitat type 3270 (located on the area between groynes) and 6430 (located on the river bank slopes).

4.9.2. PROTECTED SPECIES OF FUNGI, PLANTS AND ANIMALS

Protected species of fungi

At the site of Task implementation there were no protected species of mushrooms.

Protected species of plants

There are 5 species of plants protected by law[1] at the site of Task implementation and in the immediate surroundings. These are:

1) Strapwort *Corrigiola litoralis* (species under strict protection, requires active protection, CR category [2]),
2) Water caltrop *Trapa natans* (species under strict protection, requires active protection, EN category),
3) Floating fern *Salvinia natans* (species under strict protection),
4) Mouse garlic *Allium angulosum* (species under partial protection),
5) White water lily *Nymphae alba* (species under partial protection).

Environmental inventory conducted on the stage of drafting Environmental Impact Assessment Report and this EMP showed that section no 3 in 540,0km-537,0km of 3 km long (located at the mouth of Nysa Łużycka River to the Odra River) is the most precious section in terms of plant species.

Protected species of animals

Invertebrates

The implementation of Tasks does not interfere directly with the sites of protected invertebrate species. In the vicinity of the area of works, at a distance greater than the work impact zone there are sites of protected species and listed in Annex II and IV of the Habitat Directive: the great capricorn beetle *Cerambyx cerdo* and the butterfly species: the dusky large blue *Maculinea nausithous*, the scarce large blue *Macrobinea telejus.* In the closest vicinity of the area of works, in the inter-groyne area, there are sites under protection and listed in Annex II and IV of the Habitat Directive due to occurrence of a dragonfly the Green Gomphid *Ophiogomphus cecilia*.

Fish and river lampreys

A total of 7 protected species of fish have been identified in the Odra River section between the town of Nowa Sol and the junction of the Nysa Luzycka River and the Oder River:

1) Spined loach *Cobitis taenia* (species under partial protection, Annex II, IV HD),
2) European bitterling *Rhodeus amarus* (species under partial protection, Annex II HD),
3) Common barbel *Barbus barbus* (species under partial protection),
4) Stone loach *Barbatula barbatula* (species under partial protection),
5) Asp *Aspius aspius*[3] (Annex II HD),

[1] According to Regulation of the Minister of Environment of October 9th, 2014 on protection of species of plants (Journal of Laws of 2014, item 1409).

[2] Risk List Categories according to: Kaźmierczakowa R., Zarzycki K., Mirek Z. 2014. The Polish Plant Red Data Book. Ferns and flowering plants.

[3] The species is not subject to national legal protection, though it is listed in Annex II of the Habitats Directive.

6) White-finned gudgeon *Romanogobio vladykovi* (species under partial protection, Annex II HD),

7) Golden spined loach *Sabanajewia aurata* (species under partial protection, Annex II,IV HD).

According to the data collected in 2017 on ichtiofauna in the sections of the free-flowing Odra River, the quality of the ichthiofauna habitats increases with the flow of the river. This is mainly due to the increase in the width of the river bed and the increase in diversity of habitat conditions along the Odra River banks.

On the stretch of the Odra River between Nowa Sól and the mouth of Nysa Łużycka river to the Odra River, river forms of runs and glides located in the central part of riverbed between groynes built of sand and loose gravel sediments are considered the least precious habitats for fish. In this type of habitat, there are mostly big representatives of reophilous fish species such as the common barbell (*Barbus barbus*) or the asp (*Aspius aspius*). Greater diversity of fish can be observed in the runs along river banks built of rip rap. There are numerous species of fish such as the common bleak (*Alburnus alburnus*), the common roach (*Rutilus rutilus*) and the gudgeon (*Gobio gobio*). This habitat is of great significance for juvenile reophilous fish of the common barbell, the stone loach (*Barbatula barbatula*), the asp or the common dace (*Leuciscus leuciscus*). Riffle, which is another important river formation at the foot of the damaged groyne and built of its rip rap with fast flowing water, serves as an important habitat for the juveniles. These are important spawning and nursery grounds of the common barbell, the asp (protected within Natura 2000), the common dace, the burbot (*Lota lota*) and essential habitat for protected species of the stone loach, the golden spined loach (*Sabanajewia aurata*) and the white-finned gudgeon (*Romanogobio vladykovi*).

Shallow and sandy glides and backwaters constitute important habitats for the gudgeon and protected species such as the spined loach (*Cobitis taenia*), the golden spined loach and the white-finned gudgeon. The occurrence of swollen river mussel in this type of habitat plays an important role in reproduction of the European bitterling *(Rhodeus amarus*) which is protected by national law and within Natura 2000.

Deeper pools and shallow backwaters create the most precious habitats for fish in the Odra River. Pools are inhabited by fish typical for big rivers such as the common dace, the freshwater bream (*Abramis brama*), the wels catfish (*Silurus glanis*), the zander *(Sander lucioperca*), the burbot and the asp. The common roach, the carp (*Abramis bjoerkna*) and the common bleak can be also seen there in big numbers. Backwaters with silty and sandy bottom covered with vegetation constitute the best breeding and feeding grounds for the European bitterling and the sined loach. Moreover, they serve as habitats for such species as the pike (*Esox lucius*), the wels catfish, the tench (*Tinca tinca*), the crucian carp (*Carassius carassius*), the common rudd (*Scardinus erythrophthalmus*), the ide (*Leuciscus idus*), the European perch (*Perca fluviatalis*) and the common roach. Due to their richness in taxa of invertebrates, these habitats create perfect feeding conditions for fish.

Amphibians and reptiles

According to the data collected in the sections of the Odra River where construction works will take place, the most valuable habitats of amphibians and reptiles are located within the Odra River floodplain where various types of water reservoirs are present (oxbow lakes, small ponds and periodically flooded areas, etc.). River bank slopes are less important habitats for

amphibians and reptiles while places filled with stagnant water, separated from the main flow of the river and present in the inter-groyne zone serve as crucial habitats for these animals. Hence, building sites will be located outside such valuable habitats.

River bank slopes where construction works will take place (beyond breeding season of amphibians and reptiles) are mostly feeding grounds for these animals and they can be used again once the works stop.

At the place of Task implementation and the surroundings, the existence of a total of 13 protected species of amphibians and reptiles was established:

1) Common frog *Rana temporaria* (species under partial protection),
2) Moor frog *Rana arvalis* (species under strict protection, Annex II HD),
3) Edible frog *Pelophylax esculentus* (species under partial protection),
4) Marsh frog *Pelophylax ridibundus* species under partial protection),
5) Pool frog *Pelophylax lessonae* (species under partial protection, Annex IV HD),
6) Common toad *Bufo bufo* (species under partial protection, Annex II HD),
7) European fire-bellied toad *Bombina bombina* (species under partial protection, Annex II, IV HD),
8) Smooth newt *Lissotriton vulgaris* (species under partial protection),
9) European tree frog *Hyla arborea* (species under partial protection, Annex IV HD),
10) Viviparous lizard *Zootoca vivipara* (species under partial protection),
11) Sand lizard *Lacerta agilis* (species under partial protection, Annex IV HD),
12) Grass snake *Natrix natrix* (species under partial protection),
13) Anguis fragilis *Anguis fragilis* (species under partial protection).

Birds

Each section, where construction works will take place, is distinguished by great variety of birds of remarkable value. Crucial bird sites cover mostly the areas of natural river bank slopes, inter-groyne zone with sandy patches, partially overgrown with rushes and bog flora and adjacent floodplain meadows, oxbow lakes and riparian or oak-hornbeam forests.

Natural slopes of river banks sculpted by water constitute habitat for the common kingfisher (*Alcedo atthis*) and the sand martin (*Riparia riparia*). Only such places provide nesting and breeding habitats for these species. The inter-groyne zone is distinguished by slow flow of the river and greater sedimentation of sandy material, which creates patches, shallows and similar sandy formations. Such places are used as breeding and feeding grounds for the little ringed plover (*Charadius dubius*) and the common sandpiper (*Actitis hypoleucos*). Construction works will not be carried out in these sites. The area still in the inter-embankment zone but with further distance from the riverbed is overgrown by trees and thickets characteristic for riparian forest. It provides habitat for the group of characteristic forest birds whose most typical representatives are the middle spotted woodpecker (*Dryocopus martius*) and the collared flycatcher (*Ficedula albicollis*).

The Odra River is home to two particular precious species of black kite (*Milvus migrans*) and red kite (*Milvus milvus*). The occurrence of these species was verified in terms of potentially negative impact of the Task on their population.[1]

Within the sections of the river (river beds, bank slopes and adjacent areas) covered by Task 1B.1/1 (a) and their immediate surroundings there are in total at least 24 bird species[2] :

1) Middle spotted woodpecker *Dryocopus medius* (species under strict protection, Annex I BD),
2) European green woodpecker *Picus viridis* (species under strict protection, Annex I BD),
3) Lesser spotted woodpecker *Dendrocopus minutus* (species under strict protection, Annex I BD),
4) Black woodpecker arny *Drycopus martius* (species under strict protection, Annex I BD),
5) Eurasian wryneck *Jynx torquilla* (species under strict protection, Annex I BD),
6) Common goldeneye *Bucephala clangula* (species under strict protection, Annex I BD),
7) River warbler *Locustella fluviatilis* (species under strict protection, Annex I BD),
8) Common kingfisher *Alcedo atthis* (species under strict protection, Annex I BD),
9) Sand martin *Delichon urbica* (species under strict protection, Annex I BD),
10) Tawny owl *Strix aluco* (species under strict protection, Annex I BD),
11) Collared flycatcher *Ficedula albicollis* (species under strict protection, Annex I BD),
12) Grey heron *Ardea cinerea* (species under partial protection),
13) Black kite *Milvus migrans* (species under strict protection, zonal protection, Annex I BD),
14) Red kite *Milvus milvus* (species under strict protection, zonal protection, Annex I BD),
15) Common rosefinch *Erythrina erythrinus* (species under strict protection, Annex I BD),
16) Eurasian reed warbler *Acrocephalus scirpaceus* (species under strict protection, Annex I BD),
17) Barred warbler *Sylvia nissoria* (species under strict protection, Annex I BD),
18) Red-backed shrike *Lanius collurio* (species under strict protection, Annex I BD),
19) Little ringed plover *Charadrius dubius* (species under strict protection, Annex I BD),
20) Eurasian penduline tit *Remiz pendulinus* (species under strict protection, Annex I BD),
21) European turtle dove *Streptopelia turtur* (species under strict protection, Annex I BD,
22) Corn crake *Crex crex* (species under strict protection, Annex I BD),
23) Common sandpiper *Actitis hypoleucus* (species under strict protection, Annex I BD),

[1] The black and red kites are protected within PLB080004 Dolina Środkowej Odry Natura 2000 site and chapter 4.9.3 shows in great detail data concerning their occurrence in the vicinity of the building sites included in the Task

[2] Only selected, valuable species of birds, associated with water-dependent ecosystems were specified, while common species with a broad ecological spectrum of habitats were left out.

24) Greylag goose *Anser anser* (species under strict protection, Annex I BD).

Mammals (except for bats)

The sections of the river bed covered by the works and their immediate surroundings are the habitats of 12 species of mammals:

1) Eurasian otter *Lutra lutra* (species under partial protection, Annex II, IV HD),
2) Stoat *Mustela ermine* (species under partial protection),
3) Hedgehog *Erinaceus spp.* (species under partial protection),
4) European mole *Talpa europaea* (species under partial protection),
5) Common shrew *sorex araneus* (species under partial protection),
6) Eurasian pygmy shrew *Sorex minutus* (species under partial protection),
7) Lesser white-toothed shrew *Crocidura suaveolens* (species under partial protection),
8) Eurasian beaver *Castor fiber* (species under partial protection, Annex II, IV HD),
9) Red squirrel *Sciurus vulgaris* (species under partial protection),
10) European water vole *Arvicola amphibius* (species under partial protection),
11) Eurasian harvest mouse *Micromys minutus* (species under partial protection),
12) Wood mouse *Apodemus sylvaticus* (species under partial protection).

In the sections within the Task implementation area and their close vicinity, two species included in Annex II and IV of the Habitats Directive were identified. These are the European beaver (*Castor fiber*) and the common otter (*Lutra lutra*). Both species use the riverbed and areas in the inter-embankment zone for feeding, breeding and nursing grounds. Overgrown slopes of the riverbank and inter-groyne areas provide natural habitats for beaver and otter. Natural slopes without bank reinforment play crucial role in hiding places, dens (beaver) or holts (otter) which later turn into breeding grounds. Other mammals are protected under national law and are common in other parts of Poland.

Bats

The areas covered by the works fulfil primarily the function of feeding grounds for the species of bats. Groynes are not currently covered by older specimens of trees, where bats can hide. Inter-groyne areas where the river bays with rush vegetation offer the optimum feeding conditions for many species of bats (e.g. Common Pipistrelle, Brandt's bat, Daubenton's bat, Pond bat) are the main riverside areas important for this group of animals. The construction works will not be carried out during seasonal activity of bats and the works will not transform their habitats in significant way. A total of 11 (12) species of bats have been identified:

1) Greater mouse-eared bat *Myotis myotis* (species under strict protection, Annex II, IV HD),
2) Western barbastelle *Barbastella barbastellus* (species under strict protection, Annex II, IV HD),
3) Pond bat *Myotis dasycneme* (species under strict protection, Annex II, IV HD),,
4) Natterer's bat *Myotis Nattereri* (species under strict protection, Annex IV HD),

5) Daubenton's bat *Myotis daubentonii* (species under strict protection, Annex IV HD),
6) Brandt's bat *Myotis brandtii*/Whiskered Bat *Myotis mystacinus* (species under strict protection, Annex IV HD),
7) Brown long-eared bat *Plecotus auritus* (species under strict protection, Annex IV HD),
8) Serotine bat *Eptesicus serotinus* (species under strict protection, Annex IV HD),
9) Nathusius' pipistrelle *Pipistrellus nathusii* (species under strict protection, Annex IV HD),
10) Common pipistrelle *Pipistrellus pipistrellus* (species under strict protection, Annex IV HD),
11) Soprano pipistrelle *Pipistrellus pygmaeus* (species under strict protection, Annex IV HD).

4.9.3. NATURA 2000 SITES

Because of its location, the implementation of the planned Task may potentially influence the following Natura 2000 sites:

- **Dolina Środkowej Odry PLB080004**

It is an area of 33 677 hectares to protect the populations and habitats of 15 bird species recognized as items of protected areas. The area is particularly important for the preservation of domestic populations of black kite, red kite and white-wing tern.

A Conservation Measures Plan has been developed for the Area to define the risks, protection objectives, as well as the necessary protective measures for particular protected objects. (*Ordinance of Regional Director for Environmental Protection in Gorzów Wlkp. and Regional Director for Environmental Protection in Wrocław dated 13 July 2017*). All sections of works planned under the Task implementation are located within the Area.

Table 1 List of subjects of protections and objectives of protective action for Natura 2000 site Dolina Środkowej Odry PLB080004 – together with subjects of protection in adjacent areas to the constraction works.

Natura 2000 site	Subject of protection	Objective of protective actions
Dolina Środkowej Odry PLB080004	A229 The common kingfisher (*Alcedo atthis*)	Improvement in richness of feeding grounds by introduction suitable species of fish in water reservoirs of at least 25 ha in total.
	A122 The corn crake (*Crex crex*)	Maintaining favourable conservation status of species (FV) in the habitat through appropriate land-use of their breeding grounds.
	A238 The middle spotted woodpecker (*Dendrocopos medius*)	Maintaining favourable conservation status of species (FV) in the habitat through appropriate management of forest landscape providing breeding and feeding

Natura 2000 site	Subject of protection	Objective of protective actions
		grounds of high quality for the species.
	A073 The black kite (*Milvus migrans*)	Maintaining favourable conservation status of species (FV) in the habitat through appropriate management of forest landscape providing potential breeding grounds of high quality and reduced human pressure for the bird species.
	A074 The red kite (*Milvus milvus*)	Maintaining favourable conservation status of species (FV) in the habitat through appropriate management of forest landscape providing potential breeding grounds of high quality and reduced human pressure for the bird species.

- **Nowosolska Dolina Odry PLH080014**

The area occupies a total area of 6040.33 hectares and protects the resources of 10 types of natural habitats characteristic for the landscape of the large lowland river. The area is particularly important for the preservation of national habitat resources: 3150 oxbow lakes and and natural eutrophic reservoirs with *All. Nymphaeion, All. Potamion* plant communities and 91F0 Riparian oak-elm-ash forest habitats (*Ficario-Ulmetum*). 9 species of animals were also identified as protected species. A Protective Action Plan has been developed for the Area to define the risks, protection objectives, as well as the necessary protective measures for particular protected objects. (*Ordinance of Regional Director for Environmental Protection in Gorzów Wlkp. and Regional Director for Environmental Protection in Wrocław dated 25 April 2014.).* Sections of Works No.: 10, 11, 12 are located within the Area.

Table 4 List of subjects of protections and objectives of protective action for Natura 2000 site 2000 Nowosolska Dolina Odry PLH080014 – together with subjects of protection in adjacent areas to the construction works.

Natura 2000 site	Subject of protection	Objectives of protective actions
Nowosolska Dolina Odra PLH080014	3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* – type vegetation	Restoration of a favourable conservation status of the habitat through maintaining existing natural hydrological regime of the Odra River and reduction of negative impact of fishing or angling.
	3270 Rivers with muddy banks with *Chenopodion rubri* p.p. i *Bidention* p.p. vegetation	Maintaining favourable conservation status of species in the habitat.

Natura 2000 site	Subject of protection	Objectives of protective actions
	6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	Maintaining favourable conservation status of species in the habitat.
	6440 Alluvial meadows of river valleys of the *Cnidion dubii*	Restoration of a favourable conservation status of the habitat through maintaining and/or introducing appropriate land-use method on at least 50% of species habitat.
	91E0 Alluvial forests with *Alnus glutionosa* and *Fraxinus exelcior* (*Alno-Padion, Alnion incanae, Salicion albae)*	Restoration of a favourable conservation status of the habitat through maintaining existing natural hydrological regime of the Odra River (with alluvial soil forming processes) and establishing proper balance of the dead wood share in the ecosystem.
	91F0 Riparian mixed forests of *Querqus robur, Ulmus laevis* and *Ulmus minor, Fraxinus excelsior* or *Fraxinus angustifolia*, along the great rivers (*Ulmenion minoris*)	Restoration of a favourable conservation status of the habitat through maintaining existing natural hydrological regime of the Odra River (with alluvial soil forming processes) and establishing proper balance of the dead wood share in the ecosystem.
	1130 the Asp (*Aspius aspius*), 1145 The European weatherfish (*Misgurnus fossilis*), 1149 The spined loach (*Cobitis taenia*), 1337 the European beaver (*Castor fiber*), 1355 the river otter (*Lutra lutra*), 5339 The European bitterling (*Rhodeus sericeus amarus*)	Maintaining favourable conservation status of species in the habitat
	1188 The fire-bellied toad (*Bombina bombina*)	Increasing knowledge about the objects under protection and their conservation needs, the quality of the site and the possible threats together with protective measures.

- **Kargowskie Zakola Odry PLH080012**

The area encompasses a part of the Odra River Valley of about 3070.28 hectares. The area has been established for the protection of 8 types of natural habitats, with its particular importance for the preservation of domestic habitats: 91E0 Riparian mixed forests of willow, poplar, alder and ash tree (*Salicetum albo-fragilis, Populetum albae, Alnenion glutinoso-incanae*) as well as alder forests on percolating mires, and 91F0 Riparian oak-elm-ash forest habitats (*Ficario-Ulmetum*). 9 species of animals were also identified as protected species. A Protective Action Plan has been developed for the Area to define the risks, protection objectives, as well as the necessary protective measures for particular protected objects. (*Ordinance of Regional Director for Environmental Protection in Gorzów Wielkopolski dated 7 March 2014.*). Sections of Works No.: 8, 9 are located within the Area.

Table 5 List of subjects of protections and objectives of protective action for Natura 2000 site Kargowskie Zakola Odry PLH080012 – together with subjects of protection in adjacent areas to the construction works.

Natura 2000 site	Subject of protection	Objectives of protective actions
Kargowskie Zakola Odry PLH080012	3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* – type vegetation	Maintaining favourable conservation status of species in the habitat.
	3270 Rivers with muddy banks with *Chenopodion rubric* p.p. and *Bidention* p. p. vegetation	Maintaining favourable conservation status of species in the habitat
	6430 Hydrophilous tall herb fringe communities of plains and the montane to alpine levels	Maintaining favourable conservation status of species in the habitat
	6440 Alluvial meadows of river valleys of the *Cnidion dubii*	Restoration of a favourable conservation status of the habitat through maintaining and/or introducing appropriate land-use method on at least 50% of species habitat.
	91E0* Alluvial forests with *Alnus glutionosa* and *Fraxinus exelcior* (*Alno-Padion, Alnion incanae, Salicion albae)*	Restoration of a favourable conservation status of the habitat through maintaining existing natural hydrological regime of the Odra River (with alluvial soil forming processes) and establishing proper balance of the dead wood share in the ecosystem.
	91F0 Riparian mixed forests of *Querqus robur*,	Restoration of a favourable conservation status of the habitat through maintaining existing natural hydrolog-

Natura 2000 site	Subject of protection	Objectives of protective actions
	Ulmus laevis and *Ulmus minor, Fraxinus excelsior* or *Fraxinus angustifolia*, along the great rivers (*Ulmenion minoris*)	ical regime of the Odra River (with alluvial soil forming processes) and establishing proper balance of the dead wood share in the ecosystem..
	1188 The fire-bellied toad (*Bombina bombina*)	Increasing knowledge about the objects under protection and their conservation needs, the quality of the site and the possible threats together with protective measures.
	1130 The Asp (*Aspius aspius)*	Maintaining favourable conservation status of species in the habitat.
	1149 The spined loach (*Cobitis taenia)*	Maintaining favourable conservation status of species in the habitat.
	1337 The European beaver (*Castor fiber)*	Maintaining favourable conservation status of species in the habitat.
	1355 The river otter (*Lutra lutra*)	Maintaining favourable conservation status of species in the habitat.
	1145 The European weatherfish (*Misgurnus fossilis*)	Maintaining favourable conservation status of species in the habitat.
	5339 The European bitterling (*Rhodeus amarus*)	Maintaining favourable conservation status of species in the habitat
	1308 The western barbastelle (*Barbastella barbastellus)*	Increasing knowledge about the objects under protection and their conservation needs, the quality of the site and the possible threats together with protective measures.
	1324 The greater mouse-eared bat (*Myotis myotis*)	Increasing knowledge about the objects under protection and their conservation needs, the quality of the site and the possible threats together with protective measures.

