

ENVIRONMENTAL MANAGEMENT PLAN

ODRA-VISTULA FLOOD MANAGEMENT PROJECT – 8524 PL

Environmental category B – according to OP 4.01 of WB

Component 2:

Flood Protection of the Nysa Kłodzka Valley

Sub-component 2A:

Active protection

Contract for works 2A.2:

*Construction of “Szalejów” –
a dry flood control reservoir on Bystrzyca Dusznicka River
and
Construction of “Krosnowice” –
a dry flood control reservoir on Duna stream*

Task 2A.2/2:

*Construction of “Krosnowice” –
a dry flood control reservoir on Duna stream*

FINAL VERSION

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ODRA-VISTULA

FLOOD MANAGEMENT PROJECT

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ENVIRONMENTAL MANAGEMENT PLAN

Component: *2 – Flood Protection of the Nysa Kłodzka Valley*

Sub-component: *2A – Active protection*

Contract: *2A.2 – Construction of “Szalejów” – a dry flood control reservoir on Bystrzyca Dusznicka River and Construction of “Krosnowice” – a dry flood control reservoir on Duna stream*

Part of Contract: *Implementation of Task 2A.2/2 – Construction of “Krosnowice” – a dry flood control reservoir on Duna stream*

Project Implementation Unit:

Regional Water Management Authority in Wrocław

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Joint Venture of *AECOM I&E UK Ltd, Halcrow Group Ltd, BRL Ingerierie and AECOM Polska Sp. z o.o.*

Wrocław, May 2017

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List of basic definitions and abbreviations used in the EMP

Name	Description
BGW	Body of Ground Water
BP	Bank Procedure ¹
BSW	Body of Surface Water
Consultant / Engineer / Contract Engineer	A company or a legal person providing the service of a Technical Assistance Consultant for the Regional Water Management Authority in Wrocław as part of OVFMP
Contract / Contract for works	Contract for works 2A.2 Construction of “Szalejów” – a dry flood control reservoir on Bystrzyca Dusznicka River and Construction of “Krosnowice” – a dry flood control reservoir on Duna stream
Contractor / Task Contractor / Contract Part Contractor	A company or a legal person implementing the Part of Contract for works 2A.2 Construction of “Szalejów” – a dry flood control reservoir on Bystrzyca Dusznicka River and Construction of “Krosnowice” – a dry flood control reservoir on Duna stream concerning Task 2A.1/2 Construction of “Krosnowice” – a dry flood control reservoir on Duna stream
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
Environmental decision / DEC	Decision on the environmental conditions
ESMF	Environmental and Social Management Framework for OVFMP ²
EU	European Union
GDOŚ	General Directorate for Environmental Protection
IEOP	Infrastructure and Environment Operational Programme
IMGW	Institute of Meteorology and Water Management
Investor / Employer / PIU	Regional Water Management Authority in Wrocław / OVFMP Project Implementation Unit
LA&RAP	Land Acquisition and Resettlement Action Plan
LSMP	Local spatial management plan
OP	Operational Policy (of the World Bank) ³

¹ The World Bank’s Operational Policies and Procedures are presented in the document entitled *The World Bank Operational Manual*, available on the following website:
<https://policies.worldbank.org/sites/PPF3/Pages/Manuals/Operational%20Manual.aspx>.

² The document is available on the website of OVFMP PCU, at the following address:
http://www.odrapcu.pl/popdow_dokumenty_RPZSiSS.html.
and on the World Bank’s website, at the following address:
<http://documents.worldbank.org/curated/en/717671468333613779/Poland-Odra-Vistula-Flood-Management-Project-environmental-and-social-management-framework>.

³ See the footnote for BP (Bank Procedure)

ORBMP	Odra River Basin District Management Plan
PAD	Project Appraisal Document ⁴ for OVFMP
Part of Contract / Part of Contract for works	Part of Contract for works 2A.2 <i>Construction of “Szalejów” – a dry flood control reservoir on Bystrzyca Dusznicka River and Construction of “Krosnowice” – a dry flood control reservoir on Duna stream</i> concerning Task 2A.2/2 <i>Construction of “Krosnowice” – a dry flood control reservoir on Duna stream</i>
PCU / OVFM PCU	Project Coordination Unit / OVFM Project Coordination Unit
PIO	Project Implementation Office – an organisational unit allocated as part of PIU
POM	Project Operations Manual ⁵ for OVFMP
Project / OVFMP / OVFM Project	Odra-Vistula Flood Management Project
RDOŚ	Regional Directorate for Environmental Protection
Road manager	An organizational unit fulfilling the obligations of managing public roads as defined by the <i>Public Road Act</i> or the obligations of managing a non-public road
RZGW	Regional Water Management Authority
SHP Plan	Safety and health protection plan
Task	Task 2A.2/2 <i>Construction of “Krosnowice” – a dry flood control reservoir on Duna stream</i> , constituting a Part of Contract for works 2A.2
UBSW	Unified Body of Surface Water
WMP	Waste Management Programme
World Bank / WB	International Bank for Reconstruction and Development / World Bank
ZMiUW	Board of Amelioration and Hydraulic Structures

⁴ The document is available on the World Bank’s website, at the following address:
<http://documents.worldbank.org/curated/en/320251467986305800/Poland-Odra-Vistula-Flood-Management-Project>.

⁵ The document is available on the website of OVFM PCU, at the following address:
www.odrapcu.pl/lp.php?plik=doc/POM_PL.pdf.

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 stated on the list below.

Name in the text	Full name (with publication reference)
<i>Birds Directive</i>	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)
<i>Construction Law</i>	Act of July 7 th , 1994 Construction Law (consolidated text: Journal of Laws of 2016, item 290)
<i>Environmental Protection Law</i>	Act of April 27 th , 2001 Environmental Protection Law (consolidated text: Journal of Laws of 2016, item 672)
<i>EIA Regulation</i>	Regulation of the Council of Ministers of November 9 th , 2010 on projects likely to have significant effects on the environment (consolidated text: Journal of Laws of 2016, item 71)
<i>Habitats Directive</i>	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)
<i>Inland Fishing Act</i>	Act of April 18 th , 1985 on inland fisheries (consolidated text: Journal of Laws of 2015, item 652)
<i>Nature Conservation Act</i>	Act of April 16 th , 2004 on nature conservation (consolidated text: Journal of Laws of 2015, item 1651 as amended)
<i>Public Road Act</i>	Act of March 21 st , 1985 on public roads (consolidated text: Journal of Laws of 2015, item 460 as amended)
<i>Waste Act</i>	Act of December 14 th , 2012 on waste (consolidated text: Journal of Laws of 2013, item 21 as amended)
<i>Water Framework Directive (WFD)</i>	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)
<i>Water Law</i>	Act of July 18 th , 2001 Water Law Act (consolidated text: Journal of Laws of 2015, item 469 as amended)

EXECUTIVE SUMMARY

This Environmental Management Plan (EMP) concerns Task 2A.2/2 *Construction of “Krosnowice” – a dry flood control reservoir on Duna stream*, which constitutes a part of Sub-component 2A within the Odra-Vistula Flood Management Project (OVFMP) and is implemented as the Part of Contract for works 2A.2.

The EMP presents i.a. the following information:

- a short description of the OVFMP Project and its Component 2, which includes the Task in question (chapter 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);
- a description of mitigation measures aimed at eliminating or limiting the potential negative environmental impact of the Task (chapter 6) together with tables presenting those measures (Appendix 1);
- a description of environmental monitoring measures binding on the Task (chapter 7) together 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);
- copies of administrative decisions in the scope of environmental protection issued for the Task (Appendix 4).

Characterization of the Task

The subject of the Task discussed in this EMP is the construction of “Krosnowice” – a dry flood control reservoir on Duna stream, with a maximum flooding area of 44 ha and a maximum retention volume of approx. 1.92 mln m³. The reservoir dam shall cross the Duna stream valley at chainage km 1+375 of the river, west of Krosnowice village (Lower Silesian Province, Kłodzko district, Kłodzko Municipality). The reservoir shall control a basin with a surface area of 33.6 km², which constitutes 95% of the Duna stream.

Scope of the Task

The scope of Task 2A.2/2 *Construction of “Krosnowice” – a dry flood control reservoir on Duna stream* includes the following elements:

- construction of a dam for a dry flood control reservoir (approx. 450 m long and maximally 14 m high) with relief devices and instrumentation;
- relocation and regulation of the Duna Dolna, Duna Górna and Duna stream riverbeds;
- construction of a rubble settling tank;
- construction of a utility building;
- execution of road infrastructure and lighting;

- reconstruction of power network, tele-technical network and telecommunication network;
- performance of additional activities in the scope of environmental protection.

Institutional, legal and administrative conditions

The Task is implemented in accordance with relevant national provisions of environmental protection in the scope of its characteristics, anticipated potential environmental impact and location in relation to protected areas.

The status of EIA administrative procedures

The following administrative decisions in the scope of environmental protection are among the ones issued for the Task in question in the years of 2014-2017:

- a decision on the environmental conditions for the construction of “Krosnowice” dry flood control reservoir;
- a decision on the environmental conditions for the reconstruction of a 110 kV power line;
- a decision exempting from provisions related to protection of plant species
- a decision exempting from provisions related to protection of animal species.

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 i.a. the following environmental conditions:

- the planned reservoir is located within the boundaries of a Body of Surface Water (BSW) named PLRW60004121589 *Duna Górna with Duna Dolna* and Body of Ground Water (BGW) No. 125;
- the presence of the following was established in the Task implementation area and its immediate surroundings: 11 protected species of plants, 94 protected animal species and 3 types of natural habitats listed in Annex I to EU *Habitats Directive*;
- in the Task implementation area and its immediate surroundings, there are no Natura 2000 sites nor other areas or objects protected by the *Nature Conservation Act*;
- in the Task implementation area and its immediate surroundings, there are no monuments, objects of high cultural value or cultural property.

Summary of the Environmental Impact Assessment

Earth surface and landscape

Task implementation is related to permanent transformation of the earth surface for the construction of the reservoir dam, which shall also influence the landscape on a local scale.

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 grounds

Task implementation is related to permanent transformation of the earth surface (including soil and grounds) for the construction of the reservoir dam, as well as to the possibility of pol-

luting the substrate at the construction stage. At the operation stage, Task implementation has no influence on the soil and ground status.

Surface waters

At the construction stage, Task implementation shall have an influence on the surface water status (by influencing the biological, hydromorphological and physical-chemical elements of water quality), but the influence shall be local and partially reversible, so it shall not be significant or constitute a hazard to the achievement of the environmental objective for the Body of Surface Water (BSW). At the operation stage, Task implementation has no influence on surface waters, except the planned reduction of catastrophic flows of the Duna stream downstream of the reservoir.

Groundwater

Instances of short-term, transient, local lowering of the groundwater table may take place at the construction stage in relation to performing the necessary excavation drainages. At the operation stage, in the periods when the reservoir is filled with water, the groundwater level in its surroundings may increase, but that impact shall be short-term and transient due to the short time of water damming in the reservoir.

Acoustic climate

The influence of Task implementation on the acoustic climate is limited in time to the construction stage and is not significant.

Biotic nature

Task implementation shall have a negative impact on 3 types of natural habitats, 7 protected plant species and several dozen protected animal species (including: 4 species of fish, 3 species of amphibians and reptiles, 67 bird species, 10 species of flightless mammals and 10 bat species) present in the designed reservoir area. That impact stems first and foremost from the necessary scope of land occupation, tree felling and river regulation, and shall be significantly reduced owing to planned mitigation measures. Task implementation does not influence the status of Natura 2000 sites nor other protected areas or natural objects.

Cultural monuments and material goods

Task implementation has no negative influence on cultural monuments.

The influence of Task implementation on the status of the remaining material goods is related to the necessity of introducing changes to the existing infrastructural objects (medium and low voltage power lines, tele-technical lines and telecommunication lines) and changes to the use of the lands located within Task boundaries. Additional impacts related to using the existing road network as access roads to the construction site may occur at the construction stage.

Human health and safety

Task implementation does not generate significant hazards to human health and safety. These may only occur in the case of breakdowns, catastrophes and other random incidents (e.g. pollutant leak, fire, finding unexploded bombs or unfired rounds, flood). The EMP defines appropriate conditions aimed at preventing such events and minimizing their potential effects.

Mitigation and monitoring measures

Chapter 6 and 7 of and 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 the Task and ensuring effective implementation of EMP conditions. Those

measures contain conditions defined in the issued administrative decisions in the 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 EIA procedures for the planned Task, including:

- public consultations for the document entitled *Environmental and Social Management Framework (ESMF)* for OVFMP Project (2015);
- public consultations conducted at the stage of issuing environmental decisions for the Task (2013-2015);
- public consultations for this Environmental Management Plan (2017).

1. INTRODUCTION

This Environmental Management Plan (EMP) concerns Task 2A.2/2 *Construction of “Krosnowice” – a dry flood control reservoir on Duna stream*, which constitutes a part of Sub-component 2A within the Odra-Vistula Flood Management Project (OVFMP) and is implemented as the Part of Contract for works 2A.2.

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 the scope of ensuring more effective protection against summer floods, winter floods and flash floods.

The project has 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 Voivodship;
- Sub-component 1B – Flood Protection of 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 NYSA KŁODZKA VALLEY (COMPONENT 2 OF THE OVFMP)

Component 2 of the OVFMP Project entitled *Flood Protection of the Nysa Kłodzka Valley* is aimed at providing flood protection for Kłodzko and other smaller towns and villages of the Kłodzko Valley as far as to the city of Bardo, located at the inlet to the Valley from the side of Wrocław.

