PODKARPACKI BOARD OF
AMELIORATION AND HYDRAULIC
STRUCTURES IN RZESZÓW

ENVIRONMENTAL MANAGEMENT PLAN

FINAL VERSION

for

Odra-Vistula Flood Management Project
Loan No. 8524PL

Sub-component 3B: Protection of Sandomierz and Tarnobrzeg

WORKS CONTRACT 3B.3

Flood protection Tarnobrzeg - stage 1 (Wisła 1)

ENVIRONMENTAL CATEGORY B - in accordance with WB OP 4.01

Issue	Date	Prepared by	Checked by	Employer's Approval	Description
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ODRA-VISTULA FLOOD MANAGEMENT PROJECT

co-financed by:
World Bank, Loan No. 8524 PL

ENVIRONMENTAL MANAGEMENT PLAN

Sub-component 3B: Protection of Sandomierz and Tarnobrzeg
Works Contract 3B.3 Flood protection Tarnobrzeg - stage 1 (Wisła 1)

The Environmental Management Plan is prepared for Works Contract 3B.3 implemented by the Podkarpacki Board of Amelioration and Hydraulic Structures in Rzeszów.

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Wrocław – July 2016

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List of definitions and abbreviations used in this EMP

Abbreviation	Description
Consultant/Engineer	Consultant/ Contract Engineer for Podkarpacki Board of Amelioration and Hydraulic Structures in Rzeszów
Contractor	Company or public body executing Works Contract 3B.3 Flood protection Tarnobrzeg - stage 1 (Wisła 1)
Designer	Company or legal person drawing up the design documentation – in this case Grupa Projektowa DERING of Gdynia
DSM	Deep Soil Mixing vibration-free process for construction of filtration barrier which includes cutting and mixing soil located in the base and body of an embankment with simultaneously supplied cement-bentonite slurry
EIA	Environment Impact Assessment
EMP	Environmental Management Plan
Environmental Decision	Decision on environmental conditions
ESMF	Environmental and Social Management Framework
GZWP	Main Aquifer (Główny Zbiornik Wód Podziemnych)
IMGW-PIB	Institute of Meteorology and Water Management – National Research Center (*Instytut Meteorologii i Gospodarki Wodnej – Państwowy Instytut Badawczy*)
Investment/Works Contract	Works Contract 3B.3 Flood protection Tarnobrzeg - stage 1 (Wisła 1)
JCWP	Surface Water Body (Jednolita część wód powierzchniowych)
JCWPd	Ground Water Body (Jednolita część wód podziemnych)
KZGW	National Water Management Authority (*Krajowy Zarząd Gospodarki Wodnej)*
OHS	Occupational Health and Safety
PAD	Project Appraisal Document for the World Bank for approval of a Loan to the Polish Government to implement OVFMP[1]
PCU	Odra-Vistula Flood Management Project Coordination Unit
PIO	Project Implementation Office - created within PIU separate organizational unit responsible for the implementation of Investment
PIU	Project Implementation Unit - Podkarpacki Board of Amelioration and Hydraulic Structures in Rzeszów
PIU/Investor/ Employer	Podkarpacki Board of Amelioration and Hydraulic Structures in Rzeszów
Project/OVFMP	Odra-Vistula Flood Management Project
PZMiUW	Podkarpacki Board of Amelioration and Hydraulic Structures in Rzeszów (*Podkarpacki Zarząd Melioracji i Urządzeń Wodnych w Rzeszowie)*
RDOŚ	Regional Directorate for Environmental Protection (*Regionalna Dyrekcja Ochrony Środowiska)*
Roads authority	Organizational unit implementing the responsibilities of the management of public roads in accordance with the Act on public roads
RZGW	Regional Water Management Authority (*Regionalny Zarząd Gospodarki Wodnej*)
SHPA	Special Habitat Protection Areas Natura 2000
SHPP	Safety and Health Protection Plan pursuant to art. 21a section 4 of the Act of

[1] http://documents.worldbank.org/curated/en/2015/07/24763021/poland-odra-vistula-flood-management-project

	7th July 1994 - Building Law
WIOŚ	Provincial Inspectorate for Environmental Protection (*Wojewódzki Inspektorat Ochrony Środowiska)*
World Bank (WB)	International Bank for Reconstruction and Development

List of abbreviated names of legal acts used in this EMP

The names of legal acts mentioned herein are given in their abbreviated form. The full names of legal acts are presented in the table below.

Name in the text	Full name (and publication address)
Building Law Act	Act of 7th July 1994 - Building Law (consolidated text: Journal of Laws o 2016, item 290)
Code of Administrative Procedure	Act of 14th June 1960 - Code of Administrative Procedure (consolidated text: Journal of Laws of 2016, item 23).
Environmental Impact Assessment Act	Act of 3rd October 2008 on making available information on the environment and its protection, participation of the public in environmental protection, as well as environmental impact assessments (consolidated text: Journal of Laws o 2016, item 353)
Environmental Impact Assessment Regulation	Regulation of the Council of Ministers of 9th November 2010 on projects that may significantly affect the environment (consolidated text: Journal of Laws of 2016, item 71).
EPA	Act of 27 th April 2001 - Environmental Protection Act (consolidated text: Journal of Laws of 2016, item 672 as amended).
Flood protection special act	Act of 8th July 2010 on particular terms of preparation and implementation of Projects with regard to flood-control structures (Journal of Laws of 2015, item 966 as amended)
NEPA	Act of 16th April 2004 on environmental protection (consolidated text, Journal of Laws of 2015, item 1651, as amended)
Safety and Health Protection Regulation	Regulation of the Minister of Infrastructure of 23rd June 2003 on Information Concerning Safety and Health Protection and Safety and Health Protection Plan (Journal of Laws No.120, item 1126)

SUMMARY

This document presents the Environmental Management Plan (EMP) for the Investment: Flood protection Tarnobrzeg - stage 1 (Wisła 1) – Works Contract 3B.3 implemented within the Odra-Vistula Flood Management Project, co-financed by the International Bank for Reconstruction and Development (World Bank) and State Budget.

This EMP includes the following elements:

- Institutional, legal and administrative conditions with specified selected acts of Polish law, main stages of the EIA procedure, guidelines of the World Bank and the course of EIA procedures for the reviewed Works Contract,
- The condition of individual elements of the environment in the area of the Works Contract, in the scope of landscape shaping, climate, air, soil, surface and ground water condition, acoustic climate, environment and cultural monuments,
- Summary of the environmental impact assessment included in the Environmental Impact Report for the above mentioned elements of the environment,
- Presentation of mitigation measures to be implemented by the Contractor and the Employer at the stage of preparing, executing and operating the Works Contract with regard to soil, surface and ground water, air, noise, flora and fauna. Mitigation measures plan is specified in a table in App. No. 1,
- The monitoring plan for the construction stage and at the operation stage of the Works Contract for individual elements of the environment. The plan of monitoring measures is specified in a table in App. No. 2,
- The procedure and results of public consultations at the stage of general environmental impact assessment (initial phase), environmental impact assessment for the Works Contract, and at the stage of preparation of this EMP,
- The organizational structure of the implementation of EMP, implementation and the reporting procedure.

Appendices to EMP include lists of mitigation measures and the monitoring plan, the environmental decisions and drawings showing the location of the proposed Works Contract, as well as potential flood risk. The main source for this EMP for the Works Contract 3B.3 is the Environmental Impact Report for the Investment*: Extension of the right Vistula River embankment at km 5+950 - 15+819 from Tarnobrzeg (Skalna Góra) to Koćmierzów (Podkarpackie and Świętokrzyskie Province boundry*) and the Environmental Decision issued by the RDOŚ in Rzeszów and Decision on granting Demolition Permit issued by the Mayor of Tarnobrzeg City (containing provisions for the protection of the environment during demolition of the utility building).

Need for Works Contract implementation

The reason for the implementation of the Works Contract is the need to increase flood safety of the area situated along the right bank of the Vistula River Valley section from Tarnobrzeg (Skalna Góra) to Koćmierzów (border between Podkarpackie and Świętokrzyskie Province), to protect urban areas and to limit flood losses in the area by extensions to the existing embankment. Additionally, the Works Contract will contribute to the protection of the right-bank part of the city of Sandomierz.

The Works Contract consists on extension[1] of existing flood embankment which is too low and water may flow over it in case of a greater freshet. The existing embankment is connected with the embankment under administration of the Świętokrzyski Board of Amelioration and Hydraulic Structures in Kielce which was refurbished in 2015 and extended by about 1.4 m. The crown of the embankment proposed for extension is currently lower than that of the adjacent embankment by 1.18 m to 1.57 m.

Location of the Works Contract

The Works Contract is located at km 255+000 – 264+760 of the Vistula River (km 5 + 950 – 15 + 819 of the embankment) section from the city of Tarnobrzeg (Skalna Góra) to the village of Koćmierzów within the borderland between the Podkarpackie and Świętokrzyskie Province. The Works Contract will be entirely located within the city of Tarnobrzeg.

Scope of the Works Contract

The Works Contract 3B.3 Flood protection Tarnobrzeg - stage 1 (Wisła 1) includes the extension of 9.869 km of the right bank of the Vistula River section from Tarnobrzeg (Skalna Góra) to Koćmierzów (Podkarpackie and Świętokrzyskie Province border) at km 5 + 950 – 15 + 819 of the embankments, compacting, widening the foot and increasing the top of the embankment by 1.5 ÷ 1.8 m in relation to the current levels, additional sectional sealing of the embankment base with horizontal filtration barrier and sealing the terrace slope with the calendered sheet 1.50mm thick.

The scope of the Works Contract of embankment's extension also includes a renovation of 15 existing embankment crossings and protection of existing structures located on the embankment (2 locks and 2 outlets), repair of existing service roads and construction of new ones on embankment sections without service roads so far.

Current environmental condition

[1] It means that the crown of embankment will be raised (by 1.5 to 1.8 m) and the embankment will be widened in proportion to the height, for the bank slope to be 1:2.5 on the water-side and 1:2.0 on the dry-side.

On the stage of preparing the Environmental Impact Report[1], assessment of the environment condition was conducted within the area of planned works.