- **Krośnieńska Dolina Odry PLH080028**

The area stretches over 19202.47 hectares and covers an extensive part of the Odra River Valley approximately 70 km long. The area has been established for the protection of 14 types of natural habitats; 16 species of animals were also identified as protected species within the area. No Protective Action Plan has been prepared for Natura 2000 site. Hence, there are no established objectives of protective actions for these subjects of protections in the area. Sections of Works No.: 1, 2, 3, 4, 5, 6 and 7 are located within the Area.

There are following subjects of protection for this site, revealed during the research done on the Environmental Impact Assessment and inventory controls in 2017:

- 3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea,*
- 3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* – type vegetation,
- 3270 Rivers with muddy banks with *Chenopodion rubric* p.p. and *Bidention* p. p. vegetation,
- 6430 Hydrophilous tall herb fringe communities of plains and the montane to alpine levels,
- 6440 Alluvial meadows of river valleys of the *Cnidion dubii*,
- 91E0* Alluvial forests with *Alnus glutionosa* and *Fraxinus exelcior* (*Alno-Padion, Alnion incanae, Salicion albae)*,
- 1337 The European beaver (*Castor fiber),*
- 1149 The spined loach (*Cobitis taenia*),
- 1355 The river otter (*Lutra lutra),*
- 1145 The European weatherfish (*Misgurnus fossilis),*
- 1037 The green club-tailed dragonfly (*Ophiogomphus cecilia)*.

4.9.4. OTHER PROTECTED AREAS

Section no 3 of the Task (km 537+000 to 540+000) is located within **Krzesiński Landscape Park**.

Sections no: 1, 2, 4, 5, 6 and 7 are located within the **Area of Protected Landscape 18 - Krośnieńska Dolina Odry**, while sections no 8, 9, 10, 11 and 12 are located within **the Area of Protected Landscape 21- Nowosolska Dolina Odry.** Both these areas have been established to protect the distinctive landscape of diverse ecosystems, valuable for meeting the needs of tourism and leisure or functioning as of ecological corridors.

Besides above-mentioned areas of nature protection, the Task does not interfere with other forms of nature conservation. There are also other forms of nature protection at a distance of 5 kilometers from the boundaries of Task implementation area. These are:

- Bory Chrobotkowe koło Bytomca PLH080048 – approx. 3.1 km north of section no 3,
- Otyń PLH080040 – approx. 3 km north of section no 10,
- Rynna Gryżyny PLH080067 – approx. 2,1 km north of section no 1,

- „Młodno" nature reserve – approx. 4.3 km north of section no 3,
- „Bukowa Góra" „Młodno" nature reserve – approx. 5.0 km north of section no 10,
- Gryżyński Landscape Park – approx. 2.5 km north of section no 1.

Areas of implementation of Tasks are also located in the vicinity of several ecological sites:

- „Międzywale I" ecological site – approx. 50 m south of section no 1,
- „Międzywale II" ecological site – approx. 50 m from section no 1 (adjacent to the area of works in several locations),
- „Na krańcu" ecological site – approx. 100 m north of section no 1,
- „Moczary przy wałach" ecological site – approx. 50 m north-west of section no 1,
- Lisia Górka" ecological site – approx. 100 m north of section no 1,
- „Biagienko przy wale" ecological site – approx. 100 m north of section no 1,
- „Międzywale" ecological site – approx. 400 m north of section no 4,
- „Międzywale IV" ecological site – approx. 200 m south of section no 2,
- „Trzęsawisko" ecological site – approx. 150 m south of section no 8.

The remaining protected areas are located more than 5 km from the boundaries of the investment.

4.10. CULTURAL MONUMENTS

The tasks include activities within the Odra River bed and regulatory structures - groynes. According to the EA report there are no historical monuments in the area of the undertaking. On the basis of spatial data of the National Heritage Institute (https://mapy.zabytek.gov.pl/nid/) it was determined that in the area of Task implementation cultural monuments in Nowa Sol and the village of Bedow (Czerwiensk commune) can be identified. The activities will be carried out about 400 m from the downtown area of Nowy Sól, where historic buildings are located (including those in the register of monuments) - the closest one is the bridge built in 1927 and residential buildings dating back to the turn of the 19th and 20th centuries. With regard to the village of Bedow there is a historic church located about 400 m from the area of implementation of the Task. The church dates back to 1882 and it is included in the register of monuments.

4.11. POPULATION AND MATERIAL GOODS

Most of the project implementation area is located outside the immediate vicinity of built-up areas. Works will be carried out in the vicinity of some built-up areas only in the following sections:

- Part of section no 1 of the planned work in the area of Bedow (Czerwiensk commune),
- Part of section no 4 of the planned work in the area of Brody (Sulechow commune),

- Short sections no 10 and 11 in the area of Nowa Sol,
- Short section no 12 in the vicinity of Stara Wies (above Nowa Sol).

5. SUMMARY OF THE ENVIRONMENTAL IMPACT ASSESSMENT

5.1. EARTH SURFACE AND THE LANDSCAPE

The impact of the Task on the surface of the earth will mainly include the riverbed zone. Most of earthwork and all transport of materials used for reconstruction of groynes will be carried out with the use of floating equipment. Support facilities, including storage places for reconstruction of groynes and storing riffle material will be located within the existing ports in Cigacice, Nowa Sol and Krosno Odrzanskie, accessible to the public by paved roads. The material deposited on the groynes surface will be removed. Along the banks of the river, a new level of post-regulation zone was created, 1.5-2 m high. In the inter-groyne zone there are fluvial deposits and silt-covered lands with high natural and landscape potential. Excess earth masses acquired during the implementation of works will not be deposited in the inter-groyne areas so that the earth surface spontaneously developing in these areas will be preserved. The reconstruction of the groynes will result in further sedimentation of loose material of small particles in the inter-groyne area.

In accordance with the findings of the environmental impact assessment the investment will not have a negative impact on the landscape of the Odra River Valley. Transverse river control infrastructure has been a part of it since 19th century. The disharmonious changes introduced to the landscape in the form of traces of earthworks and machinery will be of short duration. In the operation phase the structures will blend in with the typical cultural landscape of a partially trained lowland river as the vegetation on the slopes of the reconstructed groynes will recover naturally in a short time.

In order to limit the impact of works on the earth surface and the landscape during the implementation period the mitigation measures described in Appendix 1 to the EMP should be implemented.

5.2. CLIMATE

Due to the scope of the Task, negative impact of the investment on the climatic conditions of the Odra River Valley both in the implementation phase and in the operation phase of the undertaking is not anticipated.

Greenhouse gas emissions

At the stage of construction, the emission of exhaust fumes generated in connection with operating vessels and construction machinery shall be the source of pollution emission, including carbon dioxide which belongs to greenhouse gases. This impact will not be significant and will disappear after the implementation of the Task. At the operational stage the Task does not cause emission of greenhouse gases, in particular does not require the supply of electric power, the production of which in the power plants involves the emission of CO_2.

Making the Tasks resistant to negative phenomena that accompany the climate change

The Task has been designed in accordance with current hydrotechnical regulations which take into account the extreme phenomena occurring in the environment related to climate change (this is governed by relevant regulations concerning the design, construction and operation of

hydrotechnical facilities). The implementation of the Task will increase the flood protection of towns and villages located in the Odra River valley, by improving the conditions for the operation of icebreakers and will thus contribute to the reduction of the negative impact of climate change.

Therefore, no mitigation or monitoring measures are proposed with regard to the climate.

5.3. SANITARY STATUS OF ATMOSPHERIC AIR

The emission of dust and gaseous pollutants will mainly occur at the stage of construction. During the operation phase, at the end of the construction phase, no significant emission of pollution is expected.

The combustion of fuels during the operation of construction machinery and the water transport of materials will be the main source of pollutant emissions during the construction phase. At this stage, the main compounds emitted into the atmosphere will be: nitrogen oxides, carbon monoxide, hydrocarbons and dust particles (particulate matter, it is difficult to estimate the quantity emitted to the atmosphere during the execution of work). Periodically, the earthwork on dry land may lead to increased dustiness. The largest, temporary concentration of pollutants will be observed within a few dozen meters from the Task implementation area. However, it will have small, insignificant impact on sanitary status of atmospheric air due to the technology used and period where the works will be carried out (autumn-winter). The resulting pollution will be dispersed in the atmosphere with the increase of distance from the emission site. The emission of pollutants into the atmosphere at the construction stage will be short-term and reversible. It will not lead to significant and lasting environmental impact.

It was recognized that the mitigation measures described in Appendix 1 to the EMP should be implemented in order to reduce the impact of the work on the sanitary condition of the air during the Task implementation period.

5.4. SOILS AND LAND

Risks to soil are mainly related to emergencies, such as the leakage of petroleum substances which can lead to local soil contamination. Motor engines and vehicles used during earthwork.

The execution of works will only locally affect the soil within the bank slopes but it concerns these groynes whose bodies will be rebuilt in 80-100%. Most works embrace parts of groynes located within riverbed but without necessity of penetrating soils and grounds of the river bank slopes. In order to limit the impact of the works on the condition of soil and land during the Task implementation period the mitigation measures described in Appendix 1 to the EMP should be implemented.

5.5. SURFACE WATER

Biological elements of water quality

Macrophytes, benthic macroinvertebrate fauna and phytobenthos

The groups of macrophytes are found in the inter-groyne areas on most of the sections of works. In order to limit the impact on riparian vegetation the initially planned technology of work execution has been modified. The excess of earth mass from riffle material removal will be deposited on barges and transported to ports for further processing - in accordance with relevant waste management legislation (detailed procedures regarding the handling of earth masses excavated form the riverbed are outlined in Appendix 7 of the EMP). Due to such technical solutions, the groups of macrophytes existing in the inter-groyne areas will be preserved. The vegetation growing directly within the reconstructed groynes may be destroyed. After the completion of work, the sedimentation of fine fractions of the material carried by the river will be re-activated. Accordingly, the conditions for the restoration of vegetation in the vicinity of groynes will be favourable after the completion of construction work.

Pic. 1 Restoration of vegetation and sandy bar on one of the groynes reconstructed in 2012-2015

The preservation of the inter-groyne areas will also enable the preservation of the habitats of bivalvia species and other macro-invertebrates. During dredging works, the environmental supervisory control will take place in order to reduce negative impact on macro-invertebrates which, in turn, will help to protect other animal species (for example the European bitterling whose reproduction depends on abundance of large mussels).

Ichtyofauna

Some of currently degraded groynes serve now as microhabitats for fish species, creating small rapids, stone "islands" or hollows behind the groynes. These kinds of places are habitats for such species as: common barbel, asp, common dace, burbot, chub, stone loach and gobio gobio. During the period of work they will not serve as habitat of fish species but after the completion of works the reconstructed groynes with the riprap cover will restore this function

(as shelters, feeding and spawning places). Partially eroded groynes, wooden logs and similar elements located in the inter-groyne area will remain intact to preserve existing variety of habitats for fish.

Shallow inter-groyne areas are very important habitats for protected species, such as spined loach, golden spined loach, amur bitterling and white-finned gudgeon. The modified work technology which includes keeping the inter-groyne areas intact will preserve the habitats for these species.

The works will also not affect the river's flow regime, to the extent that can change the layout of habitats and the structure of the river bottom in a larger spatial scale. Cyclic fluctuations in the water level that shape the plant habitats as well as the habitats of animals within the inter-groyne areas will also remain. A potentially significant threat to ichthiofauna is an increase of silt in the river in the period of carrying out the works. Appropriate mitigation measures have been introduced in order to limit this risk. Works connected with the riffle material removal will be carried out beyond the spawning season of the fish which falls within the period from 1 March to 31 August. As a result, the direct negative impact on ichtyofauna will be reduced to great extent. While analysing potential impact of the construction works, the segmental character of the task implementation should not be forgotten. Works will be carried out in 11 sections of the river separated from one another by the distance of 1km to 30 km long. They will be also spread over time due to works being executed only in the autumn-winter period, consequently the impact on the environment will also be spread over time.

Hydromorphological elements of water quality

Hydrological conditions

Direct reconstruction of damaged groynes is spot-based and will have segmental character. These works will affect the flow conditions and dynamics of the river but only within the re-constructed sections. The mainstream will take place in the central part of the riverbed. Due to the increase of flow velocity in the central part of the river, the sedimentation process will decrease in this zone. Removing deposits from the groynes along with herbaceous vegetation will affect the roughness of the substrate and the flow velocity. Vegetation on the groyne slopes will recover in few following vegetation seasons what can be observed in case of re-constructed groynes of the Odra River in 2012-2015 (Pic. 1).

Morphological conditions

As a result of liquidation of sedimentary structures developed directly within the groyne areas and their vicinity, local hydromorphological conditions in the river bed will be transformed. Local conditions of water flow will be changed although the accumulation of sediments in the inter-groyne areas will continue, which will ensure the maintenance of conditions for valuable plant groups and animal species occurring in the inter-groyne areas. Works will be carried out in sections so the changes of existing conditions of water flow will be segmental. Vegetation and sandy patches present in destroyed groynes will be damaged. However, the inter-groyne zone will be left untouched.

Physico-chemical elements of water quality

The impact on physical-chemical elements will occur during the execution of earthwork carried out in the river bed. It will be related to the removal of deposits covering the destroyed/damaged groynes, riffle material removal and increased inflow of suspension to surface waters, increase of the substance dissolved in water, a decrease of oxygen content and local, periodic change of water thermology. Significance of such impacts will be low regarding the autumn-winter period of construction works.

Due to the potential pollution of sediment in the Odra river bed connected with the riffle removal from the riverbed, local water contamination can occur during earthworks. At the operating stage no impact on the physicochemical state of the water is anticipated. A detailed procedure regarding the handling of output excavated form the riverbed are outlined in Appendix 7 of the EMP).

At the stage of implementation, during construction works of different character, surface water may potentially be contaminated with petroleum substances during the breakdown of the machinery. The use of "access from water" technology considerably reduces the risk of water contamination from the land as land communication of the equipment, location of storage sites and other potential sources of contamination of water are limited. The risk of water pollution will be also limited by the use of the areas within the existing ports as main construction site support facilities and the use of floating equipment in delivering building materials. However, there is a risk connected with the leakage of petroleum substances to the water while using floating equipment and transporting materials by the water (in case of breakdown of machinery).

The impact on biological elements related to the periodical change of physico-chemical parameters of water will be limited due to the adopted schedule for the implementation of works: the construction and hydrotechnical works, including dredging works in the river bottom, will have to be carried out beyond the period from 1 March to 31 August.

Illustrative assessment of the impact on the BSW covered by the Task and on the neighbouring BSW

The undertaking will locally exacerbate the hydromorphological conditions within the BSW, however, due to the degree of the existing morphology of the riverbed (the entire river section within the BSW has historically undergone significantly transformation and has a groyne infrastructure) and the segmental nature of the investment it is not a project likely to fail in terms of achieving the environmental objectives by *the Odra River from the Czarna Struga River to the Nysa Luzycka River* and *the Odra River from the Eastern Canal to the Czarna Struga River* BSW. The impact on physico-chemical parameters will be local and time-limited to the period of work execution. The impact related to the change in physicochemical parameters will not have a significant impact on biological elements due to the adopted schedule for the implementation of works (works will be carried out beyond the main part of the growing season and outside the spawning season of fish). Despite some negative impact the Tasks do not affect the achievement of environmental objectives for the BSW, i.e. the achievement of a good ecological potential and a good chemical status as well as ensuring the possibility of migration of aquatic organisms within *the Odra River from Czarna Struga River*

to Nysa Łużycka River and the Odra River from Eastern Canal to Czarna Struga River BSW and the BSW adjacent to the works[1].

In order to prevent the occurrence of new adverse impact on the status of water appropriate mitigation measures have been adopted as described in Appendix 1 to the EMP.

5.6. GROUNDWATER

The machines working in the river bed (excavators, dredgers, generators) on floating equipment will be the main source of pollution. The risk of contamination of surface water and groundwater is related to the processes of storing fuels and chemicals, the refuelling of vehicles and machinery as well as the operation of mechanical equipment. This risk has been significantly reduced by the use of the existing paved surfaces within the river's ports in Nowa Sól, Cigacice and Krosno Odrzańskie as main construction site support facilities.

Taking proper precautions, operating only the technically efficient equipment and proper location of the above mentioned processes and construction site support facilities, normally no major water quality hazards are expected to occur. There is a growing risk of surface water contamination and migration of pollutants into alluvial waters (groundwater) during the works executed in the river bed with the use of floating equipment. In this case, the extent of the impact will be determined by the amount of pollution, the extent of the contamination zone and the local conditions for the exchange of alluvial and river waters.

Due to the extent and nature of the impact, no negative impact on the quantitative and qualitative status of the groundwater of the studied part of the Odra River Valley and the BSW, including the Main Underground Water Reservoirs No. 150, No. 302, No. 149.

In order to prevent possible negative impact on the status of groundwater at the stage of execution of works, the mitigation measures specified in Appendix 1 to this EMP should be implemented.

5.7. BIOTIC NATURE

The impact of the planned investment on elements of natural environment was considered for the option selected for implementation (during administrative procedures of environmental impact assessment) and covered by the conditions in the environmental decision. Due to the assumed effect of the project implementation there was no possibility of location options. A rational alternative was to change the technology of work In order to minimize the negative impact on protected elements of nature. Originally, it was presumed that the excess of earth masses acquired during the works will be deposited in the inter-groyne areas, which would cause significant environmental loss (destruction of the patches of natural habitat and the habitats of plant and animal species).

Applied modification to the technology involves the lack of possibility of storing excessive land acquired in riffle material removal in inter-groyne areas. These areas constitute crucial

[1] In this way, the investment was assessed also within Master Plan for the Odra River Valley – chapter 4.6

sites of protected animal and plant species and for this reason they should remain intact in great extent.

At the stage of *Construction and executive design* for the planned works there were also technical options considered that relied on the use of alternative materials to achieve the intended effect. However, the use of concrete also results in a significant increase of adverse environmental effects. Therefore, the use of primarily natural materials such as stone and fascine is planned.

The selected option for implementation is not a solution that excludes any impact on the flora, fauna and natural habitats within the river bed and river banks. The work will be a source of mainly short-term impact (scaring and disturbing animals) on the natural elements of the ecosystem of the Odra River Valley in the places where the renovation of the river control infrastructure is planned and in their close surroundings.

At the stage of elaboration of this EMP and designing the scope of mitigation measures, the results of research on the condition of the natural environment have been utilized. That additional data extended the scope of knowledge in relation to data included in the Environmental impact report and available at the stage of environmental impact assessment. In particular, data from field inventories carried out in 2017 within the section of the free-flowing Odra River within the borders of the Lubusz Voivodship were utilized, as well as documentation of the management plans for Natura 2000 sites and the GIS nature databases. Performed analyses, including information collected in 2017 and obtained from Institutions responsible for monitoring Natura 2000 areas on the distribution of the patches of natural habitat and of the plant and animal species confirm that the implementation of the Task does not involve the threat of significant negative impact on Natura 2000 sites, nor does it pose a threat for the populations of wild plant, fungi and animal species.[1]

5.7.1. PROTECTED NATURAL HABITATS AND SPECIES

Implementation of the planned Task may result in negative impact on 5 types of natural habitats (out of 7 habitat types occurring in the Tasks area)：

1) 3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* – type vegetation,
2) 3270 Rivers with muddy banks with *Chenopodion rubric* p.p. and *Bidention* p. p. vegetation,

[1] Basing on the environmental decision, the final permit for the Task was issued. According to the Art. . 145. § 1. 5 of the KPA (Code of Administrative Decision) " In case of occurrence of new essential circumstances or evidence after environmental decision being issued , which were not revealed or known for the issuing authorities at the time of making decision, the administrative procedure may be reopened." Environmental inventories carried out for the purpose of the EMP confirm the results included in the environmental decision. Therefore, the Art. 145. § 1. 5 of the KPA (Code of Administrative Decision) does not apply in this case.

3) 6430 Hydrophilous tall herb fringe communities of plains and the montane to alpine levels,
4) 91E0* Alluvial forests with *Alnus glutionosa* and *Fraxinus exelcior* (*Alno-Padion, Alnion incanae, Salicion albae*),
5) 91F0 Riparian mixed forests of *Querqus robur, Ulmus laevis* and *Ulmus minor, Fraxinus excelsior* or *Fraxinus angustifolia*, along the great rivers (*Ulmenion minoris*).

The works will result in minor interventions in the above mentioned natural habitats and concern habitat patches that occur directly within the reconstructed groynes. Most of the groynes (65%) included in the Task will be reconstructed only in 5-60%. Thus, such scope of works will concern only the riverbed without intervention in the riverbank slopes. Most of the construction works will be manual. These works will not be carried out in the inter-groyne zone, which is distinguished by the bigger concentration of patches of 3270 habitat. While analysing the impact on this kind of habitat, its dynamic character should not be forgotten. Vegetation identified as 3270 habitat is distinguished by big seasonal changes that result from dynamics of water flow quantity as well as from formation and disappearance of sandbars along the riverbank slopes. At present, this habitat occurs in most of the sections of the riverbed and is covered almost entirely by groynes. Reconstruction of groynes while keeping the inter-groyne zone intact (maintaining the river formations such as sandbars, shallows etc.) will ensure protection of the most valuable patches of 3270 habitat. The concentration of the mainstream in the central part of the riverbed will result in sedimentation of fine fractions of materials carried by the river in the inter-groyne zones. In this way, the most precious 3270 habitat in the riverbed will keep its dynamic character in the sections included in the Task.

In case of groynes where construction works will concern the intervention in the riverbank slope (83 groynes constituting 24% of all groynes), the impacts on other protected habitats may take place. The intervention in the riverbank slope concerns zone of several meters wide. Thus, the impact will be of small to negligible extent and vegetation on the slopes of 6430 habitat will be restored within the next following vegetation seasons after completion of construction works.

Habitat patches or their fragments of an area of approximately several dozen square meters will be degraded. The reconstruction of groynes results in the concentration of the mainstream in the middle of the river bed. However, it does not affect the soil-water regime of habitats that are on the bank slopes and within the Odra River inter-embankment. Hence, the potential impact can be limited only to the riverbed and slopes of the riverbank.

5.7.2. PROTECTED SPECIES OF FUNGI, PLANTS AND ANIMALS

The presence of protected species of fungi was not established in the area of Task implementation and the immediate surroundings.

Protected species of plants

There are 5 legally protected plant species in the area of Task implementation and the immediate surroundings. The implementation of the Task poses the threat to individual groups of floating fern and water caltrop. During the construction works, the environmental supervision

will be provided in order to reduce the range of the adverse impacts and prevent accumulation of the new ones.