Two Sub-components shall be implemented within the Component:

Sub-component 2A – Active protection

This Sub-component concerns construction of dry flood control reservoirs located on the Nysa Kłodzka river and its tributaries in the Kłodzko Valley, and includes the following four investment Tasks:

- 2A.1/1 – Construction of “Boboszów”
 - a dry flood control reservoir on Nysa Kłodzka River;
- 2A.1/2 – Construction of “Roztoki Bystrzyckie”
 - a dry flood control reservoir on Goworówka stream;
- 2A.2/1 – Construction of „Szalejów Górny”
 - a dry flood control reservoir on Bystrzyca Dusznicka River;
- 2A.2/2 – Construction of „Krosnowice”
 - a dry flood control reservoir on Duna stream.

Sub-component 2B – Passive protection

This Sub-component concerns protection of the areas along the Nysa Kłodzka river and its tributaries in the Kłodzko Valley using measures of passive flood protection, and includes the following four investment Tasks:

- 2B.1/1 – Flood protection of Nysa Kłodzka River Valley;
- 2B.1/2 – Flood protection of Ścinawka River Valley;
- 2B.2/1 – Flood protection of Biała Łądecka River Valley and Morawka River;
- 2B.2/2 – Flood protection of Bystrzyca Dusznicka River Valley and Kamienny Potok River.

2. DESCRIPTION OF THE TASK

The Task constituting the subject of this EMP concerns the construction of “Krosnowice” – a dry flood control reservoir on Duna stream. The Project Implementation Unit (PIU) for the Task is the Regional Water Management Authority in Wrocław.

2.1. LOCATION OF THE TASK

The Task shall be implemented in the Lower Silesian Province, Kłodzko district, Kłodzko Municipality, in two village administration units: Krosnowice and Starków.

The dry flood control reservoir shall be constructed west of Krosnowice (approx. 600 m from the village edge), approx. 5 km south-west of Kłodzko and approx. 8 km north of Bystrzyca Kłodzka. The reservoir was designed in the lower part of the Duna stream basin (the reservoir dam is located at chainage km 1+375 of the Duna stream, approx. 50 m downstream of the connection of Duna Dolna and Duna Górna (Topolica) streams).

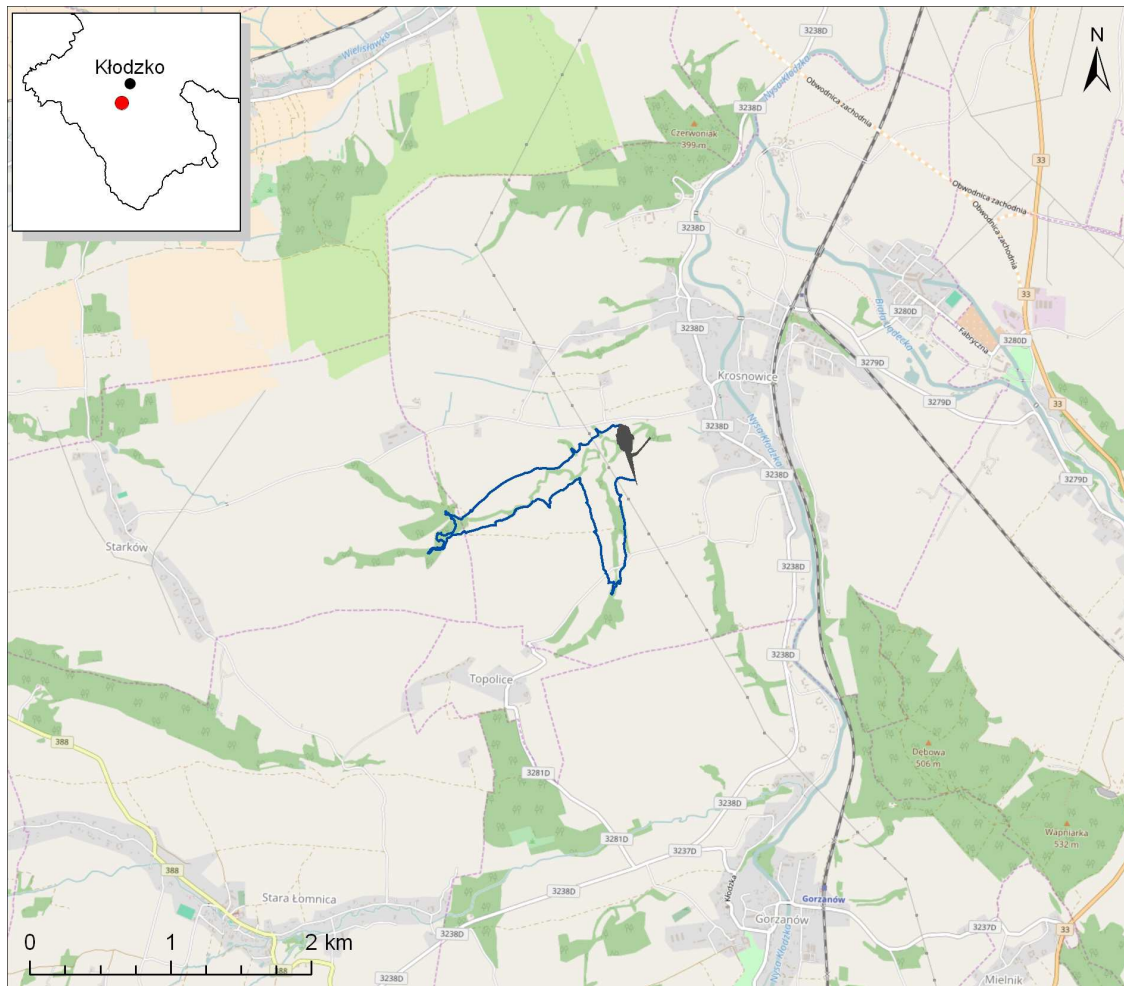


Figure 1. Task location – an overview map

(source: © authors of OpenStreetMap; licence: <http://www.openstreetmap.org/copyright>)

2.2. CHARACTERIZATION OF THE TASK

The “Krosnowice” dry flood control reservoir shall have a maximum flooding area of 44 ha and a maximum retention volume of approx. 1.92 ml m³. The main elements included in the Task scope are listed below.

Construction of a reservoir dam

The reservoir dam is located at chainage km 1+375 of the Duna stream, with the crest at an elevation of approx. 322 m AMSL. It is designed as an earth-fill dam.

The basic technical parameters of the designed dam are as follows:

- maximal dam height – 14 m;
- dam length – 450 m;
- dam crest width – 5 m;
- inclination of the upstream and downstream slope – 1:3.

The reservoir relief devices are designed in the form of two independent systems: sluice devices and spillway devices.

The sluice devices shall pass water during normal reservoir operation as well as flood waters. They are designed in the form of two reinforced concrete pipes (of dimensions: length – approx. 90 m, width – 2.5 m and height – 2.5 m). Inlet to one of the pipes is located at the elevation of 307.8 m AMSL, while to the other one – at the elevation of 310.0 m AMSL. In normal conditions, the waters in the river shall flow through the first of a/m pipes, while in flood conditions they shall flow through both pipes. The sluice devices shall be equipped with gates in the form of valves with an electrical drive.

The spillway devices are designed in the form of a sloped spillway located along the south slope of the valley.

The reservoir shall be equipped with instrumentation.

Relocation and regulation of watercourse beds

The planned works related to the existing watercourse beds include i.a. the following:

- relocation of the present riverbeds of streams: Duna Dolna, Duna Górna and Duna on the sections upstream of the dam to the new riverbeds (of total length approx. 600 m) and to the sluice device in the dam body (of length approx. 100 m);
- relocation of the present Duna stream riverbed on the section downstream of the dam to the new riverbed (of length approx. 300 m);
- regulation of the existing riverbeds of the Duna Dolna and Duna Górna streams upstream of the dam (few sections of total length approx. 600 m);
- regulation of the existing Duna stream riverbed downstream of the dam (few sections of total length approx. 500 m).

Construction of a rubble settling tank

A rubble settling tank, of surface area approx. 0.95 ha, shall be constructed on the left bank of the new Duna Dolna stream riverbed (in km 1+317 – 1+488) in the reservoir basin. The settling tank shall be constantly filled with water, with average depth 1.2 m (max. approx. 2 m).

Construction of a utility building

The utility building was designed next to the upstream station location, at the south end of the dam.

Performance of road infrastructure and lighting

The designed works include i.a.:

- construction of access and service roads (of asphalt and gravel pavement);
- construction of a car park next to the supply base building;
- execution of lighting systems.

Reconstruction of power, telecommunication and tele-technical networks

The designed works include i.a.:

- reconstruction of a high voltage 110 kV power line;
- reconstruction and construction of medium voltage 20 kV power lines;
- construction of low voltage power lines;
- reconstruction of telecommunication line;
- reconstruction and construction of tele-technical lines.

Performance of additional activities in the scope of environmental protection

Additional activities in the scope of environmental protection include i.a.:

- performance of plantings (including i.a. natural habitats *91E0 and *9170) of min. surface area 7 ha;
- installation of 2 nest boxes for birds and 50 boxes for bats.

3. INSTITUTIONAL, LEGAL AND ADMINISTRATIVE CONDITIONS

3.1. INSTITUTIONS INVOLVED IN TASK IMPLEMENTATION

The Task Investor is the Regional Water Management Authority in Wrocław, which acts in the name and on behalf of the State Treasury. Moreover, at the construction and operation stages, Task implementation may require involving public administration bodies on the central, regional and local level. For the purposes of the current coordination of the Project implementation, an organizational unit named Odra-Vistula Flood Management Project Coordination Unit was established.

3.2. BINDING NATIONAL LEGAL ACTS CONCERNING THE ENVIRONMENT

Under Polish law, the investment process in the scope concerning the environment is governed by about a dozen of acts and regulations. Appendix 3 presents a list of selected primary legal acts related to the abovementioned thematic scope 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 provisions in the scope of environmental protection are amended. In each case, the Contractor is obliged to observe all legal regulations binding in Poland throughout the Contract term.

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 i.a. on the website of the Odra-Vistula Flood Management Project Coordination Unit¹ and of the World Bank².

3.4. GUIDELINES OF THE WORLD BANK

The Task in question is co-financed by the World Bank and its implementation conditions in the scope of environmental protection comply with WB *Operational Policies* and *Bank Procedures* in the scope of environmental protection, including i.a. 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 i.a. in the *Environmental and Social Management Framework (ESMF)*.

¹ On the website: http://www.odrapcu.pl/popdow_dokumenty_RPZSiSS.html.

² On the website: <http://documents.worldbank.org/curated/en/717671468333613779/Poland-Odra-Vistula-Flood-Management-Project-environmental-and-social-management-framework>.

³ On the website: <https://policies.worldbank.org/sites/PPF3/Pages/Manuals/Operational%20Manual.aspx>.

3.5. CURRENT STATUS OF EIA PROCEDURES FOR THE TASK

The following decisions in the scope of environmental protection have been obtained for the Task in question:

A) A decision on the environmental conditions for reservoir construction

According to the classification included in the *EIA Regulation*, the undertaking concerning construction of a dry flood control reservoir (which covers the primary scope of the Task) belongs to group I, i.e. to undertakings which might always have a significant impact on the environment and for which conducting an Environmental Impact Assessment is required before issuing a decision on the environmental conditions.

The proceedings concerning issuing a decision on the environmental conditions for reservoir construction, during which the Environmental Impact Assessment was carried out, was concluded by issuing a decision of the Regional Director for Environmental Protection in Wrocław of March 13th, 2015 on the environmental conditions (ref. No.: WOOS.4204.2.2013.LCK.24 – Appendix 4a to the EMP).

B) A decision on the environmental conditions for reconstruction of a 110 kV power line

The undertaking concerning reconstruction of a 110 kV power line (constituting a part of the Task) belongs to group II, i.e. to undertakings which might have a potential significant impact on the environment and for which conducting an Environmental Impact Assessment may be required before issuing a decision on the environmental conditions.

In the course of the conducted proceedings concerning issuing a decision on the environmental conditions, the conducting body obtained a decision of the Regional Director for Environmental Protection in Wrocław expressing an opinion about lack of the necessity for conducting an Environmental Impact Assessment. The proceedings concerning issuing a decision on the environmental conditions were concluded by issuing a decision of the Head of Kłodzko Municipality of January 8th, 2014 on the environmental conditions (ref. No.: RMiZN.6220.12.5.2013 – Appendix 4b to the EMP), stating lack of the necessity for conducting an Environmental Impact Assessment. In addition, on January 11th, 2017, the Head of Kłodzko Municipality issued a decision on rectifying an obvious typographic mistake in the date of issue of the aforementioned decision (ref. No.: R.MiZN.6220.12.7.2013 – Appendix 4c to the EMP).

C) Decisions exempting from provisions related to protection of species

Scaring and disturbing as well as destruction of specimens and habitats of protected plant and animal species may take place during Task implementation, so the Regional Water Management Authority in Wrocław, as the Investor, submitted applications for issuing a decision exempting from bans related to specimens of plants and animals covered by species protection to the Regional Directorate for Environmental Protection in Wrocław. The administrative proceedings concerning that case were concluded by issuing a decision of the Regional Director for Environmental Protection in Wrocław of June 13th, 2016 exempting from bans related to plants covered by species protection (ref. No.: WPN. 6400.22.2016.MR – appendix 4d to the EMP) and a decision of the Regional Director for Environmental Protection in Wrocław of June 13th 2016 exempting from bans related to animals covered by species protection (ref. No.: WPN.6401.194.2016.MR – appendix 4e to the EMP).

Copies of the abovementioned administrative decisions issued in the years of 2014-2017 are shown in Appendix 4 to the EMP.

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

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

This chapter describes the status of elements of the environment in the surroundings of the Task on the basis of the information contained in the EIA Report (2014) with supplementations.

4.1. EARTH SURFACE AND LANDSCAPE

Considering the physical-geographical division of Poland, the planned investment is located within the Kłodzko Valley mesoregion, which borders on the Śnieżnik Massif and Golden Mountains in the east and on the Bystrzyckie Mountains in the west. That mesoregion belongs to the Middle Sudety macroregion.