As a result of works related to identifying environmental and cultural qualities it has been found that the area of the planned Works Contract is characterized by the following regional, local and supra-local conditions:

- The landside area of the embankment is a mosaic of agricultural land, orchards, idle land and urban areas. Within the area of Works Contract implementation no naturally valuable habitats have been identified.
- The area of Works Contract borders on the area of importance for the Community i.e. NATURA 2000 SAC Tarnobrzeska Dolina Wisły PLH180049. The border of the concerned area is close to the waterside embankment slope (Appendix No. 5 to the EMP).

Due to the applied restrictions with regard to land occupancy on the waterside of the embankment the planned Works Contract will not have a significant negative impact on the environment. For the needs of the Works Contract this EMP was compiled in accordance with the operational policy OP 4.01 of the World Bank. The EMP contains a plan of mitigation measures minimizing negative impact on the environment, which would be the effect of conducted works and the monitoring plan. The mitigation measures and monitoring plans have been included in Appendices No. 1 and 2.

A summary of the major adverse impacts during implementation of the Works Contract

- *Impact on ground surface*

During the implementation period the negative impact on ground surface will be related to: land transformations as a result of the conducted earthworks and area clearing. A potential danger may lay with localized contamination of the ground surface with substances harmful to the environment, including petroleum products in case of spills from machines and equipment. However, in all cases, under the assumed mitigation measures, the negative impacts will not be significant.

- *Effect on surface water*

The existing embankment to be extended in the scope of the Works Contract 3B.3 is away from the Vistula River bed (from 40 to 750 m), therefore the Works Contract would not affect the hydrology, flow speed, or sedimentation processes in the river.

Water species/habitats will remain unaffected by the works in this section being conducted on the embankments located in a considerable distance from the river bed without interfering

[1] The Environmental Impact Report Extension of the right bank of the Vistula River at km 5 + 950 - 15 + 819 from Tarnobrzeg (Skalna Góra) to Koćmierzów (the border of Podkarpackie and Świętokrzyskie Province) - *preparation made by the Design Group DERING*

in the river bed itself. The Vistula River in this section, in accordance with the Water Framework Directive (surface water body “Vistula from Wisłoka to San”) regarding chemical status has been assessed as below good condition, while the environmental potential was stated as good. Investment will not be carried out in the river bed, therefore Works Contract will not cause adverse changes in water quality and quantity.

- *Acoustic impact*

The conducted study allows to state that acoustic inconvenience will occur only within a relatively short period of implementation. The conducted study for selected location-specific situations show that the range of noise occurrence of an acceptable level for residential buildings and other facilities protected against noise, will not exceed the acceptable noise levels during daytime. As no works are planned during the night, the acoustic impact between 10pm and 6am will not occur at all. The acoustic impact of construction works will be short-term, lasting at most for several days in the case of individual locations of the works.

As a result of applying vibration-free DSM (Deep Soil Mixing) process during construction of a sectional filtration barriers adverse vibration effects on the environment are avoided.

- *Impact on the air condition*

Emission of pollutants into the atmosphere will be generated by machines used during construction works and transport, relocation of earth masses, etc. Emissions will be low enough and short-term, so as not to cause significant adverse effects, mainly with regards to danger to people, but also to the quality of the local environment as a whole.

- *Effect on the cultural environment, archaeological sites*

During the course of Works Contract implementation there will be no negative impact on national monuments protected on the basis of regulations on protection and care of monuments, because they are located far from the construction site.

In case of uncovering structures or archaeological artefacts, the Contractor is obliged to immediately notify the Podkarpacki Voivode Conservator of Historical Monuments, the Engineer, and the Employer and apply the chance finds procedure as outlined in Annex 1.

- *Impact on flora and fauna, protected areas including Natura 2000*

The conducted construction works may have a negative impact on habitats, plants, animals and possibly cause individual specimen losses, but with the implementation of mitigating measures it will not be significant enough to cause adverse effects on the environment. Implementing the mitigation measures as outlined in section 5.8 and Annex 1 of this EMP, including the careful selection of methods of embankment extension will allow to avoid impact on protected areas and species.

Assessment of impacts of the Works Contract implementation on the environment showed that the inclusion and implementation of mitigating measures (see Appendix No. 1),

will lead to a significant reduction or avoidance of all major and foreseeable hazards to the environment, related to the planned Works Contract.

- *Impact on ground water*

Regarding ground water, the direct effects, though insignificant, will take place mainly in the period of Works Contract implementation, when changes will be related to: land transformation as a result of conducted cleaning and earthworks and possible ground water contamination with substances harmful for the environment, including oil substances in case of leaks from machines and equipment used. In any case however, with the assumed mitigation measures, they will not be of significant importance. In the case of drainage of the excavations for structures due to pumping operations, a temporary lowering of the ground water table inside a 3-5 m radius from the excavation.

According to the Water Framework Directive, the groundwater body JCWPd No. 135 on which the Works Contract is located is characterized by good water condition, without the risk of failure to reach the established environmental objectives.

- *Supervision over mitigation measures*

All mitigating measures will be supervised and controlled by specialists employed by the Contractor (including entomologist, chiropterologist, herpetologist, ornithologist and botanist or phytosociologist), with regular controlling by the Engineer. The Contractor will be also required to employ archaeological supervision. These specialists will be employed throughout the whole period of the Works Contract. Further details of those actions are described in the tables for Mitigation Measures and Monitoring.

Impacts during Works Contract operation

- *Impact on ground surface*

In the course of Works Contract operation there will be no physical interference with top or slopes of the embankment. Embankment will be only periodically mowing.

- *Acoustic impact*

During the period of the operation of planned flood infrastructure, no noise emissions will occur. During periodical embankment mowing (2 times/year) small noise emissions will occur due to the equipment used for these works. During freshets, acoustic impact will appear in the form of noise of flowing water.

- *Impact on air quality*

During the phase of embankment operation, there will be no risk to the air condition.

During periodic embankment mowing (2 times/year), a small quantity of exhaust fumes will be released, related to the use of equipment with a mechanical drive. However, their quantity

will be very low and will not result in any hazard to the condition of the air in this area. Also, the period of freshets will not pose any hazard to condition of air.

- *Effect on the cultural environment*

Environmental impacts associated with the operation of embankment has no negative impact on historical substance. Embankment will increase level of protection for the historic buildings, or the entire local cultural environment located in the area of potential flood.

- *Impact on flora, fauna, protected areas, including Natura 2000 areas*

No adverse effect on habitats, or protected species of plants, animals or fungi are anticipated during period of operation.

- *Landscape impact*

The extended embankment will not be the dominant feature of the landscape in terms of its height.

- *Effect on surface and ground water*

In the embankment operation phase, there will be no danger to surface, ground, or ground water.

Cummulative impacts

Extension to the Vistula River embankment in the proposed section will possibly be affected by cummulative impact of similar Projects in the basins of the Vistula River and its tributaries. However, due to the location of individual Works Contract and the mitigation measures to be applied no cummulative impacts should be expected.

Limiting adverse impacts and strengthening of favourable ones

Main environmental impacts will take place over the time of the Works Contract implementation. During this time a number of measures should be undertaken, to mitigate or eliminate adverse impact (App. No. 1) including:

- protection of the aquatic environment and soil against pollution (the use of efficient mechanical equipment, proper storage and handling of substances harmful to the environment, including oil products, such as fuels, lubricants etc., provision of back-up facilities and staff facilities),
- protection against noise: works conducted only from 6:00 a.m. to 10:00 p.m, use of efficient construction equipment,
- environmental and landscape protection by Project implementation in accordance with environmental option which reduces interfering with flora and fauna habitats and indicates solutions minimizing the impact on the Natura 2000 areas,
- minimizing tree and shrub felling and conducting it in the period outside bird's breeding season,
- transfer of protected plant species saplings under proper botanical supervision,

- prior to work commencement, removal of the humus i.e. upper soil layer along with the present herbaceous vegetation and storing in a place where it will be protected from damage, in order to use it during land reclamation works,
- on embankment sections where reproduction areas of amphibians have been indentified, implement measures to protect the animals (dying as a result of conducted works and vehicle traffic) migrating to and fro their breeding grounds (e.g. fencing the construction site). Detailed process and location solutions, as well as the principles of handling amphibians, should be coordinated with a specialist in herpetology,
- at the stage of the Works Contract implementation, during periods indicated by the herpetologist, conduct daily monitoring of barriers or traps, and transfer animals in the directions of their original migrations,
- prior to felling of trees their possible inhabitance by protected species of insects and bats should be checked by entomologist and chiropterologist and in the event of occurrence of protected species the specialist's recommended measures should be applied,
- cultural environment protection, by constant archeological supervision on the construction site.

Essential monitoring

The monitoring plan is specified in App. No. 2. The monitoring plan includes all the provisions included in the environmental decision issued by RDOŚ, which has been presented in Appendix No. 4. The Monitoring plan will enable ongoing control over the proper implementation of all mitigation measures.

Conclusions from the review of possible social conflicts

Experiences from more and more frequent floods in the entire Vistula River basin indicate an urgent need for the implementation of the designed Works Contract. Negative effects of embankment damage during floods and flooding of floodplains, cause the local community to respond favourably to proposed flood protection Works Contract. An argument justifying a favourable attitude towards the Works Contract implementation, is also the limited interference with the environment, with a simultaneous, significant improvement in flood safety. Detailed aspects of social impact of the Works Contract 3B.3 are described in the Land Acquisition and Resettlement Action Plan.

Legal context of the Project

This Works Contract is qualified as the so-called group II, listed in EIA regulation. The Regional Director for Environmental Protection in Rzeszów, by way of a resolution dated 26.01.2012, ascertained an obligation to conduct an Environmental Impact Assessment for the Works Contract and defined the scope of the report. After submission to the RDOŚ by

the Employer, RDOŚ carried out the EIA procedure with the participation of the general public. For the planned Works Contract, RDOŚ issued an Environmental Decision where the conditions of its implementation in the aspect of environmental protection are defined.

Additional conditions for implementation of the Investment for the protection of the environment for the demolition of the utility building in the Decision on granting Demolition Permit issued by the Mayor of Tarnobrzeg City.

