



LUBUSKI BOARD OF AMELIORATION AND
HYDRAULIC STRUCTURES IN ZIELONA GÓRA



ODRA-VISTULA FLOOD MANAGEMENT PROJECT - 8524 PL

EMP – ENVIRONMENTAL MANAGEMENT PLAN

SUB-COMPONENT 1C Flood Protection of Słubice city

Contract 1C.1

Extension and construction of flood embankments and Reconstruction of Czarny Kanał and Racza Struga

ENVIRONMENT CATEGORY B – in accordance with OP 4.01 WB

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Project Implementation Unit:



Lubuski Board of Amelioration and Hydraulic Structures
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ENVIRONMENTAL MANAGEMENT PLAN

Sub-component 1C Flood Protection of Słubice city

Contract 1C.1 Extension and construction of flood embankments and Reconstruction of Czarny Kanał and Racza Struga

This Environmental Management Plan for the Odra-Vistula Flood Management Project applies to Contract 1C.1 covering the following structures: a) extension and construction of flood embankment b) reconstruction of Czarny Kanał and Racza Struga.

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List of definitions and abbreviations used in EMP

Abbreviation	Description
Consultant/Engineer	Consultant/Engineer for Lubuski Board of Amelioration and Hydraulic Structures in Zielona Góra
Contract/Task	Odra-Vistula Flood Management Project. Contract 1C.1 Extension and construction of flood embankments and Reconstruction of Czarny Kanał and Racza Struga
Contractor	Company or public body executing Contract 1C.1 Extension and construction of flood embankments and Reconstruction of Czarny Kanał and Racza Struga
EA	Environmental Assessment
EMF	Environmental Management Framework
ESMF	Environmental and Social Management Framework
EMP	Environmental Management Plan for the Contract 1C.1 Extension and construction of flood embankments and Reconstruction of Czarny Kanał and Racza Struga
Environmental Decision	Decision on environmental conditions
ESMF	Environmental and Social Management Framework – for the Odra-Vistula Flood Management Project ¹
GDOŚ	General Directorate for Environmental Protection (<i>Generalna Dyrekcja Ochrony Środowiska</i>)
GZWP	Main Underground Reservoir (<i>Główny Zbiornik Wód Podziemnych</i>)
JCWP	Surface Water Body (<i>Jednolita Część Wód Powierzchniowych</i>)
JCWPD	Groundwater Body (<i>Jednolita Część Wód Podziemnych</i>)
LZMiUW	Lubuski Board of Amelioration and Hydraulic Structures in Zielona Góra (<i>Lubuski Zarząd Melioracji i Urządzeń Wodnych w Zielonej Górze</i>)
PAD	Project Appraisal Document for the Odra-Vistula Flood Management Project ²
PCU	Project Coordination Unit
PIO	Project Implementation Office - An organizational unit allocated as part of PIU
PIU	Project Implementation Unit - Lubuski Board of Amelioration and Hydraulic Structures in Zielona Góra
PIU/Investor/Employer	Lubuski Board of Amelioration and Hydraulic Structures in Zielona Góra
Project	Odra-Vistula Flood Management Project

¹ <http://documents.worldbank.org/curated/en/2015/04/24502899/poland-odra-vistula-flood-management-project-environmental-social-management-framework>

http://www.odrapcu.pl/popdow_dokumenty.html

² <http://documents.worldbank.org/curated/en/2015/07/24763021/poland-odra-vistula-flood-management-project>

Abbreviation	Description
RDOŚ	Regional Directorate for Environmental Protection (<i>Regionalna Dyrekcja Ochrony Środowiska</i>)
Roads authority	Organizational unit implementing the responsibilities of the management of public roads in accordance with the Act of 21 st March 1985 on public roads
SCI	Site of Community Importance
SHPP	Safety and Health Protection Plan prepared in compliance with the Building Law Act of 7 July 1994
SPA	Special Protection Area – Natura 2000 site designated under Birds Directive
Structure	A material scope allocated in terms of functions, which constitutes a part of Task 1C.1: Extension and construction of flood embankments and Reconstruction of Czarny Kanał and Racza Struga
World Bank (WB)	International Bank for Reconstruction and Development

List of short names for legal acts used in EMP

Names of legal acts cited in the content of EMP are provided in a short form. Full names of legal acts are presented in the table below.

Name	Description
Birds Directive	European Parliament and Council Directive 2009/147/EC of 30 November 2009 on wild birds protection (EU Official Journal, L 288 of 6.11.2007)
Environmental Impact Assessment Act	Act of 3 October 2008 on providing information on environment and its protection, public participation in the environmental protection and Environmental Assessments (consolidated text, Journal of Laws of 2013, item 1235, as amended)
FWD	Framework Water Directive – European Parliament and Council Directive 2000/60/EC of 23 October 2000 establishing the frameworks for community activity within the scope of water policy (EU Official Journal, L 327 of 22.12.2000, p. 1, as amended)
Habitat Directive	Council Directive 92/43/EEC of 21 May 1992 on the protection of natural habitats and wild fauna and flora (EU Official Journal, L 206 of 22.7.1992, p. 7, as amended.)
NEPA	Act of 16 April 2004 on environmental protection (consolidated text, Journal of Laws of 2013, item 627, as amended)

SUMMARY

This document presents Environmental Management Plan (EMP) for the Contract 1C.1 Extension and construction of flood embankments and Reconstruction of Czarny Kanał and Racza Struga, implemented within the Odra-Vistula Flood Management Project (Project), co-financed by the International Bank for Reconstruction and Development (the World Bank).

This EMP includes the following elements:

- Abbreviated description of the Odra-Vistula Flood Management Project,
- Abbreviated description of the works within the Contract this EMP is devoted to,
- Institutional, legal and administrative conditions with listing of public administration bodies participating in issue of administrative decisions at the stage of the Task preparation, binding Polish legal acts concerning the environmental protection, the main stages of EA procedure as well as the discussion on the guidelines of the World Bank and the current state of Environmental Impact Assessment (EIA) procedure for the Task covering works within Contract 1C.1
- General specification of the status of respective environment elements on the Task implementation area and in its vicinity,
- Summary of the Environment Assessment included in the environment impact reports for the above mentioned elements of the environment, including the impact of the Task on environment in the context of Water Framework Directive,
- Set of mitigation measures to be carried out by the Contractor and Project Implementation Unit (PIU) at the Task implementation stage with reference to respective environment elements. Mitigation measures are presented in the Table in Appendix No 1 to the EMP,
- The set of monitoring measures at the preparation, works construction and exploitation stage of the Task. Monitoring measures are presented in the Table in Appendix No 2 to the EMP,
- Procedure and result of public consultations at the stage of the procedure of Environmental Impact Assessment, developing Environmental Management Framework for the Task and at the stage of developing this EMP,
- Organizational structure of implementing EMP, implementation schedule and reporting procedures.

The Appendices to EMP also include administrative decisions issued for particular structures implemented within the Task and graphic Appendices - a location map of the planned Task, a map presenting location of protected areas in relations to the Task, a map of the potential flood danger areas and areas excluded from potential flood risk.

A basis for preparing this EMP for the Contract 1C.1 is as follows: Environmental Management Framework (EMF), Environmental and Social Management Framework (ESMF), Project Appraisal Document (PAD), International Bank for Reconstruction and Development (World Bank (WB) Operational Policies, Environmental Impact Report, Environmental Decisions and design documentation.

Characteristics of the Task

Contract 1C.1 Extension and construction of flood embankments and Reconstruction of Czarny Kanał and Racza Struga comprises of the two structures:

- Extension and construction of flood embankments – concerning extension and strengthening of 6.700 km of the existing flood embankment and 185 m of the existing side embankment as well as construction of a new ring embankment with the length of 5.896 km
- Reconstruction of Czarny Kanał and Racza Struga – concerning rebuilding of the channel bed of Racza Struga along 2.000 km, and reconstruction of the channel bed of Czarny Kanał 4.065 km long.

Location of structures is presented in the Appendix No 5 to EMP.

Institutional, legal and administrative conditions

The Task, in terms of its characteristics, predicted potential impacts on environment and location in relations to protected areas, is implemented in accordance with relevant national regulations on environment protection in this scope.

Current condition of the environment in the area of the Task

As a result of works related to the identification of nature values and cultural environment values conducted by a team of specialists, during EA procedure it has been determined that the area of the Task is characterized by for the following internal, local and regional conditions:

- occurrence of 8 types of natural habitats listed in Appendix No 1 to the Habitat Directive,
- occurrence of 3 plant species under protection,
- occurrence of 21 valuable and/or protected species of birds, including 9 additional species of animals under strict or partial protection.
- The Task is partially carried out within protected areas: SCI Łęgi Słubickie PLH080013 and SPA Dolina Środkowej Odry PLB080004 and within the borders of Łęgi koło Słubic Nature Reserve and Landscape Protected Area Słubicka Dolina Odry.

Summary of Environmental Assessment

Surface of the earth and landscape

The works conducted within the channels will cause moderate, in terms of scale and significance, transformation of water courses' beds. Both channels: Czarny Kanał and

Racza Struga, are courses with significantly changed morphology within which there are no elements typical for natural river beds.

With reference to the extension, strengthening and construction of the flood embankments, the anticipated impacts are of local nature. Modernization of the existing embankments will cause only periodic impact on the surface of the earth. The construction of the embankment brings permanent transformation of the earth surface, however the embankment will be built close to the developed areas of Słubice city, outside of the river valley and therefore it does not cause significant impact on the landscape system of the Odra River Valley.

Climate

On account of a minor spatial range of the Task in terms of the impact on climatic conditions and lack of any significant interference with the environment elements which shape a local climate, the Task does not generate any negative impacts within this scope.

Air quality

Emission of pollutants is limited to the stage of the Task implementation; it is of short term and reversible nature. The implementation of the Task does not result in significant impact on air quality.

Soil and ground

The works conducted within the channels during low water level periods may intensify the process of drying up of adjacent areas. However, the changes are of local nature and do not impact on protected areas.

The impact caused by the extension and construction of flood embankments does not cause cutting off from flooding wetlands that are regularly flooded (flood embankments shall protect Słubice city against extreme water levels). Therefore, there is no significant impact on soil, including valuable alluvial soil.

Surface water

The works in the channel beds shall cause insignificant changes in flow parameters, including the impact on the water course morphology. The works shall be implemented within strongly anthropogenically transformed water courses and therefore the impacts are insignificant in the scale of Surface Water Body (JCWP).

Modernization of the existing and construction of the new embankment does not generate significant negative impacts on surface water. A new ring embankment will protect the urban developments of Słubice, not cutting off the land, oxbow lakes or wetlands from flooding. Therefore, the impacts (in the scale of the whole JCWP) are moderate and do not cause threat of failing to achieve the environmental goals.

Groundwater

The impacts generated by the Task are local and cover first of all the zone of the modernized embankment. The construction of sheet pile walls within the embankment shall cause a change in supply of alluvial waters to the land side of the embankment. The impact is insignificant for Underground Water Body (JCWPd) and the level of Main Underground Reservoir (GZWP).

Acoustic climate

Construction works using heavy equipment and other works that may generate excessive noise in acoustically protected areas shall be conducted between 6:00 a.m.- 10:00 p.m. The impacts are of local and short term nature – limited only to the Task implementation stage.

Nature

The Task shall be partially implemented within the borders of Natura 2000. It concerns the section of the ring embankment aim of which is to protect developed areas of Słubice. According to the studies conducted at the stage of developing the Environmental Assessment for the structures included in the Contract 1C.1 Extension and construction of flood embankments and Reconstruction of Czarny Kanał and Racza Struga, it was concluded that this action shall not cause a severe negative impact on Natura 2000 sites because this impact is limited only to the narrow zone along embankments. Riparian forests of the greatest natural value will not lose their area and structure. A new ring embankment will be erected outside of the areas regularly flooded with the Odra River waters and especially valuable complex of riparian forest. At the Task implementation stage, proper mitigation measures will be carried out together with current prevention of environmental threats for both, water quality and protected plants, fungi and animals which were not identified at the stage of preparation of EA. Also threats to the environment related to the presence, within the impact zone, of species of plants, fungi and animals under protection (whose presence was not revealed at the stage of developing the Environmental Impact Report) or hazards for the water quality will be prevented.

Cultural assets and tangible assets

The conducted works shall not interfere directly with buildings and other structures listed in the commune register of historical monuments or/and register of historical monuments and therefore at the stage of implementation and operation of the Task there are no severe negative impacts to such objects. Potentially, there could occur negative impacts related to dispersing of vibrations generated by selected types of construction works such as driving of steel sheet pile walls within the expanded and reinforced flood embankment or in relation to the excavations and dislocation of earth masses during the rebuilding of the channel beds of Czarny Kanał and Racza Struga and the construction of a ring embankment.

However, these potential effects can be adequately and successfully mitigated by carrying out inventory and monitoring of buildings and structures under risk of negative impacts as well as using best available techniques to minimize negative impacts. In case of archaeological finds the Contractor will apply the standards and national principles of conduct in respect to these finds, as described in sections 6.9 and Appendix No 1 to EMP.

Human health and safety

The Task does not generate real threats to human health or safety. They may occur only in the event of an emergency and other random events, such as: a fire, contamination spillage, discovery of unexploded shells, danger to unauthorized persons access connected with the performance of construction works (e.g. excavations, traffic of machines and vehicles), flood risk, hazards connected to contagious diseases, etc. EMP

specifies relevant conditions in the scope of preventing such events and mitigating of their possible results.

Mitigation measures

The Chapter 6 of EMP and the Appendix No 1 include and describe a list of mitigation measures aiming at limiting or elimination of negative impacts on particular component of the environment. The listed mitigation measures include both the conditions specified in administrative decisions concerning environment protection as well as the conditions specified at the stage of developing the EMP.

Environmental monitoring

The Chapter 7 of the EMP and Appendix No 2 include and describe a list of monitoring measures referring to verification of proper performance of the planned mitigation measures as well as monitoring of environmental impacts at the stage of Task preparation, implementation and operation. The listed monitoring measures include both the conditions specified in administrative decisions concerning environment protection as well as the conditions specified at the stage of developing the EMP.

Public consultations

In Chapter 8, there are the results of public consultations connected with potential impacts on environment and society related to the Task implementation. This refers to conducted consultations at the stage of EIA procedure, consultations of EMF and EMP for Contract 1C.1.

Organizational structure for implementation of the EMP

Due to the specified organizational conditions of the Task, included in the Project, the structure of supervision over the EMP implementation must be compliant with the regulations of Polish law, the World Bank requirements and the conditions of authorities responsible for the Project implementation. The implementation arrangements cover the operations of the following units:

- Odra-Vistula Flood Management Project Coordination Unit (PCU);
- Project Implementation Unit as a regional self-government agency (Lubuski Board of Amelioration and Hydraulic Structures in Zielona Góra (LZMiUW));
- The Engineer;
- The Contractor.