The landscape surrounding the area of the planned Task is dominated by wavy relief of the upland type. The upland areas located on two sides of the Kłodzko Valley are small, slightly wavy uplifts with an average height of approx. 500 m AMSL, crossed by shallow valleys of numerous streams. This area has the nature of a denuded upland with local hills and, due to surrounding mountain massifs, is a typical mid-mountainous depression. Eastern slopes of that area gradually rise towards the Śnieżnik Massif and Golden Mountains, while its western slopes – towards the Bystrzyckie Mountains.

The area has a cultural-cultivation landscape. Most of the area is occupied by spacious farmlands and also meadows (especially in the northern section of the Duna stream valley). Narrow zones of tree stands are situated along the stream riverbeds.

4.2. CLIMATE

There is moderate Central European mid-mountainous climate in the area of the Task in question. It is determined by two factors: the altitude above mean sea level and the orographic system. Seasons of the year are easily recognizable and identified by temperature changes (warm and humid spring, warm and often dry summer, cool and humid autumn and frosty winter with significant snowfall). The cloud cover is medium in autumn and winter and is the smallest in summer.

4.3. ATMOSPHERIC AIR

In the region of the planned reservoir construction, there are no industrial plants or production and breeding plants which could significantly deteriorate the sanitary status of the air. The source of air pollution may be local roads: Starków – Krosnowice (running approx. 50-700 m north of the designed reservoir dam) and Gorzanów – Krosnowice – Kłodzko (running approx. 600 m east of the designed reservoir dam). Emission from so-called low sources (mainly home furnaces) may also determine air pollution in the discussed region. The planned reservoir is located approx. 600 m away from the nearest village (Krosnowice), so one can expect that concentrations of the discussed pollution in the region of the planned investment should be much lower than the concentrations of background pollution measured in Kłodzko city.

4.4. SOILS AND GROUNDS

The discussed area features mainly brown soils and acid brown soils, while the stream valleys feature mainly alluvial soils. Most of the soils are used as farmlands (pastures and meadows) in valuation class III and IV.

4.5. SURFACE WATERS

The planned reservoir lies in the Duna stream – a left-hand side tributary of the Nysa Kłodzka river. The main tributaries of Duna stream are: Duna Dolna stream and Duna Górna (Topolica) stream, which meet in the basin of the designed reservoir. Within the reservoir area there is also a no-name stream, flowing out from eastern slopes of the Bystrzyckie Mountains, which debouches into the Duna Dolna stream. The Duna stream flows out from eastern slopes of the Bystrzyckie Mountains and its highest-located sources are situated at the height of 730 m AMSL. The Duna stream length, counted from the sources to the computational section, in which the dam was localised, amounts to 12.83 km. The Duna stream basin occupies the surface area of 34.48 km². The dam shall close the basis of surface area 33.6 km², which constitutes approx. 95% of the Duna stream basin area.

The designed reservoir is located within the boundaries of a Body of Surface Water (BSW) named PLRW60004121589 *Duna Górna with Duna Dolna*.

Duna is an uncontrolled watercourse. Specified characteristic flows were calculated for the purposes of the Task. Average and low flows are as follows:

Characteristic flow	Flow intensity Q [m ³ /s]
NNQ (absolutely lowest flow)	0.06
SNQ (average low flow)	0.13
SSQ (average lowest flow)	0.46

Calculated maximum flows are as follows:

Probability [%]	Flow intensity Qp% [m ³ /s]
50	7.17
10	26.88
5	36.19
2	48.61
1	58.29
0.5	68.21
0.3	75.36
0.2	81.03
0.1	91.51
0.05	99.55

The calculated minimum inviolable flow (according to hydrobiological criterion) amounts to 0.195 m³/s. A non-damaging flow for the stream valley downstream of the reservoir, as calculated in the hydrological documentation, amounts to 5 m³/s.

Arrangements stemming from the *Odra River Basin District Management Plan (ORBDMP)*

The designed reservoir is located in the Middle Odra water region, in the Nysa Kłodzka balance basin, in the basin of a Body of Surface Water (BSW) named PLRW60004121589 *Duna Górna with Duna Dolna*, which belongs to Unified Body of Surface Water (UBSW) code SO0902.

The length of watercourses in the JCWP basin amounts to 21.97 km, while the basin area – 34.48 km.

According to the binding *Odra River Basin District Management Plan*, the BSW in question belongs to type 4 – an upland silicate stream with coarse-grained substrate. *Duna Górna with Duna Dolna* BSW is a natural water body the status of which was assessed as good. The environmental objective for this BSW is the achievement of a good water status by obtaining a good ecological status and a good chemical status. The BSW in question is threatened with a risk of failure to achieve the environmental objective according to the WFD, and therefore it received a derogation under Article 4(7) of the WFD with the following justification: “due to the planned activities in the scope of implementing investments which cause changes in BSW physical characteristics and are of higher public interest, i.e. flood protection, the implementation of those plans prevents the achievement of assumed environmental objectives by the BSW”.

Moreover, the area of *Duna Górna with Duna Dolna* BSW features detailed environmental objectives, set out due to the presence of protected areas included in the lists referred to in Article 113 Par. 4 of the *Water Law*, such as:

- bodies of water intended for water uptake for the purposes of providing the population with water for consumption, i.e. BGW with the following codes: PLGW5100110, PLGW6220111 and PLGW6220112,
- areas sensitive to eutrophication caused by pollution coming from municipal sources (the entire area of Poland),
- areas intended for protection of natural habitats or species for which maintenance or improvement of water status is an important protection factor (i.a. the Bystrzyckie Mountains and the Orlickie Mountains protected landscape area (PLA)).

The planned Task, consisting in the construction of “Krosnowice” – a dry flood control reservoir on Duna stream, was included in a supplementary study for the *Odra River Basin District Management Plan* (so-called *MasterPlan*) under No. 1_444_O (Annex No. 2, List No. 1) and was classified there as an investment which does not have a negative impact on achieving a good water status or does not deteriorate water status.

4.6. GROUNDWATER

Two aquifer levels can be distinguished in the area of the planned reservoir: the Cretaceous level and the Quaternary level. Taking into consideration the Cretaceous level, the reservoir is located within the Main Groundwater Reservoir No 341 (the intra-Sudety basin Kudowa Zdrój – Bystrzyca Kłodzka). It is a reservoir of fissure and pore water connected with occurrence of cracks and gaps in the upper Cretaceous formations (in marlstones and sandstones).

The Quaternary aquifer level occurs in turn in Holocene sand and gravel formations, in the bottom of the valley. Water table of this level can be either free or confined. Since the Duna

stream is in majority grooved into the bedrock, water of the Quaternary level may be in contact with water of the Cretaceous level.

Closed mineralised water intake No 9012025 named Krosnowice 11R is located in the area of the planned reservoir, within the reach of the maximum storage level (according to the data provided by the Polish Hydrogeological Survey). The area of the planned reservoir is located outside the medicinal water deposits in mining areas connected with medicinal water deposits.

The impact area of the planned reservoir is located within the boundaries of BGW code PLGW6220_110, which belongs to the Middle Odra water region and to Odra river basin area code 6000. The groundwater quantitative status and chemical status was assessed as good and the groundwater is not threatened with a risk of failure to achieve the environmental objectives. According to a new division of bodies of ground water, the Task implementation area is located in the area of BGW No. 125.

4.7. ACOUSTIC CLIMATE

There are no significant noise generators in the region of the planned Task. The biggest source of noise here is so-called traffic noise, generated by mechanical vehicles moving along the nearest local roads (i.a. the Starków – Krosnowice road, located approx. 50-700 m north of the designed reservoir and the Gorzanów – Krosnowice – Kłodzko road, located approx. 600 m east of the designed reservoir dam.). The second source of traffic noise is railway line No. 276 (from Wrocław to the state border with the Czech Republic in Lichkov and then to Prague), located about 1 km west of the designed reservoir. Less significant sources of noise shaping the acoustic climate in this region are seasonal agricultural works.

The nearest residential building is building No 62, which is situated about 180 m east of the designed reservoir dam. Sequential development of residential and commercial buildings at the asphalt road in Krosnowice is located about 600 m east of the dam.

4.8. BIOTIC NATURE

4.8.1. Protected natural habitats and species

Natural habitats from Annex I to the *Habitats Directive*

3 types of natural habitats from Annex I to the *Habitats Directive* were determined in the area of the planned Task. They are:

- 6430 – mountain herbs (*Adenostylion alliariae*) and riparian herb growths (*Convolvuletalia sepium*). 2 patches of habitat were determined (in total surface area: 0.05 ha). The habitat occurs mainly over the Duna Dolna stream and its conservation status was determined as unfavourable inadequate (U1).
- 9170 – *Galio-Carpinetum* and *Tilio-Carpinetum* oak-hornbeam forests. 4 patches of habitat were determined (total surface area: 12.3 ha). The habitat occurs along the riverbeds of Duna Dolna and Duna Górna streams, and also in the erosive gullies on northern slope of the Duna Dolna stream valley. General conservation status of the habitat was determined as unfavourable bad (U2).
- *91E0 – riparian mixed forests of willow, poplar, alder and ash tree (*Salicetum albofragilis*, *Populetum albae*, *Alnenion glutinoso-incanae*) as well as alder forests on percolating mires. 2 patches of habitat were identified (total surface area: 1.42 ha). The habitat

occurs along the riverbeds of Duna Dolna and Duna Górna streams. General conservation status was determined as unfavourable bad (U2).

A detailed description of occurrence of the abovementioned natural habitats is presented in the EIA Report prepared in 2014 for the purposes of obtaining a decision on the environmental conditions.

Protected species of plants

Occurrence of 18 plant species considered as rare, including 11 species protected in Poland) was determined in the area of the planned Task. In addition, occurrence of 2 protected species of lichen was determined.

A list of rare and protected plant species determined in the area of the designed reservoir is presented in Table 1 in Appendix 5. That table includes species protected under currently binding national provisions of law and the remaining rare species (those included in *Polish Plant Red Data Book* or put on the *Red List of Vascular Plants of Lower Silesia*). The table does not include species that lost their protected status in relation to changes to the list of species protected in Poland but were subject to protection in the EIA Report preparation period (and were listed in the Report as protected species).

Protected species of animals

A total of 94 protected animal species was identified within the impact area of the planned Task.

8 species representing fish fauna were identified in the waters of streams flowing within the designed reservoir basin. Four of them are subject to species protection: Bullhead *Cottus gobio*, Siberian bullhead *Cottus poecilopus*, Stone loach *Barbatula barbatula* and Brook lamprey *Lampetra planeri*.

Amphibians and reptiles in the Task implementation area are represented by 3 species subject to partial protection (1 frog species, 1 lizard species and 1 snake species).

The most numerous group of protected animals in the area in question is birds. 67 bird species covered by species protection were determined here, including 6 species from Annex I to the *Birds Directive*. The presence of birds in this area is favoured by habitat diversification within the planned reservoir: the presence of tree stands (including riparian and oak-hornbeam forests) and shrubs, as well as the closeness of the stream riverbeds create good conditions for breeding, feeding and resting for many birds. Some of those species are open area birds: their mosaic is present in the agriculturally used area in the surroundings of tree-covered areas.

Flightless mammals constitute a relatively small percentage of species determined in the analysed area. 10 species subject to partial protection were identified here. Beside flightless mammals, 10 protected bat species were determined in the Task implementation area.

A list of protected species of animals determined in the area of the designed reservoir is presented in Tables 2-6 in Appendix 5 to the EMP. Detailed descriptions of occurrence of individual species are presented in the EIA Report (2014).

4.8.2. Protected areas and objects

Natura 2000 sites

There are no Natura 2000 sites in the designed reservoir area or its immediate vicinity.

In the close vicinity of the reservoir (up to 2 km), there is one Natura 2000 site belonging to a category of so-called habitat areas: the Krowianki Mountain Range (PLH020019) – approx. 1.2 km east of the reservoir.

In the further vicinity of the reservoir (up to 10 km away), there are six Natura 2000 sites belonging to a category of so-called habitat areas (PLH) or so-called bird areas (PLB):

- 1) “Dolina Bystrzycy Łomnickiej” (PLH020083) – 7.5 km SW of the reservoir;
- 2) “Piekielna Dolina koło Polanicy” (PLH020010) – 7.7 km NW of the reservoir;
- 3) “Góry Stołowe” (PLH020004) – 8.8 km NW of the reservoir;
- 4) “Góry Stołowe” (PLB020006) – 8.8 km NW of the reservoir;
- 5) “Góry Złote” (PLH020096) – 8.9 km E of the reservoir;
- 6) “Sztolnia w Młotach” (PLH020070) – approx. 9.4 km S of the reservoir.

Other protected areas and objects

In the area of the designed reservoir and in its immediate vicinity, there are no area forms or spot forms of nature protection as defined by the *Nature Conservation Act*. The following protected areas are located in the further vicinity (up to 10 km): “Góry Bystrzyckie i Orlickie” Protected Landscape Area (5.2 km W of the reservoir), “Góry Bardzkie i Sowie” Protected Landscape Area (8.2 km NE of the reservoir) and buffer zone of the “Góry Stołowe” National Park (7.3 km NW of the reservoir).

4.9. CULTURAL MONUMENTS

In the area of the designed reservoir, there are no monuments, objects of high cultural value or cultural property. The designed reservoir is situated outside the archaeological sites (the nearest archaeological site is located approx. 500 m east of the reservoir dam). The nearest monumental buildings are located more than 600 m east of the dam (buildings No 46, 48, 61, 72 and 76 in Krosnowice).