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1. INTRODUCTION

This study presents the Environmental Management Plan (EMP) for the Works Contract 3B.3 Flood protection Tarnobrzeg - stage 1 (Wisła 1), implemented under the Odra-Vistula Flood Management Project (OVFMP) co-financed by the International Bank for Reconstruction and Development (the World Bank) and State Budget. Emphasis should be put on the fact that the presented document is a site-specific study and is dedicated only to the Works Contract 3B.3, and not the entire OVFM Project.

1.1. ODRA-VISTULA FLOOD MANAGEMENT PROJECT

The primary purpose of the OVFMP Project is to protect the population on the floodplains within the selected parts of the river basins of two largest Polish rivers Vistula and Odra against risk caused by extreme floods. Under OVFMP it is planned to execute the most urgent tasks regarding flood management. The Project has been divided into three main investment components that cover: Lower and Central Odra (Component 1), Kłodzka Valley, including the mountains and upland part of the catchment area of Nysa Kłodzka (Component 2) and Upper Vistula River (Component 3). The components are divided into Sub-components.

Units directly responsible for the implementation of the above components of the Project are:

1) **Regional Water Management Authorities in Wrocław and Szczecin** - in the scope of flood protection of the lower and middle Odra River (part of Sub-component 1B) and flood protection of the Nysa Kłodzka River Valley (Component 2 - only Regional Water Management Authority Wrocław);
2) **Podkarpacki, Małopolski and Świętokrzyski Boards of Amelioration and Hydraulic Structures -** in the scope of flood protection of the Upper Vistula River (Component 3);
3) **Lubuski and Zachodniopomorski Boards of Amelioration and Hydraulic Structures** - in the scope of protecting the middle and lower Odra River (Sub-components 1A, 1C and a part of 1B).

Detailed information on the Project have been published in the document Environmental and Social Management Framework and is available at:
http://www.odrapcu.pl/doc/OVFMP/Environmental_and_Social_Management.pdf.

1.2. COMPONENT 3, SUB-COMPONENT 3B

Under Component 3, four Sub-components have been identified, designated as 3A (Flood protection of Upper Vistula towns and Kraków), 3B (Protection of Sandomierz and Tarnobrzeg), 3C (Passive and active protection in Raba Sub-basin) and 3D (Passive and active protection in San basin) – names used are consistent with the Project Operations Manual.

Under Sub-component 3B, it is planned to modernize the flood protection embankment system of the Vistula River and its tributaries within the range of Vistula's backwater along with necessary modernization of the pumping station system that protects the areas on the embankment's land side during runoff of high water.
Works Contract 3B.3 is one of three Investments implemented under Sub-component 3B, and its implementation is necessary to protect the city of Tarnobrzeg and the right-bank part of Sandomierz against flood.

1.3. THE AIM OF PREPARING THE EMP IN THE LIGHT OF POLICIES OF THE WB

According to the information included in the Project Assessment Document (PAD) the OVFM Project, and hence, Works Contract 3B.3 implemented by the **Podkarpacki Board of Amelioration and Hydraulic Structures in Rzeszów** belongs to the projects not having a significant negative impact on the environment, thus classified according to Bank Policy in category B[1] environmental projects i.e. possibly requiring conducting an Environmental Impact Assessment[2] and preparation of the Environmental Management Plan[3]. According to the guidelines of the World Bank, the Environmental Management Plan is an instrument specifying: a) the set of measures used to eliminate or mitigate adverse impacts of the Works Contract on the environment, which should be taken at the stage of its implementation and after its completion, and b) actions necessary for the effective implementation of these measures[4].

The primary purpose of the EMP, prepared individually for each Works Contract, is ensuring effective mitigation/alleviation and monitoring of unfavourable environmental impacts of the analyzed Works Contract, identified at the stage of the Environmental Impact Assessment, and during further administrative procedures, necessary for implementation at the stage of construction and operation.
It should be emphasized that this EMP does not supersede the provisions of issued administrative decisions, but is a separate document coordinating and organizing actions. It does not constitute an exemption from implementing the detailed recommendations stated in decisions.

[1] According to the classification specified in item 8 of the operational policy OP 4.01 of the World Bank (version of February 2011: *http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTOPMANUAL/0,,contentMDK:20064724~menuPK:64701763~pagePK:64709096~piPK:64709108~theSitePK:502184,00.html*).

[2] According to item 8 (a) of the operational policy OP 4.01 of the World Bank.

[3] According to item 3 in Annex A and item 1 in Annex C to the operational policy OP 4.01 of the World Bank.

[4] According to item 3 in Annex A to the operational policy OP 4.01 of the World Bank.

2. DESCRIPTION OF THE WORKS CONTRACT

2.1. LOCATION AND AREA

The Works Contract is located at km 255+000 – 264+760 of the Vistula River (km 5 + 950 – 15 + 819 of the embankment) section from the city of Tarnobrzeg (Skalna Góra) to the village of Koćmierzów within the borderland between the Podkarpackie and Świętokrzyskie Province. The Works Contract will be entirely located within the city of Tarnobrzeg. The location of the Works Contract is presented on the below drawing (Fig. 1.).

2.2. CHARACTERISTICS OF THE WORKS CONTRACT

The Works Contract includes:

- increasing height of the embankment by 1.5 - 1.8 m and width including compaction of the embankment body,
- sealing the embankment body and base by constructing filtration barrier approx. 10 m deep (at km 5 + 950 - 15 + 700), using DSM process,
- sealing the waterside slope by means of calendered film 1.50 mm thick, covered by a layer of soil, which will be used for construction of the embankment's body as well,
- repair of existing service roads and construction of new ones on embankment sections without service roads so far,
- constructing a process lane on the riverside of the embankment,
- renovation of 15 embankment's crossings, width of 3.5 – 4.0 m with gravel surface and 2 with bituminous concrete surface,
- protection of two embankment locks with diameters 800 and 1400 mm (at km 8+290 and 12+866 of the embankment), outlet of rain water pumping station with diameter of 812 mm (at km 13+840 of the embankment) and outlet of Waste Water Treatment Plant with diameter of 2x1600 mm (at km 9+589 of the embankment).

Final dimensions of the embankment will be:
Embankment crown width - 3.0 m
Water-side slope inclination - 1:2.5
Dry-side slope inclination - 1:2.0
Landside embankment footing width - 3.5m
Process lane width - 4.0m

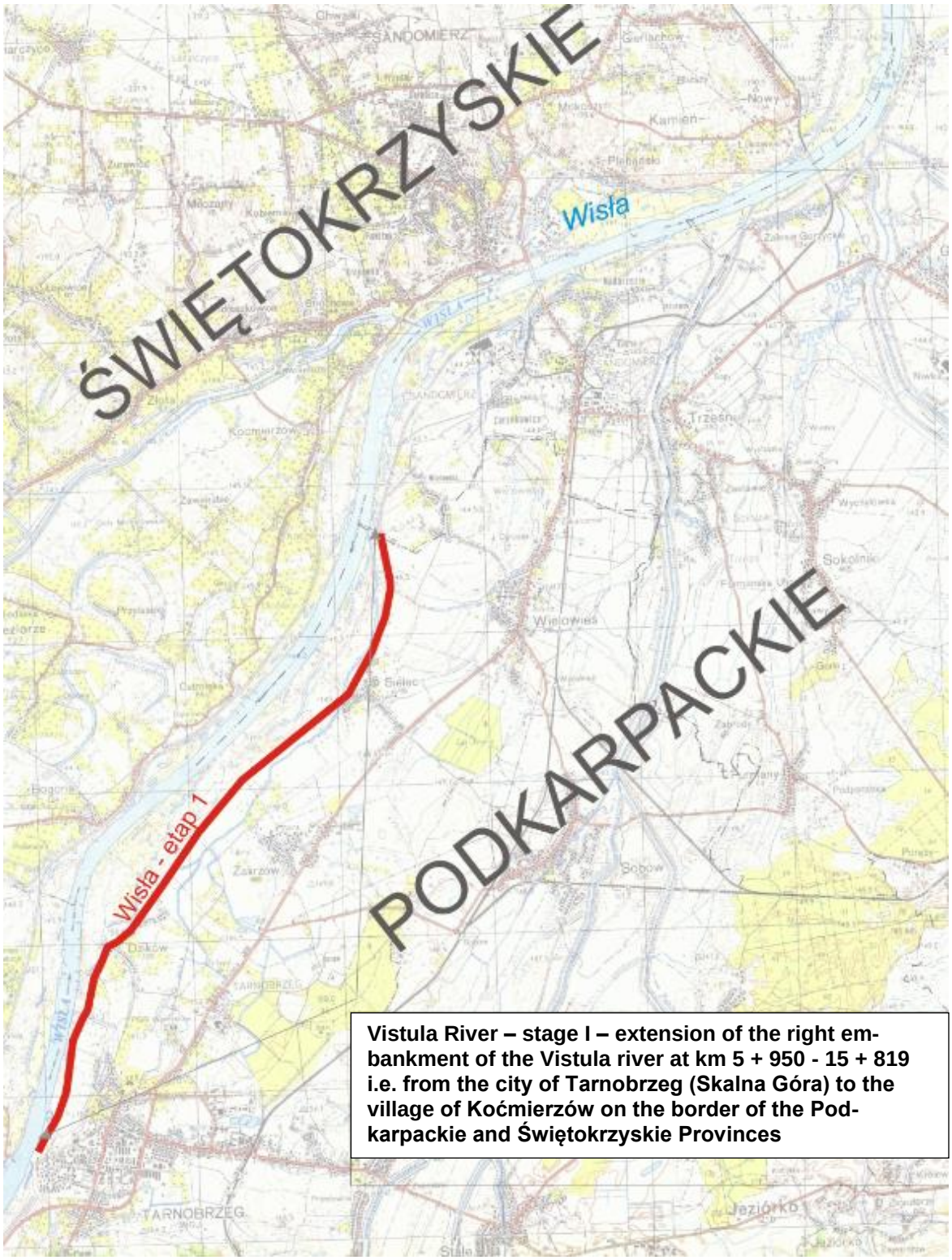

Fig. 1. The location of the Works Contract.