A detailed list of tasks for particular units included in the above mentioned structure is provided in the Chapter 9. In other parts of the EMP there are provisions concerning the responsibility of respective entities participating in the Task implementation.

EMP implementation schedule and reporting procedures

The Chapter 10 presents information on the EMP implementation schedule and reporting procedures.

Source materials

The basic source materials used for developing this EMP are mentioned in Chapter 11.

1 INTRODUCTION

1.1 Odra-VISTULA FLOOD MANAGEMENT PROJECT

Ensuring and improving flood protection is one of the most important factors determining sustainable and stable social and economic development of regions and countries. Odra-Vistula Flood Management Project assumes the implementation of the most urgent tasks in the field of flood protection within selected parts of river basins of the two largest Polish rivers, the Vistula and the Odra River (Fig. 1)

The Project includes 3 components covering improvement of flood protection within: Lower and Middle Odra (Component 1), Kłodzko Valley, mountain and highland part of the catchment area of the Nysa Kłodzka River (Component 2) and Upper Vistula River (Component 3).

Component 1 includes various activities carried out within the vast section of the Odra River with total length of approx. 440 km (so called free-flowing section of the Odra River).

All the works necessary for implementation were divided into three Subcomponents:

- 1A – Flood protection of areas in Zachodniopomorskie Voivodship
- 1B – Flood protection on the Middle and Lower Odra
- 1C – Flood protection of Słubice city

Component 2 will be implemented within Kłodzko Valley, which covers mountain and highland part of the catchment area of the Nysa Kłodzka River. Two Subcomponents will be implemented within this Component:

- 2A – Active protection (covers the construction of four polders)
- 2B – Passive protection (covers flood protection of areas located along four main rivers of Kłodzko Valley).

The aim of the Component 3 – Flood protection of Upper Vistula towns and Kraków is the implementation of measures aiming at limiting danger of flood risk management of selected areas, within gradual increase of flood safety within the catchment of Upper Vistula.

Component 3 is divided into the following Subcomponents:

- Subcomponent 3A – Flood protection of Upper Vistula towns and Kraków
- Subcomponent 3B – Protection of Sandomierz and Tarnobrzeg
- Subcomponent 3C – Passive and active protection in Raba Sub-basin
- Subcomponent 3D – Passive and active protection in San basin

As part of the Project, there will be two more Components which do not cover civil works related to:

- Component 4 – Institutional Strengthening and Enhanced Forecasting.
- Component 5 – Project Management and Studies.

A detailed description of the Project is to be found in the ESMF published on the websites of the World Bank³ and the PCU⁴. Detailed Project description is also presented in PAD document.⁵

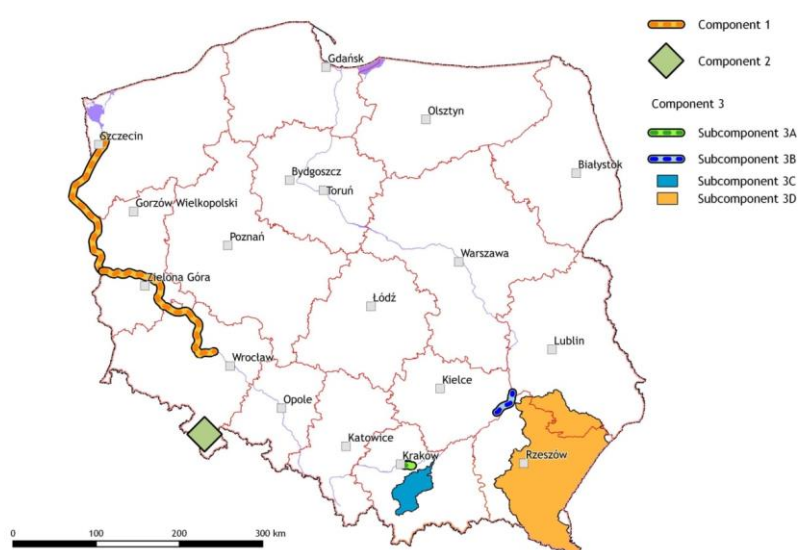


Fig. 1. General location of work implementation areas within the Project.

³ <http://documents.worldbank.org/curated/en/2015/04/24502899/poland-odra-vistula-flood-management-project-environmental-social-management-framework>

⁴ http://www.odrapcu.pl/popdow_dokumenty.html

⁵ <http://documents.worldbank.org/curated/en/2015/07/24763021/poland-odra-vistula-flood-management-project>

2 TASK DESCRIPTION

The Task included in this EMP will be carried out within the scope of the Odra Vistula Flood Management Project. The works are included in the Component 1 – Flood Protection of the Middle and Lower Odra, Sub-component 1C - Flood protection of Słubice city.

Contract 1C.1 - Extension and construction of flood embankments and Reconstruction of Czarny Kanał and Racza Struga is aimed at improvement of flood protection of Słubice city.

Lubuski Board of Amelioration and Hydraulic Structures in Zielona Góra, acting on behave of Lubuskie Province, is the Project Implementation Unit (PIU) of the Contract.

Contract 1C.1 Extension and construction of flood embankments and Reconstruction of Czarny Kanał and Racza Struga, consists of the following two parts:

- Extension and construction of flood embankments - consisting in the extension and strengthening of 6.700 km of the existing flood embankment and 185 m of the existing side embankment (km 26+000 - 32+700 of the Odra River embankment, km 582+500 – 588+000 of the Odra River course), as well as construction of a new ring embankment with the length of 5.896 km (km 26+563 of the Odra River embankment, km 587+400 km of the Odra River course),
- Reconstruction of Czarny Kanał and Racza Struga - consisting in the reconstruction of the Racza Struga channel bed within the length of 2.000 km and the reconstruction of the Czarny Kanał channel bed within the length of 4.065 km

2.1 LOCATION

The Task will be implemented in the following two structures:

- Construction and extension of flood embankments – carried out within the existing flood embankment (extension and strengthening of the existing flood embankment of the Odra River) surrounding Słubice from the west, within Słubice city boundaries, and within open areas and forests located from a few hundred meters to a few kilometers to the north of Słubice, within the boundaries of Słubice rural commune (a planned ring embankment),
- Reconstruction of Czarny Kanał and Racza Struga – carried out within the existing channels flowing from Słubice towards the north (within Słubice city and within the boundaries of Słubice rural commune).

Location of the investment works in relation to the surrounding environment is shown in the Fig. 2 below.

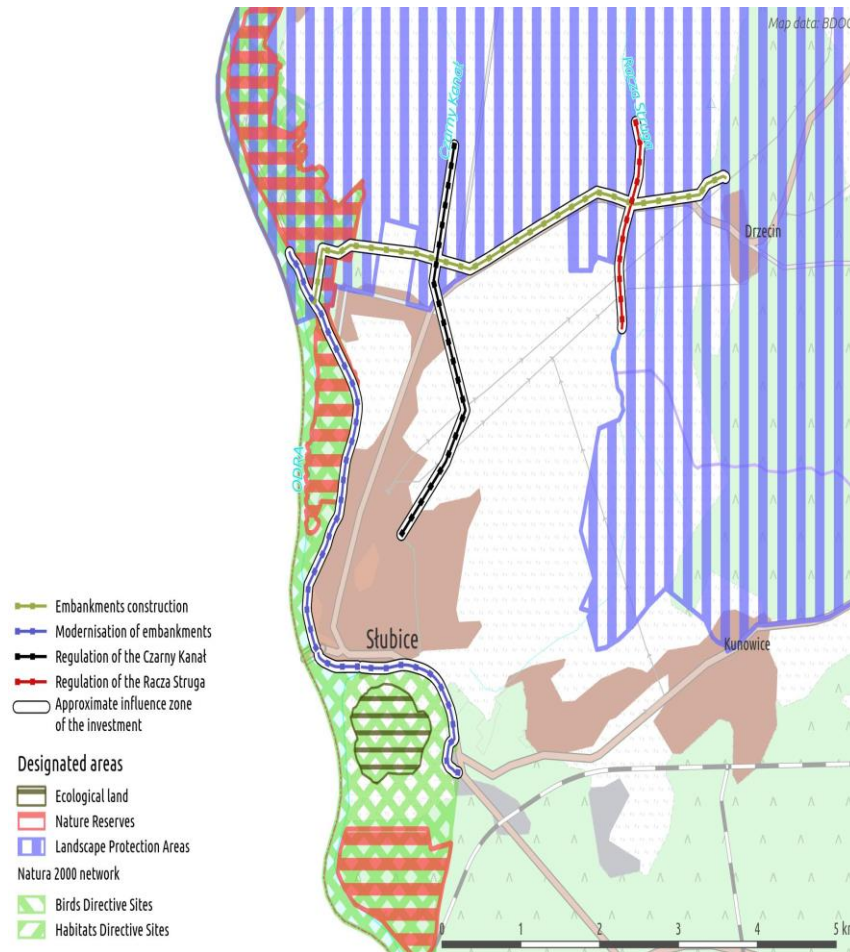


Fig. 2. Location of the construction works within the Task.

2.2 EXTENSION AND CONSTRUCTION OF EMBANKMENTS

The aim is to protect Stubice against flood through the extension and strengthening of the existing flood embankment along the Odra River with the length of 6.700 km and 185 m of the existing side embankment and also the construction of a new ring embankment to the north of Stubice with the length of 5.896 km.

Extension and strengthening of the existing flood embankment relates to the section of the embankment between km 26+000 and 32+700 of the Odra River embankment and 185 m of the existing side embankment which refers to km 582+500 - 588+000 of the Odra River course. The planned works include also the rebuilding of Nadodrzańska Street, running on the landside parallel to the existing embankment of the Odra River.

The planned ring embankment shall be 5.896 km long. The planned embankment shall start at km 587+400 of the Odra River course i.e. at km 26+563 of the Odra River embankment. The route of the embankment runs from the contact point with the existing embankment of the Odra River through forest area, and then north of the existing developments from the national road no. 31 and then along the road, up to the border of the Odra River Valley Upland in the area of Drzecin village.

The ring embankment is planned as an earth embankment with a trapezoidal section. The height of the embankment will range from 3.3 to 5.3 m depending on the site levels and the crown width will be 3.0 m with local widening of up to 6.0 m.

Slopes of embankment will be protected by sowing of a grass mixture on applied layer of humus. Due to restriction of vehicle traffic on the embankment's crown, a grass surface is planned. Only in the section at km 0+098 - 0+523 (forest areas) and in the area of the planned crossings, gravel surface is proposed. In order to seal the embankment body within its entire length, it is anticipated to construct a filtration barrier in its axis. The following will be also rebuilt: power and telecommunication lines which collide with the course of the new embankment.

The location of the structures constructed as part of the Task is presented in Appendix No 5 to the EMP.

2.3 RECONSTRUCTION OF CZARNY KANAŁ AND RACZA STRUGA

The aim is to enable proper drainage of the areas adjacent to the surrounding embankment and discharge of surface water to Racza Struga and Czarny Kanał. It is planned to reconstruct the channel bed of Racza Struga within the length of 2.000 km and of Czarny Kanał within the length of approximately 4.065 km.

Planned works within Racza Struga will comprise of levelling of sections of channel bed according to the levelled gradient (without excavating the soil) and sectional dredging of channel bed in order to obtain a designed gradient (with excavating the soil to the bank and further utilization in accordance with the principles set in App. No. 1 – Mitigation measures). The channel banks will be levelled (slope from 1:1.5 to 1:2) with the possible use of surplus soil coming from deepening the channel for filling up any unevenness on banks or increasing site levels within the sections with the least bed depth. Strengthening the banks of the channel with turf and sowing grass mix on humus with supporting the foot of the bank with the line of fascines. Tributaries of Racza Struga within the section under reconstruction will be strengthened within the length of 5 m up to their estuaries.

Czarny Kanał bed reconstruction will comprise of levelling of sections of channel bed according to the levelled gradient (without excavating the soil) and sectional dredging of channel bed in order to obtain a designed gradient (with excavating the soil to the bank and further utilization in accordance with the rules set in App. No. 1 – Mitigation measures). The channel banks will be levelled (slope from 1:1.5 to 1:2) with the possible use of surplus soil for filling up any unevenness on banks or increasing site levels within the sections with the least bed depth. Strengthening the banks of the channel with turf and sowing grass mix on humus with supporting the foot of the bank with the line of fascines. Tributaries of Czarny Kanał within the section under reconstruction will be strengthened within the length of 5 m up to their estuaries. Locally, in the places of the channel approaching the existing fencing and development, the bed slopes will be reinforced with gabions with a total length of 740 m (left and right bank).

3 INSTITUTIONAL, LEGAL AND ADMINISTRATIVE CONDITIONS

3.1 INSTITUTIONS ENGAGED INTO THE TASK IMPLEMENTATION

A direct Investor of the Task under consideration is Lubuskie Province, represented by LZMiUW. In addition, at the stage of construction and operation, its implementation may require the involvement of public administration bodies at the central, regional and local level. For the day-to-day coordination of implementation of the Project by PIU, an organizational unit, the Odra-Vistula Flood Management Project Coordination Unit has been established.

3.2 APPLICABLE NATIONAL LEGISLATION CONCERNING THE ENVIRONMENT PROTECTION

Pursuant to the Polish law, an investment process within the scope of the environmental protection is subject to several regulations and acts. A list of the selected and fundamental applicable legal acts concerning the environment protection is presented in Appendix No 3 to the EMP. The number of acts and their contents, listed in Appendix No 3, may change with changes in Polish legislation for environmental protection. Apart from applying the rules specified in this EMP, the Contractor shall also apply current provisions of law within environmental protection.

3.3 EIA PROCEDURE IN POLAND

A description of the Environmental Impact Assessment in the Polish legislation is contained in the ESMF published on the websites of the World Bank⁶ and the PCU⁷.

3.4 WORLD BANK REQUIREMENTS

The Task under consideration will be co-financed by the World Bank. Therefore, its implementation conditions concerning the environmental protection must be consistent with the following policies of the World Bank:

- OP 4.01 – environmental assessment,
- OP 4.04 – natural habitats,

⁶ <http://documents.worldbank.org/curated/en/2015/04/24502899/poland-odra-vistula-flood-management-project-environmental-social-management-framework>

⁷ http://www.odrapcu.pl/popdow_dokumenty.html

- OP/BP 4.11 – physical culture resources.

details of which are included in ESMF for the Odra-Vistula Flood Management Project published among others on the website of the World Bank⁸ and the PCU⁹.