The scale of interventions does not pose a threat to the local and national populations of the species. The floating fern appears mostly in the valley of big rivers covering the surface of water near the riverbanks, oxbow lakes and small ponds. Within the section of the Odra River included in the Task, places of occurrence of the floating fern can be found in the inter-groyne areas deeply cut into the river bank. These areas will not undergo construction works. The water caltrop grows in similar habitats showing bigger preferences for oxbow lakes in the inter-embankment zone, where construction works will not take place. The section of the river next to the mouth of the Nysa Łużycka River to the Odra River, holds the sites of the water caltrop in deeply cut inter-groyne zones. Both species are quite commonly found within the inter-groyne areas along the whole section of the free-flowing Odra River. Thus, losing a few sites of both plants will have negligible impact on their population.

Protected species of animals

Invertebrates

The implementation of Tasks does not interfere directly with the habitats of protected invertebrate species. There is possible negative impact on protected species of clams (bivalve) due to removal of riffle material. In order to reduce the mortality of these species, the mitigation measures have been introduced. They concern appropriate supervision during implementation stage, regular checkups of the material removed from the river bottom and relocation of the mussels found in the material into safe and suitable habitat of similar conditions. In the vicinity of the construction sites, where shallows and sandbars occur, the green club-tailed dragon has its habitats. Technology used in the Task helps to save this kind of habitats due to the securing the inter-groyne zones from earth mass disposal excavated during works. The construction sites limit their surface of work to the riverbed and do not cover the areas of meadows in the inter-embankment zone of the Odra River.

Fish and lampreys

The habitats of the protected species of fish found in the Odra River cover large areas. Locally conducted works related to the repair and reconstruction of groynes will not significantly affect the habitats of fish species. Short-term effects related with the elimination of the existing underwater fragments of groynes and an increased water turbidity during the removal of riffle materials are possible. The most precious fish habitats are situated within shallows of wide inter-groyne zones. These places will not undergo construction works. Short-term impacts present at the stage of construction works will not affect fish populations due to the fact that the works will be conducted in autumn-winter season. Task Implementation will be spread over time due to works being executed only in the autumn-winter period. Additionally The Task includes 11 sections of the river separated from one another by the distance of 1km to 30 km long. Due to the segmental character of the works, spread over time and conducted beyond the spawning season of fish (beyond the period of 1 March-31 August), the impacts on ichtyofauna are insignificant in scale of the whole stretch of the river included in the Task 1B.1/1 (a). Formations such as stones from wiped groynes, logs in the inter-groynes zone that create diversity of habitats in the river will not be damaged during construction works.

Amphibians and reptiles

The most valuable habitats of amphibians and reptiles are located within the Odra River floodplain where various types of water reservoirs are present. The riparian zone is locally valuable for amphibian species in places where calm water areas are formed, proglacial lakes and similar structures. In order to preserve these habitats it is necessary to adopt a suitable technology of works (collection of excess earth masses and excavated material from the work sites and loading it onto the barge, with further transportation to the ports and eventually into the landfills)[1]. The adopted schedule for the works (the works will be carried out only from 1 September to the end of February of a given year) shall ensure a significant reduction in the impact related to accidental casualties among amphibians and reptiles that may be present within the groyne areas and their vicinity during feeding and seasonal migration. The habitats of these species lying in the inter-groyne zones will not be damaged during construction works.

Birds

The risks related to the impact on bird species concern primarily the species that can directly populate degraded groynes planned for reconstruction (these are common sandpiper and little ringed plover). The Task poses the threat to one of the sites of the little ringed plover. However, the access to the habitats of both species will not decrease significantly because of the Task implementation. Sandbars and sand patches located along the inter-groyne zone will not be destroyed during construction works. Feeding grounds of both species will recover partially after a few following years of sand fraction sedimentation around the groyne (Pic. 1).

The adopted schedule of works (the works will be carried out only from 1 September to the end of February) will ensure elimination of the impact related to scaring off and disturbing all species of birds that populate groynes, inter-groyne areas, the adjacent bank slopes and trees or tree complexes in the inter-embankment zones. Construction works will not be carried out during breeding season of birds so the birds occurring in the sections of the river included in the task will be able to breed without disturbances.

The schedule of works planned beyond the bird breeding season also limits the possibility of negative impact on black kite and red kite, which are one of the most valuable bird species in the Odra River Valley (chapter 5.7.3 shows deeper analysis of the impacts on these species). The scope of work to be performed does not directly affect the forest habitats or tree density where the nests of black kite and red kite are located.

Mammals (except for bats)

The groynes and their immediate surroundings are places used primarily by terrestrial-aquatic mammals, such as beavers and otters. Within the habitats of the both species, the overgrown river bank slopes constitute their shelters and breeding grounds while the shallows and bays in the inter-groyne areas are convenient feeding grounds. In order to preserve these habitats a suitable technology of work was adopted (collection of excess earth masses from work sites and loading it onto the barge without possibility of their disposal in the inter-groyne zones). The impact will therefore be limited to periodic scaring off species in autumn-winter season.

[1] The procedure of handling of the output excavated form the riverbed is outlined in Appendix 7 of the EMP.

Habitats of the mammals lying in the inter-embankment zone will not be damaged during construction works. All species present in sections included in the Task are common all over Poland.

Bats

The areas covered by the works primarily function as the feeding grounds for bat species. The groynes are not currently covered by older specimens of trees which can accommodate the hideouts of bats. The most important area for this group of animals in the river bank zone are the inter-groyne areas where the bays with the rush vegetation offer optimal feeding conditions to many species of bats (e.g. pipistrellus, daubenton's bat and pond bat). These areas will be preserved unchanged. The works will also be carried out beyond the basic period of bat activity, therefore the impact on this group of animals will be limited and insignificant. Regarding the scope of the works (in most case only part of the groyne bodies will be reconstructed), there is no plan of tree felling so their feeding, breeding and hiding grounds in the form of trees present in the area will remain intact.

In order to ensure additional reduction of impact on the protected animal and plant species in Appendix 1 to the EMP appropriate mitigation measures have been implemented.

5.7.3. NATURA 2000 SITES

Because of its location the implementation of works may potentially influence the following Natura 2000 sites:

- **Dolina Środkowej Odry PLB080004**

Due to the scope of work and the schedule of the execution of work, the Task does not have a negative impact on the integrity of the site and the coherence of Natura 2000 network. The works will be carried out beyond the breeding season of birds so that the impact on this species will be eliminated. The species whose habitats will be affected in connection with the execution of work (common sandpiper, little ringed plover) are not under the protection within the Natura 2000 site.

Table 6 Scope of works related to reconstruction of the groynes' body under Task 1B.1/1 (a) located within the borders of Natura 2000 Dolina Środkowej Odry PLB080004 area.

The extent of reconstruction of a groyne structure (%)	Number of groynes	Percentage of the total number of groynes
5-20%	125	23%
20-40%	48	9%
40-60%	41	7%
60-80%	252	46%
80-100%	83	15%

All sections of works under Task 1B.1/1 (a) are located within the borders of Dolina Środkowej Odry PLB080004 area, with the total length of 21.8 km, which constitutes 11.97% of the Odra river within the Natura 2000 area.

During the assessment of the impact of works on bird species, the distribution of individual species' sites in relation to the areas of works was examined. Due to the date of works (solely in the period from 1 September to the end of February) for the majority of species, the impact associated with scaring off and disturbing of specimens of bird species will not occur. Therefore, the execution of works will not result in the loss of brood or in the reduction of breeding success of particular bird species. It was also examined whether the works do not cause direct destruction of bird breeding sites, during their absence in the breeding habitat (bank slopes, sandy shoals, trees, etc.). Regarding species recognized as protected objects in the Area, no such threats were found.

Potentially small negative impacts can occur in relation to migrant populations, species such as the mallard, the Taiga bean goose and the whooper swan. This is due to the fact that periods of work can partly overlap during the migration of birds. Due to the large space of the area (33 677.79 ha) and a long section of the river included in the Special Area of Conservation (182.09 km), these impacts will not have a measurable influence on the population of migratory species. Works will be conducted within a few to a dozen or so sections of works, which will cause impacts to be dispersed.

Taking into account the updated data on the occurrence of species recognized as protected objects in the Dolina Środkowej Odry PLB080004 area, the possibility of impact of the Task 1B.1/1 (a) on the **black kite** and the **red kite** was also examined.

Black kite *Milvus migrans* the presence of birds was recorded in several locations neighbouring with work places:

- a nest at a distance of approx. 200 m from work sites within the section between km 429+000 and km 432+000,
- breeding sites between km 454+000 and km 457+000,
- breeding sites at approx. km 454+000, nest presumably located in the vicinity of the riverbed,
- breeding sites at approx. km 475+000
- sightings of specimens during feeding approx. between km 490+000 and km 496+000,
- a nest approx. between km 497+500 and km 498+500,
- km 497 is a breeding site.

Red kite *Milvus milvus* the presence of birds was recorded in several locations neighbouring with work places:

- breeding sites between km 454+000 and km 457+000,
- breeding sites at approx. km 475+000
- breeding sites between km 490+000 and km 495+000,

- a nest approx. between km 498+500 and km 499+500,
- a nest approx. between km 537+500 and km 538+500.

Wooded areas, or individual trees within which nests of the species are located, will not be affected as a result of the planned works. Impacts associated with scaring the birds off will not occur taking into account the phenology of the species. The breeding season of the black kite in extreme (broad) spectrum stretches from the beginning of April to the end of August, with the main breeding period from mid-April to mid-August (GIOŚ[1] 2015). The execution of works may be carried out only within the range of September 1 to the end of February. Therefore, there is no danger that carrying out of the works will endanger the loss of brood or reduce the breeding success of the species.

The execution of works does not result in interference to the forest areas (site of occurrence, inter alia, of a middle spotted woodpecker and of a honey buzzard), or to the river inter-embankment areas where there are various types of water and marsh habitats comprising breeding sites for whiskered tern, white-wing tern, garganey and a shoveler which are the protected objects of the Natura 2000 site.

- **Nowosolska Dolina Odra PLH080014**

The impact of limited scale and intensity concern the following 5 types of natural habitats: 3270 Rivers with muddy banks with *Chenopodion rubri* p.p. and *Bidention* p.p. vegetation, 3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* – type vegetation, 6430 Hydrophilous tall herb fringe communities of plains and the montane to alpine levels, 91E0* Alluvial forests with *Alnus glutionosa* and *Fraxinus exelcior* (*Alno-Padion, Alnion incanae, Salicion albae*), 91F0 Riparian mixed forests of *Querqus robur, Ulmus laevis* and *Ulmus minor, Fraxinus excelsior* or *Fraxinus angustifolia*, along the great rivers (*Ulmenion minoris*). The adopted technology of work (no interference with inter-groyne areas) ensures that the 3270 habitat remain in their unchanged protected status. Impacts on hydrophilous tall herb fringe communities will be limited to relatively small areas where works at the river slope take place (merely 5 groynes within that Natura 2000 area). Tree felling is not expected to be performed as a part of the Task Implementation, however some of the works will be carried out in the vicinity of habitats of riparian forests (91E0, 91F0). Periodic impact also applies to two species of animals (Eurasian otter and Eurasian beaver). The impact of the investment will mainly relate to the implementation phase, which means periodic scaring off and disturbance of animals, which however has a marginal impact on the population of both species within the Natura 2000 area. This impact is not significant for the entire area of Natura 2000. The impact on fish species will be periodic and dredging will be conducted beyond the period of maximum susceptibility of ichthyofauna to the increase of turbidity of water. Within the borders of Natura 2000 area, the scope of works is small and does not affect the integrity of the Site and the coherence of the Natura 2000 network.

[1] GIOŚ – Chief Inspectorate for Environmental Protection

Table 7 Scope of works related to reconstruction of the groynes' body under Task 1B.1/1 (a) located within the borders of Natura 2000 Nowosolska Dolina Odry PLH080014 area.

The extent of reconstruction of a groyne structure (%)	Number of groynes	Percentage of the total number of groynes
5-20%	8	44%
20-40%	1	6%
40-60%	1	6%
60-80%	3	16%
80-100%	5	28%

- **Kargowskie Zakola Odra PLH080012**

The impact of limited scale and intensity concern the following types natural habitats: 3270 Rivers with muddy banks with *Chenopodion rubric* p.p. and *Bidention* p. p. vegetation, 6430 Hydrophilous tall herb fringe communities of plains and the montane to alpine levels, 91E0* Alluvial forests with *Alnus glutionosa* and *Fraxinus exelcior* (*Alno-Padion, Alnion incanae, Salicion albae)*, 91F0 Riparian mixed forests of *Querqus robur*, *Ulmus laevis* and *Ulmus minor, Fraxinus excelsior* or *Fraxinus angustifolia*, along the great rivers (*Ulmenion minoris*). The adopted technology of work (no interference with inter-groyne areas) ensures the preservation of the most important, in terms of surface and best preserved habitats on silt-covered lands in unchanged status. The impact on animal species is similar to that in the area of Nowosolska Dolina Odry PLH080014.

Table 8 Scope of works related to reconstruction of the groynes' body under Task 1B.1/1 (a) located within the borders of Natura 2000 Kargowskie Zakola Odry PLH080012 area.

The extent of reconstruction of a groyne structure (%)	Number of groynes	Percentage of the total number of groynes
5-20%	0	0
20-40%	1	3%
40-60%	2	6%
60-80%	4	12%
80-100%	26	79%

Within the Area, sections covered by Works numbered 8 and 9, with the total length of 1.4 km, will be under implementation. A total of 33 groynes are planned to be reconstructed and dredging works on a 670 m long section are intended. In relation to the length of the river section covered by the Natura 2000 area, the Kargowskie Zakola Odry PLH080012 the works constitute 3.38% of the length of the river within the Natura 2000 area.

According to the conditions defined in the environmental decision, construction and hydrotechnical works, including dredging from the river bottom, will be carried out beyond the breeding season of birds and beyond the spawning period of the fish. The exclusion of birds'

breeding season from the Task Implementation period minimizes at the same time negative impacts on other animal species, in particular invertebrates as well as amphibians and reptiles.

Impacts on animal species recognized as protected objects in the Natura 2000 area are limited to periodic impacts on fish species. This influence is related to the periodic increase in the concentration of silt in the Odra waters. However, works will be carried out beyond the summer period, which is when aquatic organisms are most exposed to changes in physico-chemical parameters of water. In order to provide indirect protection of the amur bitterling, an overview of the material excavated from the bottom of the river is granted – an examination for the presence of bivalves (including the Unionidae family) within which the larvae of the amur bitterling develop. The bivalve molluscs collected from the excavated material will be released in a safe place of the riverbed.

The works planned under the Task will be associated with a small, physical, punctual interference in the patches of natural habitat. Due to the occurrence of habitat 3270 - rivers with muddy banks - it is expected that the scale, and thus the significance of the impact will be unnoticeable in the scale of habitat resources of the entire Natura 2000 area. It should also be emphasized that the change of erosion and accumulation processes caused by the reconstruction of groynes will lead to the emergence of new habitats suitable for colonization by small therophytes in the periods of low water. The presence of moderate negative impacts on habitat 6430 - Hydrophilous tall herb fringe communities of plains and the montane to alpine levels - is predicted due to the destruction of some habitat patches and periodically increased susceptibility to ingression of invasive species after the period of the Task implementation, and prior to the species composition stabilization.

- **Krośnieńska Dolina Odry PLH080028**

The impact of limited scale and intensity concern three types of natural habitats: 3270 Rivers with muddy banks with *Chenopodion rubric* p.p. and *Bidention* p. p. vegetation, 6430 Hydrophilous tall herb fringe communities of plains and the montane to alpine levels and 91E0* Alluvial forests with *Alnus glutionosa* and *Fraxinus exelcior* (*Alno-Padion, Alnion incanae, Salicion albae*).

Table 9 Scope of works related to reconstruction of the groyne body under Task 1B.1/1 (a) located within the borders of Natura 2000 Krośnieńska Dolina Odry PLH080028 area.

The extent of reconstruction of a groyne structure (%)	Number of groynes	Percentage of the total number of groynes
5-20%	120	**41%**
20-40%	48	**17%**
40-60%	38	**13%**
60-80%	32	**11%**
80-100%	52	**18%**

Within the borders of Krośnieńska Dolina Odry PLH080072 area, sections covered by works number 1,2,3,4,5,6 and 7 are located, that have the total length of 19.8 km, which constitutes

20.91% of the Odra river within the Natura 2000 area. Within the Natura 2000 area, 290 groynes will be rebuilt, while the riffle material will be removed from the river bottom at the total length of 1143 m.

Nevertheless, it should be kept in mind, that a significant part of the groynes requires only partial reconstruction and shall include works only within the groyne's head and / or a fragment of the groyne's body (see Table 9). In this case, the works shall be performed without the necessity of land access and will not interfere with the habitats occurring on the river bank slopes.

Due to the occurrence of habitat 3270 - rivers with muddy banks - it is expected that the significance of the impact will be small, directly in the riverbed, damaged groynes and their bodies. Due to the local change of erosion and accumulation processes and alteration of sedimentary conditions, moderate indirect impacts are to be expected, which may correspond to the transformation and / or disappearance of the habitat patches.

It should also be emphasized that the change of erosion and accumulation processes caused by the reconstruction of groynes will lead to the emergence of new habitats suitable for colonization by small therophytes in periods of a low water. The presence of moderate negative impacts on habitat 6430 - Hydrophilous tall herb fringe communities of plains and the montane to alpine levels - is predicted due to the periodically increased susceptibility to ingression of invasive species after the period of the Task implementation, and prior to the species composition stabilization.

The adopted technology of rebuilding groynes and the materials used ensure that vegetation around groynes is reinstated relatively quickly, and sand accumulation processes take place on both sides of the groyne's body. Therefore, one should expect a restoration of a silt-covered habitats in the vicinity of groynes. Habitats located in the inter-groyne areas will remain intact.

Due to the lack of interference in the habitats of damp and floodplain meadows, the habitats of butterfly species (the dusky large blue *Maculinea nausithous*, the scarce large blue *Macrobinea telejus*) will remain intact. There are habitats of dragonfly Green Gomphid *Ophiogomphus cecilia* situated in the vicinity of reconstructed groynes, within the inter-groyne areas and shallows located in the area.

The implementation of works will not result in significant interference in natural habitats and habitats of species located within the bank slopes and the inter-embankment of the river. The majority of works will be executed with the use of floating equipment or with the local occupation of slopes of the riverbank in the immediate place of work. Equipment for the execution of the task will be delivered to the places of works by water. Taking into account the dates of works (autumn-winter period) impacts on fauna will be small, even considering the relatively long section of the river covered by the works. Moreover, the works execution is limited to the autumn-winter period, therefore the impacts associated with scaring the animals off will be spread over time and will not involve the entire section of the river covered by the works. Considering the protected objects of the Natura 2000 area, the impacts related to the disturbance of animals concerns mainly otters. Beaver, also considered to be a protected object of the Area, significantly reduces its activity during the autumn-winter period, also performed field

work in the places where the works were carried out did not indicate a direct collision with animal hideouts, which are used in the autumn-winter period by the animals as almost permanent shelters.

In the case of an otter, disturbance of animals may cover the whole period of works, however the significance of this pressure for the population of protected species within the Natura 2000 area is small. It is a result of the following factors: The works will be locally conducted, therefore the impact will only affect selected fragments of the riverbed with a total length of several kilometres, which are probably only parts of the turf for particular individuals utilizing the Odra riverbed. Works will be performed solely from 6:00am to 10:00pm, which will not collide with most active periods of the species that fall into the night hours. The tasks rely essentially on the locally executed works. This means that the otters that inhabit a section of the river affected by the works will still be able to use the inter-groyne areas, or water habitats adjacent to the riverbed (oxbow lakes, ponds, etc.) in the same way as before.

Summary of impact assessment on Natura 2000 areas

All works, due to their segmental character, do not pose the risk of significant impact on Natura 2000 sites. For all of the above Natura 2000 sites, the work involving the restoration of groynes will not adversely affect the level of groundwater within the natural habitats located in the inter-embankment of the Odra River. The existence and reconstruction of groynes result in the concentration of river mainstream in the central part of the river bed, and they do not have a significant influence on the water level in the whole river. Therefore, during and after the completion of the Task, there will be no impact on neighbouring habitats related to water regime and humidity (rivers, floodplain meadows) or wetlands that depend on the level of water in the river.

Within the scope related to the impact on the integrity of Natura 2000 areas, the implementation of the Task executed in the manner described in this EMP (including taking into account measures of environmental protection described in Appendix 1 of the EMP):

- does not pose a threat of significant nor high negative impact in relation to any type of natural habitats and any species of protected animals within the borders of Natura 2000 sites;
- does not affect the preservation of ecological structures and processes necessary for the durability and proper functioning of natural habitats and species populations recognized as protected objects of Natura 2000 sites.

Within the scope related to the impact on the coherence of Natura 2000 areas, the implementation of the Task executed in the manner described in this EMP:

- does not pose a threat to decline of the comprehensiveness of natural habitat resources and species within the Natura 2000 network in the country and / or biogeographical region;
- does not cause any alterations that could result in a deterioration of functional connectivity between Natura 2000 sites.

Likewise, the conclusions were enunciated at the stage of environmental impact assessment proceedings and included in the decision on the environmental conditions issued by Mayor of Czerwieńsk on November 28, 2011:

A detailed analysis of the investment in terms of the possible occurrence of adverse effects of its implementation, in view of the assumptions for protection of analyzed Natura 2000 sites, proved the absence of probability for occurrence of any distrubance among population species, which might have caused e.g.: reduction in number or density of populations in longer perspective; reduction of the reach of occurrence for species; deterioration of functioning of their populations (e.g. due to the increased death rate, limitation of reproduction possibilities); reduction of the area and quality of habitats for species or deterioration of chance to achieve the proper protection status by them in the future.

(...). Considering the scope, the location, and the nature of planned investment and environmental conditions for its implementation imposed under this decision, probability of deteriorating the status of natural habitats through: physical degradation, reduction of the area, modification of characteristic features of habitats, disturbance of ecological processes within the area was unequivocally excluded, and therefore the possibility of significant impact on protection objectives for analysed Natura 2000 sites was excluded.

Furthermore, it was identified that the planned construction works associated with the reconstruction of regulation facilities, i.e. groynes, significantly limited in terms of space and organization, shall generate impact of local range, short-term, and fully reversible, (...).

5.7.4. OTHER PROTECTED AREAS

With regard to other protected areas, such as Krzesin Landscape Park and the Areas of Protected Landscape located in the Odra River Valley there will be no impact on the protection objectives of these areas and the natural and cultural values. Works under the Task will be carried out separately at each site, within the areas of groynes selected for reconstruction. The implementation will take place beyond the most active period of the species of animals and in the off-season for vegetation. The impact will be mainly short-term and it will disappear with the works moving away. The adopted technology and the schedule of work make it possible to significantly reduce potential negative impact on the nature and landscape of the river valley. In order to prevent and limit the impact of the works on the protected species and thus on the protected areas during the Task implementation period, the mitigation measures described in the Appendix 1 to the EMP should be implemented.