3. INSTITUTIONAL, LEGAL AND ADMINISTRATIVE CONDITIONS

3.1. INSTITUTIONS INVOLVED IN IMPLEMENTATION OF THE PROJECT

The Investor/Employer of the Works Contract is the Marshal of Podkarpackie Province, represented by the Podkarpacki Board of Amelioration and Hydraulic Structures in Rzeszów (PZMiUW). Additionally, at the construction and operation stages, its implementation may require involving public administration bodies at the central, regional and local level. The responsibility for the coordination of the Project concering Loan No. 8524 PL, as well as monitoring of its implementation, lies with the Odra-Vistula Flood Management Project Coordination Unit.

3.2. BINDING POLISH LAW ACTS WITH REGARD TO THE ENVIRONMENT

According to the Polish law, an investment process with regards to environmental protection, is governed by over ten acts and regulations. A list of selected legislation has been included in Appendix no. 3. The Contractor in each case will be obliged to adhere to binding, up-to-date legal acts, if during the course of the Works Contract implementation they are amended. The provisions of EMP do not exempt the Contractor from their requirement of complying with all legal regulations binding in the country where the Works Contract is to be implemented.

3.3. MAIN STAGES OF THE EIA PROCEDURE IN POLAND

The description of the environmental impact assessment procedure in Polish legislation is included in the Environmental and Social Management Framework (ESMF) published on the i.a. web pages of the World Bank[1] and the Odra-Vistula Flood Management Project Coordination Unit[2].

3.4. WORLD BANK REQUIREMENTS

Works Contract is co-financed by the International Bank for Reconstruction and Development (the World Bank). The conditions of its implementation, with regard to environmental protection are compliant with the following policies of the World Bank:

- OP 4.01 - on the environmental impact assessment,
- OP 4.04 - on habitats, and
- OP 4.11 - on the physical cultural resources,

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

[2] http://www.odrapcu.pl/popdow_dokumenty.html

the description of which are included in the already prepared Environment and Social Management Framework published on the i.a. web sites of the World Bank and the Odra-Vistula Flood Management Project Coordination Unit.

3.5. THE CURRENT CONDITION OF EIA PROCEDURES FOR THE WORKS CONTRACT

According to the national legislation the Works Contract belongs to Group II, i.e. Projects that may significantly affect the environment, according to the EIA regulation.

The abridged EIA procedure is as follows:

1. On 26th October 2011 the Regional Director for Environmental Protection in Rzeszów received the application submitted by the Podkarpacki Board of Amelioration and Hydraulic Structures in Rzeszów, concerning issue of the decision on environmental conditions for the implementation of the Works Contract: Vistula - Stage 1 – extensions to the right embankment of the Vistula River, at km 5 + 950 - 15 + 819 on the section from Tarnobrzeg (Skalna Góra) to Koćmierzow (Podkarpackie and Świętokrzyskie Province border). The application was accompanied by the Project Information Sheet, describing i.e. the anticipated impacts and Works Contract characteristics.
2. By means of the Decision of 26th January 2012, ref. no. : WOOŚ.4233.33.2012.KR-16, the Regional Director for Environmental Protection in Rzeszów ascertained the obligation to conduct an assessment of the environmental impact of the planned Works Contract, and defined the scope of the environmental impact report of the Works Contract.
3. PZMiUW submitted report on environmental impact with the letter of 24th February 2012 ref. no.: IM 403.7.2.2012.
4. In connection with formal shortcommings and RDOŚ doubts regarding obtaining soil from the terrace area, the PZMiUW has supplement the Report several times (subsequent supplements were submitted on: 12.03.2012, 17.05.2012, 24.07.2012, 19.09.2012, 31.01.2013, 31.05.2013, 06.06.2013 and 20.06.2013).
5. After obtaining appropriate expert opinions and conducting social consultations, on 19.09.2013 the RDOŚ issued the decision on environmental conditions (ref. no.: WOOŚ.4233.19.2013.GJ-95). The decision was also announced to the public by means of a notice. The decision has not been challenged.
6. In addition, for the purpose of Works Contract implementation, on 14.04.2014 a decision of RDOŚ Rzeszów was obtained, specifying conditions of execution of Works.
7. On 20.05.2014 Decision on environmental conditions of 19.09.2013 (ref. no.: WOOŚ.4233.19.2013.GJ-95) issued by the RDOŚ Rzeszów for PZMiUW was transferred to the Podkarpackie Province. Content of the decision has not changed.

8. In addition, for the demolition of the utility building on parcel No 803/1, 803/2 at Kąpielowa Street in Tarnobrzeg, Sielec district, Decision No 3/16 issued by the Mayor of Tarnobrzeg City (ref. no.: UAB- III.6741.2.2016) on 03.14.2016 was obtained, approving construction design and grating Demolition Permit, which contains the conditions for the protection of the environment.

The above decisions have been enclosed to the EMP (App. No. 4).

4. DESCRIPTION OF ELEMENTS OF THE ENVIRONMENT IN THE VICINITY OF THE WORKS CONTRACT

4.1. LAND SURFACE, LANDSCAPE AND GEOLOGY

The existing embankment is located on the right bank of the Vistula River at km 5 + 950 - 15 + 819 in the city of Tarnobrzeg. In geographical terms, it is located in the Sandomierz Basin, which geologically belongs to the Carpathian Foredeep. The area is flat, inclined towards the north, level difference range from 142m asl to 185m asl. In the area in question simple ground conditions prevail (continuous surface layer of cohesive soils, with underlying, parallel, continuous layer of non-cohesive soils). Above the ceiling of Miocene, Krakowieckie loams, Quaternary formations are present, represented by clays, dusty clays, dusts, and strongly hydrated, medium grained and coarse sands, of a brown and grey colour. Locally, in several cross sections, interbeddings and lenses of low bearing capacity soils are present, in the form of clay silts, sand silts and peats.

4.2. SURFACE WATER

The area covered by the Works Contract is located in the Vistula River Basin at km 255+000 – 264+760 of the Vistula River course (km 5 + 950 - 15 + 819 of the embankment).

In the area of the Works Contract the surface water system is formed by Vistula River constituting a first-order watercourse and its right-bank tributaries Trześniówka and Mokrzyszówka. In the area of the Sobów housing estate the River Żupawka flows into Trześniówka. All the watercourses in the Works Contract area have embankments on both sides protecting against floods. The water system is supplemented by a number of unnamed watercourses and melioration ditches. Surface Water Body (JCWP) which is included in planned Works Contract is “Vistula from Wisłoka to San”, abiotic type[1]: 21 - great lowland river. It is a strongly altered water body. Current research conducted by the WIOŚ in Rzeszów proved that the chemical condition of the uniform surface water body was assessed as below good condition[2], while the environmental potential was defined as good[2]. The implementation of the Works Contract **does not cover alterations of the Vistula River bed**. Thus, the Works Contract has no effect on the morphological continuity of the Vistula River and it will not affect hydromorphological elements (morphological conditions).

[1] The classification of surface water created for the needs of water management in these case criterion is the size of the catchment area.

[2] According to the Regulation of the Ministry of Environment of 22th October 2014 on the classification of Surface Water Bodies and environmental quality standards for priority substances (Journal of Laws 2014, item 1482).

4.3. GROUND WATER

In the area of the Works Contract one Quaternary water-bearing level has been identified. In the vast majority of drilled holes, the level of ground water constitutes a free water table in sandy formations i.e. fine-grained, medium-grained and coarse sands. The depth of the stabilized water table ranges from 1.5 to 3.5 m below ground level. Locally, with a greater number of impermeable or poorly permeable formations (clays, dusty clays) the ground water table is tense. The drilled water level is shaped between 4.5 and 5.2 m below ground level, while the stabilized level in the range between 2 and 2.8 m below ground level. Additionally, the water-bearing level in the drilled formations determines the water level in the Vistula River, which may periodically fluctuate. The Works Contract is located beyond any GZWP.

The Works Contract will be located in the area of the Ground Water Body JCWPd No. 135, characterized by good water condition, with no danger of failure to reach the environmental objectives appointed for it. The environmental objective for this water body part is to prevent any deterioration of its condition. In order to meet the non - deterioration requirement for the water body, for a water body being in at least good chemical and quantitative condition, it will be to maintain this condition.

4.4. CLIMATE

The area covered by the Works Contract is located in the area of a lowland climate characterized by a long hot summer, warm winter, and a relatively small amount of rainfall.

The period between May and October receives ca. 65% of the annual volume of precipitation. The average annual air temperature ranges from 6 to 8^0C. The vegetation period is quite long and ranging between 210 and 220 days.

4.5. AIR QUALITY

The degree of air pollution depends on the emission size from emitters located in a given area, inflow of contaminants from other areas, climatic and meteorological conditions, as well as town planning and topography. The City of Tarnobrzeg is mainly under the influence of anthropogenic air pollution sources. Most contaminations come from public transport, municipal services, and to a smaller extent industrial emissions.

The basic measurable pollutants are: SO_2, NO_2, dust PM10, and in selected stations, fluorine compounds and hydrogen sulfide.

As a result of sulphur dioxide measurements, a concentration thereof was determined as low, and the air condition has been defined as very good. Nitrogen dioxide measurements confirmed a good and sufficient air quality. In the case of PM10, the air condition has been assessed as sufficient**.**

4.6. ACOUSTIC CLIMATE

In the area of the Works Contract implementation there are no significant noise-generating sources. Residential buildings (single-family and homestead), located near the embankment, is located rather far from the important transportation routes, etc.

The main noise sources is the suburban or village life itself. These sources are constant and are not bound with any significant impact on the environment or the population.

4.7. FLORA AND FAUNA

Embankment slopes on both the water side and the landside, as well as the embankment crest are overgrown by anthropogenic grass communities of the characteristics and structure of fresh lowland meadows. The landside area of the embankment is a mosaic of agricultural land, orchards, fallowed and urban areas. No naturally valuable habitats were found on the landside of the embankment within the boundaries of the implemented Works Contract.
On the waterside of the embankment NATURA 2000 SAC the Tarnobrzeg Vistula River valley PLH180049 area is located. Specifically, the boundary of the concerned area reaches the waterside slope of the aforementioned embankment, which has been described in detail in item 4.7.1.