3.5 CURRENT STATE OF EIA PROCEDURE FOR THE TASK

The Task is classified as group II project which is most likely to affect the environment significantly, in accordance with the classification of the Regulation of the Council of Ministers of 9th November 2010 on projects that may have severe impact on environment. Pursuant to the decision of RDOS in Szczecin of 2 June 2011 (sign: WOŚ-II.4233.12.2011.AN) as part of the proceedings concerning the issue of a decision on an environmental permit, Environmental Impact Assessment was carried out. It was concluded with issuing the environmental decisions on 28 October 2011 (issued in accordance with the current content of e.p.a.).

In relations with introduction of changes in the scope of works concerning structure-Reconstruction of Czarny Kanał and Racza Struga, after issuing an Environmental Decision for the Task, on 16th April 2015, a new Environmental Decision was obtained. According to the decision of Mayor of Słubice, on account of a minor scale of interference with the environment, the institution has not imposed an obligation to conduct an additional Environmental Impact Assessment and to prepare an additional Environmental Impact Report. The Authority has not imposed an obligation of conducting an additional EIA at the stage of obtaining an implementation decision. Furthermore, for the purpose of the Task implementation, the following administrative decisions were obtained:

- Decision of the Regional Directorate for Environment Protection in Gorzów Wielkopolski of 28th October 2011 on environmental conditions of the investment "Flood protection of Słubice city"¹⁰ sustained by the current Regional Director for Environment Protection in Gorzów Wielkopolski of 24th January 2012,
- Decision of the Mayor of Słubice of 16th April 2015 on environmental conditions without the need for conducting an environmental impact assessment for the investment consisting in updating the project documentation "Reconstruction of Czarny Kanał and Racza Struga" as part of the following investment task: Flood Protection of Słubice City, Słubice Commune, Lubuskie Province,
- Decision No. 4/15 of the Mayor of Słubice of 3rd August 2015, establishing the location conditions for the public purpose of investment concerning Rebuilding

⁸ <http://documents.worldbank.org/curated/en/2015/04/24502899/poland-odra-vistula-flood-management-project-environmental-social-management-framework>

⁹ http://www.odrapcu.pl/popdow_dokumenty.html

¹⁰ The Investment Project titled: "Słubice City Flood Protection" for which an environmental decision has been obtained is equivalent to the Task which this EMP refers to, i.e. Extension and construction of flood embankments and Reconstruction of Czarny Kanał and Racza Struga

the channel bed of Czarny Kanał (Długi Rów) along about 4.065 km from km 4+612 to km 8+677 within the investment task "Flood protection of Słubice city".

4 DESCRIPTION OF THE ENVIRONMENT ELEMENTS

4.1 LAND AREA AND LANDSCAPE

The area of the Task implementation is situated within the Odra River Valley in Lubuskie Lake District, sub-province of South Baltic Coast within Central European Plain. The heights relief is diversified by the system of moraine hills, outwash plains and ribbon lakes. Its surface is at approximately 32.6-38.30 m a.s.l.

The Odra River bed, on the section adjacent to the area of the works, is regulated and the embankments are provided. The area of the existing floodplain is artificially reduced and now it is merely 1/5 of its original floodplain. A large area of former floodplain situated on the Polish side is intersected by a dense network of drainage canals, with the Racza Struga and the Czarny Kanał as the largest.

The entire urban landscape of Słubice is situated in the Odra River Valley. Within Słubice-Górzyca section there are mainly pastures and meadows, agricultural and uncultivated lands. Słubice marshy meadows in the river floodplain are one of the most valuable ecosystem elements. A northern part of terrace area next to Słubice, which is over 1 km wide, is covered by extensively used meadows and pastures with the area of approximately 200 ha. The patches of riparian forests also occur along the river bed between the Odra River and embankment.

4.2 CLIMATE

Słubice is located in the latitude of moderate climates – transitional type. There are strong ocean influences; therefore, this area is one the warmest areas in the country.

A dominant wind direction is from the west (40%)

Average annual air temperature in Słubice is 9.1°C. The highest annual air temperature is in July (17°C, maximally up to 24.7°C), and the lowest in January (on average -1°C, minimally down to -5.1°C).

4.3 AIR QUALITY

The highest importance within an overall balance of pollution sources on urban areas is as follows: emission of pollution generated by transport and by heating - boiler rooms.

The main pollution sources in Słubice are:

- local and transit vehicle traffic,
- point pollution emitters (i.a. Sulphur oxide emissions) – industrial plants, heat station,
- emissions of gases and dusts from domestic heating systems and boiler rooms,

- cross-border pollution shifting from Germany as a result of dominant western wind direction on the Słubice area.

4.4 SOIL AND LAND

Within the heights, surrounding the lowering of the river, there is mainly podsol and brown soil. Directly in the Odra River Valley there are alluvial soils: fluvial muds, sludge soil and organic soil: peaty soil and marshy soil. Within the overflow areas, there are dusty fluvial muds. In the riverbed zone, there are mainly sandy fluvial muds.

Within the area of works and the immediate surroundings there may be distinguished:

- anthropogenic soil: built-up areas, embankments, roads;
- mineral soil: sands, river gravels, dusty clays, sandy clays, mostly of high plasticity and plasticity;
- organic soil, moor soil, alluvial soil and peats with a very well spread flora substance.

All the layers of organic soil and fluvial muds, in terms of geotechnical properties, are to be classified as weak soil.

4.5 SURFACE WATER

The Odra River Valley floodplain within vicinity of Słubice is restricted by embankments. The zone under protection is drained by means of ditches and channels. The largest channels are as follows:

- **Racza Struga** (according to the hydrographic division, it is group IV watercourse) is a left bank tributary of Postomski Channel which flows into the Warta River. It has been marked as a strongly changed water part with the following name: Racza Struga to the tributary from Czarnów (Kanał Czerwony). Abiotic type No 17: sandy lowland stream ¹¹. The catchment area of Racza Struga up to the embankment culvert cross section at the mouth of the Warta River is 136.55 km². In 2013 JCWP (SWB) Racza Struga to the tributary from Czarnów reached a good and above good ecological condition, however due to failure to meet the requirements for protected area (fish species protection areas), the assessment of the ecological condition was lowered to moderate. Due to the above-standard concentration of total phosphorus, the water condition was specified as bad (Environment condition in Słubice District in 2013, PIEP¹²).

¹¹ In Poland, all types of surface water bodies including rivers, lakes, transitional and coastal waters are published in Regulation of Ministry of Environment of 9 November 2011 on the surface water classification regarding ecological and chemical status and ecological potential.

¹² http://www.zgora.pios.gov.pl/wp-content/uploads/2014/05/Powiat-s%C5%82ubicki_2014.pdf

- **Czarny Kanał** is a left bank tributary of Racza Struga (estuary of Czarny Kanał to Racza Struga is located beyond the area protected by the designed embankment). The catchment area of Czarny Kanał up to the embankment culvert cross section at the mouth of the Warta River is 14.97 km².

Hydrography

The values of maximum annual flows of a specified probability of exceeding for Racza Struga and Czarny Kanał in the embankment culvert cross sections at the mouth of the Warta River are as follows:

- Czarny Kanał Q1%=1.21m³/s (including the impact of rain water discharge),
- Racza Struga Q1%=6.12m³/s (based on a thaw formula).

Hydro-morphological characteristics

The Task is located within JCWP on the Odra River from Nysa Łużycka to Warta River and JCWP Racza Struga to the tributary from Czarnów (Kanał Czerwony). JCWP are determined as strongly modified parts of waters for which delay in achieving environmental objects is permitted.

The Odra River bed at the height of Słubice has been improved and embankments have been provided. Nonetheless, a narrow section of terrace area is characteristic for a rivers with high natural values. There are numerous flood tunnels, small ponds and fragments of overflow channels present. The spaces between groins have been silted. The river bank is diversified. The low level of groundwater facilitates the development of the habitats of alluvial forests and reed groups.

Within a considerable length, the banks and channel bed of Czarny Kanał are not secured. In some sections, there are visible remains of securing the banks in a form of a fascine fence. Average gradient of the canal is negligible. There are 7 culverts and 27 tributaries and discharge points of storm water system and sewage system.

Racza Struga in the section under consideration is part of a drainage system of meadows, pastures and agricultural land. The channel width varies from 6.0 to 8.3 m. Approx. depth is from 1.25 to 2.35 m. The channel banks are not strengthened.

4.6 GROUNDWATER

According to the hydrogeological division of Poland (A. Jaworski, 1986), Słubice commune is situated within Szczecin region.

Main water-bearing level is present in quaternary forms (sands, sands with gravel) at the depth from a few meters to 80 meters. In tertiary forms (fine and medium-granulated sands) a water-bearing level is deeper, from 30 to over 100 meters of depth. In the Odra River Valley zone, groundwater occurs near the surface, approximately 1 m below the ground level. However, within the upland, the water table is more than 5 m below the ground level.

According to the Hydrogeological Atlas of Poland (1995) within Słubice Commune, there are water resources of the GZWP Waters No 144 "Wielkopolska Fossil Valley". Słubice are located within JCWPd No 59.

4.7 ACOUSTIC CLIMATE

The area of the Task may be divided into the following two parts in terms of the description of current acoustic climate:

- region of agricultural and suburban development – adjacent to the new ring embankment and existing embankment to be rebuilt within the section 26+000 km – 28+100 km of the Odra River embankment;
- urban area – adjacent to the existing embankment to be rebuilt within the section of 28+100 – 32+700 km of the Odra River embankment.

On the agricultural and suburban development area there are arable lands. Noise is mainly generated by national road No 31 within the section Słubice – Drzecin. According to General Traffic Monitoring done in 2010 average day traffic rate within the section Słubice – Górzycza is 3888 vehicles, including 2690 passenger vehicles (69.18%), and 796 heavy load vehicles (20.47%).

The areas adjacent to the channels to be rebuilt (Czarny Kanał and Racza Struga) are mostly agricultural land, meadows and grasslands. Currently there are no significant noise impacts in the area. Czarny Kanał runs in sections near the housing developments, which are:

- region of the intersection of Witosza Street in Słubice;
- region of Grzybowa Street and Jastrzębia Street (section from km 0+410 – 0+850 of the channel under reconstruction).

There is a residential development in the aforementioned areas. Acoustic impacts are connected here with everyday functioning of housing estates, such as: traffic of vehicles or household works.

4.8 NATURE

4.8.1 PROTECTED NATURAL HABITATS AND PROTECTED SPECIES OF PLANTS, FUNGI AND ANIMALS

NATURAL HABITATS

In the vicinity of the Task implementation area, there are in total 8 natural habitat types:

- Oxbow lakes and natural eutrophic water basins with concentrations of *Nymphaea* 3150¹³,
- Mountain and riverside overgrowth 6430,
- Plain and mountain fresh meadows used extensively 6510,
- Alluvial meadows 6440,
- *Galio-Carpinetum* oak-hornbeam forests 9170,
- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* 91E0,
- Riparian mixed forests of *Quercus robur*, *Ulmus laevis* and *Fraxinus excelsior*, along great rivers (*Ulmion minoris*) 91F0,
- Banks or dried reservoir beds with groups of *Littorelletea Isoeto-Nanojuncetea* 3130.

The most valuable habitats are well-preserved elm and ash and oak alluvial forests, affected by periodical flooding. It is the only area of this type of tree stands in the Odra River Valley to the north of Słubice up to the river mouth. Alluvial forests are well preserved on a considerable area, with typical structure for mature tree stands. Within this area, there are also a few well preserved oxbow lakes. To the south of Słubice, there is a group of riverside grasslands created by a mosaic of habitats formed by regular flooding of the Odra River. The open flooding area to the south of Słubice is covered mainly by fresh meadow habitats and *Cnidion dubii* meadows, which are regularly flooded. In the surroundings of Czarny Kanał and Racza Struga, there are meadow habitats and agricultural lands.

FLORA

In the Task implementation area and its surrounding, there are a few species of plants under protection connected with valuable groups of alluvial forests, wet meadows and grasslands, as well as oxbow lakes.

According to the information provided in the Environmental Assessment Report for the Task (Wołoszyn S. et. al 2011), there are the following flora species under protection in the neighbourhood of the area of the Task implementation:

- Mouse garlic *Allium angulosum*,
- Water caltrop *Trapa natans*,
- Floating watermoss *Salvinia natans*,

The areas which are significant for flora in the area under consideration include mostly well preserved alluvial forests, wet and floodplain meadows and oxbow lakes.

¹³ all habitats listed in Appendix I of Habitats Directive have their unique codes thus habitats can not be mistaken regardless of their names in different countries (Council Directive 92/43/EEC of May 1992 on the conservation of natural habitats and of wild fauna and flora)

FAUNA

In the vicinity of Słubice, within wide inter-embankment zone, there are well-preserved habitats typical for the Odra River Valley. Open areas affected by regular flooding, oxbow lakes and alluvial forests of natural character determine the abundance and high values of the area avifauna. Nonetheless the implementation of the Task does not cause direct impacts within these areas.