The implementation of the planned Task - both at the construction stage and at the operational stage - does not cause a significant negative impact on other areas and protected items (lack of significant negative impact occurrence in relation to the objectives and principles of protection, established in the regulations applicable to them, of the abovementioned areas).

5.8. ACOUSTIC CLIMATE

The expected scope of works will be related to periodic noise emission during the construction phase. The motor vehicles -excavators and dredgers will be the main source of noise. The acoustic impact at the Task implementation stage will be short-term and temporary. After the

completion of work (the operational stage) the previous status will return and new infrastructure will not be the source of additional noise emission. In order to ensure the protection of residential buildings located near the construction site and in order to reduce the negative impact on bird species using the investment area and its surrounding during the night-time activities, the works should be carried out between 6:00 am to 10:00 pm. The construction equipment itself must meet the standards of mechanical equipment noise emission and must be fully operational throughout the period of the works.

It was decided that in order to reduce the impact on acoustic climate during the Task implementation period the mitigation measures described in Appendix 1 to the EMP should be implemented.

5.9. CULTURAL MONUMENTS

The works performed under the Task will be located off the areas of occurrence of cultural property and monuments subject to legal protection by entering the register of monuments and/or municipal register of monuments. At the stage of implementation and operation, no negative impact on the protected sites is anticipated through the registry of monuments and/or municipal monuments.

Pursuant to the Act of 23 July 2003 on the Protection of Historical Monuments and the Preservation of Monuments (Journal of Laws of 2014, item 1446, as amended) anyone who found an item, while carrying out construction work or earthwork, for which there is a presumption that it may be a historical monument, is required to stop any work that may damage or destroy the discovered item, secure the item and place of discovery using the means available, immediately notify the Lubuski Heritage Conservator and if this is not possible, the territorially competent commune administrator (mayor, city president). The Contractor shall also notify the Engineer in this regard.

The implementation of the Task will positively affect the protection of cultural and historical monuments due to the improvement of flood protection and the reduction of risk of flooding due to ice backup floods.

In order to reduce the impact on cultural landscape during the Task implementation period the mitigation measures described in Appendix 1 to the EMP should be implemented.

5.10. MATERIAL GOODS

As regards the protection of material goods, the implementation of the Task will improve the flood protection of the areas within the municipalities covered by the Task. The Task will be implemented on plots of land owned by the state treasury (riverbed and bank slopes of the Odra River) and territorial self-government units (port zones in Nowa Sól, Cigacice, Krosno Odrzańskie). In the vicinity of the construction backyards located in ports, where the construction material will be transported by land, there is a potential risk of a deterioration or of a damage to tangible goods (e.g. nearby buildings, existing roads). In sites where work connected to groyne reconstruction shall be carried out no negative impact on material goods was found.

In order to prevent and limit the impact of the works on the material goods during the Task implementation period, the mitigation measures described in the Appendix 1 to the EMP should be implemented.

5.11. HUMAN HEALTH AND SAFETY

The impact on human health and safety during the implementation of Task may be related, among other things, to the following factors:

- increased noise emission,
- pollution by petroleum substances,
- the entry of unauthorized persons into the area of construction work,
- increased water levels in the Odra River region and ice dams posing a threat to the area of works and adjacent areas,
- transport of materials and excess earth masses by water,
- usage of floating equipment and areas near groyne slopes in reconstruction of groynes,
- usage of floating equipment in the period of autumn and winter and in difficult weather conditions while reconstructing groynes and removal of riffle materials,
- usage of existing ports for reloading of materials and excess earth masses.

The specific choice of equipment units for the needs of performing the Works covered by this Task shall be left to the Contractor's discretion, after prior agreement with the Engineer. Equipment, machinery or tools that do not guarantee the maintenance of the quality requirements of the Works, OHS regulations and SHP plan and may cause damage to the existing infrastructure, as well as structural and land development components - shall not be permitted by the Engineer.

5.12. EXTRAORDINARY ENVIRONMENTAL RISKS

The occurrence of high water levels and ice dam floods in the period of work related to the reconstruction of river regulatory infrastructure (autumn-winter) may be considered as corresponding to an industrial accident with regard to the implementation of the Task. In case of occurrence of high water levels or ice dam floods, Contractor's floating equipment can be found in the river area (e.g. barges, excavators on the pontoon).

Floods of this kind are extreme, with regard to the Odra river and works with the use of "access from water" technology, the occurrence of a flood wave can be predicted with high probability and precautionary measures can be taken - evacuate people and equipment from the danger zones. Prior to the commencement of works the Contractor shall prepare an appropri-

ate plan for dealing with such situations (*Construction Site Flood Protection Plan*) and obtain the Engineer's approval for the plan.

Another type of emergency is the leakage of petroleum substances into water or soil. In this regard, precautionary measures relating to the proper organization of construction sites and construction site support facilities and inspecting on regular basis the construction equipment used. The contractor should have proper knowledge and should be equipped in proper means to prevent further contamination and eliminate existing damage.

As a result of the large portion of works being executed in the "access from water" technology and as a result of materials being transported onto the construction sites via the waterway there is a potential threat concerning flooding of floating equipment and of construction equipment performing work within the river bank slopes. The use of floating equipment, carrying out work with its aid, as well as moving employees in the immediate vicinity of the river bed (including inter alia work within groynes) also poses a risk to the health and life of people performing these works. Therefore, it is important to ensure that employees have appropriate equipment to ensure health and life protection during the performance of works (including appropriate safety equipment), and to implement adequate safety procedures while undertaking work. Another type of extraordinary threat to the environment, as well as human health and safety is the possibility of encountering unexploded ordnance. In such a case, the Contractor should immediately stop the work, evacuate the staff, notify the police and a licensed ordnance disposal unit, the Engineer and PIO. The Contractor is also obliged to ensure sapper’s supervision during the earthwork (the Contractor's sapper’s supervision) which consists in conducting an ongoing inspection and clearing the area of dangerous items of military origin and their disposal.

6. DESCRIPTION OF MITIGATION MEASURES

In order to limit the negative environmental impact of the planned Task, Appendix 1 to the EMP defines a set of mitigation measures binding on the Construction Contractor. Those measures were developed on the basis of the conditions contained in the binding administrative decisions with regard to environmental protection issued for the Task, which were supplemented with additional conditions determined at the EMP preparation stage. A list of selected, distinctive mitigation measures is presented below, dividing them into particular components of the environment discussed in chapter 5 of the EMP. A complete list of mitigation measures is compiled in Appendix 1 of the EMP.

6.1. EARTH SURFACE AND LANDSCAPE

In order to limit the negative impact of the Task on land surface and landscape mitigation measures have been prepared. Their implementation is planned in the course of construction works and before they are started. A complete list of mitigation measures with regard to protection of earth surface and landscape is presented in Appendix 1 to the EMP. The stage of construction works should be preceded by the preparation of the area of works, including preparation of storage places for construction materials, construction support facilities, etc. It is necessary to minimize the land acquisition and transformation of the earth during the works. Construction support facilities, equipment depots and temporary technological roads should be located outside the existing greenery (determined according to the geodetic classification), on hardened and insulated ground, in a manner ensuring economical use of the site and minimal transformation of its surface. The construction support facilities will be located within the existing port areas of Cigacice, Nowa Sól and Krosno Odrzańskie.

Materials will be transported to the work areas by water. The construction site should be maintained in order and proper organization of work should be ensured.

Roads, technologic sites and construction support facilities should be located in such a way so as to preserve the woods and entire shrub vegetation growing beyond the places necessary to occupy in connection with the work. Access to the construction support facilities should be conducted by public roads.

Mitigation measures with regard to the protection of earth surface and landscape are especially included in the following items listed in Appendix 1 to the EMP, items:

- 1, 2, 3, 4 (category 01 - Acquisition of land for development),
- 20, 21, 23, 24, 25 (category 04 - Requirements concerning communication service in the task implementation area),
- 26, 27 (category 05 - Organization of construction area, construction backyards, warehouses and storage sites),
- 44 (category 08 - Requirements concerning prevention of environmental pollution),
- 62, 63 (category 11 - Requirements concerning land reclamation of temporary occupation sites).

6.2. CLIMATE

With regard to the Task in question, no mitigating measures were considered necessary to take to protect local climate conditions. The Task both prevents and minimises the effects of extreme weather conditions.

6.3. AIR QUALITY

A complete list of mitigation measures with regard to the protection of sanitary condition of the air is presented in Appendix 1 to the EMP. The following mitigating measures implemented by construction contractor are recommended to reduce/eliminate the negative impact of the Task on air quality:

- The equipment used in the construction phase must be fully operational and comply with all up-to-date legal requirements to protect against the emission of dust and gases into the air;
- Bulk materials and aggregates to be used in the construction phase should be secured against being blown off and causing dust during transport, storage and construction;
- The necessary technical and organizational measures should be applied to maintain clean status of access roads and limit dust emissions during transport of construction materials, construction work and from the construction sites;
- The operating time of combustion engines of machines and construction vehicles should be reduced during standstill (reduce emissions during the so-called idle run).
- It is necessary to reduce dust by heavy vehicles through maintaining the clean status of access roads and wheels before entering public roads, through using airtight tarpaulin on vehicles carrying materials that produce dust, or transporting bulk materials in containers, other actions preventing contamination of local roads by the sand and mud carried by vehicles and spraying inner surfaces of technological roads.

In order to protect the sanitary condition of the air, including risk minimization of additional unidentified forms of impact, it is necessary to implement proper mitigation measures. Mitigation measures with regard to the protection of air quality are especially included in the following items listed in Appendix 1 to the EMP, items: 47, 50, 54, and 55 (category 08 - Requirements concerning prevention of environmental pollution).

6.4. SOILS AND LAND

During the execution of works, the mitigation measures primarily related to reduction of size of the surface for temporary occupation and prevention of soil and land contamination should be implemented to mitigate the negative impact on the soil. A complete list of mitigation measures with regard to the protection of soils and land is presented in Appendix 1 to the EMP.

The equipment, machinery and vehicles used for the construction work must have a designated fixed parking site(s). The sites designated for the maintenance of vehicles and construction machinery, for the duration of the works, should be paved and equipped with appropriate sorbents to prevent the undesirable substances getting into the soil. When the equipment, machinery and vehicles are not in use they must be parked in those designated areas. Lubricants and fuel must be stored in designated places with leak proof surface and equipped with sorbents for neutralizing leaks of petroleum substances.

In the refuelling and parking sites for vehicles and machinery it is necessary to set up a station with sorbent to eliminate possible leaks and spills of petroleum products.

Refuelling should be carried out using mobile or fixed fuel distribution stations with adequate protection, such as a sorbent station for the elimination of leaks and oil spills to the ground.

Equipment used during construction must be in good working condition and must meet requirements putting it into service. Type and technical condition of equipment used during construction must allow the proper protection of the soil. The on-site inspection of equipment, vehicles and machinery should be carried out on regular basis in order to eliminate any the leak of petroleum hydrocarbon into the soil.

In case of potential leakage of petroleum substances, it should be immediately neutralised and contaminated layer of ground should be removed (handed over to entities holding adequate permissions) and managed according to existing standards and procedures. The place where the leakage occurred should be restored to the previous conditions.

Mitigation measures with regard to the protection of soil and land are especially included in the following items listed in Appendix 1 to the EMP, items: 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 56, 57 (category 08 -Requirements concerning prevention of environmental pollution).

6.5. SURFACE WATER

Measures for the protection of surface water are consistent with measures to protect against the pollution of soil and land and concern most of all implementation of actions and procedures minimizing the risk of water contamination and its removal when contamination occurs. A complete list of mitigation measures with regard to the protection of surface waters is presented in Appendix 1 to the EMP.

In the event of a leakage of petroleum substances into the surface water the Contractor is obliged to immediately ensure that the petroleum substance is collected mechanically from the surface of the water and appropriate sorbents applied. A spillage of the substance from a sinking of a vessel or construction equipment slipping down within the reconstructed groynes – is a potential hazard.

The support facilities must be organised and equipped in such a way to eliminate the risk of surface water contamination. In order to reduce the risk of water surface contamination, the Contractor is obliged to ensure the proper use of equipment which will be in good working order. Mitigation measures with regard to the protection of surface water are especially included in the following items listed in Appendix 1 to the EMP, items: 45, 46, 47, 48, 49, 50,

51, 52, 53, 56, 57 (category 08 - Requirements concerning prevention of environmental pollution).

6.6. GROUNDWATER

The task does not generate negative impact on the status of groundwater. A complete list of mitigation measures with regard to the protection of groundwater against contamination is compiled in Appendix 1 to the EMP. Mitigation measures regarding protection of ground water are identical as the ones for protection of soils and surface water (see reference to chapter 6.4, 6.5).

6.7. ACOUSTIC CLIMATE

The works planned under the Task will not cause significant negative impact on acoustically protected areas. A complete list of mitigation measures with regard to acoustic protection is compiled in Appendix 1 to the EMP. The impact will be periodic and limited to the immediate surroundings of work sites. It is anticipated to implement the mitigation measures to reduce the intensity of impact at the work implementation stage:

a) the construction work will be carried out only during the day, i.e. between 6:00am to 10:00pm;

b) during interruptions in the execution of work the machines and equipment will be switched off to limit the so-called idle run;

c) the construction equipment should be technically efficient with low noise emission;

d) the Contractor will carry out the works using low noise technologies with a maximum reduction in duration;

e) the Contractor will ensure a good organization of work that includes limiting the introduction of heavy equipment to the minimum necessary, proper use of the equipment and maintenance.

Mitigation measures with regard to the protection of acoustic climate are especially included in the following items listed in Appendix 1 to the EMP, items:

- 23 (category 04 - Requirements concerning communication service in the task implementation area),
- 47, 50 (category 08 - Requirements concerning prevention of environmental pollution),
- 60, 61 (category 10 - Requirements concerning noise protection of adjacent areas to construction sites).

6.8. BIOTIC NATURE

6.8.1. NATURAL HABITATS, FLORA AND FAUNA

A number of mitigating measures have been proposed for implementation at the work execution stage to prevent and limit the possible negative impact on nature. A complete list of mitigation measures with regard to protection of natural habitats, and to protection of flora and fauna is compiled in Appendix 1 to the EMP.

The Contractor should provide such a schedule for the execution of work to ensure that the time fame and location of the particular work stages are adapted to the requirements of the environmental decisions and the EMP and that they have no impact on the protected species in the Task area and its surroundings.

Access roads should be located outside the valuable natural areas indicated by the environmental team of the Contractor. The Contractor shall provide his own team of nature protection specialists which will be involved into implementation of EMP conditions for the execution of works. The Contractor's environmental team will include specialists in ornithology, herpetology, chiropterology, entomology, botany/phytosociology, ichtiology and water protection expert. A specialist from environmental team must have documented experience in adequate field and have education in the field of environmental protection or related. One expert in the Contractor's team can combine up to two of the above functions. Materials used to carry out works may be stored in the immediate vicinity of reconstructed groynes, however only in places that do not cause a conflict with the patches of natural habitat and the habitats of protected plant and animal species. Such places of temporary storage will be established with the agreement of Contractor’s environmental team. Prior to the commencement of works a one-time inventory of temporary and permanent areas of activities should be carried out to determine the current locations of protected sites, plant species, animal species and fungi as well as identification of potential sites for these species and identification of naturally valuable areas. During the construction work the vegetation located outside the area covered by the Task may not be destroyed.

The environmental supervision carried out by the Contractor’s environmental team should include inspection of the area covered by the construction and hydrotechnical works before their commencement and inspections during construction. In the vicinity of the construction sites, the monitoring of concentration of suspended solids will be carried out in order to prevent their high concentrations that may pose a threat for fish and molluscs in these sections of the river.

The deadline for cutting trees and bushes was defined in the scope necessary for Task implementation, which is possible from October 16 to the end of February. The trees and bushes that are not planned for cutting and grow within the area of Task implementation and are at the risk of damage due to the movement of vehicles and equipment, etc. should be protected against damage, e.g. by placing around the tree trunks protective plank covers with a height of not less than 1.5 m.

The materials, including in particular fascine for works implementation should be obtained from areas not protected under the Natura 2000 Program.

Any felling trees and/or bushes should be limited to the minimum necessary, while other trees not intended for felling in the area of the planned construction - hydrotechnical works, should be secured against mechanical damage.

In order to reduce the loss of clams [*bivalve mollusc*] (which are the breeding habitat of the protected species of amur bitterling) the excavated material from the Odra River should be every time examined and the specimens of clam on top of the spoil should be collected. The collected individuals should be transported and released into the river in places where they are safe. The examining should be carried out immediately after extraction and before the end of work on a given day. When the air temperature is more than 20°C the dredged material shall be examined at least every 4 hours.

The works should be conducted in such a way so as not to kill animals. In order to minimize any negative impact on populations of animal species on trees the methods of dealing with and performing state of nature monitoring to minimize negative impact on the populations of protected species (e.g., inspecting trees for felling by appropriate experts). In the event of a necessity to transfer protected species, the Contractor is obliged to first plan these activities, obtain appropriate permits, perform these activities effectively and perform other required activities (e.g. preparation and submission of reports to the authorities that issue the permit).

During the construction works connected with the reconstruction of groynes, outside the zone of direct interference, the diversity of habitats and habitats of the species within the riverbed in a form of boulders/stones from eroded groynes, logs and sandy patches shall be preserved.

Prior to the commencement of construction works the Contractor performs an on-site inspection of the work execution places with the participation of phytosociologist/botanist in order to locate the sites and populations of invasive plants (excluding small balsam). After locating and clearly marking the places where the invasive plants grow, the Contractor undertakes preventive actions during the implementation of the Contract that will limit the spread of these plants, including: the photographs of humus patches along with invasive plants and removing them from the work site to the composting facility or dispose of it in another effective way. It is unacceptable to mix this humus with humus covered with native vegetation.

In the case of damage to the tree the Contractor shall immediately carry out the necessary care measures, under the supervision of his environmental supervision, to limit the effects of damage.

The Contractor organizes training on the principles and conditions of the EMP for Contractor's managerial and engineering and technical staff, for which the Contractor and his team of nature experts are responsible. The training ends with verification test on the knowledge of participants in the subject.

Contractor's environmental team prepares the necessary materials and applications and obtains the permission to derogate from the bans regarding the protection of species of plants, fungi or animals, along the rules and in accordance with the procedure specified in the Nature Conservation Act. The decisions are issued according to Nature Conservation Act.

The environmental supervision carried out by specialists should include, *inter alia*, obtaining necessary permits for derogation from the bans regarding the protection of species of plants, fungi or animals along the rules and in accordance with the procedure set out in Nature Conservation Act.

Mitigation measures with regard to the protection of natural habitats, flora and fauna are especially included in the following items listed in Appendix 1 to the EMP, items:

- 5-16 (category 02 – Requirements concerning protection of the biotic natural resource),
- 18 (category 03 – Requirements concerning earth mass excavated during construction works),
- 35-43 (category 07 – Requirements concerning waste management),
- 79, 81 (category 14 – Requirements concerning staff employed by the contractor in the task implementation).

6.8.2. PROTECTED AREAS

During the execution of the works, the Contractor is also obliged to observe standards, prohibitions and indications as well as respect the limitations resulting from the existence of areas and sites established on the basis of the Nature Conservation Act. In order to eliminate the risk of disturbing the protected bird species for which Natura 2000 Dolina Środkowej Odry PLB080004 site has been designated, the construction and hydrotechnical works will be carried out beyond the period from 1 March to 31 August. Works related to the removal of the riffle materials should be carried out beyond the spawning period of fish (from 1 March to 31 August).

Mitigation measures agreed for the habitats and protected species also apply for the protection of natural values of protected areas. A complete list of mitigation measures regarding its extent is compiled in Appendix 1 to the EMP.

Mitigation measures with regard to the protection of natural habitats, flora and fauna are especially included in the following items listed in Appendix 1 to the EMP, items:

- 5-16 (category 02 – Requirements concerning protection of the biotic natural resource),
- 18 (category 03 – Requirements concerning earth mass excavated during construction works),
- 35-43 (category 06 – Requirements concerning waste management),
- 79, 81 (category 14 – requirements concerning staff employed by the contractor in the task implementation).

6.9. CULTURAL LANDSCAPE AND MONUMENTS

The knowledge and materials regarding the planned Task indicate that it does not cause direct negative impact on cultural monuments and landscape. However, the Contractor is required to implement preventive actions in the event of negative impact which may occur at the stage of execution of works (and are currently impossible to determine). A complete list of mitigation measures with regard to the protection of cultural landscape and monuments is compiled in Appendix 1 to the EMP.

Pursuant to the Act of 23 July 2003 on the Protection of Monuments and the Preservation of Monuments (Journal of Laws of 2014, item 1446, as amended)) anyone who found an item, while carrying out construction work or earthwork, for which there is a presumption that it may be a historical monument, is required to stop any work that may damage or destroy the discovered item, secure the item and place of discovery using the means available, immediately notify the Voivodeship Heritage Conservator and if this is not possible, the territorially competent commune administrator (mayor, city president). The Contractor shall also notify the Engineer in this regard. In order to implement the above provisions of the EMP related to the protection of cultural heritage and monuments, the Contractor shall also obtain, if necessary, the permission of the Voivodeship Heritage Conservator to carry out archaeological rescue.

Through the whole period of Task implementation, The Contractor will ensure the participation of archaeological experts (archaeological supervision). Mitigation measures with regard to protection of cultural landscape and monuments are especially included in the following items listed in Appendix 1 to the EMP, items: 64, 65, 66 (category 12 – Requirements concerning protection of cultural monuments).

6.10. MATERIAL GOODS

As part of the Task the reconstruction of the existing hydrotechnical facilities is planned. Residential, agricultural and commercial buildings will not be demolished. A complete list of mitigation measures with regard to the protection of material goods is compiled in Appendix 1 to the EMP.

The Contractor shall be responsible for any damage to buildings and structures, roads, drainage ditches, culverts, water and gas pipelines, power lines and poles, cables, geodetic survey network and installations of any kind, and other facilities such as vertical and horizontal markings, information boards, cultural heritage sites, etc., caused by him or his subcontractors during the execution of works. The Contractor is also responsible for the restoration of the ditches and drainage systems in the area of works and the roads used, in the event of damage caused by the execution of works and transport in support of the works. The Contractor shall immediately repair any resulting damage at his expense and, if necessary, carry out any other work as instructed by the Engineer.

The conditions for the use of roads for the implementation of the Task were also determined. Prior to commencement of work the Contractor shall submit to the Engineer for approval draft

schedules for traffic organization and work support coordinated with the Road Administration and the Traffic Management Authority as well as the Schedule. Depending on the needs and progress of work the traffic organization plans should be updated on an ongoing basis by the Contractor.

