

# ENVIRONMENTAL MANAGEMENT PLAN

## FINAL VERSION

**ODRA-VISTULA FLOOD MANAGEMENT PROJECT – Loan Agreement no. 8524 PL**

Environmental category B – in accordance with WB OP 4.01

### **Component 3:**

Flood Protection of the Upper Vistula

### **Subcomponent 3A:**

Flood Protection of Upper Vistula Towns and Kraków

### **The Works Contract 3A.3:**

Section 4 - Right embankment of the Vistula from the Skawinka estuary to the Kościuszko  
barrage

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## ODRA-VISTULA FLOOD MANAGEMENT PROJECT

co-financed by:

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## **ENVIRONMENTAL MANAGEMENT PLAN**

### **Subcomponent 3A:**

### **Flood Protection of Upper Vistula Towns and Kraków**

#### **3A.3 Section 4 - Right embankment of the Vistula from the Skawinka estuary to the Kościuszko barrage**

Environmental category B – according to OP 4.01 WB

#### **Project Implementation Unit:**

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AECOM Polska Sp. z o.o.

Technical Assistance Consultant

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**ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE**

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**LIST OF DEFINITIONS AND ABBREVIATIONS APPLIED IN THIS EMP**

<b>Name</b>	<b>Description</b>
BIOZ Plan	Health and Safety Plan developed based upon Article 21a item 4 of the Act of July 7, 1994 – Building Law Act
BGW	Body of Groundwater
BSW	Body of Surface Water
BOD <sub>5</sub>	Biochemical oxygen demand during 5 days
CE	Contract Engineer
CEB	Council of Europe Development Bank <a href="https://coebank.org/en/">https://coebank.org/en/</a>
Consultant / Engineer / Consultant Engineer	Company or legal person providing services for the Investor Technical Assistance Consultant for the OVFMP – AECOM Polska Sp. z o.o.
Contractor	Company or a legal person implementing the Works Contract 3A.3 Section 4 - Right embankment of the Vistula from the Skawinka estuary to the Kosciuszko barrage
Designer	Company or a legal person drawing up the design documentation
EIA	Environment Impact Assessment
EMP	Environmental Management Plan
Environmental Decision (ED)	Decision on environmental conditions
ESHS	Environmental, Social, Health & Safety
ESMF	Environmental and Social Management Framework <a href="http://www.odrapcu.pl/doc/OVFMP/Ramowy_Plan_Zarzadzania_Srodowiskiem_i_Spoleczenstwem.pdf">http://www.odrapcu.pl/doc/OVFMP/Ramowy_Plan_Zarzadzania_Srodowiskiem_i_Spoleczenstwem.pdf</a>
GDOŚ	General Directorate for Environmental Protection
MGR	Major Groundwater Reservoirs
H&S	Health and Safety
IMGW - PIB	Institute of Meteorology and Water Management – National Research Institute
LA&RAP	Land Acquisition and Resettlement Action Plan
LSDP	Local Spatial Development Plan
MZMiUW	Małopolski Board of Amelioration and Hydraulic Structures in Cracow
PAD	Project Appraisal Document for the World Bank approval of a Loan to the Polish Government to implement OVFMP <a href="http://documents.worldbank.org/curated/en/320251467986305800/Poland-Odra-Vistula-Flood-Management-Project">http://documents.worldbank.org/curated/en/320251467986305800/Poland-Odra-Vistula-Flood-Management-Project</a>
PCU / OVFM	Odra-Vistula Flood Management Project Coordination Unit

**ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE**

Name	Description
PCU	<a href="http://www.odrapcu.pl/">http://www.odrapcu.pl/</a>
PGW WP	State Water Holding Polish Waters
PIO	Project Implementation Office - created within PIU separate organizational unit responsible for the implementation of Works Contract
PIU	Project Implementation Unit
PIU/Investor/ Employer (to December 31, 2017)	Małopolski Board of Amelioration and Hydraulic Structures in Cracow
PIU/Investor/ Employer (from January 1, 2018)	State Water Holding Polish Waters Regional Water Management Authority in Cracow
POM	Project Operations Manual prepared by the Odra Vistula Flood Management Project Coordination Unit, Wrocław 2015 <a href="http://www.odrapcu.pl/doc/POM_PL.pdf">http://www.odrapcu.pl/doc/POM_PL.pdf</a> the binding version is the English one: <a href="http://www.odrapcu.pl/doc/POM_ENG.pdf">http://www.odrapcu.pl/doc/POM_ENG.pdf</a>
Project / OVFMP	Odra-Vistula Flood Management Project
RDOŚ	Regional Directorate for Environmental Protection
Roads authority	Agency responsible for management of public roads in accordance with the Act on public roads
RZGW	Regional Water Management Authority
WIOŚ	Provincial Inspectorate for Environmental Protection
Waste MP	Waste Management Plan
Contract/ Works Contract	<b>Works Contract 3A.3 Section 4 - Right embankment of the Vistula from the Skawinka estuary to the Kosciuszko barrage</b>
World Bank (WB)	International Bank for Reconstruction and Development <a href="http://www.worldbank.org/">http://www.worldbank.org/</a>

**ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE**

**LIST OF ABBREVIATIONS FOR TITLES OF LEGAL ACTS APPLIED IN THIS EMP**

Titles of legal acts quoted within contents of this EMP are given in their abbreviated form. Full titles of legal acts are given in the table below.

<b>Title in the text</b>	<b>Full title (with publication reference)</b>
<i>APC</i>	Act of June 14, 1960 - Administrative Procedure Code (consolidated text: Journal of Laws of 2018, item 2096, as amended).
<i>BIOZ Regulation</i>	Regulation of the Minister of Infrastructure of June 23, 2003 on Information Concerning Safety and Health Protection and Safety and Health Protection Plan (Journal of Laws of 2003, No.120, item 1126)
<i>Building Law Act</i>	Construction Law (consolidated text: Journal of Laws of 2018, item 1202, as amended)
<i>EIA Act</i>	Act of October 3, 2008 on providing information on the environment and its protection, public participation in the environmental protection, and on environmental impact assessments (consolidated text, Journal of Laws of 2018, item 2081, as amended)
<i>EIA Regulation</i>	Regulation of the Council of Ministers of November 9, 2010 on Works Contracts likely to have significant impact on the environment (consolidated text, Journal of Laws of 2016, item 71)
<i>NC Act</i>	Act of April 16t, 2004 on nature conservation (consolidated text, Journal of Laws of 2018, item 1614, as amended)
<i>Water MP</i>	Regulation of the Council of Ministers of October 18, 2016 on Water Management Plan for waters within the Vistula River Basin (Journal of Laws 2016, item 1911)



# ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE

## Summary

This document presents the Environmental Management Plan (EMP) for the Works Contract 3A.3 *Section 4 - Right embankment of the Vistula from the Skawinka estuary to the Kościuszko barrage*, which remains a part of Subcomponent 3A implemented within Odra-Vistula Flood Management Project, co-financed by the International Bank for Reconstruction and Development (also referred to as the World Bank), the Council of Europe Development Bank, and also by grants awarded by the European Union Cohesion Fund and by the State Budget.

This EMP includes the following elements:

- Brief description of the OVFM Project (Section 1.1).
- Institutional, legal and administrative conditions for implementation of the Works Contract, including binding state legal acts on environmental protection, main stages of the EIA procedure, and the course of EIA procedure for the Works Contract (Section 3).
- Description of individual elements of the environment in the area of the Works Contract (Section 4).
- Summary of the environmental impact assessments (Section 5).
- Description of mitigation measures to be implemented by the Contractor and by the PIU at the stage of implementing the Contract, which aim at elimination or limitation of the potential adverse impact of the Works Contract on the environment (Section 6), along with a tabulated form for those measures (Appendix 1 – Plan of mitigation measures).
- Description of environmental monitoring measures at the stage of developing, implementing and operating the Works Contract (Section 7), including a tabulated form for those measures (Appendix 2– Plan of monitoring measures).
- Description of the course and results of public consultations on the stage of environmental impact assessment and on the stage of developing this EMP (Section 8).
- Description of the organizational structure for implementation of the EMP (Section 9).
- Implementation schedule and description of reporting procedures (Section 10).