Table 1. Valuable bird breeding species in the location and in the surrounding of the Task implementation area (on the basis of the Environmental Assessment Report Wołoszyn, et. al 2011/)

Species name	Protection status [Ch – protected under national law, I DP – species enumerated in Appendix I to Bird Directive]	Quantity	Population distribution
Greylag goose <i>Anser anser</i>		1-2	within water bodies to the South of Słubice
Garganey <i>Anas querquedula</i>	Ch, I DP	1 breeding pair	within water bodies to the south of Słubice, observed also in flights to the South of Słubice
Red-necked grebe <i>Podiceps grisegena</i>	Ch	5-7 breeding pairs	within water bodies to the south of Słubice
Black-necked grebe <i>Podiceps nigricollis</i>	Ch	12 breeding pairs	within water bodies to the south of Słubice
Honey buzzard <i>Pernis apivorus</i>	Ch, I DP	probably 1 breeding pair	in forests to the north of Słubice
Black kite <i>Milvus migrans</i>	Ch, I DP	2 breeding pairs	within forests to the south and north of Słubice
Red kite <i>Milvus milvus</i>	Ch, I DP	2 breeding pairs	within forests to the south and north of Słubice
Western marsh harrier <i>Circus aeruginosus</i>	Ch, I DP	1 breeding pair	within water bodies and meadows to the south of Słubice
Crane <i>Grus grus</i>	Ch, I DP	2 breeding pairs	breeding on water bodies to the south of Słubice and within forests to the north of Słubice
Common snipe <i>Galinago galinago</i>	Ch, I DP	3-4 breeding pairs	within meadows to the south of Słubice
Black headed gull <i>Larus ridibundus</i>	Ch	5 breeding pairs	within water bodies to the south of Słubice
Common tern <i>Sterna hirundo</i>	Ch, I DP	probably 1-2 breeding pairs	within water bodies to the south of Słubice
Whiskered tern <i>Chlidonias hybrida</i>	Ch	30 breeding pairs	within water bodies to the south of Słubice

Species name	Protection status [Ch – protected under national law, I DP – species enumerated in Appendix I to Bird Directive]	Quantity	Population distribution
Black tern <i>Chlidonias niger</i>	Ch, I DP	10 breeding pairs	within water bodies to the south of Słubice
White-winged tern <i>Chlidonias leucopterus</i>	Ch	15 breeding pairs	within water bodies to the south of Słubice
European green woodpecker <i>Picus viridis</i>	Ch	min. 5 breeding pairs	in Odra River forests to the south and north of Słubice
Black woodpecker <i>Dryocopos martius</i>	Ch, I DP	probably 3 breeding pairs (Dąbrowska 2012),	in Odra River forests to the south and north of Słubice
Middle spotted woodpecker <i>Dendrocopos medius</i>	Ch, I DP	probably 34 breeding pairs	in Odra River forests to the south and north of Słubice
Barred warbler <i>Sylvia nisoria</i>	Ch, I DP	2 breeding pairs	meadows to the south of Słubice
Red-necked shrike <i>Lanius collurio</i>	Ch, I DP	from a few breeding pairs	open areas in the vicinity of the Task

During the works carried out for the needs of preparing the Report on the environmental impact (Wołoszyn, et. al 2011), there are also other protected animal species:

- Common frog *Rana temporaria*,
- Moor frog *Rana arvalis*,
- European green toad *Pseudepidalea viridis*,
- Grass snake *Natrix natrix*,
- Sand lizard *Lacerta agilis*
- European hedgehog *Erinaceus europaeus*,
- Common noctule *Nyctalus noctula*,
- European beaver *Castor fiber*,
- Otter *Lutra lutra*.

Within area Natura 2000 Łęgi Słubickie PLH080013, there is also a rare and highly valuable species of a beetle *Cucujus cinnaberinus* which inhabits old-growth riverside forests with large quantities of dead wood (Pawlaczyk and Dzieciolowski 2013).

4.8.2 PROTECTED AREAS

Legi near Słubice Nature Reserve

The nature reserve established in the year 2003 with the area of 397.94 ha, situated in Słubice Commune, in Lubuskie Province, within administrative boundaries of Rzepin

Forest Inspectorate. A group of alluvial forests under strict protection is one of the largest and the best preserved groups of this type of habitats in the vicinity of the Central Odra River. Together with a very similar area on the German side, it is a highly valuable system of alluvial forests which are systematically flooded.

The reserve consists of two parts – northern and southern. The northern part is diverse. Within the inter-embankment zone, there are mainly alluvial forests and large areas of riverside open terrains which are systematically flooded, as well as oxbow lakes.

The southern part is created by a mosaic of alluvial forests, meadows and small oxbow lakes. Łęgi Słubickie Reserve is one of the most significant places in Poland protecting this type of habitats. Its location is shown at map in Appendix No 6 to EMP.

Central Odra River Valley PLB080004 Special Area of Conservation

Middle Odra Valley PLB080004¹⁴ SPA is a vast area covering a long section of the Odra River Valley from Bytom Odrzański to Słubice (northern boundary of the area runs approx. 5 km below the city). The area covers the river floodplain route and higher floodplain levels, as well as estuary section of the Obrzyca River. The Odra River Valley within Bird SAC is distributed within the width of 5-10 km, large of its fragments are affected by periodical flooding in the periods of high water levels and floods. Various types of habitats are represented, which are typical for a large plain river, such as oak-hornbeam forests and alluvial forests, floodplain meadows and oxbow lakes. In the vicinity of Słubice, there is a valuable group of periodically flooded riverside grasslands and very well formed alluvial forests.

Within SAC area, there are 25 breeding and 30 species of birds which migrate over this area, listed in the Appendix I of the Bird Directive. Central Odra River Valley PLB080004 is one of the most important Natura 2000 sites in Poland in terms of preserving a national population of black kite, red kite and middle spotted woodpecker. It is also an important site for the species connected with river beds, such as whiskered tern and white-winged tern. Open areas are important areas for migrating and hibernating populations of whooper swan and bean goose. Its location is shown at map in Appendix No 6 to EMP.

¹⁴ all Natura 2000 sites have their unique code which identifies site despite translation of its name. First two letter refer to the country name, third to the type of the site (SAC or Special Areas of Conservation), fourth and fifth refers to province and rest is number of the site in certain province.

Table 2. The object of protection BSPA Natura 2000 Central Odra River Valley PLB080004

Name	Code	Quantity	Global assessment contained in SDF (value of the site for conservation of the species)
Common kingfisher <i>Alcedo atthis</i>	A129	30-35 r	C
Garganey <i>Anas querquedula</i>	A055	10-20 r	C
Bean goose <i>Anser fabalis</i>	A039	1000-3000 w 3000-25000 c	C
Whiskered tern <i>Chlidonias hybridus</i>	A196	3-30 r	C
White-winged tern <i>Chlidonias leucopterus</i>	A198	15-30 r	C
Corn crane <i>Crex crex</i>	A122	110-120	C
Whooper swan <i>Cygnus cygnus</i>	A038	700-900 w	C
Middle Spotted Woodpecker <i>Dendrocopos medius</i>	A238	250-300 r	C
Black kite <i>Milvus migrans</i>	A073	24-26 r	B
Milvus <i>Milvus milvus</i>	A074	32-35 r	B

Legend for the symbols used in the table: B - good value, C - significant value; r - reproducing, w - wintering, c - migratory concentration

CIS Łęgi Słubickie PLH080013¹⁵

The area consists of two parts situated to the south and north of Słubice. The southern part of the area is created by well-preserved alluvial forests and periodically flooded riverside grasslands (group of meadows, reeds, oxbow lakes, willow shrubs). In the northern enclave of the area, there is a predominance of alluvial forests. To the north of Słubice the area is the place of elmwood and ashwood up to the estuary of the Odra River to Szczecin Lagoon. Alluvial forests on the area are very well formed and of a high natural value because as a scarce phenomenon in the Odra River Valley they are situated on the embankment upstream face and they are affected by periodical flooding of the river. Its location is shown in Appendix No 6 to EMP.

¹⁵ Special Area of Conservation of Natural Habitat Natura 2000 - the name Community Interest Site functions in the absence of a national legislative act establishing the Natura 2000 **SAC**

Table 3. The objects of protection of SCI Łęgi Słubickie PLH080013

Name	Code	Area [ha]	Global assessment contained in SDF (value of the site for conservation of the habitat)
Oxbow lakes and natural eutrophic water basins with concentrations of <i>Nympheion</i>	3150	41.26	C
Mountain and riverside overgrowth	6430	41.26	C
<i>Galio-Carpinetum</i> oak-hornbeam forests	9170	36.3	C
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i>	91E0	33.83	C
Riparian mixed forests of <i>Quercus robur</i> , <i>Ulmus laevis</i> and <i>Fraxinus excelsior</i> , along great rivers (<i>Ulmenion minoris</i>)	91F0	198.85	A

Legend for the symbols used in the table: A – excellent value, B - good value, C - significant value

"Flood meadows near Słubice" ecological land

The land covers the meadows to the south of Słubice with the area of approx. 42 ha. This area is also included in BSPA Middle Odra River Valley PLB080004. The land is formed by a group of habitats called riverside grasslands. The area has high ornithological values, it is significant primarily for water and marsh birds, both in the migration period and breeding season. Within this area, there are 14 species of birds listed in the Polish Animal Red Book, including whiskered tern and white-winged tern which had nests on this area (Czechowski and Bocheński 2008). Its location is shown in Appendix No 6 to EMP.

Protected Landscape Site of Słubicka Odra River Valley

It is an area of 14 075 ha, covering a section of the wide Odra River Valley section and adjacent area between Słubice and the southern boundary of the Warta River Estuary Landscape Park. It covers a several kilometer section joining the protected area around Słubice with the Warta River estuary. Its location is shown in Appendix No 6 to EMP.

4.9 CULTURAL LANDSCAPE AND MONUMENTS

Słubice City was a district of Frankfurt before 1945. After the end of WWII, Słubice – as a separate city under Polish administration – was not subject to any significant transformations or spatial development, owing to which a radial road system is

maintained, which meets in the crossing point to Frankfurt over the Odra River, which is shaped according to old trading tracks.

Near the strengthened flood embankment extension works on the Odra River, within the distance of approx. 40 m from the embankment, along the following streets: Nadodrzańska, 1 Maja and Jedności Robotniczej, there are structures listed in the Commune Register of Historical Monuments, which are:

a) ul. Nadodrzańska:

- ul. Nadodrzańska 5 – tenant house erected in the years 1900-1930;
- ul. Nadodrzańska 1 – tenant house erected in the years 1900-1930;
- ul. Nadodrzańska 2 – tenant house erected in the years 1920-1930;
- ul. Nadodrzańska 4 – tenant house erected about the year 1900;

b) ul. 1 Maja:

- ul. 1 Maja 6 – tenant house erected in the 19th c.;
- ul. 1 Maja 9 – tenant house erected in the 1920's ;
- ul. 1 Maja 10 – tenant house erected at the beginning of 20th c.;
- ul. 1 Maja 11 – tenant house erected in the years 1885/1890;
- ul. 1 Maja 12 – a service building erected in the years 1885/1890;
- ul. 1 Maja 15 – tenant house erected in the 1920's 20th c.;
- ul. 1 Maja 17 – tenant house erected at the turn of the 19th and 20th c.;
- ul. 1 Maja 18 – tenant house erected at the beginning of 20th c.;
- ul. 1 Maja 19 – tenant house erected at the beginning of 20th c.;
- ul. 1 Maja 20 – tenant house erected at the turn of the 19th and 20th c.;
- ul. 1 Maja 23 – tenant house erected at the beginning of 20th c.;
- ul. 1 Maja 24 – villa erected at the beginning of 20th c.;
- ul. 1 Maja 25 – residential building erected at the beginning of 20th c.;
- ul. 1 Maja 26 – tenant house erected in the 1920's 20th c.;
- ul. 1 Maja 27 – tenant house erected in the 1920's 20th c.;
- ul. 1 Maja 28 – tenant house erected in the 1920's 20th c.;
- ul. 1 Maja 29 – tenant house erected in the 1920's 20th c.;
- ul. 1 Maja 31 – Parish church of Blessed Virgin Mary the Queen of Poland erected about the year 1830;

c) ul. Jedności Robotniczej:

- ul. Jedności Robotniczej 1 – tenant house erected about the year 1910;
- ul. Jedności Robotniczej 2 – tenant house erected about the year 1910;
- ul. Jedności Robotniczej 3 – tenant house erected about the year 1910;
- ul. Jedności Robotniczej 4 – tenant house erected at the beginning of 20th c.;
- ul. Jedności Robotniczej 5 – tenant house erected at the beginning of 20th c.;

The structures listed in the Provincial Register of Historical Monuments located within prospective impact range of Odra River flood embankment under strengthening and extension works are:

- front façade of former Piast cinema from 1924, ul. Jedności Robotniczej 9-10 - cca. 250 m from works implementation area;

- Wschodniomarchijski Stadium (German Ostmarkstadion) erected in the years 1914 – 1927 and the ruins of Kleist Tower (German Frankfurter Kleisturm) - cca. 320 m from works implementation area;
- ruins of the Jewish cemetery from 13th - 15th c. - cca. 220 m from works implementation area.

In the area and immediate vicinity of the construction site of reconstruction of channels (Czarny Kanał and Racza Struga), there are no historical monuments under the protection of the Conservator and there are no registered archaeological sites.

4.10 POPULATION

Structures implemented within the Task are located in the municipality of Słubice, in Lubuskie Province. The Task implementation shall ensure flood protection of Słubice City inhabited by nearly 17 000 people (GUS 2015). The entire Słubice Commune counts nearly 20 000 inhabitants (GUS 2015).

5 ENVIRONMENTAL IMPACT ASSESSMENT – SUMMARY

5.1 LAND AREA AND LANDSCAPE

Channels *Czarny Kanał and Racza Struga*

The works conducted in channels are connected with the local changes in channel beds. The unification of a cross section, providing uniform longitudinal gradient will increase channel capacity. Periodically the water flora will be removed.

The following activities will exert influence on the channels structure and local landscape:

- levelling the channel between culverts without soil excavation – these works will lead to the uniformity of the lower zone;
- deepening of the channel in order to obtain a designed gradient with the soil excavation onto the banks – lowering the channel bed it will cause the change in the gradient of a longitudinal cross section, it will improve drainage of the surrounding area;
- levelling the channel banks according to the designed slopes ranging from 1:1.5 to 1:2 the activity will stabilize the bank structure and slopes;
- strengthening the banks of the channel by turf stretches and sowing grass mix on humus with supporting the foot of the bank with the line of fascines.;
- strengthening the beds of melioration canals within the section up to 5 m from the estuaries of tributaries of Czarny Kanał and Racza Struga;
- local clearance of trees and shrubs within bank slopes of the canals – works will result in local simplification of the landscape structure.

Due to the fact that both water courses were regulated in the past, the earthworks connected with the reconstruction of the channel beds will have slight negative impact on hydro-morphological elements. This impact will be additionally limited by mitigation measures described in Chapter 6 and Appendix No 1 of this EMP, which are: leaving patches of natural bank vegetation within the trained section, leaving thick wood debris or rootstocks of cleared trees in some points of the channel bed.

Embankments

The following activities will affect the land area and landscape:

- strengthening and extension of embankments within the length of 6.885 km;
- construction of a steel wall with reinforced concrete head within the section of approximately 6.800 km;
- construction of a ring embankment with the length of approximately 5.896 km

At the stage of preparing works for the extension and strengthening of the existing flood embankment of the Odra River and the construction of a ring embankment, it is planned

to cut out trees and shrubs which collide with the construction sites. Nevertheless, on these areas there are no trees defined as nature monuments.

As a part of preparation works for the reconstruction of the canal beds of Czarny Kanał and Racza Struga it is planned to cut out trees and shrubs necessary for the performance of works. The channels had anthropologically transformed banks; therefore, the planned works will not result in any significant negative impacts on the landscape.

Additionally, at the stage of other earthworks and construction works, it is possible that the landscape values will be periodically reduced (due to the temporary destruction of the existing plants).