4.10. POPULATION AND MATERIAL GOODS

A large part of the area in the designed “Krosnowice” reservoir area and its immediate vicinity is occupied by spacious farmlands, mountain meadows on the slopes of hills, as well as riparian and oak-hornbeam forests in river valleys. Forests occupy the surface area of approx. 19 ha, farmlands approx. 15 ha and meadows approx. 10 ha. In addition, a number of unsurfaced roads run through the reservoir area, providing access to meadows and arable lands. The land on which the reservoir was planned is uninhabited. The nearest residential building is building No 62, which is situated about 180 m east of the designed reservoir dam. Sequential development of residential and commercial buildings at the asphalt road in Krosnowice (district road 3238D) is located about 600 m east of the dam. A wooden holiday house with fencing is situated in the backwater part of the reservoir basin, in the Duna Górna stream valley. The said house is located outside the floodplain while its fencing shall be flooded only sporadically, with maximum storage level (500-year water (p=0.2%)), therefore it is not foreseen

to demolish it. From the south, the reservoir backwater in the Duna Górna stream valley is crossed by an asphalt road leading from Krosnowice to Topolice.

There are three villages in the reservoir vicinity, outside its boundaries: Krosnowice (approx. 2900 residents), Starków (approx. 200 residents) and Topolice (approx. 30 residents). There are no industrial plants in those villages. A medium voltage (MV) 20 kV line and a high voltage 110 kV line run through the designed reservoir area, as well as an overhead telecommunication line on the left bank of the reservoir, upstream of the basin. Numerous facilities of power, telecommunication and sanitary infrastructure are located east of the designed dam, however in vast majority they do not collide with the Task area. Railway line No. 276 of international significance (from Wrocław to the state border with the Czech Republic in Lichkov and then to Prague) runs approx. 1.1 km east of the dam.

5. SUMMARY OF THE ENVIRONMENTAL IMPACT ASSESSMENT

5.1. EARTH SURFACE AND LANDSCAPE

Earth surface

The impact exerted on the earth surface shall be related to temporary and permanent land occupation. At the construction phase, temporary exclusion of land from its previous use in the Task area shall be related i.a. to establishing a construction site backyard and access roads. After construction completion, the construction site backyard and the access roads shall be demolished and the land shall be reinstated.

Permanent exclusion of land from its previous use related to the construction phase shall concern i.a. dam body foundation together with the upstream and downstream stations, construction of a rubble settling tank, construction of roads, backfilling of river sections, excavations for the new riverbed sections and excavations in the soil acquisition areas.

The total surface area of lands which shall be transformed as a result of implementation of the Task shall reach approx. 19 ha, including 12 ha which shall be subject to permanent transformation.

Landscape

The constructed dam in the form of an earth-fill embankment (450 m long and approx. 14 m high), crossing the valley and the Duna stream riverbed, shall be a dominant element of landscape and at the same time an alien one in the natural river valley (that effect shall be additionally strengthened by the presence of internal roads and lighting systems). Adopted technical solutions, including construction of an earth-fill dam with turfed slopes, shall reduce investment impact exerted on the landscape. Additional elements connected with landscape protection shall be: limitations on area occupation at the works stage, limitation on the scope of tree felling and planting trees and shrubs.

5.2. CLIMATE

Modification of climatic conditions

The designed reservoir shall be a dry one, filled with water only for a short time during flooding risk periods. Due to the short time of filling the reservoir with water, it shall have no influence on any climatic phenomena at the operation stage and the microclimate in its region shall not change.

Greenhouse gas emission

Exhaust fumes (including carbon dioxide, classified as a greenhouse gas) shall be emitted at the construction stage as a result of fuel combustion by vehicles and construction machinery. Moreover, demand for electrical energy shall occur in connection with using the construction site backyard, operating machines and devices and lighting the construction site (electrical energy consumption is related to greenhouse gas emission during its production in power plants).

The demand for electrical energy at the reservoir operation stage shall be mainly related to using the utility building, supplying facilities connected with the dam and functioning of the lighting system.

Making the Task resistant to negative phenomena accompanying climate changes

The planned reservoir was designed in accordance with binding hydraulic provisions, which take into account extreme phenomena taking place in the environment in connection with climate changes (this is governed by appropriate provisions concerning design, construction and operation of flood control reservoirs). On the other hand, construction of new dry flood control reservoirs (including the “Krosnowice” reservoir) shall improve flood protection of numerous towns and villages located in the Kłodzko Valley and thus contribute to limiting the effects of negative phenomena accompanying climate changes.

5.3. ATMOSPHERIC AIR

At the construction stage, unorganized emission of exhaust fumes generated in connection with operating vehicles and construction machinery shall be the source of pollution emission to atmospheric air. The primary pollutants emitted to the air due to diesel oil combustion in machine and car engines shall be: SO₂, NO₂, CO, aliphatic hydrocarbons, soot and dust rising during the passage of cars and during earthworks, especially in long rainless periods. Since the construction site covers a relatively spacious area and the vehicles and construction machinery emitting the pollution shall not work on its entire surface area simultaneously (the works shall be performed section by section, according to their progress), one should not expect a significant influence of the works on the air pollution status beyond the Task area. One should expect local, short-term, increased concentration values of the abovementioned pollutants in the neighbourhood of operating vehicles and machines, which is a typical phenomenon of construction works and withdraws after completing the works.

At the operation stage, impact on the air in connection with road transportation (emission of pollutants to the air) shall be limited only to periodic passage of cars carrying technical supervision staff arriving to inspect the dam.

5.4. SOILS AND GROUNDS

The impact exerted on the soils at the construction stage shall be first and foremost related to direct transformations of the earth surface (excavations), permanent exclusion of a part of the land from its previous use, changes to earth structure on temporarily occupied land (access roads, construction site backyards) and the possibility of soil pollution as a result of a petroleum derivative leak caused by a breakdown.

After completing the construction stage and performing correct soil reinstating, one should not expect significant changes in the soil-water conditions or soil productivity in the areas of temporary occupation.

5.5. SURFACE WATERS

Biological elements of water quality

Macrophytes, benthic macroinvertebrate fauna and phytobenthos

An approx. 1300 m long fragments of the present riverbeds of Duna Dolna, Duna Gónra and Duna streams shall be backfilled at the construction stage in relation to the necessity for relocating sections of the stream riverbeds downstream and upstream of the dam body. In addition, another, approx. 250 m long section of the Duna Dolna stream riverbed shall be incorporated into the rubble settling tank boundaries and excluded from regular flow. New riverbed sections of a/m streams shall be constructed in place of the liquidated sections, of total length approx. 1000 m. The aquatic and shore flora (phytobenthos, macrophytes) as well as a part of the aquatic fauna (especially species of small size and limited locomotion abilities, including benthic macroinvertebrate fauna) present on that section shall be destroyed on sections planned to be liquidated. Additional losses of the resources of the abovementioned organisms shall be related to the planned works consisting in the regulation of further riverbed sections of the Duna Dolna, Duna Gónra and Duna streams riverbed (in total approx. 1100 m of the stream riverbeds upstream and downstream of the dam).

At the operation stage, the groups of benthic macroinvertebrates, phytobenthos and macrophytes destroyed earlier shall be gradually restored (in regulated and newly constructed riverbed sections of the Duna Dolna, Duna Gónra and Duna streams). In the case of phytobenthos, this process shall take several months, while in the case of macrobenthos and macrophytes it shall last up to 2-3 years.

Taking into account the fact that permanent transformations shall comprise only small part of the length of watercourses within the boundaries of the body of surface water (BSW) covered by the Task, it is estimated that the losses of the resources of macrophytes, phytobenthos and macroinvertebrates shall not be significant and shall not cause failure to achieve the environmental objective set for that BSW.

Fish fauna

At the construction stage, as in the case of the abovementioned benthic organisms and macrophytes, habitats and the food base of fish shall be destroyed on the liquidated riverbed section of the Duna Dolna, Duna Gónra and Duna streams and the status of habitats and the food base of fish on the sections subject to regulation shall deteriorate. This impact shall be of local nature, so it shall not constitute a hazard to the achievement of the environmental objective.

At the operation stage, the fish habitats destroyed or degraded earlier shall be gradually restored (in regulated and newly constructed stream riverbed sections) in the periods described in the previous clause.

To sum up, the permanent negative impact on the abovementioned biological elements of waters at the construction stage shall concern relatively short (several hundred metre long) riverbed sections of the Duna Dolna, Duna Gónra and Duna streams, which constitute a small part of the length of significant watercourses in the BSW. Morphological continuity of the river shall be preserved at the reservoir construction and operation stages. Reservoir construction and operation shall not cause deterioration of the BSW ecological status.

Hydromorphological elements of water quality

Hydrological conditions

Reservoir construction and functioning shall not influence the hydrological conditions of Duna Dolna, Duna Gónna and Duna streams in the scope of normal flows. At the operation stage, the reservoir shall reduce catastrophic flows, occurring once every 10 years or rarer and significantly exceeding normal high water levels. Beside the planned limitation of catastrophic flows, the designed reservoir shall not influence the hydrological regime of a/m streams.

Morphological conditions

The riverbed section of Duna Dolna, Duna Gónna and Duna streams, of total length approx. 1500 m, shall be replaced with new riverbeds (of approx. length 1000 m) at the construction stage, which shall shorten the length of a/m watercourses by approx. 500 m. Liquidated riverbeds shall be replaced by new riverbeds of width adjusted to width of the natural stream riverbeds on that section but with simplified, as compared to them, structure of the bottom and banks. Additional simplification of morphological structure of stream riverbeds shall be connected with the planned works consisting in the regulation of further riverbed sections of Duna Dolna, Duna Gónna and Duna streams (in total approx. 1100 m of stream riverbeds, upstream and downstream of the dam) and the functioning of rubble settling tank, which shall limit the amount of rubble getting to stream sections downstream of the dam. Nevertheless, physical transformations of the BSW which change the morphological conditions are not significant enough to cause lowering of the ecological status/potential assessment result for the entire BSW. In this respect, implementation of the planned Task does not cause a hazard to the achievement of WFD environmental objectives in the next planning cycle (the year of 2021). Reservoir construction shall not have a negative influence on continuity of the streams, either.

Physical-chemical elements of water quality

Periodic, short-term, insignificant impact on selected physical-chemical elements of water quality shall occur at the construction stage. It shall be related only to the suspension concentration increase in the water depths on the sections downstream of the performed regulation works in the riverbeds of Duna Dolna, Duna Gónna and Duna streams. The described impact does not occur at the operation stage. The quantity of suspensions penetrating into the water shall be insignificant and shall not constitute a hazard to the achievement of the environmental objective.

Assessment of the impact on the BSW covered by the Task and on the neighbouring BSW

The impact of the planned works (including the works performed in the riverbeds of Duna Dolna, Duna Gónna and Duna streams) on the aquatic environment quality of *Duna Gónna with Duna Dolna* BSW, including the impact on its biological, physical-chemical and hydromorphological elements, shall not be significant. The planned Task shall not cause status deterioration of the BSW covered by the Task or the neighbouring BSW and does not constitute a hazard to WFD environmental objectives.

5.6. GROUNDWATER

The influence on the groundwater status

Instances of short-term, transient, local lowering of the groundwater table may be caused by the works related to reservoir construction in connection with performing the necessary excavation drainages at the works stage. The possibility of contaminant transfer together with rain waters from the terrain surface to the groundwater largely depends on the layer thickness of low permeability formations insulating the aquifer. In general, after implementing the minimizing measures in the scope of limiting the possibility of water and soil pollution, the construction works shall not cause a negative impact on the quantitative or qualitative status (changes in water chemism and hydrodynamism) of groundwater.

At the operation stage, surface water damming in the reservoir shall be a periodic and short-term phenomenon. However, even short-term water damming in the reservoir may influence groundwater by elevating the groundwater drainage base in the reservoir basin area and by periodically changing the hydrogeological conditions in the immediate vicinity of the reservoir. Such changes shall not affect groundwater levels on lands located downstream of the dam due to the presence of dam body sealing from upstream face.

Assessment of the impact on the achievement of BGW environmental objectives

The planned Task, consisting in the construction of a dry flood control reservoir damming the water only in flood periods, shall not infringe WFD objectives, i.e. shall not cause deterioration of the groundwater quantitative status or chemical status within the boundaries of the body of ground water (BGW) covered by the Task.

5.7. ACOUSTIC CLIMATE

The anticipated scope of works shall be related to periodic noise emission at the construction stage. The sources of noise shall be the work of individual construction machines and the traffic of vehicles, including trucks. Given that the nearest residential buildings are situated over 180 m away from the works performance locations, as well as taking into account the influence of local land configuration in the dam construction area (the works shall be performed in a stream valley the slopes of which shall constitute natural acoustic barriers limiting noise distribution to surrounding areas), one should assume that the noise level related to works performance shall not cause significant troublesomeness to the surroundings. This shall be favoured by limiting the works performance time to daytime and by the Contractor's care for the technical state of machines and devices operating on the construction site.

After completing the construction stage, reservoir operation is not related to noise emission.

5.8. BIOTIC NATURE

5.8.1. Protected natural habitats and species

Natural habitats from Annex I to the *Habitats Directive*

Implementation of the planned Task shall cause a negative impact on 3 types of natural habitats occurring in the designed reservoir area. They are:

- 6430 – mountain herbs (*Adenostylion alliariae*) and riparian herb growths (*Convulvuletalia sepium*). In relation to Task implementation, it is necessary to remove of the

whole surface area of this habitat (i.e. 0.05 ha), but due to scant surface area within the Task area such an impact shall not be significant in regional scale.

- 9170 – *Galio-Carpinetum* and *Tilio-Carpinetum* oak-hornbeam forests. In relation to Task implementation, it is necessary to remove 5.2 ha of the surface area of this habitat (i.e. approx. 42% of 12.3 ha of this habitat determined here).
- *91E0 – riparian mixed forests of willow, poplar, alder and ash tree (*Salicetum albobfragilis*, *Populetum albae*, *Alnenion glutinoso-incanae*) as well as alder forests on percolating mires. In relation to Task implementation, it is necessary to remove 1 ha of the surface area of this habitat (i.e. approx. 70% of 1.42 ha of this habitat determined here).