The Contractor is obliged to coordinate with the Road Administration draft schedules for traffic organization and work support. The Contractor is required to execute the traffic organization in accordance with the agreed plans (marking and securing the area of works and the marking of detours and recommended road marking related to the change of traffic organization, etc.).

The Contractor shall draw up draft plans for traffic organization for the duration of the works, in accordance with the provisions of the Technical Specifications and the requirements of the Road Administration concerning the roads and the terms and conditions of their use.

During the execution of work the Contractor shall make every effort to minimize the inconvenience for the road traffic in the area of works (e.g. by securing access to properties, transportation to public places).

The terms and conditions for securing the existing road infrastructure have also been defined. During the execution of work the Contractor will comply with the statutory load limits for the axle when transporting materials and equipment to and from the area of works. The Contractor will also obtain all necessary permits from the authorities for the transport of untypical cargo and will keep the Engineer informed of any such transport on an ongoing basis. Mitigation measures with regard to the protection of material goods are especially included in the following item listed in Appendix 1 to the EMP, item: 21 (category 04 - Requirements concerning communication service in the task implementation area).

6.11. HUMAN HEALTH AND SAFETY

The activities related to the protection of human health and safety related to the proper organization of works, technical means, fire protection, construction sites, the condition and use of vehicles and machinery and training on the spread of HIV-AIDS have been defined. A complete list of mitigation measures with regard to the protection of human health and safety is compiled in Appendix 1 to the EMP.

Taking account of the technology using the access from water (the use of floating equipment) and immediate proximity of water while working on the groyne slopes together with difficult weather conditions in autumn–winter season, specific precautions should be taken to provide proper conditions for human health and safety.

While drafting safety and health protection plan (SHP), the Contractor should pay special attention to perform works in a safe manner when using the floating equipment, when construction works take place in the close vicinity of flowing waters (all provisions concerning performing works should be described in great detail and workers should be provided with proper personal protective equipment and clothing).

In the case of means used for waterway transport, the following guidelines should also be applied:

- means of transport (sets of floating equipment) must meet the requirements applicable in this respect, and be in accordance with the regulations in force in the Republic of Poland covering the inland navigation,
- means of transport (sets of floating equipment) in terms of parameters must be adapted to the conditions resulting from the current Class of the waterway,
- the use of vessels in the implementation of works requires agreement with the waterway administrator and relevant local Director of the Inland Waterways Authority,
- before the commencement of implementation, a Work and Movement of Vessels During Construction Instruction Book must be prepared, which requires to be approved by the Director of RZGW in Wrocław and the Director of the Office of Inland Navigation in Wrocław,
- marking of the construction area and of the waterway informing about occurring hazards and limitations in waterway navigation traffic should be performed. The method of marking and the place of foundation should be agreed with the Director of the Office of Inland Navigation in Wrocław and a relevant Water Management Manager of the RZGW in Wrocław.

Contractor's Health and Safety Supervision will be responsible for the proper marking of the construction site in accordance with applicable law. This marking will be checked regularly, in the event of damage or theft of the sign the Contractor shall immediately restore it or replenish. The Contractor also conducts training on the principles and conditions of the EMP for the managerial, engineering and technical staff.

Mitigation measures with regard to the protection of material goods are especially included in the following item listed in Appendix 1 to the EMP, items:

- 21, 22, 24 (category 04 - Requirements concerning communication service in the Task implementation area),
- 28 (category 05 – Organization of construction area, construction backyards, warehouses and storage sites),
- 29 (category 06 – Requirements concerning waste management),
- 67-78 (category 13 - Requirements concerning protection of human health and safety).

6.12. EXTRAORDINARY ENVIRONMENTAL RISKS

Crisis situation

In emergency, appropriate services should be notified in the first place:

Service	**Phone number**
Emergency phone number from	112

mobile phone	
Police	997
Fire Department	998
Emergency Medical Services	999
City Guard	986

Flood

The occurrence of high levels of water or ice dam flood during the Task implementation may be regarded as an equivalent to the industrial accident. Prior to commencement of works, the Contractor is obliged to develop contingency plan to cope with such extraordinary environmental risk (*Construction Site Flood Protection Plan*) and obtain approval of the Engineer for its content. The document should contain operational procedures for such phenomenon (according to chapter 6.14).

Leakage of petroleum substances

Another type of emergency is the leakage of petroleum substances into water or soil. In order to reduce the risk of environmental pollution, appropriate precautionary measures shall be taken relating to the proper organization of construction sites and construction site support facilities, equipping sites of possible leaks with appropriate sorbents and ongoing inspection of the construction equipment used. In the event of any spillage of petroleum substances the spillages should be removed immediately and the contaminated soil layers should be treated in accordance with applicable regulations in this respect. Mitigation measures with regard to the protection of ground and water are especially included in the chapters 6.4-6.5.

Finding unexploded ordnance

The works will be carried out in chosen sections of the Odra River Valley, within the river bed. Due to the fact that during World War II military operations were carried out in these areas, there is a possibility of locating unexploded ordnance during the construction work, such as fuses, projectiles, aerial bombs, artillery and rifle cartridges, rocket-propelled grenade, grenades, all sorts of mines, explosives, scrap metal containing some explosives, etc.

In such a case, the Contractor should immediately stop the work, evacuate the staff, notify the police and a licensed ordnance disposal unit, the Engineer and PIO.

The Contractor is also obliged to ensure sapper’s supervision during the earthwork (the Contractor's sapper’s supervision) which consists in conducting ongoing inspections and clearing the area of dangerous items of military origin and their disposal. In no case employees performing works shall pick up, excavate, burry, carry or throw into the fire or other places such as rivers, canals, oxbow lakes, ditches, etc. any of the discovered unexploded ordnances. The Employer has not inspected the work areas for unexploded ordnance.

Mitigation measures with regard to finding unexploded ordnance are especially included in the following item listed in Appendix 1 to the EMP, items: 77, 78 (category 13 - Requirements concerning protection of human health and safety).

Fire

The Contractor is responsible for fire protection in the Task implementation area. A detailed procedure in case of fire will be included in the Safety and Health Protection Plan prepared by the Contractor (according to chapter 6.14). Requirement of preparing health protection plan (SHP) by the Contractor and obtaining the Engineer's approval for its content is listed in item 7 of Appendix 1 to the EMP. Taking into account the specific aspects of the works, a collision of vessels used during the implementation of the Task can be a potential fire hazard. A complete list of mitigation measures with regard to prevention and limitation of potential effects of extraordinary environmental risks is compiled in Appendix 1 to the EMP.

6.13. WASTE AND SEWAGE

The implementation of Task will involve generating wastes, therefore in the course of execution of works it is necessary to minimize their quantity and limit their negative impact on environment. Waste management should be carried out in accordance with the provisions of the Waste Act. The principle of minimizing the amount of generated wastes should be followed. The produced wastes should be appropriately segregated and their successive collection ensured. During their temporary storage it is necessary to provide suitable containers and/or designate and appropriately adapt for this purpose separate sites that will prevent dusting and dispersing light fractions which negatively impact the environment. Ship waste containing oil derivatives and lubricating greases, load waste produced on board and other floating equipment, sewage and waste water shall be collected within the area of floating units in such a way to protect the environment against contamination. Ship waste shall be handed over to ship waste collectors located within the ports in Nowa Sól, Cigacice and Krosno Odrzańskie.

Hazardous waste handling should be carried out as follows: until they have been handed over to the entities authorized for disposal, they must be stored in a manner that prevents the entry of dangerous substances into the environment, i.e. in sealed containers, in covered areas, with hardened and impermeable floor, secured against unauthorized access. Hazardous waste storage sites should be located beyond the reach of flood waters (detailed procedures regarding the handling of output excavated form the riverbed are outlined in Appendix 7 of the EMP).

In case of the lack of possibility to discharge the sewage and industrial waste to the existing sanitary sewage system, such sewage and waste should be collected in sealed holding tanks and removed by a specialist company with appropriate permits.

Any wastes related to repairs and maintenance of equipment, machinery and equipment used in construction works may not be stored at the construction site. Machine repairs and servicing should be carried out by specialized companies or persons authorized by the manufacturer (authorized service). Wastes (such as damaged parts, gaskets, filters, grease and liquid containers, used oils, liquids, etc.) generated during this type of work shall be collected by repairers or service providers and will not be stored on site. They should then be processed in accordance with the regulations. A complete list of mitigation measures with regard to handling and management of waste is compiled in Appendix 1 to the EMP.

Mitigation measures with regard to handling of waste and sewage are especially included in the following item listed in Appendix 1 to the EMP, items:

- 17, 19 (category 03 – Requirements concerning earth mass excavated during construction works),
- 29 – 34 (category 06 – Requirements concerning waste management).

6.14. REQUIREMENTS FOR IMPLEMENTATION OF ACTION PLANS UNDER DEVELOPMENT

On the basis of specified mitigation measures defined in the Environmental Impact Assessment report and this EMP, the Contractor is required to develop and subsequently obtain the Engineer's approval for the following documents required for the construction work:

- *A construction site organization design*, which should include, *inter allia*, the following elements:
  - Location of the construction site support facilities,
  - The construction site support facilities management,
  - The construction site support facilities protection,
  - Access roads,
  - Environmental protection in the construction site support facilities,
  - Organization of ground masses handling.
- *A waste management plan*, which should include, *inter allia*, the following elements:
  - The existing and anticipated types and quantities of waste,
  - The methods of preventing the negative environmental impact of wastes,
  - The waste management method taking into account collection, transportation, recovery and treatment,
  - The type of generated wastes and the method of storage.
- *Quality assurance plan* should include, *inter allia*, such elements as:
  - Organization of works execution,
  - Organization of traffic at the construction site and the marking of works,
  - Safety and Health Protection and the environmental protection,
  - List of working teams,
  - The responsibilities of key personnel,
  - Quality control,
  - Laboratory research.

- *A construction site flood management plan* for the duration of the works, which should include, *inter allia,* the following elements:
    - Monitoring of the hydrological-meteorological situation,
    - Conditions of passing freshet flows in the works performance period,
    - Rules of the Contractor's staff work during the flooding risk period,
    - Primary obligations of key members of the Company Flood Management Team,
    - A list of members of management during the flooding risk period,
    - A list of equipment and means of transport needed to conduct rescue operations.
    - Instruction on how to proceed during high-water.

- *Work and Movement of Vessels During Construction Instruction Book, which shall include, inter alia, elements such as:*
    - Description of the current legal requirements for the vessels planned for use during works,
    - Description of the method of marking and its place of foundation for the construction area and for the waterway, informing about occurring hazards and limitations in waterway navigation traffic.
- A *Safety and Health Protection Plan*, which should include, *inter allia,* the following elements:

    - indication of plot/site development elements which could pose a hazard to human safety and health,
    - information about the hazards anticipated during the implementation of construction works, specifying the scale, types, location and time of the hazards,
    - information about designating and marking the construction works implementation location adequately to the hazard type,
    - information about the method of instructing the employees before commencing the implementation of particularly dangerous works,
    - specification of the manner of storing and moving hazardous materials, products, substances and preparations on the construction site,
    - indication of technical and organizational means preventing the dangers stemming from the performance of construction works in zones of special hazard to health or in their vicinity, including means ensuring safe and effective communication enabling quick evacuation in case of a fire, breakdown or another hazard,

- indication of the storage location of construction documentation and documents necessary for correct operation of machines and other technical devices.

- *ESHS Management Strategy and Implementation Plans* (management strategies and implementation plans for Environmental, Social, Health and Safety hazards), *ESHS Code of Conduct*:
  - submitting for the approval of the Contract Engineer, prior to commencement of work, ESHS Code of Conduct and ESHS Management Strategy and Implementation Plans as described in the Bidding Documentation, part ItB 11.1 (h) developed at the stage of submitting a bid and periodic revision of the said documents as the result of the recommendations of the Contract Engineer.

While developing SHP Plan, the Contractor is obliged to place particular emphasis on health and safety issues connected with construction works with the use of floating equipment in the close vicinity of flowing waters. Construction works will be carried out also in weather conditions typical for autumn and winter seasons. While developing SHP Plan, the aspects of construction sites embracing riverbed and the slopes of the river banks as well as timeframe should be taken into account when establishing safety procedures concerning construction works and providing personal protective equipment for the workers.

When developing the abovementioned documents, the Contractor shall take into account relevant Operational Policies and Bank Procedures of the World Bank concerning health protection, environmental protection and safety rules. The Engineer reviews and approves the above mentioned documents. Requirement of preparing above mentioned plans by the Contractor and obtaining the Engineer's approval for their content is listed in Appendix 1 to the EMP, items: 70 and 71.

7. DESCRIPTION OF MONITORING MEASURES

7.1. ENVIRONMENTAL MONITORING DURING THE WORKS

In Appendix 2 of the EMP, there is a juxtaposition of monitoring measures to be taken by the Contractor of the Task. These monitoring measures have been developed basing on the conditions included in administrative decisions for the Task as well as additional conditions agreed while preparing this EMP.

Monitoring measures included in the Appendix 2 of the EMP concerns monitoring of implementing mitigation measures included in Appendix 1 of the EMP (1-85 in App. 2 of the EMP) as well as constant monitoring of construction works (according to the conditions in the environmental decision), monitoring of concentration of suspended solids in the Odra river, impermeability control of the tanks for petroleum and oils and monitoring of quality of earth masses excavated from the riverbed (86-89 in App. 2 of the EMP).

7.2. MONITORING AT THE OPERATIONAL STAGE

There is no need to conduct environmental monitoring for the Task at the operational stage. The implementation of mitigation measures will ensure a reduction in the scale and intensity of possible negative impact only for the duration of the work.

8. PUBLIC CONSULTATIONS

8.1. PUBLIC CONSULTATIONS OF THE FRAMEWORK FOR ENVIRONMENTAL MANAGEMENT AND SOCIAL AFFAIRS FOR OVFMP (2015)

The draft of the document entitled *Environmental and Social Management Framework* (*ESMF*) for the OVFM Project (including Component 2, which covers the present Task) was subject to the procedure of public consultations conducted in accordance with *OP 4.01* Operational Policy of the World Bank. Their aim was to enable the public to familiarize itself with the content of that document and ensure the possibility of submitting remarks, questions and motions concerning the content.

The documentation of the public consultation process for the abovementioned document is available on the website of the Odra-Vistula Flood Management Project Coordination Unit [1].

8.2. PUBLIC CONSULTATIONS AT THE STAGE OF ENVIRONMENTAL PROCEDURES FOR THE TASK (2010/2011)

The consultations with the public's participation were conducted by a relevant local body issuing the decision, i.e. the Mayor of Czerwiensk.

An announcement dated 23 December 2010, Ref. No.: GGRiOŚ 7627-11/23/10 the Mayor of Czerwieńsk provided the required information about the planned undertaking. The announcement as put on the notice board at the Commune and City Office in Czerwiensk and on the website of local authorities. It was also posted on the notice boards in the following: City Office in Cybinka, City and Community Office in Wołów, City and Community Office in Prochowice, Community Office in Zielona Góra, City Office in Sulechów, Community Office in Rudna, Community Office in Głogów, Community Office in Kotla, City Office in Krosno Odrzanskie, Community Office in Zabor, City Office in Głogow, Community Office in Jemielno, Community Office in Malczyce, City Office in Sroda Slaska, Community Office in Gubin, Community Office in Trzebiechow, Community Office in Bojadla, Community Office in Nowa Sol.

Within the time frame prescribed by the law (as well as after its expiry until the issuance of the decision) no comments or requests related to the project in question were received by the lead body.

On July 18, 2011, the Mayor Czerwiensk issued a decision on the environmental conditions regarding Reconstruction of river control infrastructure – adaptation to the conditions of Class III waterway (Ref. No.: GGRiOŚ 7627-11/39/10/11). That decision was published via an announcement in the same way as the notice on the initiation of proceedings with the participation of the public.

[1] At: http://www.odrapcu.pl/popdow_dokumenty_RPZSiSS.html.

8.3. EMP PUBLIC CONSULTATIONS (2018)

The draft of this document was subject to the public consultation procedure carried out in compliance with the World Bank operational policies (OP 4.01.)

After developing the draft EMP document and obtaining conditional agreement of the World Bank on the basis of it (so-called "no objection") for the commencement of the public disclosure procedure, on the 25th June 2018 the electronic version of the EMP draft was posted on the publicly available websites of the below mentioned institutions, and the paper version of the document was available for inspection at their premises. In total, 14 entities participated in the process of public disclosure of the EMP draft:

- State Water Holding Polish Waters, Regional Water Management Authority in Wrocław – website *www.wroclaw.rzgw.gov.pl;*
- Project Coordination Unit for Odra-Vistula Flood Management Project – website *www.odrapcu.pl*;
- Gubin Town Hall – website *www.gubin.pl*;
- Gubin Municipal Ofice – website *www.gminagubin.pl*;
- Trzebiechów Municipal Office – website *www.trzebiechow.pl*;
- Bojadła Municipal Office – website *www.bojadla.pl*;
- Sulechów Municipal Office – website *www.sulechow.pl*;
- Zielona Góra Town Hall – website *www.zielona-gora.p*l;
- Nowa Sól Municipal Office – website *www.gminanowasol.pl*;
- Zabór Municipal Office – website *www.gminazabor.pl*;
- Czerwieńsk Municipal Office and Town Hall – website *www.czerwiensk.pl*;
- Cybinka Municipal Office – website *www.cybinka.pl*;
- Nowa Sól Town Hall – website *www.nowasol.pl*;
- Krosno Odrzańskie Town Hall – website *www.krosnoodrzanskie.pl*;

Detailed information on a possibility of becoming familiar with the draft of EMP and a possibility of filing motions and comments (together with the indication of detailed contact data: e-mail address, addresses of the venues where it is possible to become familiar with the draft document, office hours) was made public in the announcement placed at the following sites:

- on websites of PGW WP RZGW in Wrocław, OVFMP PCU, and of the above mentioned Town Halls, and Municipal Offices;
- in local press, including a local supplement to *Gazeta Wyborcza* (Fig.3) and *Gazeta Lubuska* (Fig. 4) newspapers;
- on the information boards of PGW WP RZGW in Wrocław and of the above mentioned Town Halls, and Municipal Offices.

The notice also included information on the possibility of taking part in open meetings and discussions for interested persons, organizations and institutions (listing the place, date and

time of the meeting), which were scheduled on the 9th of July 2018 in Krosno Odrzańskie, and the 10th of July 2018 in Modrzyca near Nowa Sól.

In addition, representatives of the OVFMP PCU directly informed the representatives of Non-Governmental Organizations and invited them to a discussion on the abovementioned draft of the EMP document.

After the end of the public disclosure period (paper and electronic version of the documentation was available to all interested parties from 25/06/2018 to 06/07/2017 inclusive, i.e. for 10 business days) on the **9th of July 2018** at 5:00 p.m. in the conference room of the "Odra" Hotel in Krosno Odrzańskie an open meeting was organized for interested persons, organizations and institutions at which the public presentation of the EMP draft took place. The meeting was attended by a total of 7 people, including representatives of the PGW WP RZGW in Wrocław, of the Consultant of technical support and of PCU. The second meeting took place on the **10th of July 2018** in the conference room of the Korona Guesthouse in Modrzyca near Nowa Sól at 5:00 p.m. The meeting was attended by 5 people, including representatives of the PGW WP RZGW in Wrocław, of the Consultant of technical support and of PCU.

Each meeting was opened by the Consultant of technical support, who after welcoming the assembled company presented the goals and agenda of the meeting. Next there was a multimedia display of rules of developing and functioning of EMP during the implementation of the investments co-financed by the World Bank as well as detailed information on the draft EMP for the Contract 1B.1/1 (a) Reconstruction of the Odra River control infrastructure - adjusting to the III class of waterway, on the section from the village of Ścinawa to the estuary of the Nysa Łużycka River – Stage II.

MAGAZYN GORZÓW | ZIELONA GÓRA | Piątek 22 czerwca 2018 | 7

GŁOŚNE PROCESY

nawia:
y frustracja?

Adwokat: To zabójstwo

Adwokaci rodziny Baranowskiego uważają, że ochroniarz powinien odpowiadać za zabójstwo. - Miał zamiar zabić i zrobił to umyślnie. Gdyby go zostawił przy życiu, musiałby oddać gigantyczną kasę. Musiał go zlikwidować - tłumaczył w sądzie Pietrzak. - Wiedział, że nawet lekkie uderzenie może spowodować śmierć. Nikt nie wiedział tego lepiej niż jego opiekun, który jeździł z Baranowskim po klinikach.

Piotr S. zdawał sobie sprawę, że 4 czerwca to ostatni dzień jego pracy. Dlatego, według oskarżycieli, obmyślił, jak zdobyć wielkie pieniądze. Traktował to jako rozliczenie za długoletnią pracę.

- Dwie godziny później patrol zatrzymał S. na drodze. Gdy policjant powiedział, że jest zatrzymany jako podejrzany o zabójstwo, nie był zaskoczony. Wyciągnął pokornie ręce do skucia - opowiadał Szymański.

Jak zmarł biznesmen?

Jest kilka opinii biegłych. Wszystkie się różnią. Pierwszy lekarz, jeszcze podczas sekcji, wskazywał na uduszenie. Biegli z Bydgoszczy mówili o zawale serca, a zespół kardiologów z Katowic precyzował, że do zatrzymania akcji serca mogło dojść na skutek mechanicznego uszkodzenia serca, np. wstrząśnienia czy stłuczenia. Czwarty biegły z Poznania, oceniając opinie poprzedników, uznał ostatecznie, że serce zatrzymało się z powodu silnego stresu.

- Pobicie nie było bezpośrednią przyczyną śmierci, nie można mówić o zabójstwie - tłumaczy Majchrzak i jest gotów rzucić zawód, jeśli sąd przyjmie taką kwalifikację. Jego zdaniem S. nie bił mocno. - Potrafił trzema ciosami powalić 120-kilogramowego mężczyznę, także lądował na SOR. Ofiara nie chorowała na serce, mój klient nie mógł przewidzieć, że uderzenie w afekcie może doprowadzić do problemów sercowych i do śmierci. Baranowski nie był wcale kruchy. Prowadził życie na wysokich obrotach, jeśli chodzi o wysoki poziom stresu - bronił Majchrzak i wnioskował, by S. został także uniewinniony od próby wymuszenia rozbójniczego.

- Prokurator i adwokat mówili, że bił dopiero w zemście za to, że nie wykonano przelewu. Oskarżony żył w wielkiej frustracji. Baranowski był trudnym szefem. Na swój sposób hojny, ale też równie chytry, potrafił zrobić awanturę o 5 złotych. Poniżył człowieka. Nie był krystaliczny. Nie raz kazał kogoś pobić, ale S. nie wykonywał polecenia. To świadczy, że nie był zdemoralizowany - wyliczał Majchrzak.