Predicted impact on landscape is limited in space to the Task implementation area and its direct surroundings. Works as part of the Task, cover a small part of the Odra River Valley and do not cause a significant transformation of the landscape in the river valley. The change of landscape related to tree cutting, or construction of embankments is of permanent nature, however after completion of works, stripping of topsoil from the slope and reinstatement of vegetation on the flood embankments, the permanent impact on the landscape shall be negligible. Locally, upon the completion of works and upon the reconstruction of plants, the impact on landscape values may be positive.

In order to mitigate the potential negative impacts during the stage of construction works, it is necessary to implement mitigation measures described in section 6.1 and Appendix No 1 to this EMP.

5.2 CLIMATE

The Task will not cause any changes in climatic conditions on a large scale (city/region/country). Yet, minor changes will occur on the micro-scale level, connected with tree cutting. The change in the ground roughness may cause minor changes in the wind direction and speed. Nevertheless, it may be stated that the said changes are negligible and the Task implementation will not be connected with any serious threats to the local climate.

Therefore, there is no need to introduce any mitigation measures or monitoring measures specifically related to climate impact.

5.3 AIR QUALITY

The emission of dust and gas pollution will be present mostly at the construction stage. At the Task operation stage, upon construction works completion, pollution will be emitted only in some situations, such as mobile motor pumps operation in the event of flood.

A main source of pollution emission at the construction stage will be fuel combustion during the operation of building machines, electric power generator and material transport. At this stage, main compounds emitted to the atmosphere will be as follows: nitrogen oxides, carbon oxides, hydrocarbons and dust particles (suspended dust – its exact amount emitted to the atmosphere during the works is difficult to estimate). The highest temporary pollution concentrations will be noticeable within the distance of a few

dozens of meters from the source and in such places they may exceed permissible values (temporary situation, spatially limited to the area of the Task implementation). In the direct vicinity of the working site, it is possible that a dust concentration may be temporarily increased due to dusting from technological routes and building sites, vehicle traffic and dusting caused by materials transported. The pollution from implementation areas will disperse in the atmosphere along with increasing the distance from the working sites. The emission of pollution to the atmosphere at the construction stage will be temporary and reversible. It will not lead to the occurrence of any significant and permanent impacts on the environment.

In order to reduce the impact of works on the sanitary condition of the air within the Task implementation period, it is necessary to implement mitigation measures described in Chapter 6.3 and Appendix No 1 to the EMP.

5.4 SOIL AND LAND

Channels

The desilting of channels will lead to the activation of channel bed sediments during deepening works, which will periodically deteriorate the physical and chemical conditions of waters. The deepening of channel, on the one hand, will increase their capacity and on the other hand, with medium and low water levels in channels, may intensify the lowering process of groundwater table and periodical over-drying of habitats. Changes arising from the clearing of channels will be of a local type.

Embankments

The Task, apart from the sectional strengthening and extension of the existing Odra River embankment, provides also for the construction of a ring embankment with the length of 5.896 km, which is connected with interference into the soil structure. The impacts are negligible and do not result in the interference with valuable areas of soils or soil formation process.

In order to protect soil and ground during the works construction period, it is necessary to implement mitigation measures described in Chapter 6.4 and Appendix No 1 to the EMP.

5.5 SURFACE WATER

As a result of earthworks conducted in the channel beds, the geometry and structure of the channel beds and banks will be stabilized. The unification of the gradient in the longitudinal profile will affect the dynamics of water flows. In the periods of low and medium surface water levels, it may cause strengthening of the effect, occurring in case of such water levels, of over-drying of soils adjacent to the channels.

Due to the change in hydro-morphological conditions the temporary deterioration of biological parameters will take place till the regrowth of the bank and aquatic vegetation. The deterioration of a chemical condition will be temporary and will be present at the implementation stage only, which will be connected with the formation of slopes and

deepening of channels. The activation of sediments may cause periodical deterioration in the physicochemical parameters of water.

Rebuilding of the existing sections of embankments will not affect JCWP water level significantly. The Task implementation within the scope of constructing and enhancement of ring embankments and works in the channels will not also affect significantly the condition of the entire JCWP.

Mitigation of negative impact and protection of water quality will be obtained through the introduction of mitigation measures and monitoring of the state of water and their elements described in Chapter 6.5, 7.5 and in Appendix No 1 and 2 to EMP.

5.6 GROUNDWATER

The Task will exert a local impact on the lowering of the groundwater table – it applies to the drainage zone and sections of deepened channels.

The Task implementation will not affect adversely the quality and condition of groundwater of the Odra River Valley. Due to its local nature, the Task will not affect GZWP.

5.7 ACOUSTIC CLIMATE

The impact of the Task on the acoustic climate must be considered separately at the implementation of construction works and at the operation stage. During the performance of construction works, it is possible that there will be short-term exceeding of noise level limits. Such situation will be connected with the earthworks conducted with the use of heavy equipment. The largest source of nuisance which affects the acoustic climate will be the performance of strengthening of the existing embankment. Construction works connected with the reconstruction of Czarny Kanał and Racza Struga will comprise earthworks and necessary felling of trees and shrubs. During the works, it is likely that noise level limits will be exceeded which will be connected to the operation of heavy equipment and tools such as chain saws.

In order to minimize adverse acoustic impacts, construction works in the acoustically protected areas¹⁶ will be carried out from 6:00 a.m. to 10:00 p.m., and the construction equipment must be of a low noise and air pollution emission type and in a good technical order.

No negative impact on the acoustic climate is assumed to happen during the construction period.

¹⁶ areas under acoustic protection are areas indicated in Article 113.2 of 27 April 2001 on Environmental protection law (Journal of Laws of 2013, item 1232, as amended) and the Regulation of the Minister of Environment of 14 June 2007 on permissible noise levels in the environment (Journal of Laws of 2014, item 112) for which the standards of acoustic impacts have been specified

In order to reduce the impact of works on the acoustic climate during the Task implementation period, it is necessary to implement mitigation measures described in Chapter 6.7 and Appendix No 1 to the EMP.

5.8 NATURE

5.8.1 PROTECTED NATURAL HABITATS AND PROTECTED SPECIES OF PLANTS, FUNGI AND ANIMALS

As it is demonstrated in the Report on the environmental impact (Wołoszyn, et. al 2011), implementation of the works within Contract 1C.1 will not significantly affect the condition and the resources of natural habitats in the Task implementation location and in its vicinity.

In the area of the most valuable groups of natural habitats, the works will mainly consist of rebuilding the existing embankment next to Słubice city. Within a certain section, the construction of a new ring embankment will entail interference into forest habitats - oak-hornbeam forests. The works will affect forests located on the landside of the embankment – beyond the group of the most valuable alluvial forests.

In the southern part of the Task implementation potential impacts of the Task shall concern wet meadows and shrubs creating the so called complex of riverside common. In this area it is important to limit the area of temporary occupation and to conduct works off- the- breeding -season of birds in order to limit unfavorable impact on the valuable complex of breeding birds, as described in section 6.8 of this EMP.

5.8.2 FLORA

In the area of the designed works, connected with rebuilding and construction of new embankments and works within Czarny Kanał and Racza Struga, there are no flora species under protection. Nevertheless, during the works, it is not feasible to exclude a possibility of discovering stands of flora species under protection; therefore, it is necessary to introduce measures connected with the monitoring of impacts and supervision over the works. If the stands of protected species of plants are discovered, the Contractor shall obtain a relevant permission from RDOŚ / GDOŚ for deviation from prohibitions concerning species under protection (issued under the Environmental Protection Act), as specified in section 6.8 and Appendix No 1 of this EMP.

5.8.3 FAUNA

Prospective negative impacts of the Task on fauna may primarily concern flushing out animals, especially birds. The construction of a new embankment will also be connected with a necessity of felling trees and shrubs which may constitute areas of distribution of bird species, beetles and bats under protection.

The presence of construction machines and operation of vehicles on the building site may also increase a death rate among amphibians and reptiles in particular nearby periodical water bodies.

The reconstruction of the channel bed of the Czarny Kanał and the Racza Struga shall be related to interference in the structure of banks and bed of the channel. It shall cause temporary destruction of bank plants as well as the aquatic vegetation. This type of works may have first of all negative impact on ichthiofauna and water invertebrates. The channels have strongly transformed structure and therefore the impact shall not cause damage of valuable natural habitats and rare animal species. Mitigation measures in respect to fauna are shown in section 6.8 and Appendix No 1 of this EMP

5.8.4 PROTECTED AREAS

According to the results of the analyses conducted as part of devising the Environmental Impact Report (Wołoszyn et. al 2011), the Task will not cause any significant impacts on the areas under protection. The works related with rebuilding and construction of embankments shall not cause severe interference in tree stands in as the works are limited to 3 m from the line of the embankment foot. In such a way the negative impact within forest habitats will be limited and insignificant in terms of protection of Natura 2000 site.

The tree felling related to construction of a new embankment shall be partially conducted within the protected areas (Łęgi koło Słubic Nature Reserve, SPA Dolina Środkowej Odry PLB080004, CIS Łęgi Słubickie PLH080013). The interference concerns areas located outside the existing embankments. In this area the most valuable riparian elm and ash forests do not occur. However, the Task implementation shall cause some interference in the existing natural habitats (*Galio-Carpinetum* oak hornbeam forests 9170). Hence it is needed to implement relevant mitigation measures, as described in the Environmental Permit and section 6.8 and Appendix No 1 of this EMP.

The key factor conditioning the proper preservation of resources in particular protected areas is regular flooding by the Odra River waters. The construction of the surrounding embankment, protecting Słubice from the north is limited to the place of contact with the existing embankment and therefore, the conditions shaping the natural habitats and animal habitats within the existing inter embankment area shall not be disturbed. During the performance of works, the Contractor shall also observe standards, prohibitions and recommendations as well as it shall respect limitations arising from the existence of areas and facilities formed under the Environmental Protection Act.

In order to reduce the impact of works on nature within the Task implementation stage, it is necessary to implement mitigation measures described in Chapter 6 and Appendix No 1 to the EMP.

5.9 CULTURAL LANDSCAPE AND MONUMENTS

In the area of the works on the construction of a new embankment and reconstruction of channels (Czarny Kanał and Racza Struga) there are no historical monuments or other construction works of high historical and cultural values – therefore, at the construction stage, there will be no impact on this environment type.

In the area of the embankment to be rebuilt, there is a historical centre of Słubice with urban structures under protection in the form of entry to the commune register of historical monuments. During driving of sheet pile walls it is possible that short-term

impacts connected with vibrations will appear and may be transferred to the structures under the Conservator's protection.

Objects located in the area and within the range of the potential impact of the Task, entered into the Provincial register of monuments and commune register of monuments are mentioned in Chapter 4.9. The Contractor shall exercise due care when executing works. No significant impacts are anticipated at the Task implementation stage.

In order to reduce the impact of works on the cultural landscape and historical monuments and other historical values within the works construction period, it is necessary to implement mitigation measures described in Chapter 6.9 and Appendix No 1 to the EMP.

5.10 TANGIBLE ASSETS

The Task implementation is connected with a necessity of temporary land occupation, required felling of trees and hindrances within road traffic. The construction of a new embankment also entails dispossession; nevertheless, the course and spatial reserve were determined earlier in the binding local plan of spatial development. In the neighborhood of the construction sites and transportation roads it is also possible that there will be impact on the buildings located in the vicinity. In addition, a scale and range of the changes within the property structure is relatively minor compared to a significant rise in the flood protection of all the construction works in Słubice.

As part of the Task, it is only anticipated to demolish and rebuild the existing hydraulic structures or rebuild linear structures which collide with the ring embankment, e.g. roads and technical infrastructure. Residential, agricultural and service and commercial buildings will not be damaged, occupied or demolished. Therefore, there is no need to introduce any mitigation measures or monitoring measures specifically related to tangible assets.

5.11 HUMAN HEALTH AND SAFETY

The impact on the human health and safety during the Task implementation may be connected inter alia with the following factors:

- increase in the pollution emission to the atmosphere;
- increased noise emission;
- contamination with petroleum derivatives.
- access of unauthorized personnel to the construction works site,
- occurrence of increased water levels in the Odra River, which are a hazard for the area of works and adjacent terrains.

Therefore, this EMP includes appropriate mitigation measures within this scope described in Chapter 6.11 and Appendix No 1 to the EMP.

5.12 EXTRAORDINARY HAZARDS

This section deals with the unexpected hazards that may occur during the works implementation – in relation to floods, incidental leak of oils and fuels, fire and unexploded ordinances.

In respect to floods - during the period of conducting the works consisting in the rebuilding of the existing embankment - during the period of the flood wave, in the inter-embankment zone there may be construction machines, construction materials and other elements of infrastructure or the equipment of the construction sites. Surge waters of this type are extreme phenomena; in the event of Słubice region a forthcoming flood wave may be forecasted well in advance, and preventive measures may be applied – both people and equipment can be evacuated outside of the danger zone.

Prior to the commencement of works, the Contractor shall devise a relevant action plan in case of the occurrence of such events (The construction site's flood management plan for the time of the works) and shall obtain the Engineer's approval for such an action plan.

Yet another type of an extraordinary threat is the leakage of oil derivatives to water and soil. Nevertheless, for this purpose appropriate preventive measures are applied, which refer to the adequate organization of building sites and site facilities as well as continuous inspection of the construction equipment used, as described in section 6.12 and in Appendix No 1 to EMP (human health and safety part and other relevant parts connected with water, soil, and other).

A possibility of discovering unexploded shells is yet another extraordinary hazard for the environment as well as human health and safety. In the event of discovering unexploded shells, the Contractor shall immediately stop the works and evacuate workers and notify the police, a licensed sapper unit as well as Engineer and PIU.

The Contractor shall ensure sapper supervision throughout the performance of earthworks, which will consist of on-going inspection and clearance of the site, including the areas of former military ranges, from hazardous objects of a military origin and their disposal. Prior to the commencement of works, the Contractor shall conduct a site inspection on the area of works in terms of the existence of unexploded shells. Relevant measures are described in section 6.12 and Appendix No 1 to this EMP.

5.13 CUMULATIVE IMPACTS

There will be no cumulative impacts connected with the simultaneous implementation of the said Task and other activities, whose impact may cumulate with the impacts of this Task. In the surrounding of the works conducted it is not planned, in a foreseeable future, to perform other works which could contribute to cumulative environmental adverse impacts.

6 DESCRIPTION OF MITIGATION MEASURES

6.1 LAND AREA AND LANDSCAPE

In order to limit the negative impact of the construction works within the Task on the land and landscape, mitigation measures have been planned, which will be introduced at the time of construction works. Roads, temporary yards and site facilities on the building site must be situated in the manner ensuring the preservation of trees and shrubs growing beyond the places which are necessary for occupation in connection with the performance of works. Temporarily occupied sites (temporary roads, sites, building site facilities, construction material storage, parking, etc.) must be located beyond the areas with a natural environment value in accordance with the recommendations of the Contractor's environmental team and approved by the Engineer and beyond the Odra River inter-embankment zone.