This impact shall be of permanent nature (the liquidated habitat patches shall not be restored in those locations after works completion) and its joint influence shall be reduced i.a. owing to the planned planting of trees and shrubs in determined locations (see item 110 in Appendix 1 to the EMP), resulting from the conditions of the environmental decision.

Protected species of plants

Occurrence of 18 plant species considered as rare (including 11 species protected in Poland) was determined in the area of the planned Task. The abovementioned 7 plant species shall be affected by a negative influence of the planned Task at the construction stage, including protected plants: Oxlip *Primula elatior*, Spring snowflake *Leucoium vernalis*, Wild garlic *Allium ursinum*, *Anomodon attenuatus* and *Homalia trichomanoides*.

The loss of sites of the abovementioned protected plant species shall not be of significant nature. The population resources of the abovementioned protected species shall not be significantly reduced on a regional or local scale. The protected species determined here are locally frequent or relatively frequent and are not significantly endangered.

Protected species of animals

Fish and lampreys

The implementation of the planned Task shall cause a negative impact on all species of fish inventoried within its area, most importantly in connection with the planned relocation and regulation of the riverbeds sections of Duna Dolna, Duna Górna and Duna streams (loss or periodic deterioration of habitat quality, periodic deterioration of the food base). The effects of this impact shall be limited owing to a range of mitigation measures concerning i.a. reducing the impact on aquatic environment for duration of works and maintaining the conditions for migration of aquatic organisms.

Amphibians and reptiles

The planned construction works may pose a danger of trapping amphibians or reptiles in performed excavations. Vehicle and machine traffic is also a hazard as it may deteriorate the conditions of their living and breeding or pose a direct hazard to the life of their specimens. Potential pollution of the aquatic-soil environment may also be a danger to this group of animals. All the above impact is of potential nature and performing the works in accordance with the conditions determined in Appendix 1 to the EMP shall significantly reduce the risk of its occurrence.

Birds

The main forms of the negative impact of the planned Task on the bird fauna include the following:

- destruction of potential breeding grounds (groups of trees and shrubs as well as patches of herb growths) and feeding grounds – this impact shall not cause a significant influence on the populations of individual species due to the availability of other areas of similar nature in the surroundings of the construction site;
- increased penetration of the area by humans as well as intense vehicle and construction machine traffic (scaring and disturbing of specimens) – this impact is local, short-term and limited to the period and time of works performance.

Flightless mammals

In the case of species of small land mammals, the planned construction works pose hazards analogous to those mentioned in the case of amphibians and reptiles (see above); mitigation measures leading to a significant reduction of the unfavourable effects of this impact are analogous.

Bats

The hazards to this group of animals are analogous to those in the case of birds, but the bats living in tree hollows are additionally more vulnerable to death during tree felling. This type of hazards was minimized owing to appropriate mitigation measures described in Appendix 1 to the EMP.

5.8.2. Protected areas and objects

Natura 2000 sites

The implementation of the planned Task (both at the construction and operation stages) does not cause a negative impact on Natura 2000 sites located in its surroundings (lack of a negative influence on Natura 2000 site integrity or network coherence).

Other protected areas and objects

The implementation of the planned Task (both at the construction and operation stages) does not cause a negative impact on protected areas and objects (other than Natura 2000 sites) located in its surroundings.

5.9. CULTURAL MONUMENTS

Implementation of the planned Task – at the construction and operation stage – shall not adversely affect heritage sites, archaeological sites and other objects of cultural value.

5.10. POPULATION AND MATERIAL GOODS

In connection with implementation of the planned Task, it shall be necessary to introduce i.a. the following changes to the existing infrastructural objects: relocation of a high voltage 110 kV power line, reconstruction of an overhead medium 20 kV power line within the area of Duna stream downstream of the dam, reconstruction of an underground tele-technical line at the crossing with Duna stream, reconstruction of a telecommunication line.

The issues related to land purchase or changing land use, as well as possible problems connected with the influence of reservoir construction and operation on temporary occupation areas and their surroundings, are discussed in detail in the *Land Acquisition and Resettlement Action Plan (LA&RAP)* for the Task in question.

The potential negative influence on material goods at the construction stage is related to using the existing road network as access roads to the construction site. Introduction of mitigation measures in this scope shall enable limiting this impact category.

5.11. HUMAN HEALTH AND SAFETY

The implementation of the planned Task may be related to the following impact on human health and safety:

- Increase of air pollution emission

At the construction stage, the pollution level of atmospheric air may locally and periodically increase in connection with using vehicles and construction machinery (emission of exhaust fumes). Since this impact is dispersed, local and not too intense, and owing to the distance between the construction site and the nearest buildings, the impact should not cause significant effects in relation to the health of the Contractor's staff or residents from the vicinity (see also chapter 5.3).

- Increased noise emission

At the construction stage, the noise level related to performing the works and using vehicles and construction machinery may locally and periodically increase. Taking into account the circumstances discussed in chapter 5.7, this phenomenon should not cause significant effects in relation to the health of the Contractor's staff or residents from the vicinity.

- Petroleum derivative pollution hazard

Bad organization of works or failure to observe appropriate standards could lead to water and soil pollution with fuels at the construction stage, which could constitute a direct or indirect hazard to the health of the Contractor's staff or residents from the vicinity. To prevent such hazards, Appendix 1 to the EMP introduces a number of conditions aimed at limiting the risk of petroleum derivative pollution at the construction stage (see also chapter 6.11).

- The possibility of a reservoir breakdown or catastrophe at the operation stage

The issues related to the potential influence of a reservoir breakdown or catastrophe on the health and safety of the residents of towns and villages located downstream of the dam are discussed in chapter 5.12.

5.12. SPECIAL HAZARDS (CRITICAL AND EMERGENCY SITUATIONS)

The implementation of the planned Task is related to the possibility of occurrence of the following critical or emergency situations which could cause special environmental hazards:

- Uncontrolled emission (leak) of petroleum derivatives

An emergency situation may take place at the construction stage, resulting in a leak of petroleum derivatives from vehicles, construction machinery, tanks etc. polluting surface waters or the earth surface (including soil). The risk and effects of this type of events are limited by appropriate organization of the construction site backyard, care for the appro-

appropriate technical condition of vehicles, machines and equipment used on the construction site as well as, if those events do occur, strict observance of procedures concerning emergency and critical situations, described in Appendix 1 to the EMP.

- Fire or explosion of flammable substances

An emergency situation may take place at the construction stage in relation to a fire (e.g. as a result of an equipment breakdown, staff negligence, an explosion of flammable substances, a lightning strike etc.). The risk and effects of this type of events are limited by strict observance of OSH provisions, appropriate organization of the construction site backyard, care for the appropriate technical condition of vehicles, machines and equipment used on the construction site as well as, if those events do occur, strict observance of procedures concerning emergency and critical situations, described in Appendix 1 to the EMP.

- Finding unexploded bombs or unfired rounds

Hazardous materials of military origin, such as unexploded bombs or unfired rounds, may be found at the construction stage. Potential hazards related to this type of situations are limited by pre-emptive sapper examination of the construction site before commencing the works, ensuring sapper supervision over the works on a running basis as well as, if such materials are found, strict observance of procedures concerning situations related to the presence of unexploded bombs or unfired rounds, described in Appendix 1 to the EMP.

- Sudden freshets, flood

A sudden water level increase in the streams on the construction site or a flood may take place at the construction stage, threatening the staff's health and life and causing material losses on the construction site. In order to minimize the possible effects of this type of events, the Contractor shall take into account the flooding risk when organizing the construction site backyard and the remaining part of the works area as well as develop a *Construction site flood management plan* and strictly observe the conditions contained in it.

- The possibility of a reservoir breakdown or catastrophe at the operation stage

The operation of a dry flood control reservoir is related to a potential risk of water spillway above the dam crest or a dam break, e.g. as a result of long-term torrential precipitation, a breakdown of relief devices and other causes. The occurrence risk of this type of catastrophes is limited by specific design and technical solutions applied in the planned reservoir, including i.a.: adapting the reservoir to the transfer of so-called 500-year water (in accordance with the regulations for III validity class of hydraulic structures), applying an anti-filtering membrane in and under the dam body, equipping the dam with two types of relief devices (sluices and spillways), equipping the reservoir with control and measuring instruments. Given the abovementioned protections and the fact that the reservoir design takes into account the hydrological data characterizing the scale of flows in the watercourses of this area during calculation periods, one can state that the discussed hazard is very much of a potential nature and its probability of occurrence is slight. At the operational stage the reservoir will be used in accordance with the operating instructions which will be prepared in the execution stage of the facility by the Contractor, taking into account all formal and legal requirements concerning both the environmental, technical and safety aspects of the building.

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 Task Contractor. Those measures were developed on the basis of the conditions contained in the binding administrative decisions in the scope of environmental protection issued for the Task, which were supplemented with additional conditions determined at the EMP preparation stage. A list of main categories of the mitigation measures is presented below, dividing them into the environment components discussed in chapters 4 and 5 of the EMP.

6.1. EARTH SURFACE AND LANDSCAPE

The primary forms of the negative impact of the planned Task on earth surface and landscape are presented in chapter 5.1.

To limit that impact, Appendix 1 to the EMP introduces mitigation measures aimed i.a. at:

- limiting the influence related to land occupations on the status of earth surface and landscape (item 3, 4, 6, 58 and 74);
- limiting the landscape value losses related to tree and shrub felling (item 108, 109, 110 and 110).

6.2. CLIMATE

Due to lack of a negative impact on the climate (see the description in chapter 5.2), it was considered as unnecessary to introduce mitigation measures.

6.3. ATMOSPHERIC AIR

The primary forms of the negative impact of the planned Task on atmospheric air are presented in chapter 5.3.

To limit that impact, Appendix 1 to the EMP introduces mitigation measures aimed i.a. at:

- limiting the electrical energy consumption at the works stage (item 88);
- limiting air pollution with exhaust fumes, dusts etc. (item 89, 90 and 92).

6.4. SOILS AND GROUNDS

The primary forms of the negative impact of the planned Task on soils and grounds are presented in chapter 5.4.

To limit that impact, Appendix 1 to the EMP introduces mitigation measures aimed i.a. at:

- limiting the soil resource losses related to land occupations (item 3, 4, 5, 58, 71 and 74);
- limiting the topsoil layer loss (item 11 and 58);
- ensuring an appropriate chemical quality of grounds in the area of works (item 7 and 9);
- limiting the ground pollution risk at the works stage (item 5, 6, 70, 71, 74, 75, 76, 77, 78, 80, 81, 83, 84, 93, 94, 95 and 96).

6.5. SURFACE WATERS

The primary forms of the negative impact of the planned Task on surface waters are presented in chapter 5.5.

To limit that impact, Appendix 1 to the EMP introduces mitigation measures aimed i.a. at:

- limiting the water pollution risk at the works stage (item 5, 6, 45, 46, 49, 51, 70, 71, 73, 74, 75, 76, 77, 78, 80, 81, 83, 84, 93, 94, 95 and 96);
- ensuring an appropriate chemical quality of grounds in the area of works (item 7 and 9);
- limiting the negative influence on the biological elements of water quality (item 39, 40, 42, 43, 44, 45, 46, 49, 51 and 52).

6.6. GROUNDWATER

Due to lack of a significant negative impact on groundwater (see the description in chapter 5.6), it was considered as unnecessary to introduce mitigation measures. Groundwater protection is indirectly related to a part of the mitigation measures listed in chapter 6.5 concerning protection of surface waters against pollution.

6.7. ACOUSTIC CLIMATE

The primary forms of the negative impact of the planned Task on atmospheric air are presented in chapter 5.7.

To limit that impact, Appendix 1 to the EMP introduces mitigation measures aimed at:

- limiting the noise generated at the works stage (item 85, 86, 87 and 88).

6.8. BIOTIC NATURE

The primary forms of the negative impact of the planned Task on biotic nature resources are presented in chapter 5.8.

To limit that impact, Appendix 1 to the EMP introduces mitigation measures aimed i.a. at:

- limiting the natural resource losses related to land occupations (item 5, 6, 11, 25, 26, 58, 75, 110, 111, 112);
- limiting the natural resource losses related to the felling of trees and shrubs (item 12, 13, 14, 15, 110, 112);
- eliminating or limiting the natural resource losses related to accidental deaths of specimens of protected species on the land (item 25, 26, 28, 29, 31, 32, 33, 34, 35, 37);
- eliminating or limiting the natural resource losses related to accidental deaths of specimens of protected species in the aquatic environment (item 39, 40, 42, 43, 45, 46, 49, 51, 52);
- eliminating or limiting the influence of works implementation on the breeding results of protected animal species (item 12, 13, 16, 19, 25, 26, 37, 38, 40, 42, 43, 44, 45, 46, 49, 51, 52);
- eliminating or limiting the influence of works implementation on the migration conditions of protected animal species (item 34, 35);

- limiting the influence of works implementation on the status of natural habitats and habitats of protected species on the construction site and in its immediate vicinity (item 25, 27, 37, 38, 44, 58, 110, 111, 112);
- limiting the influence of works implementation on the status of trees and shrubs not anticipated for felling (item 18, 19, 20, 21, 22, 23, 24, 37);
- eliminating or limiting the influence of works implementation on the spreading of invasive plant species of foreign origin (item 36).

6.9. CULTURAL MONUMENTS

In order to prevent a negative influence of Task implementation on cultural resources, (see the description in chapter 5.9), Appendix 1 to the EMP introduces three mitigation measures aimed at ensuring the arrangement of works performance conditions with a relevant heritage conservator and implementing appropriate procedures in the case of discovering movable monuments or archaeological sites at the works stage (item 107, 108 and 109).