Appendices to the EMP 3A.3 *Section 4 - Right embankment of the Vistula from the Skawinka estuary to the Kościuszko barrage* include check lists of the Plan of mitigation measures (Appendix 1) and of the Plan of monitoring measures (Appendix 2), the list of national legal acts related to environmental protection (Appendix 3), the environmental decision, resolutions, permits, notes (Appendix 4), and drawings showing the location of the proposed Works Contract (Appendix 5), a map presenting location of areas protected in reference to elements of the Contract (Appendix 6), a map presenting areas under potential flood threat (Appendix 7), a map of areas excluded from the potential flood threat due to implementation of the Works Contract (Appendix 8) and a map with location of the Works Contract's elements (Appendix 9).

## **ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE**

A basis for the development of this EMP were the following materials: ESMF, PAD, POM, WB operational policies, investment data sheets, issued environmental decision, environmental impact report, and design documentation.

### ***Need for Contract Implementation***

The reason for implementation of the Contract is the need to increase flood safety and limit flood damage for the area situated along the right bank of the River Vistula from the Skawinka estuary to the Kościuszko barrage, and protection of built-up developed areas and limitation of flood damage in the discussed area through the increase and extension of the existing embankment.

The Contract comprises extension (the embankment body shall be raised and extended) and modernization (development of technical protection, e.g. anti-filtration protection) of the existing section of the Vistula flood embankment. The current technical condition of the embankment, its parameters and filtration reducing capabilities are insufficient.

The Works Contract in question was included on List no. 1 under item "ID 1\_671\_W" (ordinal no.: 997) of Appendix no. 2 titled "*Investments which do not adversely affect the achievement of good status of water or which do not deteriorate the status of water*" to the MasterPlan for the Vistula River Basin (2014)<sup>1</sup>.

### ***Location of Contract***

The Contract is located within Małopolskie Province:

- District of the City of Cracow, Commune: City of Cracow;
- District of Cracow, Commune: Liszki, area of: Kryspinów and Piekary.

### ***Scope of Contract***

The Contract includes extension of the right-side embankments of the River Vistula from the Skawinka estuary to the Kościuszko barrage over a total length of 3.884 km. The embankment body shall be raised and extended within 3 sections at chainage from km 60+325 to km 61+662 (river chainage km 59+735 – 62+000), from km 62+017 to km 63+183 (river chainage km 63+080 – 63+865), from km 63+779 to km 65+160 (river chainage km 64+211 – 66+300). The embankment body shall be extended as an earth-fill embankment; the embankment crest shall be raised at chainage from km 63+153 to km 63+183 through construction of a reinforced-concrete wall over a length of 30 m.

Embankment shelves behind the embankment and in the embanked area (mostly passable), technological and service roads in the embanked area, and also technological lanes behind the embankment and in the embanked area shall be developed under the planned Works Contract. It is also expected to construct entries and exits, and to extend embankment crossings and construct a road culvert and a maneuvering yard on the embankment crest. Roads on the embankment crest, at embankment crossings and exits, and technological roads on embankment shelves shall be hardened using aggregate or asphalt. The existing embankment culverts shall be extended and a new embankment culvert shall be constructed

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<sup>1</sup> See: description in footnote for Chapter 2.2.