Miał chronić...

Piotr S. był, z przerwami, ochroniarzem biznesmena od 20 lat. Ostatnio był także pielęgniarzem. Zaufanym człowiekiem. Karmił, ubierał, kąpał. Zarabiał ok. 12-20 tys. zł miesięcznie. Tyle że przedsiębiorca trzeli do niego zaufanie. Z domu coraz częściej ginęły pieniądze, pracowników niepokoiła agresja ochroniarza. Gdy próbowali go odseparować od przedsiębiorcy, spotkały ich groźby.

Świadek 1: - Nie jestem człowiekiem strachliwym, a jednak nie odbieram telefonów od nieznanych mi numerów. Nie używam już domofonu. To człowiek znany z agresji. Mój kolega pobity przez S. przez dłuższy czas unikał publicznych miejsc.

Świadek 2: - Dzwonił do mnie „połamię ci kości, zaj... cię".

Nie lubię teatralnych gestów

- S., bijąc, nie zastanawiał się, czy złamie kość czaszki, czy ofiara umrze ze stresu. Bił, żeby zabić. Tak jak żołnierz na wojnie nie zastanawia się, jaki narząd przebije kula - porównywał Pietrzak.

I pokazał wielkoformatowe zdjęcie skatowanego Baranowskiego.

- Nie lubię teatralnych gestów, ale to zdjęcie pokazuje, że była to jednokierunkowa napaść - mówił do ławników i sędziów.

Szymański, zielonogórski adwokat: - S. chciał się zabezpieczyć na resztę życia. Ale żeby plan się powiódł, musiał unicestwić Baranowskiego.

Jaką kwalifikację przyjmie ostatecznie sąd? Ogłoszenie wyroku wkrótce.

OBWIESZCZENIE

Zgodnie z wymaganiami Banku Światowego (polityka operacyjna OP 4.01), instytucji współfinansującej realizację Projektu Ochrony Przeciwpowodziowej w Dorzeczu Odry i Wisły,

podaje się do publicznej wiadomości, co następuje:

Państwowe Gospodarstwo Wodne Wody Polskie Regionalny Zarząd Gospodarki Wodnej we Wrocławiu (PGW Wody Polskie RZGW we Wrocławiu), Jednostka Realizująca Projekt Ochrony Przeciwpowodziowej w Dorzeczu Odry i Wisły (JRP i OPDOW) udostępnia do wglądu wszystkim zainteresowanym osobom i instytucjom **PROJEKT PLANU ZARZĄDZANIA ŚRODOWISKIEM** dla Komponentu 1 – *Ochrona przed powodzią Środkowej i Dolnej Odry*, Podkomponent 1B – *Ochrona przed powodzią Środkowej i Dolnej Odry, Kontrakt 1B.1/1 (a) Odbudowa zabudowy regulacyjnej rzeki Odry. Przystosowanie do III klasy drogi wodnej, na odcinku od miejscowości Ścinawa do ujścia Nysy Łużyckiej – Etap II* (zwany dalej PROJEKTEM PLANU ZARZĄDZANIA ŚRODOWISKIEM).

Każdy zainteresowany może:

A) zapoznać się z PROJEKTEM PLANU ZARZĄDZANIA ŚRODOWISKIEM od dnia 25 czerwca 2018r. do dnia 6 lipca 2018r. włącznie (10 dni roboczych), w siedzibie:
- Państwowego Gospodarstwa Wodnego Wody Polskie, Regionalny Zarząd Gospodarki Wodnej we Wrocławiu, ul. Norwida 34, 50-950 Wrocław, w dniach roboczych od godziny 8.00 do 14.00;
- Państwowego Gospodarstwa Wodnego Wody Polskie, Regionalny Zarząd Gospodarki Wodnej we Wrocławiu, Zarząd Zlewni w Zielonej Górze, ul. Ptasia 2B, 65-514 Zielona Góra, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Miasta w Krośnie Odrzańskim, ul. Parkowa 1, 66-600 Krosno Odrzańskie, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Miejskiego w Gubinie, ul. Piastowska 24, 66-620 Gubin, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Gminy Gubin, ul. Obrońców Pokoju 20, 66-620 Gubin, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Gminy Trzebiechów, ul. Sulechowska 2, 66-132 Trzebiechów, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Gminy w Cybince, ul. Szkolna 5, 69-108 Cybinka, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Gminy w Bojadłach, ul. Sulechowska 35, 66-130 Bojadła, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Gminy Zabór, ul. Lipowa 15, 66-003 Zabór, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Gminy i Miasta w Czerwieńsku, ul. Rynek 25, 66-016 Czerwieńsk, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Gminy Sulechów, Plac Ratuszowy 6, 66-100 Sulechów, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Miasta Zielona Góra, ul. Podgórna 22, 65-424 Zielona Góra, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Gminy Zielona Góra, ul. Dąbrowskiego 41, 65-021 Zielona Góra, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Gminy Nowa Sól, ul. Moniuszki 3a, 67-100 Nowa Sól, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Miejskiego w Nowej Soli, ul. Piłsudskiego 12, 67-100 Nowa Sól, w dniach roboczych od godziny 8.00 do 14.00;
- Jednostki Realizującej Projekt Ochrony Przeciwpowodziowej Dorzecza Odry i Wisły (JRP i OPDOW) PGW Wody Polskie RZGW we Wrocławiu, ul. Kochanowskiego 9/b, 51-612 Wrocław, w dniach roboczych od godziny 8.00 do 14.00;

lub poprzez stronę internetową:
- Państwowego Gospodarstwa Wodnego Wody Polskie, Regionalnego Zarządu Gospodarki Wodnej we Wrocławiu, pod adresem – www.wroclaw.rzgw.gov.pl;
- Biura Koordynacji Projektu Ochrony Przeciwpowodziowej Dorzecza Odry i Wisły, pod adresem – www.odrapcu.pl;
- Urzędu Miasta w Krośnie Odrzańskim – www.krosnoodrzanskie.pl;
- Urzędu Miejski w Gubinie – www.gubin.pl;
- Urzędu Gminy Gubin – www.gminagubin.pl;
- Urzędu Gminy Trzebiechów – www.trzebiechow.pl;
- Urzędu Gminy w Cybince – www.cybinka.pl;
- Urzędu Gminy w Bojadłach – www.bojadla.pl;
- Urzędu Gminy Zabór – www.gminazabor.pl;
- Urzędu Gminy i Miasta w Czerwieńsku – www.czerwiensk.pl;
- Urzędu Gminy Sulechów – www.sulechow.pl;
- Urzędu Miasta Zielona Góra – www.zielona-gora.pl;
- Urzędu Gminy Zielona Góra – www.gminazg.pl;
- Urzędu Gminy Nowa Sól – www.gminanowasol.pl;
- Urzędu Miejskiego w Nowej Soli – www.nowasol.pl

B) składać uwagi i wnioski odnośnie PROJEKTU PLANU ZARZĄDZANIA ŚRODOWISKIEM w formie pisemnej pod w/w adresami lub w formie elektronicznej na adres e-mail: jrp1.wroclaw@wody.gov.pl w dniach od dnia 25 czerwca 2018r. do dnia 6 lipca 2018r. (włącznie). Instytucją właściwą do rozpatrzenia uwag i wniosków jest PGW Wody Polskie RZGW we Wrocławiu.
Po okresie 10 dni roboczych udostępniania do wglądu dokumentu (od 25 czerwca 2018r. do 6 lipca 2018r.) w dniach:
- 9 lipca 2018r. o godzinie 17:00 w sali konferencyjnej Hotelu Odra w Krośnie Odrzańskim, ul. Grobla 27, 66-600 Krosno Odrzańskie;
- 10 lipca 2018r. o godzinie 17:00 w sali konferencyjnej Restauracji „Korona", ul. M. Konopnickiej 43, 67-106 Modrzyca

odbędą się spotkania otwarte dla wszystkich zainteresowanych, na których przedstawione zostaną informacje o PROJEKCIE PLANU ZARZĄDZANIA ŚRODOWISKIEM, odbędą się publiczne dyskusje dotyczące tego dokumentu oraz dyskusje nad złożonymi do niego wcześniej lub w trakcie spotkań wnioskami i uwagami.

Obwieszczenie to zostało podane do wiadomości poprzez ogłoszenie w lokalnej prasie (Lubuski dodatek do Gazety Wyborczej, Gazeta Lubuska), wywieszenie na tablicach ogłoszeń w: PGW Wody Polskie RZGW we Wrocławiu, PGW Wody Polskie RZGW we Wrocławiu Zarząd Zlewni w Zielonej Górze, Urzędzie Gminy Nowa Sól, Urzędzie Miejskim Nowa Sól, Urzędzie Miasta w Krośnie Odrzańskim, Urzędzie Gminy w Gubinie, Urzędzie Miejskim w Gubinie, Urzędzie Gminy w Trzebiechowie, Urzędzie Gminy w Cybince, Urzędzie Gminy w Bojadłach, Urzędzie Gminy Zabór, Urzędzie Gminy i Miasta w Czerwieńsku, Urzędzie Gminy Sulechów, Urzędzie Miasta Zielona Góra, Urzędzie Gminy Zielona Góra jak również na stronach internetowych instytucji wskazanych powyżej.

Fig. 3 Announcement on public consultations of the draft EMP for the Contract 1B.1/1 (a) placed in local press (supplement to Gazeta Wyborcza, issue of 22nd June 2018.

dostępny.

Zanim do tego doszło, do pana Tadeusza przyszło pismo. Ze sklepu. Reklamacja została odrzucona.

- Byłem bardzo poirytowany. Znów poszedłem do sklepu. Pani zaoferowała mi 400 zł i nic więcej - opowiada T. Smoliński. Gubinin sam narożnik zakupił za prawie 1800 zł. - Chciałem, żeby sklep przyjął reklamację, tym bardziej że miałem rację i wcześniej ten produkt został uznany jako wadliwy.

Długa i kręta droga, która zakończyła się w sądzie

Nasz rozmówca napisał do rzecznika praw konsumenta w Krośnie Odrzańskim.

- Trafiają do mnie ludzie z podobnymi problemami. Droga niewątpliwie jest długa i wielu rezygnuje z walki - opowiada rzecznik.

Pan Tadeusz jednak nie zrezygnował.

- Rzecznik wysłał pismo do firmy. Ci odpowiedzieli, opisali dotychczasową sytuację i stwierdzili, że nie będą

...y" w papierach. Musiał przejść ...ieniądze za wadliwy produkt

REKLAMA 008418539

OBWIESZCZENIE

Zgodnie z wymaganiami Banku Światowego (polityka operacyjna OP 4.01), instytucji współfinansującej realizację PROJEKTU OCHRONY PRZECIWPOWODZIOWEJ W DORZECZU ODRY I WISŁY,

podaje się do publicznej wiadomości, co następuje:

Państwowe Gospodarstwo Wodne Wody Polskie Regionalny Zarząd Gospodarki Wodnej we Wrocławiu (PGW Wody Polskie RZGW we Wrocławiu), Jednostka Realizująca PROJEKT OCHRONY PRZECIWPOWODZIOWEJ W DORZECZU ODRY I WISŁY (JRP I OPDOW) udostępniła do wglądu wszystkim zainteresowanym osobom i instytucjom **PROJEKT PLANU ZARZĄDZANIA ŚRODOWISKIEM** dla Komponentu 1 – *Ochrona przed powodzią Środkowej i Dolnej Odry*, Podkomponent 1B – *Ochrona przed powodzią na Środkowej i Dolnej Odrze, Kontrakt 1B.1/1(a) Odbudowa zabudowy regulacyjnej rzeki Odry. Przystosowanie do III klasy drogi wodnej, na odcinku od miejscowości Ścinawa do ujścia Nysy Łużyckiej – Etap II* (nazywany dalej PROJEKTEM PLANU ZARZĄDZANIA ŚRODOWISKIEM).

Każdy zainteresowany może:

A) zapoznać się z PROJEKTEM PLANU ZARZĄDZANIA ŚRODOWISKIEM od dnia 25 czerwca 2018 r. do dnia 6 lipca 2018 r. włącznie (10 dni roboczych) w siedzibie:

- Państwowego Gospodarstwa Wodnego Wody Polskie, Regionalny Zarząd Gospodarki Wodnej we Wrocławiu, ul. Norwida 34, 50-950 Wrocław, w dniach roboczych od godziny 8.00 do 14.00;
- Państwowego Gospodarstwa Wodnego Wody Polskie, Regionalny Zarząd Gospodarki Wodnej we Wrocławiu, Zarząd Zlewni w Zielonej Górze, ul. Ptasia 2B, 65-514 Zielona Góra, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Miasta w Krośnie Odrzańskim, ul. Parkowa 1, 66-600 Krosno Odrzańskie, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Miejskiego w Gubinie, ul. Piastowska 24, 66-620 Gubin, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Gminy Gubin, ul. Obrońców Pokoju 20, 66-620 Gubin, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Gminy Trzebiechów, ul. Sulechowska 2, 66-132 Trzebiechów, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Gminy w Cybince, ul. Szkolna 5, 69-108 Cybinka, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Gminy w Bojadłach, ul. Sulechowska 35, 66-130 Bojadła, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Gminy Zabór, ul. Lipowa 15, 66-003 Zabór, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Gminy i Miasta w Czerwieńsku, ul. Rynek 25, 66-016 Czerwieńsk, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Gminy Sulechów, plac Ratuszowy 6, 66-100 Sulechów, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Miasta Zielona Góra, ul. Podgórna 22, 65-424 Zielona Góra, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Gminy Zielona Góra, ul. Dąbrowskiego 41, 65-021 Zielona Góra, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Gminy Nowa Sól, ul. Moniuszki 3a, 67-100 Nowa Sól, w dniach roboczych od godziny 8.00 do 14.00;
- Urzędu Miejskiego w Nowej Soli, ul. Piłsudskiego 12, 67-100 Nowa Sól, w dniach roboczych od godziny 8.00 do 14.00;
- Jednostki Realizującej Projekt Ochrony Przeciwpowodziowej Dorzecza Odry i Wisły (JRP I OPDOW) PGW Wody Polskie RZGW we Wrocławiu, ul. Kochanowskiego 91b, 51-602 Wrocław, w dniach roboczych od godziny 8.00 do 14.00;

lub poprzez stronę internetową:

- Państwowego Gospodarstwa Wodnego Wody Polskie, Regionalnego Zarządu Gospodarki Wodnej we Wrocławiu, pod adresem – www.wroclaw.rzgw.gov.pl;
- Biura Koordynacji Projektu Ochrony Przeciwpowodziowej Dorzecza Odry i Wisły, pod adresem – www.odrapcu.pl;
- Urzędu Miasta w Krośnie Odrzańskim – www.krosnoodrzanskie.pl;
- Urzędu Miejski w Gubinie – www.gubin.pl;
- Urzędu Gminy Gubin – www.gminagubin.pl;
- Urzędu Gminy Trzebiechów – www.trzebiechow.pl;
- Urzędu Gminy w Cybince – www.cybinka.pl;
- Urzędu Gminy w Bojadłach – www.bojadla.pl;
- Urzędu Gminy Zabór – www.gminazabor.pl;
- Urzędu Gminy i Miasta w Czerwieńsku – www.czerwiensk.pl;
- Urzędu Gminy Sulechów – www.sulechow.pl;
- Urzędu Miasta Zielona Góra – www.zielona-gora.pl;
- Urzędu Gminy Zielona Góra – www.gminazg.pl;
- Urzędu Gminy Nowa Sól – www.gminanowasol.pl;
- Urzędu Miejskiego w Nowej Soli – www.nowasol.pl

B) składać uwagi i wnioski odnośnie PROJEKTU PLANU ZARZĄDZANIA ŚRODOWISKIEM w formie pisemnej pod ww. adresami lub w formie elektronicznej na adres e-mail: jrp1.wroclaw@wody.gov.pl w dniach od dnia 25 czerwca 2018 r. do dnia 6 lipca 2018 r. (włącznie). Instytucją właściwą do rozpatrzenia uwag i wniosków jest PGW Wody Polskie RZGW we Wrocławiu.

Po okresie 10 dni roboczych udostępnienia do wglądu dokumentu (od 25 czerwca 2018 r. do 6 lipca 2018 r.) w dniach:

- 9 lipca 2018 r. o godzinie 17.00 w sali konferencyjnej Hotelu Odra w Krośnie Odrzańskim, ul. Grobla 27, 66-600 Krosno Odrzańskie;
- 10 lipca 2018 r. o godzinie 17.00 w sali konferencyjnej Pensjonatu „Korona", ul. M. Konopnickiej 43, 67-106 Modrzyca

odbędą się spotkania otwarte dla wszystkich zainteresowanych, na których przedstawione zostaną informacje o PROJEKCIE PLANU ZARZĄDZANIA ŚRODOWISKIEM, odbędą się publiczne dyskusje dotyczące tego dokumentu oraz dyskusje nad złożonymi do niego wcześniej lub w trakcie spotkań wnioskami i uwagami.

Obwieszczenie to zostało podane do wiadomości poprzez ogłoszenie w lokalnej prasie (Lubuski dodatek do „Gazety Wyborczej", „Gazeta Lubuska"), wywieszenie na tablicach ogłoszeń w: PGW Wody Polskie RZGW we Wrocławiu, PGW Wody Polskie RZGW we Wrocławiu Zarząd Zlewni w Zielonej Górze, Urzędzie Gminy Nowa Sól, Urzędzie Miejskim Nowa Sól, Urzędzie Miasta w Krośnie Odrzańskim, Urzędzie Gminy w Gubinie, Urzędzie Miejskim w Gubinie, Urzędzie Gminy w Trzebiechowie, Urzędzie Gminy w Cybince, Urzędzie Gminy w Bojadłach, Urzędzie Gminy Zabór, Urzędzie Gminy i Miasta w Czerwieńsku, Urzędzie Gminy Sulechów, Urzędzie Miasta Zielona Góra, Urzędzie Gminy Zielona Góra, jak również na stronach internetowych instytucji wskazanych powyżej.

Fig. 4 Announcement on public consultations of the draft EMP for the Contract 1B1/1 (a) placed in Gazeta Lubuska (issue of 22nd June 2018).

During the public disclosure period, people who wanted to get familiarized with the hard copy of the document in the indicated locations were not noticed. During this period, the following questions and comments to the content of the draft EMP, sent by electronic mail, were reported. They were made by a natural person and by EKO-UNIA Ecological Association ("Save the Rivers" Coalition).

1. *The range of the planned investment includes the reconstruction of groynes and removal of the riffle materials. Does the investment include also building new hydrological infrastructure/hydro technical facilities and if the answer is positive, so what kind?*

Within the range of the planned investment for Contract 1B.1.1 (a), there is no intention of building new hydrological infrastructure/hydro technical facilities. All works embrace reconstruction of existing 341 groynes damaged

to different extent in 11 sections of the river. The range of investment includes also removal of 11 riffle materials from the riverbed in order to reduce shallows and provide proper conditions for ice-breakers. The range of works within the Contract 1B.1.1 (a) is described in Chapter 2.2 Description of the Task.

2. *Does Regional Water Management Authority in Wrocław have any experience in implementation of groyne reconstruction Stage I in terms of negative impacts caused to the environment at that time? Was any monitoring of impacts on environment carried out or was there a supervision of environmental experts provided – both analogical to the ones described in this EMP? Was any EMP drafted for Stage I and how was it enforced? Are current monitoring and mitigation measures of Stage II based on the previous experience?*

   During implementation of groyne reconstruction Stage I, there was a supervision of environmental experts carried out according to the demands of the environmental decision of 18 July 2011 made by the mayor of Czerwieńsk.

   There was no need in drafting EMP for Stage I of groyne reconstruction. This document is necessary during implementation of projects sponsored by the World Bank and the Council of Europe Development Bank. These institutions did not sponsor the implementation of groyne reconstruction Stage I. During the implementation of Stage I, both the Investor and the Contractor were obliged to follow all conditions included in the environmental decision.

   Unlike Stage I, the works included in the Contract 1B.1/1 (a) have undergone some modifications such as different technology of task implementation. Earth masses excavated during works cannot be disposed in the inter-groyne zone, the team of environmental experts supervising the Task implementation was expended, supplemental conditions related to the protection of trees and animal species within the area of tree-felling were added as well as a number of provisions preventing soil and water contamination were introduced. New mitigation measures are directed into protection of precious elements of nature and sustainability of water and soil conditions.

3. *The building site will not be easily available from land. Thus unexpected control or supervision cannot be, by and large, carried out. How can the Investor provide effective supervision through the whole implementation period and not only at the moments when the Supervision Inspector is present?*

The access to the building site is available to the supervision inspectors through public roads including unpaved roads, field and forest tracks leading to the area discussed. Supervision over the Task will be carried out from the water with the use of water transport. According to the content of the EMP, the Contractor's team is responsible for implementing mitigation measures. It means that the EMP Coordinator in the Contractor's team is needed to cooperate in person with the building manager and the rest of the Contractor's team (including Contractor's environmental experts, archeologists, sapper's unit and supervisors of Health and Safety at work).

Supervision over both technical and environmental sides will be conducted also by the Contract Engineer. Adequately to the progress of works, the Engineer is obliged to verify the correctness of the execution of the work as well as implementation of the mitigation measures which, in turn, form the basis for The Contractor's salary.

4. *What disciplinary action towards The Contractor can Regional Water Management Authority in Wrocław take to provide proper implementation of environmental protection measures? The EMP includes plenty of measures but how to make sure that they will be carried out by the Contractor?*

   Regional Water Management Authority employs the Contract Engineer for the Task implementation who cooperates with qualified engineering and technical staff as well as with skilled environmental experts. The execution of works is carried out according to the Conditions of the Contract agreed upon between the Contractor and the Investor. According to the Contract, the Engineer has a certain tool while supervising the compliance of conditions laid down in this EMP and to be followed by the Contractor which constitutes the current control of meeting liabilities conducted by the Engineer's supervision inspectors and representatives of environmental team.

   In the event of irregularities in connection with this EMP, the Engineer calls on the Contractor to improve or correct the ways of implementing the measures. In case of not conforming to the Engineer's rules and instructions, the Engineer can make the Contractor change his/her Staff responsible for the issue in question (such as the EMP Coordinator or technical staff of the Contractor). In case of conducting works without taking into account environmental regulations, the implementation of some tasks may be considered incomplete which will affect the terms of payment settlement with the Contractor for these tasks.

In case of gross violation of Conditions of Contract Employer can terminate from Contract due to the Contractors fault.