4.7.1. Natura 2000 sites

The planned Works Contract is located in part within the area of importance for the Community NATURA 2000 the **Tarnobrzeg Vistula River valley PLH180049**, which is characterized by: great biodiversity of plant and animal species, as well as the existence of unique habitats, the example of which are old river beds with floating, submerged and scrub vegetation, riparian habitats and mountain meadows, numerous fish and amphibians species.
The NATURA 2000 the **Tarnobrzeg Vistula River valley area** is located in its entirety in the Sandomierz Basin within the Vistula lowland, on the border of two Provinces. It includes the Vistula River Valley limited to the terrace area, at the section from the Wisłoka River estuary to the city of Sandomierz. Significant areas of Vistula sand dunes are covered with vegetation, initiating the succession process. The river valley contains quite large old river beds, with developed natural vegetation. The area is rich in fish and amphibian species.
Main hazards to individual habitats depend, to a large extent, on species present therein. Risks to meadows are mostly caused by neglecting the twice a year mowings causing overgrowth of meadows within the floodplain and, in consequence, a change of landscape in the terrace area. Flora characteristic for this type of meadows is dying out and is gradually being replaced by shrubs.

Riparian forest areas are threatened by excessive, uncontrolled felling of the relatively small remaining areas of riparian forests. Often old, impressive specimens of poplar, or white willow are felled, which results in local landscape changes and the destruction of remiz nesting locations.

Felling riparian forests is a result of recognizing them as deprived of economic importance, as well as an obstacle in the implementation of the flood protection policy.

Another hazard is the regulation of the river, leveling old riverbeds, elimination of islands and shoals. Increasing the height of embankments is not a typical danger, but its consequence may be the felling of riparian forests.

The basic hazards for a protected zoological species include various forms of poaching such as: angling with prohibited methods and in closed season, nets, night traps, electricity.

In relation to easily startled animals, a main reason for their migration from habitats may be noise and intensive human penetration of the area, related to recreation, hunting and fishing.

4.7.2. Location of the Works Contract in respect of protected areas

The Works Contract planned for implementation is partly located within the area of NATURA 2000 the Tarnobrzeg Vistula River valley PLH180049. In addition, at a distance of up to 5 km from Works Contract site, another area is located of special bird protection Sandomierz Forest (PLB180005).

The area of NATURA 2000 Tarnobrzeg Vistula River valley location is shown at map in App. No. 5 to EMP.

4.8. POPULATION

The Works Contract 3B.3 is a line investment, the course of which is partially located on naturally valuable areas and partially in the vicinity of human settlements. Considering the entirety of the Works Contract, it affects the protection of an area of a surface of 48.56 km^2, inhabited by ca. 7 800 people[1].

The planned Works Contract cuts through private property - agricultural and urban areas. The public is already aware of the fact that the area is the location of flood protection facilities, and that it serves social interests. Issues related to the social context of the Works Contract to be implemented are described in more detail in the Land Acquisition and Resettlement Action Plan for the Work Contract 3B.3 Flood protection Tarnobrzeg - stage 1 (Wisła 1).

[1] Data comes from the paper Charakterystyka zadania planowanego do realizacji w ramach Projektu Ochrony Przeciwpowodziowej w Dorzeczu Odry i Wisły [Characteristics of the task planned for implementation within the Odra-Vistula Flood Management Project] provided by PZMiUW

4.9. CULTURAL MONUMENTS AND OTHERS STRUCTURES

In the area of the Works Contract there are no cultural goods or listed monuments under protection.

On the access route to the construction site, outlined in the letter of the Tarnobrzeg Mayor of 25.11.2013 (file ref. ABI.IX.7234.163.2013) i.e. from the exit from the Province road (ul. Warszawska), there are no cultural monuments.

On the Dzikowska Street are located: roadside chapel, place of religious cult of the local people (this object is not subject to any form of legal protection) and the information board associated with the designation for the NATURA 2000 area.

Photo 1. Information board.

Photo 2. Roadside chapel.

5. SUMMARY OF THE ENVIRONMENTAL IMPACT ASSESSMENT

5.1. IMPACT ON LAND SURFACE AND LANDSCAPE

The works implemented will consist of rehabilitation of the existing embankment. No new impacts with regard to land surface and landscape will emerge.

In connection with earthworks implementation only short-term impacts may occur, associated with a change in landscape qualities at the stage of implementation.

Works Contract implementation will not cause any changes in land functions and will not affect a change in the land use structure. Impacts created refer to a strip of land, where the upper soil layer will be disturbed. After the completion of the works the impacts will cease to exist and the area will be restored.

5.2. IMPACT ON LOCAL CLIMATE

Works Contract, due to the unique character of the conducted works, as well as the future lack of emissions at the stage of operation, will not have any effect on climate changes.

5.3. IMPACT ON AIR QUALITY

During the construction works, air contamination will occur, caused by unorganized emissions, associated mainly with operation of construction equipment and means of transport with combustion engines, emitting gas pollutants to the atmosphere, as well as earth works (delivery, storage and embedding ground masses, placing of concrete at culverts, and asphalting at 2 embankment crossings). Operation of assembly equipment and means of transport as well as combustion engine power units will cause emission of carbon monoxide, nitrogen oxides, sulphur oxides, aldehydes and a mixture of hydrocarbons. It will have a local and periodical impact only, and will cease once the works are completed.

During construction, pollutant emissions in the form of dusts will be related to the displacement of ground masses, both during transshipment of ground masses, as well as the construction thereof. They will be local and periodical in nature. And will cease once the works are completed.

During Works Contract operation, the embankments will be systematically (2 times a year) mowed. During these activities, no single-source emission (in one place) to atmosphere will be present. Possible multi-source emission will appear during the operation of a petrol lawn mower. They will be however, small scale, limited in terms of area and time, and not subject to regulations stipulated in legal acts.

5.4. IMPACT ON SOILS AND GROUNDS

During the works, a structural and soil texture violation will occur, resulting in changes of its characteristics along the extended embankments.

The selected method of sealing the embankment and its bedding, by means of a filtration barrier, will lower the level of the ground water table within the embankment body (during a surge wave), extending the filtration route and crossing privileged filtration routes.

Filtration barrier (made of DSM technology) will completely protect the base and body of the embankment in the case of flood freshets, thereby safeguarding the area protected by the embankment.

In light of the already completed sealing by means of a filtration barrier, no negative impact on ground-water conditions has been found on the landside of the embankment especially in agricultural areas. Drainage of ground water from the above mentioned areas (after a flood wave) will be conducted by means of melioration devices in the form of melioration canals, directing surface water to the river, through embankment culverts.

5.5. EFFECT ON SURFACE WATER

The Works Contract is located 40 m to 750 m from the Vistula riverbank (km 254 + 200 - 268 + 300). The implementation of the Works Contract does not include interfering with the Vistula River bed. Thus, the Works Contract has no effect on the morphological continuity of the Vistula River. Also, it will not have any impact on hydromorphological elements (morphological conditions). Impacts during the construction stage may result from penetration of substances harmful for the environment, including oil derivative substances into surface water as a result of failure i.e. spillages of fuel and other substance used during construction. Technically operational construction equipment, and proper handling of machines will eliminate any and all such hazards.

The Works Contract poses no risk for implementation of the goals of water protection within the Surface Water Body, and will not pose risks for water protection in other water bodies. As a result, the Works Contract implementation will not cause risks of incompletion of environmental goals JCWP “Vistula from Wisłoka to San”.

In the embankment operation phase, there will be no danger to surface, ground, or ground water.

5.6. IMPACT ON GROUND WATER

Considering the scope of the Works Contract and its potential impacts, it should be stated that the Works Contract will not constitute a risk for the environmental objectives set forth for JCWPd No. 135.

During the embankment operation phase no hazards for ground water will be present.

5.7. ACOUSTIC CLIMATE

Noise emissions of a significant level may occur only in the construction period. At this stage, that impact will depend mostly on the intensity of conducted earthworks.

The conducted calculations indicate that exceeding the allowed noise level for residential areas and other facilities protected against noise will not take place. The acoustic impact of construction works will be short-term, lasting at most for several days in the case of individual locations of the works.

To prevent any vibrations during the construction of the filtration barrier the vibration-free DSM process has been adopted, deep mixing with vertical (cutting- auger devices) or horizontal (cutting- bucket devices) stirrers.

As no works are planned between 10pm and 6am, the acoustic impact during this period will not occur.

Operation of the Works Contract will not cause a deterioration of the acoustic climate for the surrounding environment, except the times of periodic conservation works, to ensure a good technical condition of the embankments and surge waves.

5.8. NATURE

Impact on habitats and protected species within the Natura 2000 area

Habitats

After the Employer's resigning from collecting soil from the terrace area the Works Contract will not in any way interfere with located in the terrace area riparian habitats neighboring on the embankment intended for extension along the distance of 1.4 km (i.e. short sections, with a length of: 230 m, 525 m, 331 m, and 380 m respectively). In sections where planned works will be conducted in the vicinity of riparian habitat, a necessity has been established to protect the patches of these habitats by means of tape fencings. In addition within the area of these habitats, no waste will be stored, nor back-up facilities located (it will be situated on the landside of the embankment). It should be also emphasized that the works will not in any way interfere with the old riverbed habitats and other reservoirs located in the terrace area. Project implementation will not necessitate interference with mountain meadow habitats. On the other hand, lowland hay meadows (6510) reach the embankment footing along a total distance of ca. 5.3 km (i.e. shorter sections of a length of 1.4 km, 670 m, 875 m, and 2.4 km). This habitat will be seized only in its marginal, bank part. In the are of the embankment's extension humus will be removed, stored and then reused for reclamation of the concerned area. After completion of the works, damaged grounds will be subject to swarding of and

sowing with native plants. Therefore, the implementation of the Works Contract will not result in significant adverse impacts on the habitats. Proper implementation of the environmental conditions decision in this area will be supervised by a botanist (or phytosociologist) employed by the Contractor.