## **ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE**

to replace the existing one at chainage km 63+115. Slope stairs shall be developed at culverts, and amelioration dikes shall be redeveloped. Demolition works shall be performed to the: existing descend road to the embanked area, existing embankment culvert, existing slope stairs, and embankment objects to be extended. Anti-filtration membrane shall be developed in the embankment's subbase at its riverside foot, and a sectional anti-filtration membrane shall be constructed at the embankment crest. The embankment body shall be locally protected through sealing with bentomat. Earthworks shall be done at levelling of land in the embanked area, and locally behind the embankment.

Detailed technical solutions were given in Section 2.2.

Due to implementation of the planned Works Contract greenery colliding with the Works Contract shall be removed. It is expected that about 63 trees will be felled and about 3195 m<sup>2</sup> of shrubs cut out. Geodetic control network spots and hectometer posts shall be redeveloped. The area of planned Works Contract shall be finished in the final phase through top-soiling and sowing with a mix of grass.

### ***Current conditions of environmental elements surrounding the Contract***

As a result of works done by the team of specialist to identify values of the natural and cultural environment during the development of EMP and during earlier works associated with the development of environmental documentation and the obtainment of administrative decisions, it has been identified that the area located within the Contract implementation boundaries is characterized by the following local and supra-local conditions:

- Presence of protected species of plants, protected habitats, fungi, lichens, mosses was not identified in the area of direct Works Contract impact, i.e. within the embankment and in the directly adjacent area;
- 25 species of birds were identified within the inspected area, including 2 unprotected species (birds of prey), 4 species under partial protection, and 19 species under strict protection;
- Three species of amphibians were identified within the inspected area, i.e. common toad, edible frog, and pool frog, and two species of reptiles, i.e. grass snake and sand lizard. The aforementioned species are strictly protected;
- In case of protected species of invertebrates only bumblebee was identified;
- The analyzed Works Contract is located within the Bielańsko–Tyniecki Landscape Park,
- Embankment at Task no. 2 reaches a hill, where a historic object is located: St Benedict's Abbey in Tyniec. In accordance with an opinion of the Heritage Conservator, the Works Contract is not located within the area entered to the Malopolski Heritage Register, and it does not collide with the relics of earth defenses existing within the aforementioned area. The Conservator issued a positive opinion for the Works Contract and imposed relevant conditions upon the Investor.

Due to the applied restrictions with regard to land acquisitions on the water-side as well as on the land-side of the embankment and due to mitigation measures, the works under the Contract will not have significant adverse impact on the environment and on cultural heritage. This EMP was developed in accordance with the World Bank's operational policy OP 4.01.

## **ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE**

The EMP includes a plan of measures mitigating adverse environmental impact during the works, as well as a monitoring measures plan. Plan of mitigation measures and the Plan of monitoring measures are included in Appendix No. 1 and Appendix No. 2 to this EMP.

### ***Summary of the major adverse impacts during implementation of the Contract***

#### **Impact on earth surface, soils, and grounds**

There will be no significant changes to either the topography or the use of the area as a result of the Works Contract implementation. After the Works Contract implementation the majority of the agricultural land will retain its current use. Minor land acquisition and interference in soil environment will only take place in a strip immediately adjacent to the existing embankment, due to the necessity to remove or at least disturb top layer of soil. The area will be reinstated to its original condition on completion of the Works. There will be no significant adverse impact on the ground surface as a result of the Works Contract implementation. The permanent transformation of the ground surface and the landscape will only occur as a result of the necessary felling of selected trees and shrubs in the embanked area and in the area beyond the embankment, as well as due to structural changes to the embankment, i.e. crest raising, extension of the embankment base. However, those shall be minor modifications in view of general landscape perception.