Vehicle traffic on the works construction area should take place along technological routes, preventing any damage to the vegetation growing close to the roads. Technological roads used for transportation of materials including machines and devices, as well as employees) shall be organized as far as possible on the basis of the system of exiting works, outside of the areas indicated by the Contractor's environmental team, as the areas of natural values. Upon completing construction works, it is necessary to reinstate temporarily occupied sites to their previous condition (land reclamation). At the places where topsoil was removed, topsoil should be levelled and then earlier prepared area should be sowed with grass mixes (composition of grass mix will be agreed on with an expert - phytosociologist of the Contractor) and adequately taken care of, by, among others, twofold swath in June and September, covering also defects notification period.

In compliance with the conditions specified in the decision issued by the Regional Director of Environmental Protection in Gorzów Wielkopolski of 28 October 2011 on environmental conditions of the project implementation, it is required to ensure the efficient use of the terrain and minimal transformation of its surface.

Mitigation measures in the scope of ground surface and landscape protection are listed in the Appendix No 1 to EMP.

6.2 CLIMATE

For the Task implementation stage, it is not necessary to conduct mitigation measures due to local climate conditions protection.

6.3 AIR QUALITY

It is necessary to introduce mitigation measures the negative impacts of the Task on the air quality at the stage of construction works. In compliance with the conditions specified in the decision issued by the Regional Director of Environmental Protection in Gorzów Wielkopolski of 28 October 2011 on environmental conditions of the project

implementation, it is required to use equipment in working order which satisfies all legal conditions authorizing it for putting such equipment into service in order to protect it against extraordinary dust and gas emission to the air. In compliance with the provisions of the above decision, it is necessary to apply required technical and organizational measures in order to maintain access routes in cleanliness and measures limiting dust emission at the time of transporting construction materials and conducting construction works.

It is also necessary to minimize the operation time of machines and vehicles in a neutral gear as well as to minimize vehicle speed within the building site. In order to limit the impact on the air sanitary condition, it is necessary to adhere to the rule of switching off machines and devices during breaks at work.

Mitigation measures in the scope of air protection are listed in the Appendix No 1 to the EMP.

6.4 SOILS AND LANDS

During the performance of works, it is necessary to implement measures minimizing the impact on soils, in particular referring to the organization of works and localization of temporary occupied places.

At the time of work performance, it is necessary to use equipment in working order, satisfying all legal conditions authorizing it for putting such equipment into service in order to protect soil against pollution/contamination.

The Contractor must also satisfy other conditions referring to the prevention and mitigation of the impact on roads. Places designated for vehicles and construction machines should be, for the time of the works, paved and equipped with appropriate sorbents preventing penetration of soils with harmful substances. In case of possible pollutants, they shall be removed with use of relevant sorbents and if it turns out necessary, also mechanically.

In the vicinity of sites dedicated for fueling up and parking vehicles and machines, it is necessary to place a stand with a sorbent for liquidating possible leakages and spillages of petroleum substances. In case of need the pollutants shall be removed also mechanically. Refueling should be carried out with the use of mobile or stationary points of fuels distribution with adequate protection, such as station with sorbent used for removal of leaks and overflows of oil derivatives to the ground.

Additional measures mitigating the impact on soils shall comprise: prohibition of repairing equipment and machines, exchanging oil and fueling up and storing fuel within the entire Task implementation area, as well as prohibition of parking of machines within the Odra River inter-embankment zone and the areas of a natural environment value, indicated by the Contractor's environmental team. Only construction materials not harmful for the environment (natural, environment friendly or neutral) shall be used for the implementation of the Task. Used materials, raw materials, fuels, fertilizers, cement and concrete mixes shall have relevant attestations and be allowed for use.

The protection measures on the work performance areas have also been specified. Prior to the commencement of earthworks, it is necessary to remove a humus layer at the level of about 30 cm which will be re-used for subsequent land reclamation. The

Contractor should choose a place for depositing humus which will secure it against damage, being driven through and compacted, and which will ensure its re-use.

In order to avoid indirect negative impacts on soils and lands, also recommendations for depositing earth masses within the works construction area were described. Earth masses must not be deposited within: cavities and oxbow lakes within the entire Task implementation area, Odra River inter-embankment zone and the terrains of a natural environment value, indicated by the Contractor's environmental team.

Within Racza Struga and Czarny Kanał there will be dredging works carried out. Appendix No 1 to the EMP presents a detailed method for quality control and handling the sediments excavated.

Mitigation measures in the scope of soils and ground protection are listed in the Appendix No 1 to the EMP.

6.5 SURFACE WATER

In order to mitigate a negative impact of the Task on the condition of surface water as well as in the terms of JCWP, mitigating measures have been established which will limit a negative impact on the condition of waters in the works performance period.

In compliance with the conditions specified in the decision issued by the Regional Director of Environmental Protection in Gorzów Wielkopolski of 28 October 2011 on environmental conditions of the project implementation, as well as in accordance with the provisions of this EMP, it is required to limit earthworks to a necessary minimum and the earth material to be used must be deposited as far as possible from the river bed in the outer-embankment zone of the Odra River embankment under construction works.

Within Racza Struga and Czarny Kanał there will be dredging works carried out. Appendix No 1 to the EMP presents a detailed method for quality control and handling the sediments excavated, which will limit the negative impacts on the condition of waters.

Waters and mud collected in excavations must not be discharged to oxbow lakes in order to protect the physical and chemical parameters of oxbow lake's ecosystems which are sensitive to changes.

In case of possible leakages and spillages of petroleum substances into surface waters proper sorbent must be used, and in case of possible pollutants they shall be removed mechanically. Work construction sites must be equipped with sorbent through the whole Task implementation stage. During performance of works in the channel beds natural, environment friendly materials shall be used (fascine, wood, natural stone etc.).

It is necessary to monitor levels of suspended solids in Racza Struga and Czarny Kanał – when permissible concentration levels are exceeded within a respective section of works, it is required to undertake remedial measures consisting of the restriction of works in scope or/and time.

Mitigation measures in the area of surface water protection are listed in the Appendix No 1 to the EMP.

6.6 GROUNDWATER

The Task does not generate any threats for groundwater. Nevertheless, there is a need for implementing some preventive measures for the purpose of avoiding the occurrence of negative impacts at the stage of works performance. In order to avoid indirect negative impacts on groundwater, also recommendations for depositing earth masses within the works construction area were described. Earth masses must not be deposited within: cavities and oxbow lakes within the entire works construction area, Odra River inter-embankment zone and the terrains of a natural environment value, indicated by the Contractor's environmental team.

Mitigation measures in the scope of groundwater protection are listed in the Appendix No 1 to the EMP.

6.7 ACOUSTIC CLIMATE

The Task does not generate any significant impact on acoustic climate. In order to mitigate possible negative impacts at the stage of performance of works it is planned to apply additional mitigation measures. Construction works in the areas under acoustic protection must be carried out only during the day, i.e. between 6 a.m. and 10 p.m. In the areas under acoustic protection and the working sites adjacent to these areas, in order to mitigate the nuisance for inhabitants and environment, it is allowed to use only pumping engines equipped with soundproof housing. Mitigation measures within noise protection are presented in Appendix No 1 to EMP.

6.8 NATURE

6.8.1 Natural habitats, flora and fauna

In order to prevent the occurrence of negative impacts and their mitigation, a range of measures have been proposed to be introduced at the stage of work implementation.

The location of temporary occupation sites (roads, technological sites, etc.) must be at each time agreed with the Engineer's environmental team. Prior to the commencement of works, it is necessary to conduct by Contractor field inventory of the areas of temporary and permanent occupation aimed at determining the current distribution of protected plants and those present in the national and regional red lists of the endangered species of plants and determining the sites of possible occurrence of such species. If during works construction period any protected plant species will be discovered, they have to be handled in the proper way. Adequate rules for translocation of these species were also planned and described. Contractor's environmental team prepares necessary materials and applies for permits for deviation from prohibitions of protection of species of plants, fungi or animals on the terms and in the mode specified by the Act of 16 April 2004 on environmental protection. The above-mentioned decisions issued by RDOŚ/GDOŚ are to be requested for by the Contractor.

Felling of trees and shrubs within the scope of the Task implementation shall be done from 16 October to the end of February (this period protects both the population of birds

breeding populations and migrating populations within the Odra valley). It is also forbidden to cut out trees and shrubs within the distance exceeding 3 m from the foot of the flood embankment under extension and reinforcement works as well as ring-embankment under construction (on the embankment upstream and downstream face) in the sections running within the areas under protection: SPA Dolina Środkowej Odry PLB080004, SCI Łęgi Słubickie PLH080013 and Łęgi koło Słubic Nature Reserve. Trees and shrubs not intended for cutting out, which grow on the work construction area and which are prone to be damaged due to traffic, equipment transfer, etc. must be protected against damage, for instance, through placing trunk shields made of wooden boards around the entire trunks up to the height of at least 1.5 m. Special attention shall be paid to proper securing and carefulness when preparing works close to the avenue of lindens occurring within the modernized embankment protecting Słubice city (ensuring lack of damages of the tree trunks and minimizing possible interference with tree's root system).

In order to mitigate possible negative impacts on the species of animals settled in trees, there are procedures established and a need for conducting a Contractor's environmental team in order to limit possible negative impacts on the populations of protected species (inspection of trees intended for clearance by experts, fish flushing out or catching, obtaining separate, legally required, permissions for departing from prohibitions related to the species under protection).

As part of the embankment section to be rebuilt, temporary occupation locations must be organized in the outer-embankment zone, outside the terrains of a natural value, indicated by the Contractor's environmental team, upon the agreement with the Engineer's environmental team.

Prior to beginning of the construction works there should be conducted site inspection of places of performance of works with participation of botanist or phytosociologist in order to locate the presence and estimate the population of invasive plants (except for Small Balsam *Impatiens parviflora*). After locating and visibly marking in places where invasive plants grow take preventive actions during the implementation investment, which limit spreading of these plants, including, among others, removing topsoil layer along with invasive plants and transporting them from area of works to the composting plant or neutralizing in any other effective manner. It is unacceptable to mix this topsoil with topsoil overgrown with local native vegetation.

During works performance within the Racza Struga and Czarny Kanał river beds, the terms of works implementation within the channels shall be adjusted to the high activity periods of animals, especially during the breeding period. The area of works implementation in the channel beds shall be secured (in the period of amphibian seasonal migration) against access of such animals, in a manner preventing them from entering into area that is dangerous for them.

Mitigation measures for protected areas are presented in Appendix No 1 to EMP.

6.8.2 Protected areas

Measures reducing a negative impact of the Task will be connected mostly with the reduction of the area of the temporary occupied sites in the Task implementation stage. An essential element reducing negative impacts on forest habitats is also the limitation of trees and shrubs felling within the areas under protection (SPA Dolina Środkowej Odry PLB080004, SCI Łęgi Słubickie PLH080013 and Łęgi koło Słubic Nature Reserve to the

locations within max. 3 m from the foot of the flood embankment under extension and reinforcement works and ring-embankment under construction (on the embankment upstream and downstream face).

Construction works connected with the strengthening and extension of the embankment within the section between km 582+500 and km 588+000 of the Odra River course must be performed with the exclusion of the period from 1 March to 31 July, which is a bird breeding season. In the places where construction works will be carried out within the Natura 2000 and nature reserve sites, protected territories should be cordoned off from the construction areas. Fence should secure protected territories against unauthorized access of persons involved in construction works and entering of construction vehicles and machines. The purpose of the activity is protecting the territories within the boundaries of the protected areas against accidental destruction.

During the performance of works, the Contractor shall follow standards, prohibitions and recommendations as well as it shall respect limitations arising from the existence of areas and facilities formed under the Environmental Protection Act.

Mitigation measures in the scope of protected areas are listed in the Appendix No 1 to the EMP.

6.9 CULTURAL LANDSCAPE AND MONUMENTS

Information and materials collected for the planned Task demonstrate that there is no significant impact connected with the Task implementation on historical monuments and cultural environment. The Contract shall introduce measures which will prevent the occurrence of negative impacts.

As per the Act of 23 July 2003 on historical monuments law (Journal of Laws of 2014, item 1446, as amended) if a person discovers an object during construction or earth works, which may be a historical monument, such a person shall suspend all the works likely to destroy or damage the objects discovered, shall secure them with the use of available measures and shall notify the Provincial Conservator of Historical Monuments immediately, and if impossible, the Mayor of Słubice. The Contractor shall also notify the Engineer within the above scope.

In the locations where works will be conducted within archaeological sites, prior to the commencement of works, the Contractor shall ensure archaeological rescue excavations performed by a qualified person (part of Contractor's archaeological supervision). The above will ensure the removal of valuable objects and other elements of a historical value from the working site and will enable the performance of specific works. During the works, continuous archaeological supervision will be ensured. The Contractor will obtain a permit from Provincial Conservation Officer for carrying out archaeological rescue research in order to implement the above provisions.

Mitigating measures concerning the protection of historical monuments are listed in Appendix No 1 to the EMP.

6.10 TANGIBLE ASSETS

The mitigation measures with regard to protection of material goods include restoring the previous condition in the places of temporary occupation and appropriate inspection and restoring to the previous condition the public roads used by the Contractor in connection with conducting construction works. Precautionary measures have been introduced to protect existing condition and to ensure the necessity to reinstate the conditions of various structures (buildings, structures, infrastructure, etc.) at the time prior to the execution of the works, should they be damaged or their condition deteriorate as a result of the work's implementation. Contractor is responsible for restoring the previous condition.

6.11 HUMAN HEALTH AND SAFETY

Activities have been determined connected with human health and safety protection, which refer to the proper organization of works, technical means, fire protection, building sites, condition and use of vehicles and machines and training within the transfer of HIV-AIDS.

Mitigation measures in the scope of human health and safety protection are listed in the Appendix No 1 to the EMP.

6.12 EXTRAORDINARY HAZARDS

In the event of a crisis situation the competent services must be notified:

Services	Telephone number
Emergency number from a mobile	112
Police	997
Fire Brigade	998
Emergency Medical Service	999
Municipal Police	986

Flood

In the period of works construction, in the inter-embankment zone, there might be construction machines, construction materials and other materials. Approach of a flood wave may be foreseen and appropriate preventive measures may be introduced which will be specified in the construction site's flood management plan for the time of the works.

Leakage of oil derivatives

Yet another type of a special risk is the leakage of oil derivatives to water and soil. For this purpose, appropriate preventive measures are introduced which consist in proper organisation of sites and building site facilities, equipping locations of possible leakages with adequate sorbents and inspecting the condition of the construction equipment used.