Flora

Prior to the commencement of the works, the botanist or phytosociologist will perform additional survey of flora in order to determine the current distribution of protected plant species on the areas intended for the Works Contract implementation. In case of observing specimens of any protected plants – after obtaining by the Contractor a respective permit of relevant nature protection authority (according to Art. 56 of the Act of 16 April 2004 on Nature Protection) – transfer them to a habitat that fits a particular species beyond the work area. Proper implementation of the environmental conditions decision in this area will be supervised by a botanist (or phytosociologist) employed by the Contractor.

Fauna

Due to the natural mobility of animal species, they may periodically be present in areas where works are conducted. Embankment construction however, will not result in a direct collision with bird nesting positions, or key animal refuges (e.g. amphibian reproduction positions). Proper implementation of the environmental conditions' decision with regard to fauna (with particular focus on amphibians) is to be supervised by expert entomologist, chiropterologist, herpetologist, and ornithologist employed by the Contractor.

Due to the scope and character of the Works Contract (no interference with the riverbed), it will not have any adverse impact on fish.

The results of how the Works Contract will impact the area NATURA 2000 PLH 180049 Tarnobrzeska Dolina Wisły are described in more detail in Appendix No. 7.

On the embankment's landside no environmentally valuable habitats or protected species of plants were observed. These lands are subject to permanent transformations related to agricultural activity.

In the operation phase no adverse impacts on the above mentioned elements of the environment are foreseen.

5.9. IMPACT ON CULTURAL LANDSCAPE AND MONUMENTS

As demonstrated by the environmental impact assessment, there will be no danger in relation to cultural goods and monuments at the stage of implementation and operation of the Works Contract.

Provincial Monuments' Conservator, in the opinion of 27.12.2013 (file ref. UOZ-T-3.5133.34.2013), advised that "in the vicinity of the Vistula River embankment, in the town of Sielec, there is an archaeological site listed in the Archaeological Artefact Register. In connection with the above, during any construction works in this area, archaeological supervision should be provided".

5.10. SOCIAL IMPACT

During the social consultations conducted at the stage of the environmental impact assessments, the RDOŚ in Rzeszów has not received any comments or proposals related to the Works Contract.

A broader study of this issue was conducted and described in the document Land Acquisition and Resettelment Action Plan for the Works Contract 3B.3 “Flood protection Tarnobrzeg - stage 1 (Wisła 1) (prepared by JV Sweco, 2015).

5.11. UNECPECTED HAZARDS

Both during the construction and operation of the right Vistula River bank at km 5 + 950 – 15 + 819 of the embankment, unexpected hazards may occur associated with contamination of the environment, unexploded ordinances and breaking of the embankment. However, correct implementation and operation, and compliance with the principles of proper work organization and compliance with the law and with provisions of the EMP document will ensure total safety to the structure and environment. During the implementation of the Works Contract, an emergency can arise, e.g. failure of working heavy equipment, causing uncontrolled leak of substances harmful for the environment, including, among others, oil derivatives, and ground and water contamination. It is to be prevented by the requirement of using construction equipment (machines and devices) that is technically efficient, being under control at all times, secured against possible leaks of fuels and lubricants. In the event of observing contamination of ground or ground water, the contamination site will be promptly and adequately secured and neutralized with sorbent. During the operation, a construction disaster may occur related to breaking of the embankment, and water collected in the terrace will flow down, causing local flooding. Due to periodic and relatively short time of collecting higher water levels in the terrace and duly executed structure, and annual inspections and maintenance of the installations, the risk of the embankment's breach will be minimized.

Due to possible flood flows during the Works Contract implementation, the Contractor is obliged to organize and establish detailed rules of conduct in case of flood. The Flood Protection Team will be estabilished in the structure of implementation team of Contractor and

will be protected the Works in case of flood risk in the area of the construction works within the executed Investment covered by the present Works Contract.

5.12. CUMMULATIVE IMPACTS

Extension of the right-side embankment of the Vistula River along the concerned section, may potentially entail a cummulative impact of similar Projects being implemented in the basins of the Vistula River and its tributaries.

The total cumulative effect of diverse Works Contracts designed for flood protection, will enable more thorough floodplain protection against the flood water across the whole section of the Upper Vistula River and in its basin.

6. DESCRIPTION OF MITIGATION MEASURES

6.1. LAND SURFACE AND LANDSCAPE

Phase of implementation

With regard to ground surface, including landscape, direct impacts will appear only during the Works Contract implementation, when any changes will be related to land transformations as a result of the conducted earthworks, cleaning activities.

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 mowing in June and September, covering also Defects Notification Period.

In any case however, with the assumed mitigation measures, they will not be of significant importance.

Mitigation measures concerning the protection of the ground surface, landscape and soils is specified in App. No. 1 - activity 1 (II.1), 2 (II.2), 3 (II.3), 6 (II.11), 57 (II.22), 58 (II.23), 59 (II.24), 61 (II.38).

Phase of operation

During the operation no adverse impacts on ground surface and landscape are anticipated. Grounds located on the embankment land side will be protected against flooding, as a result of which rational agriculture is possible to develop in the area.

6.2. CLIMATE

Due to lack of impacts on climate it was stated that no mitigation measures were necessary.

6.3. AIR QUALITY

Phase of implementation

During construction works the air will be contaminated by an unorganized emission, associated mainly with operation of installation equipment and means of transport driven by combustion engines emitting gas pollutants to the atmosphere, as well as earth works (delivery, storage and ground masses embedding).

Mitigation measures concerning air protection are specified in App. No. 1 - operation 32 (II.12), 49 (II.34), 51 (II.36), 52 (II.37), 54 (II.41).

Phase of operation

Hazard for the condition of air, in the operation phase of the embankments, will not be present.

6.4. SOILS AND GROUNDS

Phase of implementation

With regard to soil, direct impacts will appear only during the Works Contract implementation, when any changes will be related to land transformations as a result of the conducted earth-works, cleaning activities, or possibly contamination of ground surface with substances harmful for the environment, including oil substances, in the case of leaks from used machines and devices, spillage of such substances in their storage places.

Refuelling 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.

In case of an emergency situation, mitigating actions shall be undertaken (including soil replacement). 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 mowing in June and September, covering also Defects Notification Period.

In any case however, with the assumed mitigation measures, they will not be of significant importance.

Mitigation measures concerning the protection of the soils is specified in App. No. 1 - activity 23 (II.14), 36 (II.17), 40 (II.21), 57 (II.22), 58 (II.23), 59 (II.24), 61 (II.38).

Phase of operation

During the operation no adverse impacts on soils are anticipated.

6.5. SURFACE WATER

Phase of implementation

The impact of the Works Contract on surface water is ralated mainly to the construction works period.

A very important hazard to surface water is contamination of the ground and water environment with substances harmful for the environment, including oil derivative substances caused by emergency leakage of motor fuels from machine engines or means of transport, or spilling of these substances during their warehousing.

In case of an emergency situation, mitigating actions should be taken.

Mitigation measures concerning protection of surface water are specified in App. No. 1 - operation: 23 (II.14), 30 (II.9), 34 (II.15), 35 (II.16), 36 (II.17), 40 (II.21), 48 (II.33), 49 (II.34), 50 (II.35).

Phase of operation

In the embankment operation phase, there will be no danger to surface water.

6.6. GROUND WATER

Phase of implementation

The impact of the Works Contract on ground water is ralated mainly to the construction works period.

A very important hazard to ground water is contamination of the ground and water environment with substances harmful for the environment, including oil derivative substances caused by emergency leakage of motor fuels from machine engines or means of transport, or spilling of these substances during their warehousing.

In case of an emergency situation, mitigating actions should be taken.

Mitigation measures concerning protection of ground water are specified in App. No. 1 - operation: 23 (II.14), 36 (II.17), 40 (II.21), 48 (II.33), 49 (II.34), 50 (II.35).

Phase of operation

In the embankment operation phase, there will be no danger to ground water.

6.7. ACOUSTIC CLIMATE

Phase of implementation

Distribution of noise level around the planned Works Contract, will change along with movement of the area of the works. Under assessment of planned works impact on the acoustic conditions in the areas covered by the protection against noise calculations were carried out.

Mitigation measures concerning protection against noise are specified in App. No. 1 - operation 32 (II.12), 41 (II.27), 42 (II.28), 53 (II.40).

Phase of operation

During this phase, no noise will be exceed above limited level (i.e.for normative time at day LAeq, D = 61 dB for residential single-family buildings areas with permanent or prolonged presence of children and youth).

6.8. NATURE

The conducted study demonstrated that implementation of the Works Contract may result in negative impact in relation to types of habitats and animals species which are the objects of protection, including in the Natura 2000 site. Therefore, it was necessary to indicate mitigation measures.

Contractor’s environmental team prepares necessary materials and requests for obtaining permits for derogations from prohibitions of protection of species of plants, fungi or

animals on the terms and in the mode specified by the NEPA (Act of 16 April 2004). The above-mentioned decisions issued by RDOŚ/GDOŚ are to be requested for by the Contractor.

Mitigation measures of negative impacts have been indicated in Appendix No. 1 - operation: 9 (II.1), 11 (III.6), 12 (II.31), 13 (II.2), 14 (II.7), 19 (II.25), 20 (II.26), 24 (II.6), 25 (II.30), 26 (II.3), 27 (II.4), 28 (II.5), 29 (II.8), 31 (II.10), 33 (II.13), 43 (III.7), 44 (II.32), 57 (II.22) and 60 (II.29).

Implementation of the proposed mitigating measures by the Contractor also requires involvement of various specialists (botanist, entomologist, chiropterologist, herpetologist, and ornithologist) during the implementation of the works.

6.9. CULTURAL LANDSCAPE AND MONUMENTS

In the direct vicinity of the extended embankment there are no historical facilities covered by legal protection. However in the area of planned earthworks, it is possible to find so far unknown and not identified archaeological sites. Mitigating operation concerning culture monuments protection has been indicated in App. No. 1 - measure 45 (IV.5).