#### **Impact on air condition and climate**

The source of impact of the analyzed Works Contract on the air will be the works involving construction equipment, vehicles and diesel machines causing emission of gas and dust pollutants, and as a consequence increasing the pollution rate in the air. The range of emission will correspond to the area of construction works and to the route of access roads and technological roads. Its scale will be subject to the number of vehicles and equipment used on the Construction Site, their working time, and also technical condition. It will also depend on the organization of Works (optimization of the use of equipment, performance), as well as the organization of the Construction Site and access roads (route optimization, location of site facilities). The emission shall have local and temporary character. It will completely cease at the completion of construction works. Small spatial reach of the Contract results in the fact that the subject Works Contract shall not adversely affect local and regional climate conditions.

#### **Impact on surface and ground waters**

The Works Contract implementation will not involve interference in the riverbed of Vistula or other still water reservoirs; therefore no direct significant impact on surface water is expected. The impact may only result from failures causing incidental spills of fuel or other harmful substances (diesel or grease), as well as from poorly organized water and sewage management, or improper collection and protection of waste, which may cause a release of pollutants into surface water. The Works Contract will not involve direct discharge of sewage to surface water, will not cause disturbance to normal flow of water in nearby rivers, and will also not change the morphology of watercourses or still water reservoirs.

The Works Contract will not jeopardize the achievement of environmental objectives for bodies of surface water described within the frame of update of "Water Management Plan waters within for the Vistula River Basin" - Sidzinka (PLRW200016213572) and BSW Wisła od Skawinki do Podłężanki (PLRW2000192137759).

## **ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE**

At the stage of the construction works no significant adverse impact on the circulation or quality of groundwater is anticipated. It is not planned to mechanically lower the groundwater level or to carry out works which could significantly affect water conditions, e.g. through significant change in infiltration conditions. The activity which could affect water circulation is e.g. a sectional removal of top-soil, which remains one of the factors affecting infiltration of rainwater. However, the impact on the total hydrogeological condition will be minimal. Emission during the implementation stage of generally little amounts of pollutants to soil and water environment can only occur, when the Contractor fails to meet standard environmental protection requirements applied on the construction stage, e.g. improper storage of waste, improper sewage management at Site Facilities, use of motor vehicles and construction machines and devices against their purpose or outside of designated areas (e.g. traffic of vehicles outside of designated roads, parking lots or maneuvering site) or as a result of exceptional events, such as equipment failure, road accidents, adverse weather conditions or natural disasters. Maintaining environmental protection standards, H&S standards, and compliance with Environmental Decision's provisions, as well as with the EMP, will not affect the quantitative and qualitative status of Bodies of Groundwater – BGW 147 and BGW 148 during the contract implementation. It will not jeopardize reaching the environmental objectives specified for bodies of groundwater under the updated "Water Management Plan for waters within the Vistula River Basin".

### *Impact on acoustic climate*

The source of the acoustic nuisance on the contract implementation stage may be the construction works involving vehicles and equipment. They may occur only during the daytime, in the area limited to the Construction Site, its immediate vicinity, and roads used for transportation. Those nuisances shall not affect the health of the residents and of the land users; however, they may contribute to disturbance of animals in nearby habitats. There will be no permanent adverse impact changing the acoustic climate. The acoustic nuisance will cease at completion of construction works.

### *Nature*

Performance of the planned construction works is associated with the impact of Works Contract on vegetation and fauna. The most important potential threats to animals during the construction works include the loss of habitats due to land acquisition for the Works Contract (habitats of invertebrates, birds, amphibians, reptiles, and mammals), what would be associated with felling of trees, shrubs and low vegetation necessary for the Works Contract, as well as with direct disturbance of the active layer of soil, which would cause the loss of occupied habitats. Possible impact of the subject Works Contract on amphibian and reptile habitats is related to the temporary limitation of their free migration and deterioration of the quality of the habitat due to acquisition of land in the embanked area, and to the creation of barriers in a form of service roads. An indirect impact might be the deterioration of the habitat quality due to possible pollution of some environmental components (soil, air).

The Works Contract implementation will not cause degradation of the natural layer of the river valley. Use of the subject site in the river area and its immediate vicinity will practically not change as a result of Works Contract implementation. The river side and its surrounding areas will retain their biological functions.