6.10. POPULATION AND MATERIAL GOODS

In accordance with the information provided in chapter 5.10, the issues related to land purchase or changing land use, as well as possible problems connected with the influence of reservoir construction and operation on temporary occupation areas and their surroundings, are discussed in detail in the *Land Acquisition and Resettlement Action Plan (LA&RAP)* for the Task in question. The impact related to using the existing road network as access roads to the construction site shall be limited by implementing the conditions of access road use, described in item 8 of Appendix 1 to the EMP.

6.11. HUMAN HEALTH AND SAFETY

The primary forms of the negative impact of the planned Task on human health and safety are presented in chapters 5.11 and 5.12.

To limit that impact, Appendix 1 to the EMP introduces mitigation measures aimed i.a. at:

- limiting the influence of the planned Task on the sanitary status of atmospheric air (listed in chapter 6.3);
- limiting the influence of the planned Task on the acoustic climate (listed in chapter 6.7);
- eliminating or limiting the risk of chemical pollution of water and ground at the works stage (listed in chapters 6.4 and 6.5);
- ensuring safety on the construction site and in its surroundings (item 98, 99, 100, 101, 102, 103);
- ensuring appropriate response in situations of special hazards (item 104, 105, 106).

6.12. SPECIAL HAZARDS (CRITICAL AND EMERGENCY SITUATIONS)

The primary types of special hazards (with characteristics of a critical situation) that may potentially occur in connection with Task implementation are presented in chapter 5.12.

To limit the possible effects of this type of events, Appendix 1 to the EMP introduces mitigation measures aimed i.a. at:

- eliminating or limiting the risk of chemical pollution of water and ground at the works stage (listed in chapters 6.4 and 6.5);
- ensuring safety on the construction site and in its surroundings (item 98, 99, 100, 101);
- ensuring appropriate response in situations of special hazards (item 104, 105, 106).

6.13. REQUIREMENTS IN THE SCOPE OF DEVELOPMENT AND IMPLEMENTATION OF THE CONTRACTOR'S SELECTED DOCUMENTS

In order to ensure appropriate organization of works performance and implement correctly the conditions determined in Appendix 1 and 2 to the Environmental Management Plan, the Contractor is obliged to develop the following documents, obtain the Engineer's approval for them and then implement them:

- 1) A construction site organization design, which should include i.a. the following elements:
 - backyard location;
 - backyard management;
 - backyard protection;
 - access roads;
 - environmental protection in the backyard.
- 2) A waste management plan, which should include i.a. the following elements:
 - found and anticipated types and quantities of waste;
 - manners of preventing the negative environmental impact of the waste;
 - the waste management manner taking into account collection, transportation, recovery and treatment;
 - the type of generated waste and the manner of its storage.
- 3) Quality assurance plans for individual categories of works and other types of the Contractor's measures (as needed, including as required by the Engineer), which should contain i.a.:
 - information about the planned organization of performing a given category of works or measures;
 - information about the conditions of implementing a given category of works or measures contained in the EMP;
 - information about other possible manners of preventing the negative environmental impact of a given category of works.

- 4) A construction site flood management plan, which should include i.a. 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 officers during the flooding risk period;
 - a list of equipment and means of transport needed to conduct rescue actions.
- 5) A Safety and Health Protection Plan, which should include i.a. 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, place and time of the hazards, including the relation to the natural environment;
 - information about designating and marking the construction works implementation location in a manner appropriate for the hazard type;
 - information about the manner 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 neighbourhood, 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.

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.

6.14. MEASURES AT THE OPERATION STAGE

A part of the mitigation measures specified in the EMP goes beyond the construction stage and shall also be implemented in the reservoir operation period. Those measures include i.a.:

- ensuring appropriate rules for use and maintenance of the reservoir (item 59, 60, 61, 62, 63, 64, 65, 66, 67, and 68 in appendix 1 to the EMP);
- maintenance of tree and shrub plantings on a running basis (item 58, 110 in Appendix 1 to the EMP);
- performance of maintenance and possible repairs of nest boxes for birds on a running basis (in relation to the content of item 111 in Appendix 1 to the EMP);
- performance of maintenance and possible repairs of boxes for bats on a running basis (in relation to the content of item 112 in Appendix 1 to the EMP and item 125 in Appendix 2 to the EMP);

- performance of measures aimed at ensuring efficiency of the facilities supporting migration of fish (in relation to the content of item 126 in Appendix 2 to the EMP).

In the Defect Notification Period, the Contractor is the party responsible for implementation of the abovementioned measures (in the case of the last two measures – together with the Investor). After Contract completion, the Investor is responsible for implementation of all of the abovementioned measures.

7. DESCRIPTION OF MONITORING MEASURES

Appendix 2 to the EMP defines a set of monitoring measures binding on the Task Contractor. Those measures were developed on the basis of the conditions contained in the binding administrative decisions issued for the Task, which were supplemented with additional conditions determined at the EMP preparation stage.

The monitoring measures listed in Appendix 2 to the EMP belong to three main categories:

- monitoring of implementation of the mitigation measures listed in Appendix 1 to the EMP (item 1-123 in Appendix 2 to the EMP);
- monitoring of the status of selected elements of the environment defined in the decision on the environmental conditions (item 124-126 in Appendix 2 to the EMP);
- monitoring of implementation of the abovementioned measures monitoring the status of selected elements of the environment (item 127 in Appendix 2 to the EMP).

8. PUBLIC CONSULTATIONS

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

The draft of the document entitled *Environmental and Social Management Framework (ESMF)* for the OVFMP 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 Unit¹.

8.2. PUBLIC CONSULTATIONS AT THE STAGE OF ENVIRONMENTAL PROCEDURES FOR THE TASK (2013-2015)

In terms of national administrative procedures in the scope of EIA, Task 2A.2/2 *Construction of “Krosnowice” – a dry flood control reservoir on Duna stream* consists of two undertakings subject to separate EIA procedures, i.e.: (1) construction of “Krosnowice” – a dry flood control reservoir on Duna stream and (2) reconstruction of a 110 kV power line.

A full EIA according to Polish legislation was conducted for the undertaking concerning reservoir construction. With regard to the undertaking concerning power line reconstruction, the relevant local body determined lack of the need for conducting an environmental impact assessment (see chapter 3.5). However, one has to indicate here that the power line reconstruction was an element of the environmental documentation for the reservoir, but it was excluded from the EIA procedure due to formal reasons (see chapter 3.5).

A) **Public consultations concerning the decision on the environmental conditions for reservoir construction**

In the scope concerning issuing the decision on the environmental conditions for the construction of “Krosnowice” reservoir, the consultations with the public’s participation were conducted by a relevant local body issuing the decision, i.e. the Regional Director for Environmental Protection in Wrocław.

In an announcement of December 11th, 2014 (ref. No.: WOOS. 4204.2.2013.ŁCK.17), the Regional Director for Environmental Protection in Wrocław published the required information concerning the planned undertaking. That announcement was placed on the notice board and the website of the Regional Directorate for Environmental Protection in Wrocław and on the notice board of the Kłodzko Municipality Office, the Kłodzko City Hall, the City and Municipality Office in Bardo as well as in the Public Information Newsletter of the City and Municipality Office in Bardo and in the local press.

Within the deadline provided by the law, the conducting body received no remarks or motions related to the undertaking in question. After expiration of the above deadline, remarks and motions concerning the undertaking in question were submitted by habitants of the Krosnowice village. Having examined the case, the Regional Director for Environmental Protection in

¹ On the website: http://www.odrapcu.pl/popdow_dokumenty_RPZSiSS.html.

Wrocław send a letter of February 4th, 2015 (ref. No: WOOS.4204.2.2013.ŁCK.21), in which he referred to submitted remarks and motions, considering them as ungrounded.

On March 13th, 2015, the Regional Director for Environmental Protection in Wrocław issued a decision on the environmental conditions for the construction of “Krosnowice” reservoir (ref. No.: WOOS. 4204.2.2013.ŁCK.24). That decision was published via an announcement.

B) Public consultations concerning the decision on the environmental conditions for 110 kV power line reconstruction

In the scope concerning issuing the decision on the environmental conditions for the reconstruction of a 110 kV power line, the consultations with the public’s participation were conducted by a relevant local body issuing the decision, i.e. the Head of Kłodzko Municipality.

In an announcement of October 25th, 2013 (ref. No.: RMiZN.6220.12.2.2013), the Head of Kłodzko Municipality published the required information concerning the planned undertaking. That announcement was placed on the notice board of the Municipality Office of Kłodzko and on the website of the Municipality Office of Kłodzko.

Within the deadline provided by the law (and after its expiration), the conducting body received no remarks or motions related to the undertaking in question.

On January 8th, 2014, the Head of Kłodzko Municipality issued a decision on the environmental conditions for reconstruction of a 110 kV power line (ref. No.: RMiZN.6220.12.5.2013). That decision was published via an announcement.

8.3. PUBLIC CONSULTATIONS FOR THE EMP (2017)

The draft of the present document was subject to the public consultation procedure conducted in accordance with the Operational Policies of the World Bank (*OP 4.01*).

After preparing the draft EMP and obtaining – upon its basis – the World Bank’s acceptance (so-called “no objection”) for commencing the publication procedure, on the 13th of March 2017 a digital version of the EMP was published at publicly accessible websites: website of the Regional Authorities for Water Management (RZGW) in Wrocław – <http://wroclaw.rzgw.gov.pl> (Fig. 2) and website of the OVFMP Project Coordination Unit – <http://www.odrapcu.pl> (Fig. 3), and a hard copy was made available in the office of the RZGW in Wrocław (Wrocław, 34. Norwida Street), in the office of the RZGW in Wrocław, Inspectorate in Kłodzko (Kłodzko, 1. Kościuszki Street), in the Municipality Office of Kłodzko (Kłodzko, 8A. Okrzei Street) and in the office of the Consultant of the RZGW in Wrocław (Wrocław, 9. Szymanowskiego Street).

Detailed information on the access to this document and on the possibility of informing conclusions and comments (along with indication of detailed contact data: e-mail address, snail mail addresses, where the project document was made accessible, office opening hours) were publicly informed in the announcement (Fig. 4) placed in the following locations:

- websites of the RZGW in Wrocław – <http://wroclaw.rzgw.gov.pl> (Fig. 5), websites of the OVFMP PCU – <http://www.odrapcu.pl> (Fig. 3) and websites of the Municipality Office of Kłodzko – <http://www.gmina.klodzko.pl> (Fig. 6);
- in local press – local supplement to *Gazeta Wyborcza* (Fig. 7);
- on information boards in: RZGW in Wrocław, RZGW in Wrocław – Inspectorate in Kłodzko, Municipality Office of Kłodzko, and localities of Krosnowice and Starków.

The aforementioned announcement also included information on the possibility of taking part in a meeting and in a discussion opened for interested people, organizations and institutions, which was planned for the 29th of March 2017 (including information on a place, date and time of the meeting).

The publication was completed after 10 working days, i.e. on the 24th of March 2017. During the publication period the visits of persons familiarizing themselves with the available draft EMP were not observed. On the 27th of March 2017 RZGW in Wrocław obtained comments of an ecological organization (*Klub Przyrodników [Naturalists' Club]*, Świebodzin, ul. 1 Maja 22 – letter dated 20th of March 2017) relating to design solutions of the planned reservoir. Until the completion of works on this document neither additional remarks nor questions were provided in relation to contents of the draft EMP.

After completion of the publication, an opened meeting for interested people, organizations and institutions was held on the 29th of March 2017 at 4:30 p.m. in the Municipality Office of Kłodzko (Kłodzko, 8A. Okrzei Street), where a public presentation of and discussion on the draft EMP were organized (Fig. 8). 13 people participated in the meeting, including: the representatives of local community and authorities, PCU, RZGW in Wrocław, and the Consultant. The meeting lasted for about 1 hour and the following questions were asked:

1) *What is the planned scope of the clearance of trees and shrubs?*

With reference to the question it was clarified that the spatial scope of the clearance of trees and shrubs is presented at the map in Appendix 6 to the EMP and in a more detailed manner – in the reservoir's design documentation. Design documents (including cartographic documentation) relating to the planned clearance of trees and shrubs were made available to the meeting participants for inspection.

2) *What actions are planned for the purpose of protection of numerous habitats of protected plant species occurring at the area of planned works?*

With reference to the question it was clarified that protected plants which were detected at the stage of the works on *EIA Report (2014)* for the planned investment would be replanted in accordance with the obtained decisions of RDOŚ in Wrocław presented in Appendix 4 to the EMP and in accordance to the condition listed in item 28 of Appendix 1 to the EMP. Additional protected plant specimen, if detected during the survey of works site carried out in accordance with item 25 of Appendix 1 to the EMP, will be treated in accordance with guidelines of the environment experts team (referred to in item 117 of Appendix 1 to the EMP) and in accordance to the condition listed in item 38 of Appendix 1 to the EMP.

3) *What actions will be taken in case of detecting the presence of nesting habitats of protected bird species at the area of the construction site during the execution of works?*

With reference to the question it was clarified that general guidelines concerning proceeding in case of finding nesting habitats of protected animal species are determined in item 38 of Appendix 1 to the EMP. In accordance therewith, the current situation will be analyzed by the environment experts team (referred to in item 117 of Appendix 1 to the EMP) and depending of the analyses' results relevant substantive and procedural actions will be taken. Detailed nature of actions taken will depend on the biology of a given bird species, the location of the nesting habitat found, date of determination and the current stage of works. In analogical situations at the project of *Modernization of Wrocław*

Floodway System it was usually possible to restrict the scope of works in the vicinity of the nesting habitat found by the time of the end of breeding, without causing losses to the resources of protected animal species.

4) *Does RDOŚ in Wrocław carry out supervision over the execution of the project?*

With reference to the question it was clarified that RDOŚ in Wrocław carries out supervision over the execution of the planned project by means of: (i) analysis of reports and statements submitted in accordance with provisions of administrative decisions presented in Appendix 4 to the EMP and in accordance to the condition listed in items 122 and 123 of Appendix 1 to the EMP; (ii) occasional inspections of the project construction site carried out by the employees of RDOŚ. Supervision will be carried out on a regular basis by the Engineer and the Employer, and the EMP anticipates systematic monitoring measures and institutional structure of implementation of the EMP.