If during the works, any archaeological objects not included in the survey are found, the Contractor is required to stop the works at the site of the finding, protect the site, and report this fact to the Provincial Conservator of Historical Monuments in Rzeszów, notifying also the Employer and the Engineer. In this case it will be necessary to conduct archaeological rescue research, following the decision of the Provincial Conservator. The survey will be carried out by the Contractor.

6.10. ORGANIZATION OF THE BACK-UP FACILITIES AND THE CONSTRUCTION SITE

The Contractor, by their own effort, will acquire the area for an arrangement of the back-up facilities and storage yards. Any approval for temporary occupancy must be preceded by a study of its impact on particular environmental elements. When selecting the location for the back up facilities for the construction site, the following aspects should be taken into account:

- examining the area for its ground base, vegetation and ground water table: locate any construction sites on areas free from trees and where the ground water table is below 1.5 m b.g.l.,
- the geological structure of area of construction site location will effectively protect ground water,
- the construction site location will provide convenient access to energy and water supply for social purposes. The access road to the back-up facilities will not hinder access to the nearby buildings,

- locate the construction site only beyond the area of any protected habitats.

In addition, the Contractor has to prepare the construction site organization plan which, apart from the location of the site facilities, will indicate the conditions of its use, including: the location of parks for the construction equipment and other vehicles, the method of soil and water protection against contamination with substances harmful for the environment, the method of draining rain water, the location of the warehouses for construction materials, and the place for municipal waste storage.

From the environmental and social point of view, site facilities are a place of potential adverse effects, due to: possible soil contamination, storing and usage of hazardous materials, fuels and oils, water demand, sewage discharge, electric energy demand, and waste generation. Neighbouring with residential buildings may be a source of potential problems with the local community due to the presence of a large number of employees, especially strangers, who may be a source of sexually transmitted infections.

The construction site organization plan should also contain organizational and functional procedures for the construction site in order to protect the local community. The construction sites must observe the OHS regulations valid in Poland and the European Union and be equipped with sealed sanitary devices for sewage collection. Sewage should be removed to a sewage treatment plant equipped with a drainage station. Waste management procedures must be implemented in accordance with the Act on Waste (minimized generation, segregation or selective collection and storage in appropriate containers and receipt by licensed companies). The Contractor should establish in the offer cost of organizing site facilities and its operation during the implementation of Works Contract.

6.11. REQUIREMENTS REGARDING ACTION PLANS IMPLEMENTATION IN THE CONSTRUCTION PHASE

The Contractor under the specified mitigation measures, included in the decision on environmental conditions, in decision determining requirements for conducting works and in the hereby EMP will prepare and then obtain the Engineer's acceptance, for the following documents necessary for conducting construction:

- Construction site organisation plan, which should contain among other such elements as:
  - *location of the site facilities,*
  - *managing the site facilities,*
  - *securing the site facilities,*
  - *service roads,*
  - *environment protection on the back-up facilities.*

- Waste management plan, which should contain among other such elements as:
  - *encountered and predicted types and volumes of waste,*
  - *means of preventing negative impact of the waste on environment,*
  - *means of waste management with taking into account collection, transport, recovery and treatment of waste,*
  - *type of generated waste and way of its storage.*
- Quality assurance plan, which should contain among other such elements as:
  - *works performance organisation,*
  - *organisation of traffic at the construction site jointly with marking of the works,*
  - *OHS 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 contain among other such elements as:
  - *monitoring hydrological and weather situation,*
  - *conditions for allowing flood 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 transport means needed to conduct rescue actions.*
- Safety and Health Protection Plan, which should contain among other such elements as:
  - *indication of land development elements, which may create safety and health risks,*
  - *information concerning expected hazards, that could occure during performance of construction works, defining the scale and types of hazards and the place and time of occurrence,*
  - *information on separation and marking of places of conducting construction works, according to the hazard type, with reference to environment,*
  - *information on the way of conducting training of employees prior to beginning performance of particularly hazardous works,*
  - *determining the method of storing and transport of hazardous materials, products, substances and preparations at the construction site,*
  - *indication of technical and organizational means of safeguarding against hazards connected with construction works in increased safety risk zones, or in their immediate vicinity, including means of safe and efficient communication, allowing quick evacuation in the case of fire, mechanical failure, and other hazards,*

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

NOTE:

The Contractor, preparing the plans of organization of the construction site, including the Safety and Health Protection Plan, will consider appropriate actions as indicated in the Guidelines of the World Bank[1] concerning protection of health, environment as well as safe-guard policies. Plans of organization of the construction site that will be drawn up by the Contractor will be reviewed and approved by the Engineer.

[1]http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/0,,contentMDK:20120722~menuPK:41392~pagePK:41367~piPK:51533~theSitePK:40941,00.html

7. DESCRIPTION OF MEASURES RELATED TO ENVIRONMENTAL MONITORING

7.1. MONITORING IN THE PHASE OF IMPLEMENTATION OF WORKS

The Contractor should, before the commencement of the works, prepare own monitoring plan that should be correlated to the monitoring plan of the Engineer and other institutions involved in the Works Contract execution. The plan should focus on such environment elements as: the surface of soil, landscape and ground; water, acoustic conditions and nature (habitats, flora, fauna).

- **The surface of soil, landscape and ground**

The area of construction works is located beyond the area of a large intensity of traffic. Therefore, as shown in EIA Report, concentration of heavy metals in soil is at a regular level, typical of this region. It is not suggested to conduct soil tests before and at the stage of execution of construction.

In the case of an emergency situation, (e.g. leakage of oils, lubricants from construction equipment to the ground, spillages of substances harmful for the environment in their storage place) take mitigation measures (up to the ground replacement inclusively).

Monitoring actions related to protection of soils were indicated in App. No. 2.

- **Surface and ground water**

Monitoring of hazard to ground and surface water in the construction phase is intended to identify impact on their quality.

In the case of both surface and ground water, measurements of basic parameters of water indicators should be made in case of their emergency contamination (e.g.leakage of oils, lubricants from construction equipment). The following parameters should be subject to assessment: pH, BZT_5, suspension, turbidity and concentration of oil derivatives.

This applies particularly to works related to drainage of foundation excavation for culverts (lowering of the ground water level).

Monitoring actions related to protection of water have been indicated in App. No. 2.

- **Acoustic climate**

The best approach to control noise level during construction is requirement of using such equipment which meets standards of noise limitations and constant monitoring of its condition, including response to any complaints on inconveniences from the local community.

If the acceptable levels of noise are exceeded, mitigation measures should be implemented by means of periodic control of workplaces. In this case responsibility will be borne by the Contractor.

Monitoring actions related to protection of acoustic climate were indicated in App. No. 2.

- **Nature (habitats/flora/fauna)**

The Contractor must ensure monitoring by the Contractor's environmental team the works' impact on flora/fauna at the stage of their implementation.

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

Involvement of the following specialists is required to implement the site-specific EMP: (i) a botanist (or phytosociologist), (ii) entomologist, (iii) chiropterologist, (iv) herpetologist and (v) ornithologist. Those specialists will be involved in the implementation of mitigation measures the implementation of which will be covered by monitoring (App. No. 2).

7.2. ENVIRONMENTAL MONITORING IN THE OPERATION PHASE

With regard to the **reviewed elements of the environment** the need for planning of monitoring has not been envisaged due to the lack of impact during operation.

8. PUBLIC CONSULTATIONS

8.1. PUBLIC CONSULTATIONS ON ENVIRONMENTAL IMPACT REPORT (2013)

At the stage of the procedure of the environmental impact assessment consultations with participation of the public were conducted by the body issuing the environmental decision i.e. RDOŚ in Rzeszów.

The proceeding conducted from 9th July 2013 to 29th July 2013 included participation of the public - according to Article 79 of Act on making available information on the environment and its protection, public participation in environmental protection as well as environmental impact assessments. Announcement of the Regional Director for Environmental Protection in Rzeszów of 26th June 2013 ref.: WOOŚ.4233.19.2013.GJ-82 on the submitted application and environmental impact report, along with information about conducting assessment of the impact of the Project 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, were made public. It was placed on the bulletin board and on the website of the Regional Environmental Protection Management in Rzeszów, on the bulletin board and on the website of the Municipal Office in Tarnobrzeg as well as in the bulletin board and on the website of the Municipal Office in Sandomierz.

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

Before publication of this decision, the parties have been ensured on possibility of expressing opinions on the gathered evidence, in accordance with Article 10 of the Code of Administrative Proceedings by means of publishing Announcement of the authority dated 6th August 2013 ref. : WOOŚ.4233.19.2013.GJ-88 in the area of implementation of the Project, in the seat of Office of the City of Tarnobrzeg and Sandomierz, as well as in the seat of the authority.

Neither party to the proceedings used the possibility to issue an opinion, with regard to the collected evidence and materials on the basis of which will be issued the decision on environmental conditions of implementation for the above Works Contract.

8.2. PUBLIC CONSULTATIONS ON ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (2015)

Upon providing a draft ESMF on 19th February 2015, an electronic version of this document has been posted on the website of Podkarpacki Board of Amelioration and Hydraulic Structures in Rzeszów (www.pzmiuw.pl). A printed document has also been provided for review in the seat of this institution. ESMF draft has also been posted on the website of OVFM PCU (http://www.odrapcu.pl/en_popdow_dokumenty_RPZSiSS.html) and of the World Bank.
Detailed information about all aspects of these consultations are on the web site:
http://www.odrapcu.pl/doc/OVFMP/ESM_Annex_08_Public_disclosure_EAMF_reports.pdf

8.3. PUBLIC CONSULTATIONS ON EMP (2016)

In accordance with operational policy OP 4.01, the disclosure of the draft of Environmental Management Plan (EMP) started on June 28th 2016, when public consultations were announced in local supplement of “Gazeta Wyborcza” (daily newspaper with nationwide coverage).

A public announcement invited the public, authorities and relevant institutions to have an insight into the draft of EMP for the Works Contract 3.B3. EMP was made public from June 28th 2016 to July 12th 2016, (i.e. for 10 working days), on the web sites of:

- PZMiUW at the web address – www.pzmiuw.pl,
- Municipal Office in Tarnobrzeg at the web address – www.tarnobrzeg.pl,
- Project Coordination Unit at the web address – www.odrapcu.pl.