5. *In what way can RZGW (Regional Water Management Authority) control the transport of excavated material from the river to the ports to have guarantee that it got to the destination in one piece and was not disposed into some deeper parts of the river?*

   The quantity surveying of excavated material from the river will be organized in two stages. In the first stage, the quantity of excavated material will be measured by geodetic inventory in control cross-sections within sections of riffle material removal and additionally tonnage of excavated earth masses will be measured on the basis of immersion of barge in ports. In the second stage, the quantity surveying will be done in the loading berth of the port while loading on the lorries and amount of earth masses handing over for disposal will be documented with proper waste transfer card.

6. *What is the total amount of the excavated material from the river? The EMP mentions approximate amount but in reality it may be different as it was assumed basing on historical data. What is an estimated difference 100%, more or less? Why doesn't the Investor use some up-to-date measurements and proper amount of planned excavated materials?*

   Taking into consideration the pace of constant changes of sedimentation transport in the riverbed, the difference in relation to the amount given at the time of drafting the project may be several per cent and morphological alterations are observed with diverse dynamism in the riverbed. The difference is estimated more or less 10-20%. The contract for works within the Task implementation is so-called quantity contract. The dredging contractor is going to receive payment in accordance with the scope of executed works and therefore the earth mass quantity surveying has to be accomplished before other works proceed. This will ensure adequate remuneration to the real scope of tasks corresponding to quantity of excavated earth masses. As far as changing conditions of the riverbed are concerned, it is impossible to give an exact amount of excavated earth mass necessary to remove at the stage of drafting bidding documents.

7. *Is there a plan to remove the riffle materials only in given locations or is there possibility of such removal within this investment in other sections in case of their occurrence?*

The Task concerns the removal of riffle materials in 11 locations marked in the technical project and included in the environmental decision for the Task.

8. *What is the final destination of excavated materials – after barge reloading? Was there any calculation done on how many dumpers must be used to remove the earth mass? What kind of impact will it have on the local traffic and technical condition of the local roads near these ports?*

   The Contractor is liable for quality control of excavated earth masses and for choosing final places of storage of excess masses (following the regulations on proper storage of contaminated waste). These actions shall be supervised by the Contract Engineer. During the Task implementation, there will be a need to use the areas of three existing ports in Cigacice, Nowa Sól and Krosno Odrzańskie. The estimated number of vehicles used while transporting excavated earth masses from the river is max 30 lorries per transshipment day twice a week during the period of dredging works (for the three ports altogether and with consideration for the environmental terms allowing 6 months of work in a year). The assumed undertaking will not have a great impact on the increase of the volume of road transport as well as the technical state of the roads. Moreover, the EMP includes certain regulations connected with technical state of the roads and buildings in the vicinity of building sites providing protection of material assets prone to adverse impacts during the Task implementation where the increase of the volume of road transport may occur. The EMP mentions as well the necessity of repairs and compensations in case of destructions, damages or deterioration of conditions (item 21, Appendix 1 to the EMP). It provides proper protection of material assets during implementation of the Task.

9. *According to the content of the EMP, RZGW in Wrocław implemented Stage I of the Task in the area of Lower Silesia and now it is working on Stage II of the Project. Will the implementation of these two stages be enough to achieve the goal which is to create proper navigation of icebreakers and sailing along the full length of the Odra River or are there some other extra works planned?*

   The aim of the investment is to facilitate the works of icebreakers which, in turn, can be done through improvement in the average depths of the river. It can be achieved by sedimentation removal and further prevention of sedimentation along the navigable trail. The planned works are to eliminate the places of so-called bottlenecks which stop icebreakers from working on particular sections of the river. Segmental establishment of III class waterway through introduction of Stage I and Stage II works connected with the

reconstruction of river control infrastructure will facilitate the sailing conditions and enable the undisturbed work of icebreakers in the Odra river situated within the borders of Lower Silesia and Lubuskie voivodship up to the mouth of the Nysa Łużycka river.

10. *What is the starting date for the works and when are they going to finish? What will happen if the weather or sailing conditions can ruin the schedule of works? Is the Investor considering intensifying works on longer sections of the river at the same time then?*

    The established period of the Task implementation covers the years of 2019-2022. The Employer agrees on executing the works simultaneously in different sections of the river included in the Task.

11. *Why aren't all groynes going to be reconstructed but only chosen ones? What was the criterion of choice? Aren't you afraid that leaving some of them untouched may lead to the failure in achieving the final effect?*

    The range of the planned investment was established on the basis of inventory of about 5000 groynes. The most destroyed ones with the worst technical state were chosen among all inspected groynes. Next, the sections with the biggest number of groynes to be reconstructed were chosen. The planned investment "The reconstruction of the river control infrastructure – adjustment to the III class waterway" was divided into two stages.

    The Stage I embraced the sections of the river lying in Lower Silesia and has been already accomplished. The Stage II embraces the section of the Odra river in the area of Lubuskie voivodship and serves as a continuation of the Stage I. The fact that some of groynes are not taken into consideration in the reconstruction process will not ruin the overall effect and goals of the project.

12. *What kind of impact can the reconstruction of groynes have on the level of groundwater in the Odra valley? Has the problem been analyzed? Will it improve or deteriorate the groundwater conditions?*

    As modeling studies on two sections of free-flowing Odra waters of about 3-km long have demonstrated, such groyne reconstruction can lead only to local changes in discharge in the riverbed and to an increase in water table. Hydraulics calculations on the section of the Odra river from 458 km to 461,20 km were done for the flow corresponding to low flow of 53 $m^3 \cdot s^{-1}$ and Q240 of 126 $m^3 \cdot s^{-1.}$ This section of the river embraces 44 groynes including 5 damaged ones.

Calculations were done on the model reflecting the current state and the model based on reconstruction of damaged groynes. The reconstruction of the groynes including the filling of washouts results, only locally, in flow changes in the inter-groyne zone occurring mostly up and down reconstructed groyne. The scale of changes depends on location of the groyne within the curve length and the flow velocity in the inter-groyne zone. The calculations also show that groyne reconstruction can lead to an increase of water table in the riverbed by 2-3 cm at the time of the lowest discharge and 4÷7 cm at Q240.

The goryne reconstruction on the given section will cause local changes in the movement of sediments of 5-15 mm big (according to Ganguillet-Kutter formula). These changes concern the sediments transported in the vicinity of reconstructed groynes. Most of the sediments (70-80%) constitute sediments suspended in water. The movement of bed sediments at average flow is minimal so there is no risk of bed erosion or erosion channel which is created in the conditions of restricted transport of suspended particles.

Taking the above into consideration, the reconstruction of chosen damaged groynes will not lead to negative processes in the riverbed resulting in its height alterations and changes in the groundwater level nearby.

13. *Building and reconstruction of 341 groynes are going to narrow the cross-section of the river, improve the flow and the depth of the river due to erosion of sedimentation. It will all lead to improvement of sailing conditions to class III waterway. The expertise published in June for similar tasks of building and reconstruction of groynes of boundary section of the Odra River and submitted to Witold Korochmal of WB Project Coordination Unit (''The efficiency of the Międzyodrze polder and the river flow regulatory approach as a way of flood protection of the Lower Odra River", May 2018, Gerstgraser Ingenieurbüro für Renaturierung", http://www.ratujmyrzeki.pl/dokumenty/Bericht_gIR_180606_PLx.pdf), shows that such actions lead to several adverse effects contradicting their original purpose. They increase the risk of flooding, especially above reconstructed groynes when the high waters appear causing even higher wave by few to several centimeters. Thus, something that is supposed to serve as flood protection (allegedly good for icebreakers) can pose a bigger threat of flood in case of extremely high waters. In terms of its dynamics and complex process of forming riffles, which is difficult to remodel (including winter with its ice cover), the reconstruction of groynes cannot guarantee the access of icebreakers to ice jams.*

The goal of the investment is to improve ice-breaking conditions for ice-breakers through the improvement in the average depth of the river by prevention of sedimentation along the navigable waterway. The goal of the Task 1B.1/1 (a) is not to narrow the cross-section of the river or improve the flow or depth of the Odra river. The reconstruction of small part of river control infrastructure leads to permanent reduction of impassable zones with riffle materials in the given sections which cause gradual deterioration in effectiveness of ice-breaking actions due to significant decrease in depth of the riverbed.

The reconstruction of river control infrastructure of the Odra river does not result in raising the level of flood waters. The planned investment deals mostly with the reconstruction of groyne heads and bodies so that it cannot result in an increase in flow resistance. It should be underlined that flow resistance coefficient in water gets lower with the bigger depth of the water.

As modeling studies on two sections of free-flowing Odra waters of about 3-km long have demonstrated, such groyne reconstruction can lead only to local changes in discharge in the riverbed and to an increase in water table. Hydraulics calculations on the section of the Odra river from 458+000 km to 461+200 km were done for the flow corresponding to low flow of 53 $m^3 \cdot s^{-1}$ and Q240 of 126 $m^3 \cdot s^{-1.}$ This section of the river embraces 44 groynes including 5 damaged ones.

Calculations were done on the model reflecting the current state and the model based on reconstruction of damaged groynes. The reconstruction of the groynes including the filling of washouts results, only locally, in flow changes in the inter-groyne zone occurring mostly up and down reconstructed groyne. The scale of changes depends on location of the groyne within the curve length and the flow velocity in the inter-groyne zone. The calculations also show that groyne reconstruction can lead to an increase of water table in the riverbed by 2-3 cm at the time of the lowest discharge and 4÷7 cm at Q240.

The goryne reconstruction on the given section will cause local changes in the movement of sediments of 5-15 mm big (according to Ganguillet-Kutter formula). These changes concern the sediments transported in the vicinity of reconstructed groynes. Most of the sediments (70-80%) constitute sediments suspended in water. The movement of bed sediments at average flow is minimal so there is no risk of bed erosion or erosion channel which is created in the conditions of restricted transport of suspended particles.

14. *The expertise „The efficiency of the Międzyodrze polder and the river flow regulatory approach as a way of flood protection of the Lower Odra River" („Skuteczność planowanego polderu zalewowego Międzyodrze i koncepcji regulacji cieku na poprawę ochrony przeciwpowodziowej na dolnej Odrze",May 2018, Gerstgraser Ingenieurbüro für Renaturierung", http://www.ratujmyrzeki.pl/dokumenty/Bericht_gIR_180606_PLx.pdf) reveals:*

    a. *Scarcity of floods caused by ice jams (the last one in 1947) and of climate changes;*

    The factor that contributes to ice-jam floods on the section of the Odra river included in the Task is temperature regime in the upper and lower Odra river. When the river in the upper basin undergoes the processes of melting, the middle and lower parts of the river still experience the solid ice cover on their surface. Modelling studies (IMGW 2015) showed 14 places of ice-jam phenomena in the section of the river included in the Task. Moreover, basing on data collected by State Water Holding Polish Waters Regional Water Management Authority in Wrocław, there are following typical places of ice jams in the section of the Odra river included in the Task 1B.1/1 (a):

Local authority of RZGW in Wrocław	Mileage information (km)	Locality
Krosno Odrzańskie km 542,4 – 480	538 - 540	Łomy
	531 – 536	Rybaki – Miłów
	521 – 523	Sarbia - Czarnowo
	514 - 516	below the mouth of Biela river – near Krosno Odrzańskie
	507 – 508	Gąstchorze
	500 – 504	Radnica
	494 – 497	Laski – Będów
	484 – 488	Brody
Cigacice km 480 – 423	479	below railway bridge in Pomorsko
	472 – 476	below Cigacice
	467-486	Głuchów – Górki Wielkie
	456,3 – 463,8	Tarnawa – Wielobłoty
	449,7	Bojadło
	448 – 449	Milsko
	444 – 445	Młynkowo
	443,2	Bukowa
	441,5	mouth of Śląska Ochla river
	437	railway bridge in Stany

Local authority of RZGW in Wrocław	Mileage information (km)	Locality
	431-432,8 427	Nowa Sól Stara Wieś

In the analyzed section of the Odra river, there were observed cases of permanent ice cover in the following places (Contract 1B.1/1 (a) is divided into sections between 427,5 km and 540,5 km of the Odra river)[1]:

- below 522,0 km (vicinity of Serbia, Retno), in winter season of 1990/1991,
- below 345,0 km (vicinity of Jemielno), in winter season of 1995/1996 (the elimination of ice-jam problems in the vicinity of Cigacice[2] contributed greatly to prevention of bank breaks and ice-jams in the area),
- below 444,8 km (vicinity of Dąbrowa, Młynkowo), in winter season of 2005/2006.

b. *Other factors that contribute to ice-jam floods and still different from the working depth of ice breakers (German website did not confirm having problems with this depth and their icebreakers have similar submersion specifications to ours);*

The section included in the Task consisted of many places with detected riffle materials which constitute obstacles in navigation of icebreakers. In case of the Odra river conditions, the only effective solution (optimal from the environmental point of view) is based on the use of icebreakers with the draught of 1,8m (established in the stage of Flood Risk Management Plans when analyzing different methods of ice-jam flood protection).

The question does not reveal information about problems with submersion of icebreakers, hence it is difficult to answer it precisely. What is more, the German party organizes actions within so-called Border Odra River which is absolutely different section than the ones included in the Task of this EMP.

[1] Dane Ośrodka Koordynacyjno-Informacyjnego ochrony przeciwpowodziowej RZGW Szczecin (http://www.oki.szczecin.rzgw.gov.pl/Article_Lodolamanie.html)

[2] Woś K., Kreft A., Kosierb R. 2007. Organizacja i przebieg akcji lodołamania na Odrze w sezonie zimowym 2005/2006. Gospodarka Wodna nr 12/2007.

Other factors can influence the occurrence of ice jams such as defective reconstruction of riverbed or defective reconstruction of river bank curves.

c. *The necessity of finding alternative cheaper ways of icebreaking with the use of amphibious excavators which in Canada work with a shallow draught on the river. Thus, there is no need to control the river flow along hundreds of km for a few ice-breakers which will still not be able to sail to their destinations for other reasons;*

In order to prevent the occurrence of dangerous phenomenon such as ice jam, several methods were developed which can be basically divided into the passive and active ones. The passive methods constitute mostly ice barriers built to control ice cover and its movement down the river avoiding places of possible ice-jam floods. The active methods concern icebreaking in order to provide constant flow of the ice down the river to its mouth.

Variant analysis on the particular methods and their effectiveness was carried out in the stage of drafting Flood Risk Management Plans. It was demonstrated that icebreaking with the use of icebreakers serves among all alternative methods of preventing ice jams as the only reasonable option for conditions met in the Odra River.

Potentially alternative methods of preventing ice-jam floods are characterized by low effectiveness and high level of adverse impacts on the environment (such as fixed barriers, icebreaking with a use of explosive charge, ice removal with a use of floating equipment).

Since the icebreakers have the draught of 1,8 m or more, the effective action of icebreaking demands the minimal depth of 1,8 m and proper height (5,25m) and width of the bridges to travel underneath.

Icebreaking by means of excavators is used successfully in small shallow watercourses (such as the Grasse River with the mean annual discharge of Q 32 m^3/s). This action involves removal of the ice from the bank of the river. Next, if the arm of an excavator is not long enough to reach some ice cover, the excavator is placed on the barge to continue icebreaking. However, a bigger wave created at the moment of clearing the ice cover by the excavator in icebreaking actions poses a threat to the equipment itself as it can be taken by the river. That is why icebreaking works are mostly done from the river bank to reduce unnecessary risks. As far as the sections of the Lower and Middle Odra River

are concerned, such solution is impossible. Firstly, these works last long and taking the huge volume of the ice cover to remove into consideration, it makes the task of icebreaking unreal to accomplish in time. Secondly, excavators can work only on the bank slopes in great proximity to the river which again will be technically impossible to accomplish along most of the sections in question.

d. *Building groynes, on the other hand, can lead to depletion of biodiversity in the precious areas adjacent to the river due to the decrease of groundwater level as a consequence of dredging the riverbed. It concerns all 341 groynes as all of them lie in Natura 2000 areas.*

Modelling calculations show that the flow velocity in the cross-section of rebuilt groyne will be equal to the avarage flow velocity of the intact groyne (at the discharge of Q240). Thus the process of erosion will be established (constant transport of sediments). The erosion will reduce the riffle in the cross-section of the rebuilt groyne. Lowering the bottom (through riffle removal) in the cross-section of rebuilt goryne (by a few centimeters) and raising the water table by a few centimeters (4÷7 cm) are going to improve navigable conditions. The groyne reconstruction will have small local impact on bottom formation. Raising the water table in the riverbed of the Odra River can, however, improve local groundwater conditions in the inter-embankment zone.

15. *Task no 2 – removal of riffle materials from the riverbed described as „removal of the riffle material in 11 sections of the riverbed which cover totally 2,5 km." It is estimated that 47 500 m³ of sediments is going to be relocated. This is a huge amount and excessive weight (demanding 40-tone lorries in number of 1190 vehicles or 24 freight trains of 50 40-tone carriages each). The task which sounds reasonable from hydrotechnical point becomes biological disaster for benthic organisms, including fish and often causes permanent violation or damage in species and habitats of the river. What is worse, from the perspective of transport, the possibility of use of ice breakers (3rd class waterway) is going to be limited as well. The riverbed is very dynamic according to the expertise „The efficiency of the Międzyodrze polder and the river flow regulatory approach as a way of flood protection of the Lower Odra River." First higher waters may jeopardize the efforts by carrying sediments from the upstream. Money will be wasted and the environment irreversibly damaged. We rely, additionally on the research done two years ago (July 2016) by the experts of Klub Przyrodników ("Initial assessment of possible impacts of the following projects on protected areas: Odra-Vistula World Bank Project and government project known as Development Strategy of Inland Waterways in Po-*

land for 2016-2020 with the possible extension to 2030) who made such opinion about the actions taken within OVFMP:

- *The main objectives of the Project such as constriction of the river current and maintenance dredging in the protected areas of the lower Odra River (Natura 2000 sites: Dolina Środkowej Odry PLB080004, Łęgi Słubickie PLH080013, Krośnieńska Dolina Odry PLH080072; Nowosolska Dolina Odry PLH080012, Kozioróg w Czernej PLH0210, Krzesiński Park Krajobrazowy, dolina Odry w Parku Krajobrazowym Ujście Warty) will decrease the frequency of flooding which, in turn, will deteriorate the conditions of habitats dependant on flooding, such as: 91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior, 91F0 riparian mixed forests of Quercus robu,r Ulmus laevis and Ulmus minor, Fraxinus excelsior or Fraxinus angustifolia, 6440 Alluvial meadows of river valleys of the Cnidion dubii, 6430 Hydrophilus tall herb fringe communities of plains and 3150 Natural eutrophic lakes with Magnopotamion or Hydrocharition –type vegetation;*

The aim of the Task 1B.1/1 (a) is not to deepen the riverbed of the Odra River. Segmental reconstruction of the groynes intends to rebuild the original control infrastructure and to maintain the state of constant transport of sediments in the riverbed avoiding formation of shallows in the central part of the river. As modelling calculations show that groyne reconstruction can lead to an increase of water table in the riverbed by 2-3 cm at the time of the lowest discharge and 4-7 cm at Q240. Thus, decrease in groundwater level in adjacent areas and negative impacts on habitats dependent on flooding and high groundwater level will not take place.

Regarding the fact that the aim of the Task does not concern deepening of the riverbed, the reconstruction of the groynes does not limit the flow of other waters outside riverbed and does not affect drag coefficient of the flowing water.

16. *Reconstruction and building of bank reinforcement structures and constriction of river current will pose a threat to protected habitats along the rivers known as 3270 Rivers with muddy banks with Chenopodion rubric p.p. and Bidention p.p. vegetation;*

In order to reduce negative impact on the environment of the works included in this EMP, a new technology of works has been introduced. Construction works will be carried out solely in the vicinity of the reconstructed groyne with so-called „access from water" technology with a use of differ-

ent kinds of floating equipment. The excess of earth mass excavated from the river cannot be deposited in the inter-groyne zone.

Therefore the precious habitats 3270 formed mostly along the Odra riverbed in the inter-groyne zones will be preserved. The reconstruction of groynes does not eliminate the possibility of sedimentation or erosion of fine fraction from inter-groyne areas which is crucial in creating the habitat 3270. The regular flooding in these areas will still occur so the dynamism of processess in this kind of habitat will be sustained.

In case of 65 % of all groynes planned for reconstruction, the works will embrace mostly heads of gorynes and not more than 60% of their bodies. The bank slope intervention works will not take place so both habitats adjacent and precious animal and plant species will not be disturbed.

17. *Constricted river current and maintenance dredging which are established objectives for the project will cause great damages in habitats of terns Chlidonias hybridus and Chlidonias leucopterus and due to the restricted area of flooding and lower frequency of flooding, the habitats of gargancy Anas querquedla and shoveler Anas clypeata are under threat. These goals will have negative impact on most of the birds using these areas during migration and as wintering grounds;*

    The aim of the task is not to dredge and deepen the bottom of the river. In the sections included in the task, there are not species of birds mentioned above (cf. chapter 4.9, 5.9 of the EMP). The assumption that the reconstruction of the groynes will reduce the seasonal flooding in the inter-embankment zone is wrong and is not reflected in the experience gained so far in the Odra river valley. It should not be forgotten that the whole section of the Odra river where the task herein is going to be implemented, underwent the process of control infrastructure such as groynes in the 19th century and the fact that they exist does not limit the surface of regularly flooded areas which create such precious habitats for birds in the inter-embankment zone.

18. *Changes in the riverbed after dredging and groyne reconstruction will lead to adverse impacts on the habitats of lamprey (Lampetra fluviatilis and Lampetra planeri) and other fish such as: spined loach Cobitis taenia, bitterling Rhodeus sericeus amarus, weatherfish Misgurnus fossilis.*

    Works connected with the implementation of the task will be carried out outside the season from 1 March to 31 August. This season has been excluded from the work period since fish species are the most sensitive to any

disturbance in the riverbed. The section of the Odra river between Nowa Sól and the mouth of Nysa Łużycka river is about 112,5 km long, but the works connected with the reconstruction of groynes will take about 21,8 km whereas the riffle removal will cover the length of 2,5 km. These works will be carried out in 11 sections between years 2018-2021. Thus, the possible impacts on ichtyofauna will be spread/scattered both in time and in distance. The most crucial habitats for the species mentioned above are situated i the inter-groyne zone of the sections in question. Regarding new technology of work and the lack of possibility in depositing excavated earth masses in the inter-groyne zone (which constitutes the main habitat for precious species of fish), the habitats of these species will be left untouched.

The EMP also comprises suitable monitoring and mitigation measures which control the level of suspended fractions in the river for the sake of its fish.