Discovery of unexploded shells

The works will be conducted partially in the Odra River Valley close to the river bed. On account of the fact that during the WWII there were military actions carried out, it is possible to discover unexploded shells during construction works, which include the following: detonators, missiles, aerial bombs, artillery and rifle bullets, armoured missiles, grenades, mines, explosive materials, scrap containing the residues of explosive materials, etc. In the event of discovering unexploded shells, the Contractor shall immediately stop the works and evacuate workers and notify the police, a licensed sapper unit as well as Engineer and PIU.

The Contractor shall ensure permanent sapper supervision (Contractor's sapper supervision) throughout the performance of earthworks, which will consist in on-going inspection and clearance of the site, including the area of former military ranges, from hazardous objects of a military origin and their disposal. Prior to the commencement of works, the Contractor shall conduct a site inspection on the area of works in terms of the existence of unexploded shells. Relevant measures are described in section 6.12 and Appendix No 1 to this EMP.

Fire

The Contractor is responsible for fire protection on site. A detailed procedure in the event of fire will be provided in SHP Plan prepared by the Site Manager.

6.13 WASTE AND SEWAGE

The Task implementation will generate waste; therefore, it is necessary to minimize its amount during works and limit its negative impact on the environment. Waste must be segregated and collected constantly and immediately. At the stage of its temporary storage, it is necessary to provide appropriate containers and/or allocate and adapt sites for this purpose, preventing dusting and spreading light fractions as well as their negative impact on the environment.

Hazardous waste must be handled in the following manner: before the time it is handed over to entities holding permit for waste utilization, it is necessary to store waste preventing hazardous substances from entering the environment, i.e. in tightly closed containers, in roofed sites, on hardened and impermeable ground, protected against unauthorized access. Hazardous waste storage sites must be allocated beyond flood waters area. Places designated for vehicles and construction machines service should be, for the time of the works, paved and equipped with appropriate sorbents. There should also be ensured drainage of rain water from paved yards ensuring removal of petrol derivatives.

In case of locating the construction site facility outside of the areas covered by the sewage system, it is important to ensure regular social-household sewage discharge,

previously collected in tight contained tanks. Guidelines for sewage handling are provided in Appendix No 1 to EMP.

6.14 REQUIREMENTS FOR THE IMPLEMENTATION OF ACTION PLANS DURING CONSTRUCTIONN PHASE

The Contractor on the basis of specified mitigation measures described in this EMP (Chapter 6, Appendix No 1 and decisions on environmental conditions in Appendix No 4) shall perform works as part of Contract 1C.1.

The Contractor shall prepare its own procedure of introducing mitigation measures which will be included in the Quality assurance plan and shall obtain the Engineer's approval prior to the commencement of works.

At the same time, the Contractor shall provide the following documents, which are necessary for the performance of construction work and shall submit them to the Engineer:

- Building site organization design, which should include, among others, the following elements:
 - Location of the construction site facility,
 - Managing the construction site facility,
 - Securing the construction site facility,
 - Service roads,Environment protection within the construction site facility.
- Waste management plan, which should include, among others, the following elements:
 - Encountered and predicted types and volumes of waste,
 - Manners of preventing negative impact of the waste on environment,
 - Manners of waste management with taking into account collection, transportation, recovery and treatment of waste,
 - Type of generated waste and way of its storage.
- Quality Assurance Plan, which should include, among others, the following elements:
 - Works performance organization,
 - Organization of traffic at the construction site jointly with marking of the works,
 - Work Health and Safety and environment protection,
 - List of working teams,
 - Scope of duties of the key personnel,
 - Quality control,

- Laboratory tests.
- The construction site's flood management plan for the time of the works, which should include, among others, the following elements:
 - Monitoring hydrological and weather situation,
 - Conditions for allowing swollen flows in the period of works performance,
 - The rules of work for the Contractor's team in the period of flood risk,
 - Basic duties of the members of the Flood Protection Team,
 - List of people with assigned duties in the period of flood risk,
 - List of equipment and transportation means needed to conduct rescue actions.
- Safety and Health Protection Plan (SHPP), which should include, among others, the following elements:
 - Indication of plot or terrain development elements which may pose a threat to the human safety and health,
 - Information on anticipated threats occurring during construction works, specifying the extent and type of threats as well as location and time of their occurrence,
 - Information on allocating and marking the construction works site appropriately for the threat type,
 - Information on the manner of instructing workers prior to the commencement of particularly hazardous works,
 - Specification of the manner of storing and transporting materials, products, substances and hazardous preparations in the building site,
 - Indication of technical and organizational measures preventing hazards resulting from the performance of construction works in the zones of particular health danger or close to them, including those ensuring fast and efficient communication, enabling immediate evacuation in the case of fire, accident or other threats,
 - Indication of a storage place for building site documentation and documents required for correct machine operation and other technical equipment.

The aforementioned documents will be approved and supervised by Engineer.

The Contractor, while preparing the aforementioned documents, shall consider applicable Operational Policies of the World Bank for protection of health and safety and environmental issues. The Engineer shall review and approve the above-mentioned documents.

7 DESCRIPTION OF ENVIRONMENTAL MONITORING MEASURES

7.1 ENVIRONMENT MONITORING DURING WORKS

7.1.1 LAND AND LANDSCAPE

In the case of this Task, monitoring shall comprise the following: localization of temporary occupation areas outside the terrains of a natural value, indicated by the Contractor's environmental team, localization of roads and sites, and building site facilities, including the limitation of impacts on the plants and land. Adherence to the rules of vehicle traffic along dedicated technological roads and appropriate reclamation of temporary occupation sites shall be monitored. The control of the occupation of the areas adjacent to the project implementation site and located outside it shall also be monitored.

The guidelines related with monitoring of this environmental element are listed in the Appendix No 2 to the EMP.

7.1.2 CLIMATE

For the Task under consideration, it is not necessary to conduct monitoring measures due to local climate conditions protection.

7.1.3 SANITARY CONDITION OF THE AIR

In the case of the Task in question it was found it is not necessary to perform any monitoring related to the protection of local climate conditions. However, it is necessary to conduct monitoring concerning implementation of mitigation measures. Detailed guidelines concerning monitoring are specified in the Appendix No 2 to the EMP.

7.1.4 SOIL AND GROUND

It is necessary to monitor the quality of sediments intended for excavation from channel beds and monitoring of mitigation measures execution.

The guidelines related with monitoring of this environmental element are listed in the Appendix No 2 to the EMP.

7.1.5 SURFACE WATER

On account of a limited scope of anticipated impacts of the Task on the Odra River surface waters, it is not necessary to monitor biological elements during the strengthening and extension of flood embankments, construction of flood embankments, rebuilding canal beds and upon their completion. Nevertheless, it is recommended to monitor the waters of Racza Struga and Czarny Kanał during works in terms of a

suspension concentration level. It is also necessary to monitor the appropriate implementation of measures mitigating the impacts on surface water.

The guidelines related with monitoring of this environmental element are listed in the Appendix No 2 to the EMP.

7.1.6 GROUNDWATER

Continuous monitoring of groundwater quality is not necessary due to a lack of prospective risk of their contamination. The guidelines related with monitoring of this environmental element are listed in the Appendix No 2 to the EMP.

7.1.7 ACOUSTIC CLIMATE

Activities within acoustic climate monitoring concern verification and adherence to recommendations arising from issued administrative decisions, including a decision on environmental permit and mitigation measures specified in Appendix No 1 to the EMP. Monitoring must be conducted during the entire time of construction works performance. The guidelines related with monitoring of this environmental element are listed in the Appendix No 2 to the EMP.

7.1.8 NATURE

In accordance with the conditions specified in the Decision on environmental permit of 28 October 2011, issued by the RDOS in Gorzów Wielkopolski (sign: WOOS-II.4233.12.2011.AN), monitoring of nature must be conducted comprehensively, taking into consideration all previously analyzed natural environment elements (natural habitats, flora and fauna species, protected areas).

A fundamental condition outlined in the aforementioned decision is appointing by the Contractor's environmental team for the entire period of works and submitting reports to RDOŚ in Gorzów Wielkopolski (as part of the implementation of activities required by an environmental decision).

The task of Contractor's environmental team shall be the monitoring of unpredicted and/or not possible to be revealed at the stage of establishing the Task implementation conditions, negative impact on natural habitats of the Community interest and species as well as plant and animal species under legal protection and over the correct implementation of mitigation measures.

Effectiveness of the activities conducted according to the needs in order to remove external, invasive plant species, should be monitored.

The guidelines related with monitoring of nature are listed in the Appendix No 2 to the EMP.

7.1.9 CULTURAL LANDSCAPE AND MONUMENTS

Monitoring measures within the scope of vibration and acoustic impact on the historical monuments are preventive in nature. On the basis of the Contractor inventory of

construction works exposed to adverse vibration and acoustic impacts. Contractor will monitor the condition of such buildings. Monitoring of the correct implementation of mitigation measures was also planned. The monitoring also covers implementation of correct procedure (by the Contractor's archaeological supervision) in case of finding valuable items or other historical substance and implementation of works covered by possible permit of the Provincial Conservator of Historic Monuments (rescue archaeological survey).

The guidelines related with monitoring of this element are listed in the Appendix No 2 to the EMP.

7.1.10 TANGIBLE ASSETS

Monitoring measures in the scope of vibro-acoustic impact on the buildings located in the direct vicinity of the extended and strengthened flood embankment are of preventive nature. Monitoring measures in terms of tangible assets protection shall involve the control of the correct recovery of a previous condition (condition preceding the commencement of construction works) in temporary occupation locations. The condition of the roads, buildings and other objects and elements of infrastructure shall also be monitored in terms of possible damage resulting performance of construction works and serving construction sites. The monitoring is to ensure repair of possible damage at the stage of works implementation. The guidelines related with monitoring of this element are listed in the Appendix No 2 to the EMP.

7.1.11 HUMAN HEALTH AND SAFETY

The threats related with human health and safety shall be monitored on ongoing basis by appropriate Contractor's personnel and Engineer at the stage of works implementation. The guidelines related with monitoring of this element are listed in the Appendix No 2 to the EMP.

7.2 ENVIRONMENTAL MONITORING DURING OPERATIONAL PERIOD

Environmental monitoring of the development at the operation stage includes checking proper maintenance of the embankments.

8 PUBLIC CONSULTATIONS

8.1 PUBLIC CONSULTATIONS ON ENVIRONMENTAL IMPACT ASSESMENT (2011)

At the stage of the procedure of the EIA consultations with participation of the public were conducted by the body issuing the environmental decision i.e. RDOŚ in Gorzów Wielkopolski.

The proceeding conducted from 2nd September 2011 to 24th September 2011 included participation of the public - according to Article 79 of Environmental Impact Assessment Act. Announcement of the Regional Director for Environmental Protection in Gorzów Wielkopolski of 2nd September 2011 (ref.: WOOS-II.4333.12.2011.AN¹⁷) were made public, including information on the submitted application and Environmental Impact Report, along with information about conducting assessment of the impact of the Task on the environment, initiating proceeding, the object of the decision which is to be issued, an authority competent to issuing decisions and authority competent to issue opinions, possibilities of familiarizing with any necessary documentation case and place of providing it for inspection, possibilities and deadline for submission of comments, with observance of 21-day term of their submission and authority competent for their examination. It was placed on the bulletin board and on the website of the RDOŚ in Gorzów Wielkopolski, as well as on the bulletin board of the Municipal Office in Słubice.

During the conducted public participation, the authority did not receive any comments or conclusions associated with the concerned Task.

Before publication of this decision, the parties have been ensured on possibility of acquainting on the documents, in accordance with Article 61 of the Code of Administrative Proceedings by means of publishing Announcement of the authority dated 16th Maj 2011 ref.: WOOS-II.4233.12.2011.AN, on the bulletin board and on the website of the RDOŚ in Gorzów Wielkopolski, as well as in the bulletin board of the Municipal Office in Słubice.

Neither party to the proceedings used the possibility to issue an opinion, whit regard to the collected evidence and materials.

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http://archiwumbip.gorzow.rdos.gov.pl/index.php?option=com_content&view=article&id=1076:obwieszczenie-z-dnia-2-wrzesnia-2011-r-dot-ochrony-przeciwpowodziowaodziowej-m-slubice&catid=156:obwieszczenia-archwium-rok-2011&Itemid=320

8.2 PUBLIC CONSULTATIONS OF THE ENVIRONMENTAL MANAGEMENT FRAMEWORK (2015)

The draft of EMF was subject to the public consultation procedure carried out in compliance with the World Bank Operational Policy OP 4.12 in order to enable the public to read the document and ensure a possibility of submitting comments and questions to its content.

Documentation of the public consultation process of EMF is available on the website of the Odra-Vistula Flood Management Project Coordination Unit¹⁸.

8.3 PUBLIC CONSULTATIONS OF THE ENVIRONMENTAL MANAGEMENT PLAN (2016)

Draft of EMP for the Contract 1C.1 Extension and construction of flood embankments and Reconstruction of Czarny Kanał and Racza Struga, was subject to public consultations in accordance with the World Bank Operational Policy OP 4.12 in order to enable the public to become familiar with the document and ensure a possibility of submitting comments and questions to its content.

On 18.04.2016 developed draft of EMP was placed on the websites of the Lubuski Board of Amelioration and Hydraulic Structures (www.melioracja.lubuskie.pl), Słubice District Governor's Office (www.powiatlubicki.pl) and PCU (www.odrapcu.pl).

Detailed information on the possibility of reading the content of EMP and to submit comments and queries, including contact details (e-mail address, venue address where the draft document is available, office hours, telephone numbers) were provided for public information in the local press. Relevant Announcement was published in local supplement to Gazeta Wyborcza (Magazyn Lubuski) on 15.04.2016. The Announcement containing this information was published also on the website of LZMiUW in Zielona Góra and on the website of PCU. The Announcement included also information regarding proposed meeting on consultation as part of the procedure of making EMP public (it included date, venue and subject of the meeting).

Printed document was available for viewing by interested parties in a period from 18.04.2016 to 29.04.2016 at the offices of Lubuski Board of Amelioration and Hydraulic Structures (ul. Ptasia 2B, Zielona Góra) and of Słubice District Governor's Office (ul. Piłsudskiego 20, Słubice). The document's public disclosure period ended on 29.04.2016 (after 10 working days). At this time there was no interest in viewing printed copy of the document. However, there was a number of downloads of the folders from the indicated websites.