5) *The construction of the planned reservoir as a dry reservoir limits its potential economic benefits as compared to a wet reservoir. Would it be possible to analyze the effects of the most unfavorable overlapping of extreme flood wave in the Nysa Kłodzka river drainage basin and Duna stream drainage basin?*

With reference to the question the hydraulic, environmental and technical conditions decisive of the selection of the dry reservoir concept were characterized and it was informed that the determination of detailed design, location and operation parameters of reservoirs constructed within the framework of the OVFMP Project was preceded with the stage of works in the scope of hydraulic modeling aimed at, among others, analyzing the effects of possible overlapping of flood waves in various spatial configurations.

6) *Will the investor have the possibility of influencing the date of construction works commencement so as to minimize possible environmental losses?*

With reference to the question it was clarified that in case of construction of the Krosnowice reservoir at the stage of works on environmental decision and EMP the need for determination of restrictions to the date of commencement of construction works was not stated. Nevertheless, both the environmental decision and the EMP include a number of conditions restricting the dates of execution of works of various categories, due to the need for environmental resources protection. Such conditions include, among others, restricting the dates of clearance of trees and shrubs (items 12 and 17 of Appendix 1 to the EMP), restricting the dates of topsoil layer removal (item 11) and restricting of dates of execution of works in the riverbeds (item 42). A significant element of protecting the environmental resources at the area of the construction site is also the condition of carrying out single environmental survey prior to the commencement of works in a given location (items 25 and 26 of Appendix 1 to the EMP) and implementing recommendations of the environment experts team and RDOŚ, to the results of the aforementioned survey, respectively (item 38 of Appendix 1 to the EMP).

7) *Why the decision of the Head of Kłodzko Municipality dated 8th of January 2014 on environmental conditions for the reconstruction of the 110 kV power line, within the framework of the construction of the Krosnowice reservoir, was not included in the draft EMP?*

With reference to the question it was clarified that the aforementioned decision was not included in the draft EMP due to the fact that it imposes no conditions for the execution

of the project – it is just a statement of the authority on no need to perform *EIA* for the reconstruction of the 110 kV power line within the framework of the construction of the "Krosnowice" reservoir. In the adopted editorial scheme of EMP for the OVFMP Project, characterized by abbreviated and brief consideration of particular parts of the main text of the EMP, such a situation substantiated not extending the EMP text with information which is in fact not important for the actual addressee of the EMP i.e. the future Contractor. Taking into consideration the question asked during debate and previous comments of the Employer, the authors of the EMP decided to supplement the text of the final version of the EMP with the decision in question.

At the meeting its attendees also asked questions concerning the matters connected with resettlement and compensation. The persons running the meeting provided short explanations regarding the above issues, noting that such issues had been the subject of separate public consultation related to the *Land Acquisition and Resettlement Action Plan (LA&RAP)*.

In addition to the answers to the aforementioned questions, during the meeting the lecturer read out comments relating to design solutions of the planned reservoir, included in the aforementioned letter of the *Klub Przyrodników* dated 20th of March 2017. The comments contained:

- a positive opinion on the selection of the Krosnowice reservoir's concept as a dry reservoir;
- application for resignation from the regulation of the Duna stream bed above and below the reservoir's dam (along with the resignation from felling of riverine woodlots along the water course banks);
- application for the change of detailed design solutions for the reservoir's sluice devices in a manner ensuring the continuity of the Duna stream.

In the commentary the lecturer informed that the Employer submitted the aforementioned comments to the reservoir's designers, with a request to analyze thereof and to present a written response which would be presented to the *Klub Przyrodników*.

On the 10th of May 2017 RZGW in Wrocław sent to the *Klub Przyrodników* a written response to the aforementioned comments (letter dated 8th of May 2017). Referring to particular comments included in the letter of the *Klub Przyrodników*, it was found that:

- resignation from the regulation of the Duna stream bed above and below the reservoir dam is not possible due to applicable regulations relating to designing hydraulic structures which require the adjustment of the stream bed to the volume of admissible flow;
- clearance of trees and shrubs connected with the construction of the reservoir is included in the design only in the zone with deluge probability of $Q_p = 10\%$ and at areas under the structures planned to be constructed. Total resignation from the clearance of woodlots along the water course banks is not possible for safety reasons, among others, in connection with the necessity to ensure the passability of bottom sluices;
- changes of detailed design solutions for the reservoir's sluice devices in a manner proposed by the *Klub Przyrodników* are not necessary because sluice devices planned in the design include the requirements for ensuring the passability of the water course for aquatic organisms, including detailed requirements included in the environmental decision (presented, among others, in items 53, 54, 55, 65, 66 of Appendix 1 to the EMP).

Considering the character of aforementioned remarks and questions asked during the meeting and included in the aforementioned letter of an ecological organisation, and the lack of other

remarks and conclusions of the society as regards the draft EMP for the *Task 2A.2/2*, the authors of the EMP stated that its contents only needs to be supplemented with information on additional environmental decision for the reconstruction of the 110 kV power line (along with subsequent corrections relating to the aforementioned decision) and the implementation of a few corrections resulting from the comments obtained along with the conditional consent of the World Bank for publication of the draft EMP. After supplementation of the document with a memo on the publication procedure and the implementation of the aforementioned corrections, the final EMP was submitted to the World Bank in order to obtain the final acceptance clause, i.e. “no objection”.

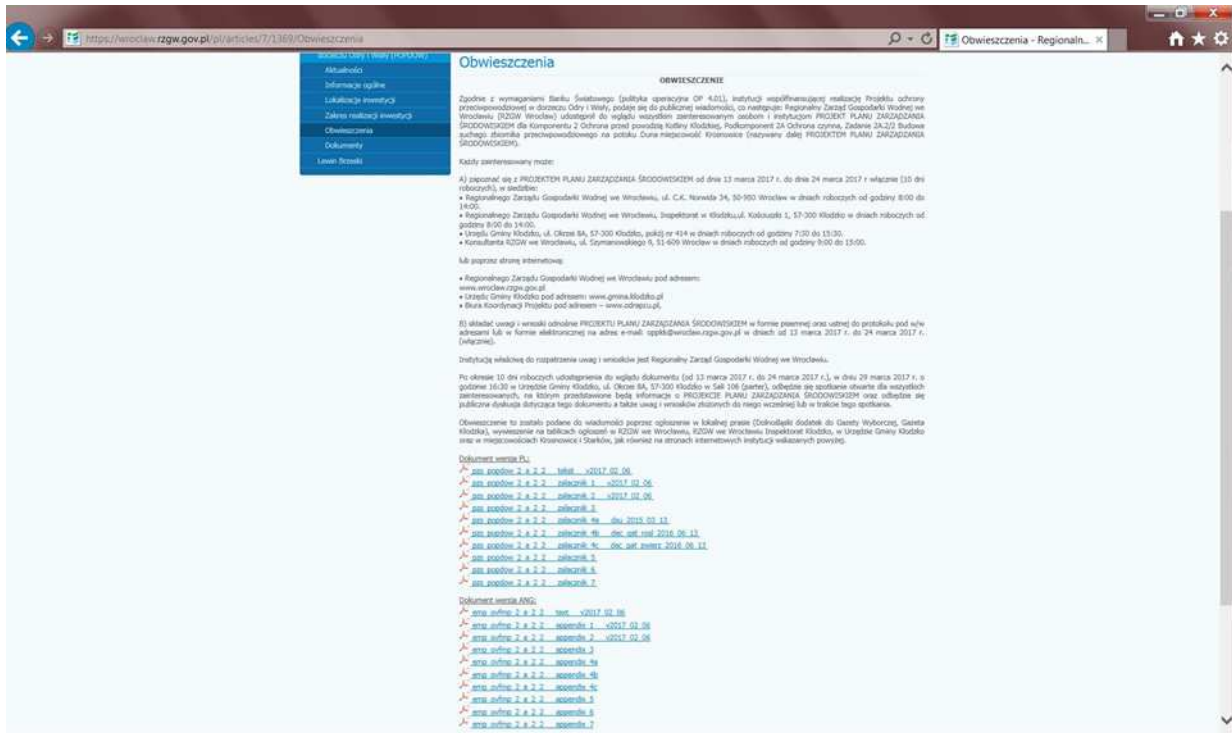


Figure 2. Digital version of the draft EMP published at the website of the RZGW in Wrocław.

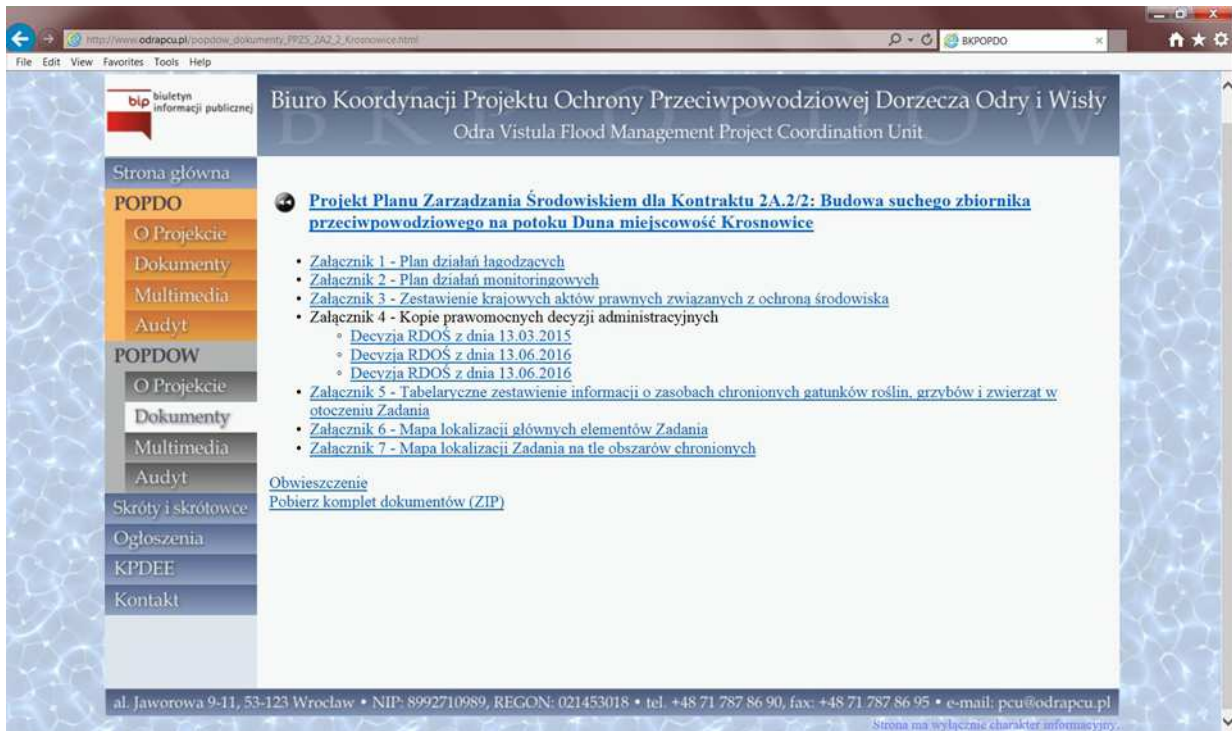


Figure 3. Digital version of the draft EMP published at the website of the OVFMP Project Coordination Unit.

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:

Regionalny Zarząd Gospodarki Wodnej we Wrocławiu (RZGW Wrocław) udostępnił do wglądu wszystkim zainteresowanym osobom i instytucjom PROJEKT PLANU ZARZĄDZANIA ŚRODOWISKIEM dla Komponentu 2 Ochrona przed powodzią Kotliny Kłodzkiej, Podkomponent 2A Ochrona czynna, Zadanie 2A.2/2 Budowa suchego zbiornika przeciwpowodziowego na potoku Duna miejscowości Krosnowice (nazywany dalej PROJEKTEM PLANU ZARZĄDZANIA ŚRODOWISKIEM).

Każdy zainteresowany może:

A) zapoznać się z PROJEKTEM PLANU ZARZĄDZANIA ŚRODOWISKIEM od dnia 13 marca 2017 r. do dnia 24 marca 2017 r włącznie (10 dni roboczych), w siedzibie:

- Regionalnego Zarządu Gospodarki Wodnej we Wrocławiu, ul. C.K. Norwida 34, 50-950 Wrocław w dniach roboczych od godziny 8:00 do 14:00.
- Regionalnego Zarządu Gospodarki Wodnej we Wrocławiu, Inspektorat w Kłodzku, ul. Kościuszki 1, 57-300 Kłodzko w dniach roboczych od godziny 8:00 do 14:00.
- Urzędu Gminy Kłodzko, ul. Okrzei 8A, 57-300 Kłodzko, pokój nr 414 w dniach roboczych od godziny 7:30 do 15:30.
- Konsultanta RZGW we Wrocławiu, ul. Szymanowskiego 9, 51-609 Wrocław w dniach roboczych od godziny 9:00 do 15:00.

lub poprzez stronę internetową:

- Regionalnego Zarządu Gospodarki Wodnej we Wrocławiu pod adresem: www.wroclaw.rzgw.gov.pl
- Urzędu Gminy Kłodzko pod adresem: www.gmina.klodzko.pl
- Biura Koordynacji Projektu pod adresem – www.odrapcu.pl,

B) składać uwagi i wnioski odnośnie PROJEKTU PLANU ZARZĄDZANIA ŚRODOWISKIEM w formie pisemnej oraz ustnej do protokołu pod w/w adresami lub w formie elektronicznej na adres e-mail: oppkk@wroclaw.rzgw.gov.pl w dniach od 13 marca 2017 r. do 24 marca 2017 r. (włącznie).