19. *Bank reinforcement will stop natural erosion which will have negative impact on habitats of kingsfisher Alcedo atthis*

    During the implementation of the task and the reconstruction of 83 groynes, the shoreline will become locally modified due to the necessity of rebuilding of the groynes. The works will concern, however, only the bank slope where the groyne reconstruction will take place. The environmental inventory done in 2017 did not indicate any conflict of interest between planned works and nesting grounds of kingfisher *Alcedo atthis.*

20. *All places which will undergo construction will pose a threat to habitats and species of animals and plants living in the river valleys and protected by EU law and Polish law. Such actions should get the approval of European Commission.*

    There was a procedure of environmental impact assessment carried out for the project under the name „Construction and executive design of the reconstruction of the Odra River control infrastructure – adaptation to the conditions of Class III waterway" which ended with issuing the Decision on environmental conditions by Mayor of Czerwieńsk of 18 July 2011. During the environmental impact assessment, the habitats of Natura 2000 sites were takin into account and the final conclusion was that there were no significant negative impacts on the objects of protection in these Natura 2000 sites. The process of getting the financial support from EU funds demands compliance with environmental criteria connected with the impacts on Natura 2000 sites and Water Framework Directive.

21. *World Bank proposes a lot of compensation measures or mitigation measures such as one-off environmental inventory, prevention of the spread of invasive species or their removal, reduction in mussels mortality, taking protected areas into consideration and so on so forth. However all of them will serve as band-aid on the vast deep open injury which is building class III waterway in the river ecosystem.*

    The task embraces segmental reconstruction of river control infrastructure and removal of identified riffle materials in the sections of groyne reconstruction. The groynes will be reconstructed to their original parameters. The task does not include the introduction of any new river control infrastructure.

22. *There exist also doubts about legal aspects. The decisions of mayor in Czerwieńsk and provincial governor of Lubuskie voivoship concern totally different Project known as "Construction Design and Detail Design for Reconstruction of river control infrastructure on the Odra River – Adaptation to the conditions of Class III waterway" made in 18.07.2011 so 7 years ago. It dealt with adjusting the Odra river to class III waterway and it was sponsored by the state budget and* Regional Water Management Authority in Wrocław being the Investor. *Present tasks concerning flood protection rather than building the waterway (as Word Bank allegedly does not sponsor the latter), according to the words of Word Bank representatives, are connected with the draft, which was agreed on between Polish Government and WB in September 2015. We have doubts whether the decision issued 7 years ago is still valid:*

    a. *In terms of the river whose environment and ecosystem are changing dynamically,*

    b. *In terms of the task which is oriented towards transport goals (waterway) rather than flood management, especially when it increases the risk of flooding.*

    While drafting this EMP, some data collected during environmental inventory in 2017 was used. The inventory concerned the section of Free Flowing Odra river from Malczyce to the mouth of the Nysa Łużycka River. The mitigation measures were introduced to counteract the adverse impacts caused by reconstruction of 341 groynes and the riffle removals at the total length of 2,5 km of the river. River environment undergoes constant dynamic changes especially in the habitats such as 3270. It constitutes the natural system of mosaic of habitats which becomes sustained for years providing the stable functioning of key factors such as constant regime of

the water flow. The aim of the task is to provide protection against ice-jams floods through adjusting the river sections to the class III waterway.

The Decision of the Mayor of Czerwieńsk of 18 July 2011 on environmental conditions (sign. GGRiOŚ 7627-11/39/10/11) was used in administrative procedure which was completed by the construction permit: decision of Lubuskie Voivode No 108/13 dated 29 March 2013 (Ref. No.: IB-II.7840.108.2013.JMud). In case of the Task herein, the construction permit is final and on force.

23. *Environmental Impact Assessment conducted during the process of issuing environmental decision should be based on up-to-date data and knowledge of modern science. Considering that the environmental impact assessment report comes from 2010, we can assume that data is 10 years old. This in turn leads to the conclusion that knowledge gained 8 years ago cannot be valid if the world is changing so rapidly. According to the article 72 item 3 of The Act on Providing Information on the Environment and Environmental Protection, Public Participation in Environmental Protection and on Environmental Impact Assessment, an environmental decision can be attached to the request for issuance of the building permit within 6 years after being taken. If the request for issuance of building permit concerning the Task being consulted upon had not been submitted in time (it is not clear from the documentation submitted), the subjective environmental decision would not be valid anymore. In extra circumstance, the initial period of duration can be extended to 10 years, but it demands additional approval of the body issuing such decision (issued upon request before the expiry date of the document) and additional evaluation of conditions for the Task implementation mentioned in the decision. However, we cannot ignore the fact that the subjective decision was issued when the regulations allowed for 4-year period of validity with the possibility of extension up to 6 years. The period of validity was extended on 24 December 2015 together with periods of validity of other documents issued before this day, which is doubtful move as the subjective decision expired before 24 December 2015.*

As it was indicated on page 21 of the main body of the EMP, The decision in question on environmental conditions was used in the administrative procedure, which was completed by the construction permit: decision of Lubuskie Voivode No 108/13 dated 29 March 2013 (Ref. No.: IB-II.7840.108.2013.JMud). The construction permit is final and on force, hence the environmental decision for the Task remains on force.

24. *Word Bank responsible for this Task and its implementation should question the credibility of the project and think over whether to sponsor waterways on Polish rivers.*

    Such recommendation does not concern directly the content of this EMP.

25. *It is impossible to protect inhabitants of the Odra River valley by constructing waterway. It is scientifically proven and confirmed with empirical studies done in many places that regulations of rivers increase the risk of flooding and decrease biodiversity of the river valleys. It is the same in case of the planned tasks in the Odra River. There is no justification for these actions and we call for their change.*

    The implementation of the task reduces the risk of ice-jam flooding due to the provision of proper conditions for work of icebreakers. Construction works are to be carried out in sections, one at the time, with consideration for mitigation measures included in Appendix 1 of the EMP. Chapter 5.7 of the EMP shows the impacts on the biodiversity that the Task has. However, the chapter does not mention any significantly negative impacts on precious sites and significantly adverse impacts on protected habitats and species of plants or animals.

Other questions and comments concerning environmental conditions and the content of the EMP with its monitoring and mitigation measures were not received. The questions and comments that were received by OVFMP PIO were analyzed. Corresponding explanations, jointly with reference to relevant provisions of the EMP, were prepared. However, the nature of the comments has not influenced the content of the EMP itself. Nevertheless, on the basis of the public disclosure, some minor corrections and amendments to the document have been made. Reported comments were also discussed during the public debates.

On 8th November 2018, answers were granted to the comments and questions to the draft EMP, in an electronic form (e-mail) and in case of the Ecological Association Eko-Unia (Save the Rivers Coalition) additionally by snail mail. In the answers to the questions as sent also a request was included to provide feedback on the said clarifications till 23rd November 2018. Till this date no comments or questions have been received, thus the process of public consultations of EMP is considered to be completed.

9. ORGANIZATIONAL STRUCTURE OF EMP IMPLEMENTATION

The Task being the subject of this EMP is implemented within the Odra-Vistula Flood Management Project (see chapter 2.1), co-financed with the World Bank's funds. Therefore, the EMP implementation supervision structure has to comply with both the provisions of Polish law and the requirements of the World Bank.

9.1. ODRA-VISTULA FLOOD MANAGEMENT PROJECT COORDINATION UNIT (OVFM PCU)

The entity responsible for overall coordination of implementing the individual parts of the EMP within the OVFM Project is the Project Coordination Unit (PCU), which is currently a state budgetary unit under the authority of the applicable minister that deals with the water managment.

OVFM PCU tasks include, *inter alia*:

- cooperation with appropriate ministries, State Water Holding Polish Waters and local government administration bodies related to OVFM Project implementation;
- coordination of activities of individual Project Implementation Units and supporting those units in the scope of EMP implementation;
- monitoring and assessment of EMP implementation progress;
- cooperation with the World Bank on a running basis, including development of quarterly reports on OVFM Project implementation;

9.2. PROJECT IMPLEMENTATION UNIT (PIU) AND PROJECT IMPLEMENTATION OFFICE (PIO)

The entity directly responsible for implementing the EMP for the Task and monitoring EMP implementation progress is the Project Implementation Unit (PIU), i.e. State Water Holding Polish Waters Regional Water Management Authority in Wrocław.

In relation to OVFM Project implementation, the Project Implementation Office (PIO) was established within PIU as a separate organizational unit supervised by President of State Water Holding Polish Waters. Such a structure is transparent and its decision- making level is situated very high, which increases EMP implementation efficiency. As part of EMP implementation supervision, the PIO performs the following tasks:

- monitoring of EMP implementation progress;
- financial management and account management;
- preparation of the necessary reports for the purposes of EMP implementation monitoring and for the purposes of coordination of EMP implementation by all the involved services;

The scope of duties of PIO employees related to EMP implementation supervision is as follows:

- management and coordination of as well as supervision over EMP monitoring implemented by the Consultant and the Contractor;
- direct supervision over correct Task implementation;
- cooperation with the PCU;
- administrative and legal supervision over EMP implementation;
- verification of EMP implementation reports and accounts prepared by the Consultant and the Contractor;
- financial supervision over EMP implementation;
- supervision over the correctness of applying formal procedures concerning EMP implementation which stem, *inter alia*, from the requirements of the Contract for works, *the Construction Law*, *the Environmental Protection Law* and other documents.

9.3. CONSULTANT/ENGINEER

The role of the Consultant/Engineer is supporting the PIU (SWH PW, RZGW in Wrocław) in effective implementation of the entire investment process, from undertaking preparation to its settlement.
The Consultant/The Engineer shall be selected using the QCBS (Quality- and Cost-Based Selection) method, in accordance with "*Guidelines for the Selection and Employment of Consultants by World Bank Borrowers"*. The Consultant/The Engineer shall be obliged to supervise EMP implementation, in accordance with the scope defined in the Consultant's/the Engineer's Contract, which shall include, *inter alia*:

- monitoring of EMP implementation;
- monitoring the Contractor's actions;
- checking the quality of the construction works performed and the construction products used to build by the Contractor, in particular preventing the use of construction products which are defective or are not allowed for use in civil engineering;
- representing Investor on the construction site by controlling the compliance of construction implementation with the design, the building permit, the provisions in the scope of environmental protection and the principles of technical knowledge;
- supervising all issues related to environmental protection by experienced specialists in the scope of environmental protection and by the Engineer's remaining staff;

- constant monitoring of the correctness of implementing the measures mitigating the negative environmental impact;
- performance of additional examinations if it becomes necessary to verify the Contractor's accounts;
- identification of problems stemming from the adverse environmental impact of construction works implementation and submitting proposed solutions to those problems;
- checking and accepting the construction works to be covered up and temporary construction works, as well as preparation of and participation in acceptance activities of ready structures and commissioning them;
- confirmation of actually performed works and removed defects as well as, at the Investor's request, inspection of construction settlement.

9.4. CONTRACTOR

A Contractor shall be selected to implement the construction works. The Contractor shall be responsible for EMP implementation. The Contractor's duties in this regard shall include:

- performance of construction works in accordance with the rules defined in the EMP, Contract conditions, design documentation, binding provisions of law and requirements of administrative decisions issued for the Task;
- implementation of the Engineer's recommendations (including those of the environmental supervision specialists and the Investor's supervision inspector) concerning EMP implementation;
- ensuring the preparation of the following documents before construction commencement: a Safety And Health Protection Plan, a Waste Management Plan, a Quality Assurance Plan, a Construction Site Flood Management Plan for the works implementation period and a Construction Site Organization Design;
- submitting for the approval of the Contract Engineer, prior to commencement of work, ESHS Code of Conduct and ESHS Management Strategy and Implementation Plans as described in the Bidding Documentation, part ItB 11.1 (h) developed at the stage of submitting a bid and periodic revision of the said documents as the result of the recommendations of the Contract Engineer,
- maintenance of construction documentation;
- preparation of monthly reports and inspection reports;
- preparation of environmental protection reports;
- submitting proposals to the Investor for changes in design solutions if this is justified by the necessity of increasing the implementation safety of construction works or streamlining the construction process with regard to the EMP implementation.

10. EMP IMPLEMENTATION SCHEDULE AND REPORTING PROCEDURES

EMP implementation enables the parties involved in the preparation, implementation and supervision of the Contract for works to do the following:

- identify various environmental aspects which significantly influence the environment status so that they can be controlled, corrected and reduced but, consequently, produce economic effects;
- correct unfavourable consequences of conducted works during their implementation, which is beneficial to the environment and the financial results;
- define the objectives and tasks implemented within the adopted environmental policy, which are included in the EMP, require outlays and yield measurable effects;
- identify and eliminate potential hazards and breakdowns as well as prevent and remove environmental effects which may be related to them and cause losses disproportionate to prevention costs;
- use natural goods rationally with minimal environmental losses and optimal generation of costs.

Moreover, implementation of the recommendations and measures stemming from the EMP may reduce or even eliminate contractual risks, in particular:

- the risk of the Contractor skipping the environmental protection issues in the task implementation process;
- the risk of escalation of protests by the local community as a result of the Contractor's failure to observe the works implementation technologies and the environmental procedures approved by the Engineer;
- the risk of additional environmental penalties;
- the risk of incurring additional environmental losses.

Bearing in mind the significance of the issues determining the environmental and social conditions, the following EMP implementation procedures are anticipated:

- before selecting the Contractor of works, the Employer shall submit the draft of this EMP to the World Bank in order to receive an opinion;
- subsequently, the EMP shall undergo public consultations;

- after conducting the public consultations (and supplementing the document with consultation results), the EMP shall be supplemented and its final version shall be submitted to the World Bank for approval;

- after EMP approval by the World Bank, the final document shall be included in the bidding documents concerning Contractor selection;

- all actions of the Contractor of works shall be reported regularly (once a month) in terms of the obligations stemming from the EMP and other contract documents. They shall be reported in Polish and English, both in a printed version and in an electronic version. Those reports shall require the Engineer's and the Employer's approval.

Environmental monitoring with regard to impact on environment of the Task consists in:

1. Control of the execution of construction works connected with the implementation of the task under the control of environmental supervision specialists, appointed by the Contractor for the period of the Contract implementation.

2. Environmental supervision, carried out by specialists should include:

- review and ongoing control of the area covered by the construction and hydrotechnical works prior to commencement, and inspections during construction, including the preparation of adequate reports, which document the correct implementation of the environmental supervision and at the same time inform about the proper implementation of mitigation,

- formulating and reporting to the Engineer the need for mitigation measures (including their implementation) necessary to mitigate the adverse effects of the Task on natural habitats and species and habitats of interest to the Community and subject to legal (species) protection, which are impossible to predict and/or to be disclosed at the stage of establishing the conditions for the implementation of the Task in question in the course of the proceedings leading to the decision on environmental conditions. These actions can be implemented only after the Engineer's approval,

- obtaining necessary permits for derogation from the prohibitions on the protection of species of plants, fungi or animals along the principles and procedures specified in the Nature Protection Act,

- reporting in the form of periodic reports.

3. As part of Contractor's team of environmental experts, the Contractor shall appoint specialists in the following areas: botany/phytosociology, entomology, ichthyology,

herpetology, ornithology, mammalogy, chiropterology. One expert can combine up to two of the above functions.

It is planned that the Contractor shall prepare collective reports on environmental monitoring at the works implementation stage. The reports shall be confirmed by Contractor's team of environmental experts, approved by the Engineer's. A detailed scope of the report shall be determined by the Engineer (the commencement report, the periodic (monthly) report, the quarterly report, the ad hoc report, the closure report). The Engineer shall also define their preparation deadlines. Contractor's environmental team shall also prepare periodical reports submitted to the Regional Director of Environmental Protection (RDOŚ) in Gorzów Wielkopolski, once a year in a written form with a deadline falling on 30th day of November of each year in which the works were carried out. Prior to this, mentioned report should be submitted for the Engineer's approval.

The OVFM Project reporting system shall be based on monthly reports submitted by Contractors to the PIO via the Engineer and on the Engineer's monthly reports. Monthly reports on EMP implementation shall also be prepared (by the Contractor and the Engineer) – as part of the monthly reports or as separate documents. Collective quarterly reports shall also be developed on this basis.

The PIU shall submit quarterly reports concerning its implemented tasks to the PCU. They shall contain the required set of information and descriptions enabling the PCU to prepare the OVFM Project quarterly report. Moreover, especially in the case of problems with implementation of the Contract for works, the PCU shall expect the PIO to submit information sets and data every month.

The following reporting procedures were established:

1) Reporting:
    a) reports (the commencement, monthly, reports (the commencement, monthly, quarterly and final ones), report submitted to RDOS in Gorzów Wielkopolski prepared by the Contractor of Works,
    b) reports overview by the Engineer,
    c) submitting the report to the Employer (for information purposes),
    d) submitting the report to the RDOS in Gorzów Wielkopolski by the Engineer,
    e) submission of a quarterly report by the PIU to the PCU.
2) Archiving:
    a) Contractor: 1 copy of each report in the electronic version, for 5 years after the Contract completion date and not less than 3 years after completion the Operational program of European Union from which the Task was co-funded,

b) Engineer: 1 copy of each report in the electronic version, for 5 years after Contract completion and not less than 3 years after completion the Operational program of European Union from which the Task was co-funded,

c) Employer: 1 copy of each report in the electronic version, for 5 years after the Contract completion date and not less than 3 years after completion the Operational program of European Union from which the Task was co-funded.

3) Evaluation – assessment (on a running basis) of implementation results of the planned actions stemming from the EMP. Analysis (on a running basis) of documentation (the Contractor's reports) by the Engineer. Submission of reliable information on the course of the construction process to the Employer, with special consideration for the implementation of the measures limiting the negative environmental impact and the recommendations stemming from the environmental decisions.

PCU prepares also quarterly reports submitted to the World Bank.

The following are planned:

- *ex-ante* evaluation: a report before commencing Contract implementation (the Engineer's report),
- evaluation on a running basis: the Engineer's quarterly reports,
- *ex-post* evaluation:
  - ✓ a report after completing Contract implementation (final reports on EMP implementation prepared by the Contractor and the Engineer),
  - ✓ EMP Report after the expiry of the defect reporting period prepared by the Engineer.

11. LIST OF SOURCE MATERIALS

1) Assessment of impact of the Investment on water protection objectives according to article 4.1 and 4.7 of Water Framework Directive for the Task 1B1/1 (b) Reconstruction and modernization of river control infrastructure on the Odra River. Restoring the conditions of navigability of the waterway (1 bridge – Krosno Odrzańskie) Section: From the city of Scinawa to the mouth of the Nysa Luzycka River (Consultant's internal data, draft, November 2017).

2) Decision by the Mayor of Czerwieńsk on the environmental conditions of 18 July 2011, Ref.No.: GGRiOŚ 7627-11/39/10/11, issued for the undertaking under the name „Construction and executive design of the reconstruction of the Odra River control infrastructure – adaptation to the conditions of Class III waterway";

3) Decision of the Regional Director of Environmental Protection in Gorzow Wielkopolski, Ref. No.: WOOŚ-H4242.18.2011.NC of 7 April 2011 agreeing on the implementation of the project under the name „ Construction and executive design of the reconstruction of the Odra River control infrastructure – adaptation to the conditions of Class III waterway";

4) Decision of the Regional Director of Environmental Protection in Wrocław, Ref. No.: WOOŚ.4242.39.2011 JS.4 of 2 June 2011 agreeing on the implementation of the project under the name „Construction and executive design of the reconstruction of the Odra River control infrastructure – adaptation to the conditions of Class III waterway;

5) Documentation of the Plan of Protection Tasks of Natura 2000 site Dolina Środkowej Odry PLB080004;

6) Documentation of the Plan of Protection Tasks of Natura 2000 site Kargowskie Zakola Odra PLH080012;

7) Documentation of the Plan of Protection Tasks of Natura 2000 site Nowosolska Dolina Odry PLH PLH080014;

8) "Environmental Impact Report for the Investment Related to the Reconstruction of River Odra Regulation Structures – Adaptation to Class III Waterway", prepared in 2011 by a team from KRAMEKO Sp. z o.o. from Cracow under the guidance of Marcin Czerny, M.Sc. Eng.;

9) Environmental data for free-flowing Odra River: maps showing distribution of natural habitats and occurrence of protected species of fauna and flora from field inventory carried out in 2017 as well as from other available sources of data (Consultant's internal data).

10) Environmental and Social Management Framework for the Odra-Vistula Flood Management Project – the final document. RZGW in Szczecin, RZGW in Wrocław, RZGW in Kraków, ZMiUW of the Lubuskie Province in Zielona Góra, West-Pomeranian ZMiUW in Szczecin, ZMiUW of the Świętokrzyskie Province in Kielce, Lower-Silesian ZMiUW in Wrocław, ZMiUW of the Małopolskie Province in Kraków, ZMiUW of the Podkarpackie Province in Rzeszów, IMGW-PIB. April 2015

Project Operations Manual (POM) for the Odra-Vistula Flood Management Project. OVFM Project Coordination Unit. Wrocław, October 2015;

11) GIS database (natural habitats, animal species, SPAs areas for bird species) for Natura 2000 Krośnieńska Dolina Odry PLH080028.

12) Establishing the crucial places of ice jams in the Odra River in the section from barrage in Malczyce to the mouth of Nysa Łużycka with the estimation of potential flood damages in this section. IMGW-PIB (2015)

12. LIST OF APPENDICES

Appendix 1. Plan of mitigation measures

Appendix 2. Plan of monitoring activities

Appendix 3. List of national legal acts related to environmental protection

Appendix 4. Copies of administrative decisions regarding the environmental protection issued for the Task:

a. Decision on the environmental conditions by Mayor Czerwieńska of 18 July 2011 Ref. No.: GGRiOŚ 7627-11/39/10/11, issued for the undertaking under the name „Construction and executive design of the reconstruction of the Odra River control infrastructure – adaptation to the conditions of Class III waterway";

b. Decision of the Mayor of Czerwieńsk of 28 November 2011 (Ref. No.: GGRiOŚ 7627-11/43/10/11) on the correction of an obvious writing mistake in the Decision of the Mayor of Czerwieńsk of 18 November 2011

Appendix 5. Maps presenting the locations of Task (5a Location map of the main elements of the Task, 5b Location map of the Task against the protected area)

Appendix 6. Situation plans of groynes

(6a – Typical groyne – 100% extent of reconstruction of a groyne structure,

6b – Typical groyne – 50% extent of reconstruction of a groyne structure,

6c – Typical groyne – 10% extent of reconstruction of a groyne structure).

Appendix 7. Requirements concerning earth masses excavated from the riverbed.

Appendix 8. Report on the public disclosure procedure for the draft Environmental Management Plan for Contract 1B.1/1(a): Krosno Odrzańskie, 9.07.2018,

Report on the public disclosure procedure for the draft Environmental Management Plan for Contract 1B.1/1(a): Modrzyca, 10.07.2018.