¹⁸

http://www.odrapcu.pl/doc/OVFMP/RPZSiS_Zalacznik_08_Raporty_z_procedury_upublicznienia_projektu_EMAF.pdf;

http://www.odrapcu.pl/doc/OVFMP/RPZSiS_Zalacznik_09_Raporty_z_konsultacji_spolecznych_RAF.pdf

In the period of public disclosure of draft of EMP a number of e-mails were received with comments to the content of EMP. All comments have been thoroughly reviewed by the Consultant. The Consultant provided answers and explanations to the comments, which were then sent to persons and entities who submitted them.

After 10 working days period of public disclosure, on 04.05.2016 at 4 pm at the Słubice District Governor's Office, Piłsudskiego Street no. 20, 69-100 Słubice, an open meeting took place for all the interested parties. During the meeting the information on the rules of developing and functioning of the Environmental Management Plans during the implementation of projects co-financed by the World Bank was presented as well as detailed information on draft of EMP for the Contract 1C.1 Extension and construction of flood embankments and Reconstruction of Czarny Kanał and Racza Struga (mainly anticipated types of impact on the environment, mitigation measures and monitoring). The meeting was attended by 11 people in total. After completion of all presentations, the Consultant started a discussion and encouraged the participants to ask questions and provide comments or concerns regarding presented document. The participants drew attention to the issues related to EMP and to execution of the construction works. The Consultant gave the audience the answers and explanations to all the issues raised. After it was confirmed that the meeting participants received answers to all the questions, those present were thanked for attending the meeting and for their active participation. And here the meeting ended.

Remarks and motions handed over during the draft EMP consultation process and both debates were also analysed in terms of necessary adjustments to the final version of the document, and then the amendments were introduced during the final editing of the EMP.

9 EMP IMPLEMENTATION ORGANIZATIONAL STRUCTURE

The said Task constitutes a part of the Odra-Vistula Flood Management Project, co-financed from the World Bank's funds (1C Subcomponent structures). Accordingly, the structure of supervision over EMP implementation must be compliant with the provisions of the Polish law and the requirements of the World Bank.

9.1 ODRA-VISTULA FLOOD MANAGEMENT PROJECT COORDINATION UNIT

PCU is responsible for the entire coordination of the Project implementation. PCU belongs to budget units supervised by the President of the KZGW.

The PCU tasks in respect to implementation of this EMP are, as follows:

- cooperation with the Ministry of Finance, the Ministry of Interior Affairs and Administration, Ministry of the Environment, the KZGW and other bodies of government and self-government administration connected with the Project implementation;
- coordination of activities of PIU and supporting such units within EMP implementation;
- monitoring and assessment of the EMP implementation progress;
- ongoing cooperation with the World Bank, including the preparation of quarterly progress reports on the Project implementation.

9.2 PROJECT IMPLEMENTATION UNIT (PIU)

An entity which is directly responsible for implementing EMP for the Task and monitoring the progress in its implementation is PIU as a regional self-government agency (LZMiUW in Zielona Góra).

PIO is a separate organisational cell subordinate supervised by the LZMiUW Director. This structure is transparent and has a high decisive level which increases the effectiveness of the Task implementation.

As part of EMP implementation, PIO fulfils the following tasks:

- monitoring of the EMP implementation progress;
- financial management and bookkeeping;
- preparing required reports for the needs of EMP implementation monitoring and coordination of its execution by all services engaged into EMP implementation;

The scope of PIO employees' duties connected with the fulfilment of supervision over EMP implementation is as follows:

- managing, coordinating, supervising over the EMP implementing by the Consultant and Contractor;
- direct supervising over the correct Task implementation;
- cooperation with PCU;
- conducting an administration and legal supervision over EMP implementation;
- verifying the Reports and accounts of EMP implementation prepared by the Consultant and Contractor;
- conducting a financial supervision over EMP implementation;
- supervising the proper application of formal procedures during the implementation of EMP, as required by the Construction Law, Contracts, the Environmental Protection Law and other documents.

9.3 ENGINEER

The role of the Engineer is to support PIU in the effective performance of the entire Task process (from the preparation of the Task to its settlement) carried out as part of the LZMiUW tasks. An Engineer is appointed by means of QCBS (Quality and Cost Based Selection) method according to the *Guidelines for the Appointment and Employment of Consultants by the World Bank Loaners*. In accordance with the scope specified in the Engineer Contract, Engineer will be obliged to perform the supervision over EMP implementation, comprising, i.a. the following:

- monitoring of EMP implementation;
- monitoring the Contractor's activities;
- verifying the quality of construction works performed by the Contractor and the construction materials, including but not limited to preventing the use of defective and not approved construction products;
- representing LZMiUW in Zielona Góra in the construction site through supervising the conformity of its implementation with the design and permit to implement, environmental protection regulations and technical knowledge rules;
- supervising all the aspects connected with environmental protection through experts in environmental protection and other Engineer's personnel;
- continuous monitoring of the implementation of the mitigation measures the negative impact on the environment;
- conducting additional studies, if it is necessary to verify Contractor's reports;
- identifying problems resulting from a harmful environmental impact of the implementation of construction works on environment and presenting a proposal for solving such problems;
- checking and accepting construction works to be covered up and concealed, participating in technical tests and site acceptances of technical plants and

devices as well as preparing and participating in the acceptance activities for ready construction works and putting them in service;

- confirming actually completed works and eliminating defects upon the Investor's request;
- controlling the financial settlements of the construction.

9.4 CONTRACTOR

For the purpose of performing construction works, a Contractor will be appointed who will also be responsible for implementing respective EMPs. The Contractor's responsibilities within this scope are as follows:

- conducting construction works according to the rules specified in EMP, Contract conditions and design documentation pursuant to applicable legal provisions and requirements of administrative decisions issued for the Task;
- carrying out the Engineer's recommendations (including the recommendations of experts from Engineer's environmental team and the Investor's supervision) concerning the implementation of EMP;
- ensuring the preparation of SHPP, Waste management plan, Quality assurance plan, The construction site's flood management plan for the time of the works and Building site organisation design;
- keeping the construction site documentation;
- drafting monthly reports and technical inspection reports;
- the preparing reports concerning environmental protection;
- application for the changes in the project solutions to LZMiUW in Zielona Góra if it is justified by the necessity of increasing the safety of the construction works performance or improving the construction process within the scope concerning EMP implementation.

10 EMP IMPLEMENTATION SCHEDULE AND REPORTING PROCEDURE

The implementation of EMP will allow the parties involved in the preparation, performance and supervision of Task to:

- identify different environmental aspects which have a considerable impact on the state of the environment and therefore to control, correct, and reduce them but which, consequently, generate economic effects;
- rectifying adverse consequences of the works conducted during the implementation to the benefit of the environment and financial results;
- determine the aims and tasks performed within the adopted environmental policy, covered by EMP, which require expenditure and bring tangible effects;
- identification and elimination of prospective hazards and failures, preventing and removing the environmental effects which may be connected with them and which may entail losses disproportional to the preventive costs;
- reasonably use the nature's resources, with minimum environmental loss and the optimum generation of costs.

Furthermore, the implementation of recommendations and activities required by EMP may reduce or even eliminate risks involved in the Contract, in particular:

- a risk to ignore the environmental protection issues during the process of implementation of the Task by Contractors of the work;
- a risk of the escalation of the local community protests as a result of a failure of the Contractor to adhere to technologies for conducting the works and environmental procedures approved by the Engineer;
- a risk of additional environmental penalties;
- a risk of incurring additional losses in the environment.

Taking into account the significance of the aspects specifying the environmental conditions and community conditions, the following EMP implementation procedures are anticipated:

- before the selection of the Contractor, the Contracting Authority will submit a draft of this EMP to the World Bank in order to obtain its opinion;
- EMP will be then subject to public consultations;
- after the public consultations (and supplementing the document with the consultations results), EMP will be supplemented and submitted in its final version for the approval by the World Bank;
- upon the approval of EMP by the World Bank, a final document will be attached to the Bidding Documents for selection of the Contractor;

- all activities of the Contractor will be systematically reported (once a month), both in Polish and in English, in paper and electronic versions, with reference to the obligations required by EMP and other contractual documents. These documents will be subject to the approval of the Engineer and the Contracting Authority.

Furthermore, an environmental decision imposes an obligation of monitoring the Task's environmental impact within the scope of natural environmental monitoring, which consists of:

1. The inspection of the performance of construction works connected with the Task implementation under the Contractor's environmental team appointed by the Contractor for the period of the implementation of the entire Contract.
2. Environmental supervision carried out by Contractor's experts (Contractor's environmental team), ought to comprise the following:
 - review and ongoing supervision of the terrain covered by construction and hydro-technical works prior to their commencement and at the time of construction, and preparing relevant reports constituting the documentation of the correct performance of environmental supervision and informing on proper introduction of mitigation measures,
 - if necessary, forming and reporting motions to the Engineer concerning the needs for undertaking mitigation measures (including their implementation) which are necessary for mitigation adverse Task impacts on the natural habitats and species and habitats which are the object of the Community's interest and subject to legal protection (species protection), which are impossible to be predicted and/or which are impossible to be revealed at the stage of establishing the conditions for the implementation of the Task under consideration as part of the procedure aimed at issuing an environmental permit. The measures may be implemented only after the approval by the Engineer,
 - if necessary, obtaining necessary permits for departure from the prohibitions of species protection of flora, fauna and fungi according to the rules and under the procedure specified in the Environment Protection Act of 16 April 2004,
3. The Contractor's environmental team shall include the following experts in the field of nature protection: phytosociologist, herpetologist and ornithologist, chiropterologist, entomologist, botanist and water protection expert. Every specialist must hold documented experience within an applicable scope and higher education diploma in the field of earth sciences and environment formation (higher education diploma within the following fields: environment protection, biology, forestry, ornithology, herpetology, chiropterology, entomology, phytosociology; geography, hydrology, environment protection and water protection).

Monitoring at the civil works execution stage involves the preparation of consolidated reports from monitoring of nature by the Contractor, confirmed by the experts of the Contractor's environmental team, approved by the Engineer's environmental team and approved and submitted to RDOŚ by PIU annually by 30th November each year, when PIU works were carried out. The final report on the implementation monitoring will be

submitted by PIU within 3 months of the date of completing the Task's implementation. A detailed report scope shall be defined by the Engineer (commencement report, periodical report – monthly, quarterly, ad-hoc, closure); it shall also define the due dates.

The Project reporting system will also be based on monthly reports submitted by the Contractors to PIU by the Engineer and Engineer's monthly reports. Monthly reports on EMP implementation (Contractor's or Engineer's) shall be prepared as part of monthly reports or a separate document. On this basis there will be consolidated and quarterly reports drawn-up.

PIU shall supply PCU with quarterly reports in the part referring to Task implementation. They shall include a required set of information and descriptions enabling the preparation of the Project quarterly report by PCU. Furthermore, especially in the case of problems with the Task implementation, the PCU shall expect PIU to submit the statements and data in the monthly periods.

The following reporting procedures are determined:

1) Reporting:

- a) Reports (initial, monthly, quarterly, final) drawn up by the Contractor,
- b) Report review by the Engineer,
- c) Submission of a report to the Employer (for information),
- d) Submission of a report to RDOŚ in Gorzów Wielkopolski (only within the scope required by the environmental decision - within the term till 30th November each year, when works are conducted),
- e) Submission of a PIU's quarterly report to PCU.

2) Archiving:

- a) Contractor: 1 copy of each report in an electronic version for 5 years from the date of the Contract completion,
- b) Engineer: 1 copy of each report in an electronic version for 5 years from the date of the Contract completion,
- c) Employer: 1 copy of each report in an electronic version for 5 years from the date of the Contract completion.

3) Evaluation – on-going assessment of the outcomes of the planned activities implementation which arise from EMP. Ongoing analysis of documentation (the Reports of the Contractor of the works) by the Engineer. Providing the Employer with reliable information on the course of the construction process, including the implementation of activities limiting the adverse impact on the environment and recommendations arising from environmental decisions.

PCU shall also prepare quarterly reports and submit them to the World Bank.

The following is planned:

- *ex-ante* evaluation: Report prior to the commencement of the Contract execution for the works (Engineer's Report).

- ongoing evaluation: Engineer's quarterly reports,
- *ex-post* evaluation:
 - ✓ Report upon the completion of the Contract performance (EMP final report drawn up by the Contractor and the Engineer),
 - ✓ EMP Report upon expiry of the Defects Notification Period drawn up by the Engineer.

11 SOURCE MATERIALS

- The decision issued by the Regional Director of Environmental Protection in Gorzów Wielkopolski of 28 October 2011 on the environmental conditions of the task implementation titled: "Słubice City Flood Protection", amended by the decision of the Regional Director of Environmental Protection in Gorzów Wielkopolski of 24 January 2012.
- The decision issued by the Mayor of Słubice of 16 April 2015 on the environmental conditions without Environmental Assessment
- Permit required by Water Law Act for performing the hydraulic structures to prevent flooding the Słubice city and adjustments of natural watercourses, Marshal of Wielkopolskie Province, 27 December 2011, sign: DR.IV.7322.28.2011
- Permit required by Water Law Act for performing a road culvert No 5, Marshal of Dolnośląskie Province, 1 June 2012, sign: DOW-W.I.7322.19.2012.RS
- Decision on amending the permit required by Water Law Act, Marshal of Wielkopolskie Province, 16 August 2012, sign: DR.IV.7322.10.2012
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- Study of land use conditions and directions for Słubice Commune, resolution of the City Council No. XI/84/2011, of 30th June 2011

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APPENDIX NO 1 PLAN OF MITIGATION MEASURES

APPENDIX NO 2 PLAN OF MONITORING MEASURES

APPENDIX NO 3 LIST OF NATIONAL LEGAL ACTS CONNECTED WITH THE ENVIRONMENT PROTECTION

APPENDIX NO 4 COPIES OF THE FINAL ADMINISTRATIVE DECISIONS ISSUED FOR THE TASK (WITHIN THE CONTRACT 1 C.1)

- Decision of the Regional Directorate for Environment Protection in Gorzów Wielkopolski of 28th October 2011 on environmental conditions of the project “Flood protection of Słubice city” put right by the ruling of the Regional Director for Environment Protection from Gorzów Wielkopolski of 24th January 2012,
- Decision of the Mayor of Słubice of 16th April 2015 on environmental conditions without conducting environment impact assessment,

APPENDIX NO 5 – LOCATION MAP OF THE TASK

APPENDIX NO 6 - LOCATION MAP OF THE TASK ON THE BACKGROUND OF DESIGNATED AREAS AND NATURA 2000 NETWORK

APPENDIX NO 7 - POTENTIAL FLOOD RISK AREA

APPENDIX NO 8 – TERRAINS EXCLUDED FROM THE AREAS WITH A POTENTIAL FLOOD RISK