## **ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE**

Adverse impact on ichthyofauna is not anticipated due to substantial distance of the Construction Site from the Vistula Riverbed.

As a result of implementation of the mitigation measures described in Appendix No. 1 to this EMP for Contract 3A.3 (Plan of mitigation measures), effects of all significant and foreseeable threats to the environment due to the Contract implementation shall be limited.

### *Impact on the cultural environment, archaeological sites*

In the scope of works planned for Task no. 2 the Contract borders on one protected object (St Benedict's Monastery in Tyniec). Despite the small distance to the object, presence of adverse impact on protected elements is not expected on the implementation stage. Technical solutions proposed in the design documentation have been selected to limit the earthworks in the area of the Monastery to the minimum. The Heritage Conservator issued a positive opinion for the Works Contract and informed some conditions, which shall be observed during the performance.

### *Health and Safety for People*

The analyzed Contract does not generate significant risk for the health and safety of people. It may only occur in case of a failure or other random events, e.g. fire, leakage of pollutions, identification of unexploded shells and misfires, hazard for third parties related to the performance of construction works (e.g. excavations, traffic of machines and vehicles), flood risk, etc. This EMP determines proper conditions to prevent the occurrence of events of those types and to minimize potential effects.

### *Other ESHS hazards*

Regardless of the ones listed above, such ESHS related types of issues or hazards as accidents and near misses, cases of sexual harassment or mobbing, cases of labour law violation, cases of sexually transmitted diseases, including HIV/AIDS, and others, may occur during implementation of the Contract. This EMP determines relevant conditions to prevent hazards of those types and to efficiently react to the cases of their occurrence.

### *Cumulative impact*

Impact associated with the works to extend the Right embankment of the River Vistula within the discussed sections might have cumulated, if another Works Contract would be implemented in the neighborhood. However, contracts in the phase of implementation or planning, which may in any way affect the occurrence of cumulative impact, have not been identified within the Contract implementation area or within the areas, where it shall exert impact.

## ***Summary of major adverse impact on the Contract's operational stage***

### *Impact on earth surface, soils, and grounds*

In the course of operation there will be no physical interference in the embankment's structure. There will be no new structures on the embankment's surface or in its vicinity. Periodic mowing of grass on the embankment's slopes and works associated with maintenance and conservation of roads and technological lanes will be the main maintenance actions. The extended embankment shall not form a landscape dominant in terms of height. Implementation of the contract shall not modify the land function, and shall

## **ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE**

neither affect the use method for surfaces within the Works Contract boundaries nor in its vicinity.

### *Impact on air condition and climate*

The only source of unorganized emission on the operation stage shall be diesel engines of the equipment (vehicles, mowers) used during periodic mowing of grass and of vehicles used on the technological road to maintain or inspect the condition of the embankments. Due to the minor scale that emission will not affect the air quality significantly.

### *Impact on surface water and on groundwater*

During the operational stage the Works Contract will not cause changes to the hydrological regime of Vistula or other rivers. The Works Contract shall not adversely affect the groundwater. Circulation of water shall not change in relation to the current state. The functioning of the flood embankment, including the necessary conservation and maintenance works, will not cause emission of pollutions to the ground and to surface water and groundwater, and will not pose other type of threat to the soil and water environment.

### *Acoustic impact*

At periodical mowing of plants on slopes of the embankment, minor noise emission shall occur, and its source would be operations of devices applied for the purpose of those works. However, this emission shall not be nuisant.

### *Nature*

No adverse impact on habitats or protected species of animals is anticipated on the operational stage.

### *Impact on the cultural environment*

Utilization of the embankment shall not affect historic objects adversely. The use of embankment itself is a positive impact increasing the safety level for the historic objects located in the areas protected against flooding.

### *Cumulative impact*

The use of embankments shall not cause accumulation of adverse impacts.