Instytucją właściwą do rozpatrzenia uwag i wniosków jest Regionalny Zarząd Gospodarki Wodnej we Wrocławiu.

Po okresie 10 dni roboczych udostępnienia do wglądu dokumentu (od 13 marca 2017 r. do 24 marca 2017 r.), w dniu 29 marca 2017 r. o godzinie 16:30 w Urzędzie Gminy Kłodzko, ul. Okrzei 8A, 57-300 Kłodzko w Sali 106 (parter), odbędzie się spotkanie otwarte dla wszystkich zainteresowanych, na którym przedstawione będą informacje o PROJEKCIE PLANU ZARZĄDZANIA ŚRODOWISKIEM oraz odbędzie się publiczna dyskusja dotycząca tego dokumentu a także uwag i wniosków złożonych do niego wcześniej lub w trakcie tego spotkania.

Obwieszczenie to zostało podane do wiadomości poprzez ogłoszenie w lokalnej prasie (Dolnośląski dodatek do Gazety Wyborczej, Gazeta Kłodzka), wywieszenie na tablicach ogłoszeń w RZGW we Wrocławiu, RZGW we Wrocławiu Inspektorat Kłodzko, w Urzędzie Gminy Kłodzko oraz w miejscowościach Krosnowice i Starków, jak również na stronach internetowych instytucji wskazanych powyżej.

Figure 4. Announcement on public hearings for the draft EMP submitted to local press and published on the web sites and on the bulletin boards.

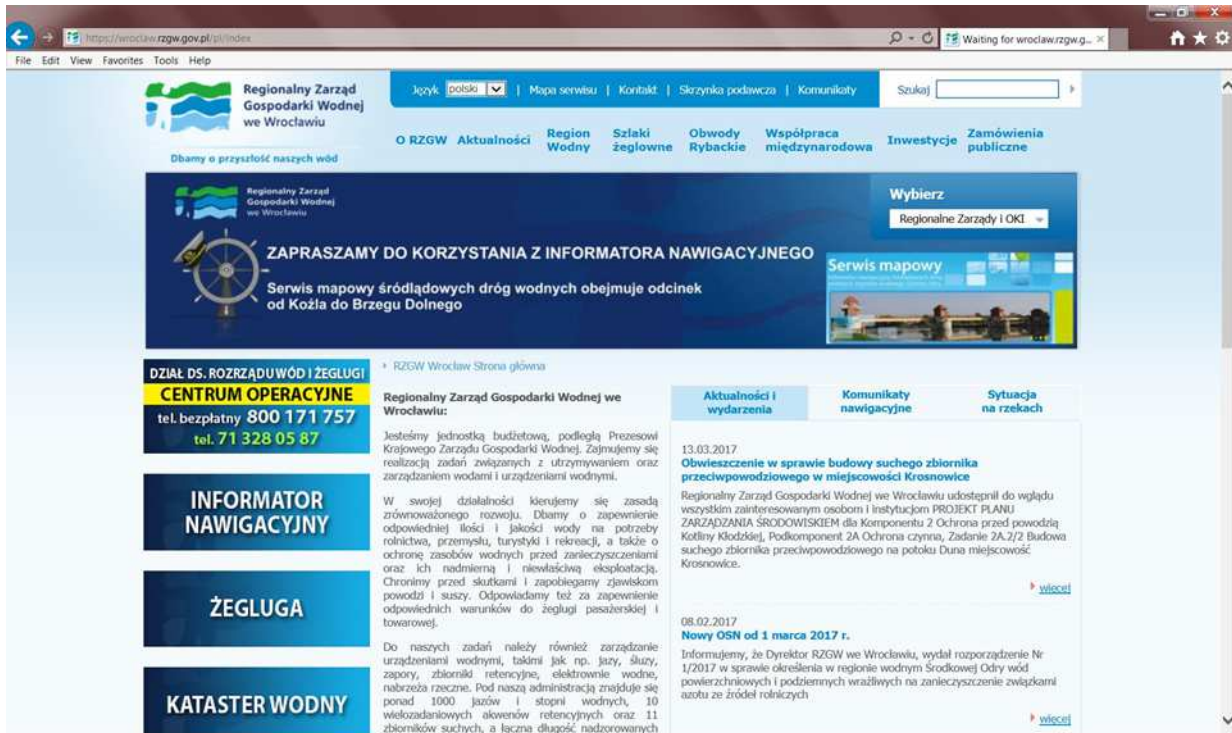


Figure 5. Announcement on public hearings for the draft EMP published at the web site of the RZGW in Wrocław.



Figure 6. Announcement on public hearings for the draft EMP published at the web site of the Municipality Office of Kłodzko.

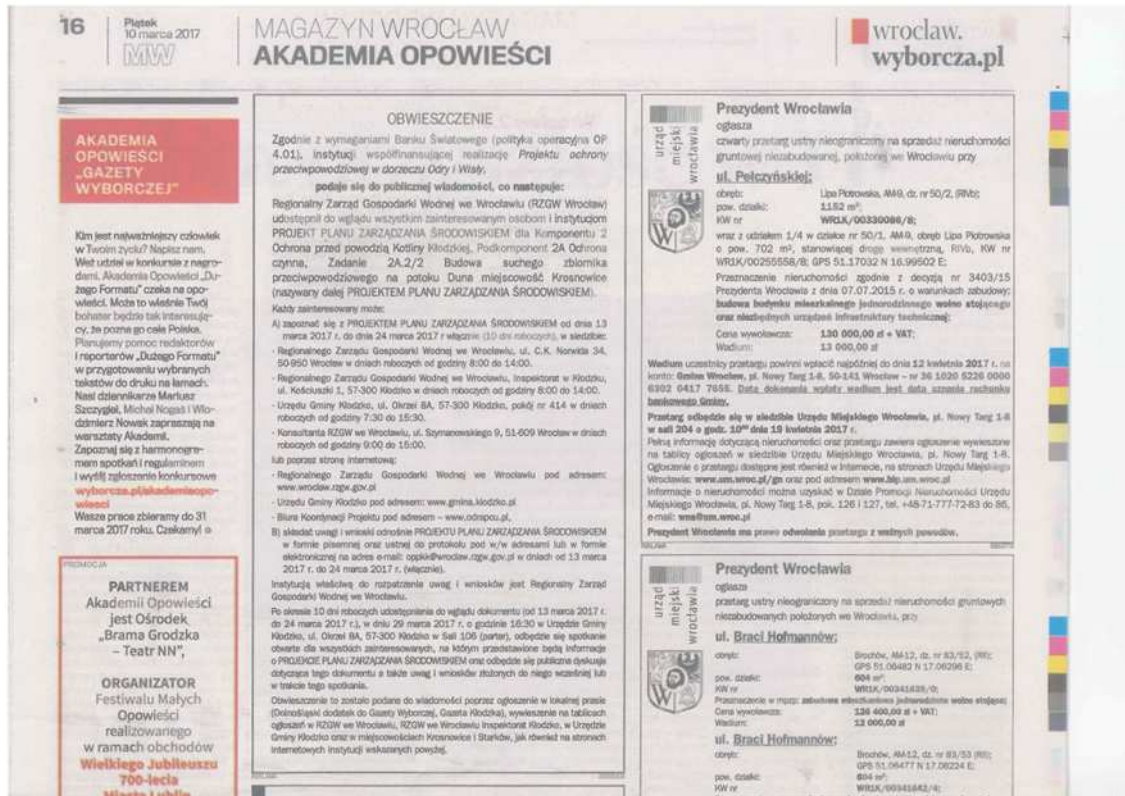


Figure 7. Announcement on public consultation for the draft EMP published in a local supplement to *Gazeta Wyborcza*.



Figure 8. Public hearings for the draft EMP held in the Municipality Office of Kłodzko, on the 29th of March 2017.

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 1.1), co-financed using 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 responsible to the President of the National Water Management Authority.

OVFM PCU tasks include i.a.:

- cooperation with the Minister of Finance, the Minister of the Interior and Administration, the Minister of the Environment, the National Water Management Authority and other government 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. RZGW in Wrocław, as a state budgetary unit responsible to the President of the National Water Management Authority.

In relation to OVFM Project implementation, the Project Implementation Office (PIO) was established as a separate organizational unit directly responsible to the Director of RZGW in Wrocław and supervised by him/her. 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/Engineer and the Contractor;

- direct supervision over correct Task implementation;
- cooperation with the PIU;
- administrative and legal supervision over EMP implementation;
- verification of EMP implementation reports and accounts prepared by the Consultant/Engineer and the Contractor;
- financial supervision over EMP implementation;
- supervision over the correctness of applying formal procedures concerning EMP implementation which stem i.a. from the requirements of the Contract for works, *the Construction Law*, *the Environmental Protection Law* and other documents.

9.4. CONSULTANT/ENGINEER

The role of the Consultant/Engineer is supporting the PIU (RZGW in Wrocław) in effective implementation of the entire investment process, from undertaking preparation to its settlement.

The Consultant/Engineer shall be selected using the QCBS (Quality- and Cost-Based Selection) method, in accordance with *Guidelines: Selection and Employment of Consultants by World Bank Borrowers*. The Consultant/Engineer shall be obliged to supervise EMP implementation, in accordance with the scope defined in the Consultant/Engineer's contract, which shall include i.a.:

- monitoring of EMP implementation by the Contractor;
- 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 RZGW in Wrocław on the construction site by controlling the compliance of construction implementation with the project, 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, participation in tests and technical acceptance of technical devices and systems 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, on the Investor's request, inspection of construction settlement.

9.5. CONTRACTOR

A Contractor shall be selected to implement the construction works. The Contractor shall be responsible i.a. for EMP implementation. The Contractor's duties in this scope 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 i.a. 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;
- maintenance of construction documentation;
- preparation of monthly accounts and reports on inspections;
- preparation of accounts concerning environmental protection;
- applying to RZGW in Wrocław 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 in the scope concerning 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 bearing additional environmental losses.

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

- a) 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;
- b) after receiving a positive opinion from the Bank, the EMP shall undergo public consultations;
- c) 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;
- d) after EMP approval by the World Bank, the final document shall be included in the bidding documents concerning Contractor selection;
- e) 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.

Moreover, appropriate units involved in Task implementation are obliged to meet additional obligations in the scope of monitoring and reporting the issues related to environmental pro-

tection, which are defined in the administrative decisions issued for the Task in question (see chapter 3.5) and presented in Appendix 1 and Appendix 2 to the EMP.

It is planned that the Contractor shall prepare collective reports on environmental monitoring at the works implementation stage. The reports shall be confirmed by environmental supervision specialists from the Contractor's team, approved by the Engineer's nature supervision staff and submitted to the RDOŚ via the PIU. 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.

The OVFMP 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 OVFMP 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 defined:

- 1) Reporting:
 - a) reports (the commencement, monthly, quarterly and final ones) prepared by the Contractor of works;
 - b) report overview by the Engineer;
 - c) submitting the report to the Employer (for information purposes);
 - d) submitting the report to the RDOŚ in Wrocław (only in the scope stemming from the issued administrative decisions);
 - 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;
 - b) Engineer: 1 copy of each report in the electronic version, for 5 years after Contract completion;
 - c) Employer: 1 copy of each report in the electronic version, for 5 years after the Contract completion date.
- 3) Evaluation:
 - a) assessment (on a running basis) of implementation results of the planned actions stemming from the EMP;
 - b) analysis (on a running basis) of documentation (the Contractor's reports) by the Engineer;
 - c) 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;

d) preparation and submission of quarterly reports by the PCU 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);
 - a report on EMP implementation after the Defect Notification Period, prepared by the Engineer.

11. LIST OF SOURCE MATERIALS

- 1) *Project Operations Manual (POM) for the Odra-Vistula Flood Management Project.* OVFM Project Coordination Unit. Wrocław, October 2015.
- 2) *Environmental and Social Management Framework for the Odra-Vistula Flood Management Project – a 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 – National Research Institute. April 2015.
- 3) *The environmental impact report for the designed undertaking entitled: “Construction of “Krosnowice” – a dry flood control reservoir on Duna stream, nearby Krosnowice, Kłodzko Municipality, in the Lower Silesian Province”.* SWECO Hydroprojekt Kraków Sp. z o.o. July 2014.

12. LIST OF APPENDICES

- Appendix 1. Plan of mitigation measures
- Appendix 2. Plan of monitoring measures
- Appendix 3. List of national legal acts related to environmental protection
- Appendix 4. Copies of administrative decisions in the scope of environmental protection issued for the Task:
- a. Decision of the Regional Director for Environmental Protection in Wrocław of March 13th, 2015 on the environmental conditions for the construction of “Krosnowice” dry flood storage reservoir (ref. No.: 4204.2.2013.ŁCK.24)
 - b. Decision of the Head of Kłodzko Municipality of January 8th, 2014 on the environmental conditions for the reconstruction of 110 kV power line in Krosnowice, as part of the task entitled: “Construction of ‘Krosnowice’ – a dry flood control reservoir on Duna stream in Krosnowice” (ref. No: RMiZN.6220.12.5.2013)
 - c. Decision of the Head of Kłodzko Municipality of January 11th, 2017 on rectifying an obvious typographic mistake in the decision on the environmental conditions of January 8th, 2014 (ref. No.: R.MiZN.6220.12.7.2013)
 - d. Decision of the General Director for Environmental Protection in Warsaw of June 13th, 2016, exempting from bans related to plants covered by species protection (ref. No.: WPN.6400.22.2016.MR)
 - e. Decision of the Regional Director for Environmental Protection in Wrocław of January 8th, 2016 exempting from bans related to animals covered by species protection (ref. No.: WPN.6401.194.2016.MR)
- Appendix 5. Tables presenting the information about the resources of protected species of plants, fungi and animals in the surroundings of the Task
- Appendix 6. Map presenting the location of main elements of the Task
- Appendix 7. Map presenting Task location in relation to protected areas