In addition, information on the EMP public disclosure (personal invitations) was sent to the public institutions interested in Project implementation.

Printed version of the EMP Draft was available for review in the office of:
Podkarpacki Board of Amelioration and Hydraulic Structures in Rzeszów, 9 Hetmańska Str., 35-959 Rzeszów on working days from 8.30 a.m. to 2.30 p.m,
Podkarpacki Board of Amelioration and Hydraulic Structures in Rzeszów, Department in Tarnobrzeg, 86 Sienkiewicza Str., 39-400 Tarnobrzeg on working days from 8.30 a.m. to 2.30 p.m.

Within the 14 days period which allows for the questions to the publicized Draft of Environmental Management Plan, no questions or motions have been received. However, there was a great public interest in this document. Several people appeared in person at Department of PZMiUW in Tarnobrzeg to review hard copy of EMP. Downloading of the document from the websites indicated in the notification has been observed. The attention of those people was focused primarily on obtaining the information regarding the scope of works.

On the July 12th 2016 at 4:30 p.m. in the Conference Room of Municipal Office in Tarnobrzeg, 32 Kościuszki Str. an open public meeting was held on the public consultation on the Draft of Environmental Management Plan (EMP) for the Works Contract 3.B3 "Flood protection Tarnobrzeg - stage 1 (Wisła 1)" implemented within the Odra-Vistula Flood Management Project.

The public debate was opened by Mrs. Marta Rak, Consultant representing Joint Venture Sweco Consulting Sp. z o.o./ Sweco Nederland B.V./ Artelia Ville & Transport SAS/Artelia Sp. z o.o. /Ekocentrum Sp. z o.o. After a brief greeting, she presented the purpose and plan of the meeting. Furthermore, she encouraged the participants to ask questions and to take prepared forms for ask questions in writting.

The participants have also been greeted by PhD Eng. Bogdan Nowak, Deputy Project Director from Project Coordination Unit.

Furthermore, Mrs. Marta Rak presented Power Point presentation of the Draft of Environmental Management Plan (EMP) for the Works Contract 3.B3 "Flood protection Tarnobrzeg - stage 1 (Wisła 1)" – she informed the audience about the purpose and contents of the Environmental Management Plan prepared in accordance with the requirements of the World Bank, as well as information on implemented Works Contract 3.B3 i.e. its location, the project alternatives, environmental impact both during the implementation, as well as in the operating period. During the presentation, Mrs. Marta Rak paid special attention to the mitigation measures, the scope of monitoring and obligations arising from them during the execution of Works Contract to the Contractor, the Engineer (the Consultant) and the Investor, also in the period after Project's implementation.

Then, Mrs. Marta Rak encouraged the participants to ask questions, asked the audience for questions, concerns and comments that need clarification, by writing them down on the prepared forms.

Remarks and motions handed over during debate were 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. ORGANIZATIONAL STRUCTURE OF EMP IMPLEMENTATION

The Project including Works Contract 3B.3, being the subject of this EMP is a part of Odra-Vistula Flood Management Project co-financed from the funds of the World Bank. Therefore, the structure of supervision over implementation of EMP must correspond to both regulations of Polish law and the requirements of the World Bank.

9.1. ODRA-VISTULA FLOOD MANAGEMENT PROJECT COORDINATION UNIT

Project Coordination Unit (PCU) is responsible for the entire coordination of the OVFM 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 PIUs 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

An entity which is directly responsible for implementing EMP for the Project and monitoring the progress in its implementation is PIU as a regional self-government agency (PZMiUW in Rzeszów).
PIU is a separate organisational unit subordinate supervised by the PZMiUW Director. This structure is transparent and has a high decisive level which increases the effectiveness of the Project implementation.
As part of EMP implementation, PIU 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 PIU 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 Works 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 an effective conduct of the whole Works Contract process (from preparation of the Works Contract to its settlement).

The Engineer will be appointed using QCBS method (quality and cost based selection) in accordance with the Guidelines: Selection and Employment of Consultants by World Bank Borrowers.

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 implementing by the Contractor;
- monitoring of the Contractor's activities;
- checking the quality of construction works and built-in construction products performed by the Contractor, preventing the usage of building materials which are defective and not accepted for use in the construction industry;
- representing PZMiUW in Rzeszów on Site by performing the control of the compliance of the construction process with the Works Contract and the Building Permit, regulations related to environment protection and technical know-how;
- supervision of all issues related to environmental protection by specialists experienced in the field of environmental protection and other Engineer's personnel;
- constant monitoring over proper execution of mitigation measures the adverse environmental impact;
- if necessary, conducting additional tests to verify the reports of the Contractor;

- identifiying problems resulting from harmful environmental impact of implementing construction works and presentation of proposed solutions to these problems;
- verifying and acceptance of construction works being covered or temporary works, participation in tests and technical commissioning of technical installations and devices, as well as the preparation and participation in performing the commissioning activities or finished building and approving them for use;
- confirmation of the works actually completed and the removal of defects, as well as, at the request of the Employer, maintaining control of financial settlements of the construction project.

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' responsibilities within this scope are as follows

- conducting construction works according to the rules specified in EMP, Works Contract conditions and design documentation pursuant to applicable legal provisions and requirements of administrative decisions issued for the Works Contract;
- 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 a Safety and Health Protection Plan, 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 PZMiUW in Rzeszów 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 PROCEDURES

The implementation of EMP will allow the parties involved in the preparation, performance and supervision of Works Contract 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 Works Contract, in particular:

- a risk to ignore the environmental protection issues during the process of implementation of the Works Contract by Contractor;
- 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 Employer.

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

- Prior to the commencement of the next stage of works implementation the nature survey within the Works Contract impact shall be performed.
- During the implementation of the Works Contract constant environmental team shall be ensured.
- Constant monitoring and maintenance in good working order of all devices during operations shall be ensured.
- RDOS in Rzeszowie shall be informed about the dates of works commencement and completion.
- Information on the decisions concerning the method and scope of the performance of mitigation measures, and also documents confirming the participation of specialists (e.g. memorandum of understanding and/or a declaration of a specialist confirming the proper performance of activities) should be submitted to the Regional Director for Environmental Protection in Rzeszów together with the reports mentioned above.

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. 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 Contractor 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 Works Contract 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 Works Contract 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 Rzeszów (only within the scope required by the environmental decision),
    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 Works Contract completion,
    b) Engineer: 1 copy of each report in an electronic version for 5 years from the date of the Works Contract completion,
    c) Employer: 1 copy of each report in an electronic version for 5 years from the date of the Works 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) by the Engineer. Providing the Employer with reliable information on the course of the construction process, including the fulfilment 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 Works Contract execution for the works (Engineer's Report),
- ongoing evaluation: Engineer's quarterly reports,
- *ex-post* evaluation:
    - ✓ Report upon the completion of the Works Contract performance (EMP final reports 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

1. Environmental impact report for the Project entitled*: Extension of the right bank of the Vistula River at km 5 + 950 - 15 + 819 from Tarnobrzeg (Skalna Góra) to Koćmierzów (the border of Podkarpackie and Świętokrzyskie Province)* - provided by the Design Group DERING 81-572 Gdynia, ul. Świerkowa 36/3, January 2012. (author's team: MSc. Eng. Maria Dering-Głuszkiewicz, MSc, Eng. Alina Rachwał, MSc, Eng. Agnieszka Mydłowska, MSc, Eng. Agnieszka Mydłowska, MSc, Eng. Michał Mydłowski).
2. Supplementation of the report of environmental impact of the Project covering the documents from: May 2012, July 2012, September 2012, January 2013, May 2013.
3. Acoustic analysis, entitled: Influence of truck traffic on the communal road in the area of extension of the right Vistula embankment at 5 + 950 -15 + 819 km from Tarnobrzeg (Skalna Góra) to Koćmierzów on the acoustic conditions in the environment, preparation: Stempus Witold Ziółkowski, May 2013
4. Decision on environmental conditions (ref. no. WOOŚ.4233.19.2013.GJ-95) for the concerned Project Wisła - Stage 1 - Extension of the right bank of the Vistula River at km 5 + 950 - 15 + 819 on the section from Tarnobrzeg (Skalna Góra) to Koćmierzów (the border of Podkarpackie and Świętokrzyskie Province), issued by RDOŚ in Rzeszów,
5. Decision stipulating the requirements for conducting the works for the project entitled: WOOŚ.4233.19.2013.GJ-95) for the concerned Project Wisła - Stage 1 - Extension of the right bank of the Vistula River at km5 + 950 - 15 + 819 on the section from Tarnobrzeg (Skalna Góra) to Koćmierzów (the border of Podkarpackie and Świętokrzyskie Province), issued by RDOŚ in Rzeszów,
6. Construction project for the task Wisła - Stage 1 - Extension of the right embankment of the river on the km 5 + 950 - 15 + 819 section from Tarnobrzeg (Skalna Góra) to Koćmierzów (the border of Podkarpackie and Świętokrzyskie Province), provided by the Group Design DERING 81-572 Gdynia, ul. Świerkowa 36/3, December 2012.
7. Characteristics of Task Planned for Execution within the Odra-Vistula Flood Management Project, Document Prepared by PZMiUW in Rzeszów.
8. World Bank Operational Policy OP 4.01 – Environmental Assessment (http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTOPMANUAL/0,,contentMDK:20064724~pagePK:64141683~piPK:64141620~theSitePK:502184~isCURL:Y~isCURL:Y~isCURL:Y~isCURL:Y~isCURL:Y,00.html)

9. Environmental and Social Management Framework, final document, April 2015 (http://www.odrapcu.pl/doc/OVFMP/Ramowy_Plan_Zarz%C4%85dzania_Srodowiskiem_i_Spo%C5%82eczenstwem.pdf)
10. Poland - Odra-Vistula Flood Management Project: environmental and social management framework (http://documents.worldbank.org/curated/en/2015/04/24502899/poland-odra-vistula-flood-management-project-environmental-social-management-framework).
11. Website: http://www.odrapcu.pl/popdow_dokumenty.html.

APPENDICES

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