### ***Limiting adverse impact and strengthening of favorable impact***

Main environmental impacts will take place over the time of the Contract implementation. During that time numerous measures shall be undertaken to mitigate or to eliminate adverse impact (Appendix 1 to the EMP– Plan of mitigation measures), aiming at the following:

- 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 diesel products, such as fuels, lubricants, etc., provision of site facilities and staff facilities);
- protection against noise: works conducted only from 06.00 am to 10.00 pm, use of efficient construction equipment;
- removal of trees and shrubs (logging) only in the necessary range and conducting it beyond the bird hatching season;

## **ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE**

- prior to the commencement of earthworks, within the indicated deadline, one shall inspect the occurrence of protected animal species, and the removed humus layer shall be placed beyond the work area – for application during reclamation works;
- in case of identifying seasonal migration of amphibians, apply solutions protecting against mortality (due to the works performed and the traffic of vehicles) of animals migrating to and from breeding grounds (e.g. fencing of habitats for amphibians on the construction site's side with hurdles and moving the animals to the area beyond the Works Contract);
- at the stage of Contract implementation monitor barriers or traps, and transfer the animals to the area beyond the Works Contract.

### ***Essential monitoring***

The monitoring measures plan is specified in Appendix 2 to the EMP– Plan of monitoring measures. The monitoring measures Plan includes all the provisions included in the Environmental Decision issued by RDOŚ in Cracow, which has been presented in Appendix 4 to the EMP– Decisions, resolutions, permits, and notes. The monitoring measures Plan will enable ongoing control over the proper implementation of all mitigation measures.

### ***Conclusions from the review of possible social conflict***

It is possible that there will be social conflicts arising due to e.g. inconvenience for residents of the surrounding areas mainly on the Works Contract implementation stage related to adverse impact of the construction works and transport (noise, vibration, air pollution). However, in general, the overriding objective of the Contract, which is the reduction of the flood risk, should compensate for any inconvenience during the construction stage. The negative effects of damage to the embankments occurring during the past floods and flooding of the floodplains will justify the economic aspect for the Contract and cause widespread social acceptance of the local authorities, residents, property owners and users of land, where or in the vicinity of which the construction works are or will be performed. The argument for the favorable attitude towards the Contract is also a very small interference in the natural environment.

### ***Legal context of the Contract***

This Contract is qualified to so-called Group II, in accordance with the EIA Regulation. In the Decision dated September 16, 2014 the Regional Director for Environment Protection in Cracow imposed the obligation to provide the Environmental Impact Assessment for the Contract and determined the scope of the report. After submission of the Environmental Impact Report for the Contract by the Investor - MZMiUW, RDOŚ in Cracow conducted a proceeding on the environmental impact assessment, with the public participation. On May 20, 2015 RDOŚ in Cracow issued the decision on environmental conditions, in which it determined conditions for implementation of the Contract regarding environmental protection.



## **1 Introduction**

This paper presents the Environmental Management Plan (EMP) for the Contract 3A.3 *Section 4 - Right embankment of the Vistula from the Skawinka estuary to the Kościuszko barrage*, which remains a part of Subcomponent 3A implemented within Odra-Vistula Flood Management Project (OVFMP), co-financed by the International Bank for Reconstruction and Development (World Bank), the Council of Europe Development Bank, and also by grants awarded by the European Union Cohesion Fund and by the State Budget.

### **1.1 Odra-Vistula Flood Management Project**

The main objective of the OVFM Project is the protection of people residing within flood plains located at selected parts of river basins of two biggest Polish rivers – Vistula and Odra – against hazards caused by extreme floods. The OFVMP expects implementation of the most urgent flood protection Contracts.

3 Works Contract Components were considered under the Project, and they cover actions associated with the: Protection of the Middle and Lower Odra River (Component 1), Flood Protection of the Nysa Kłodzka Valley (Component 2), and Flood Protection of the Upper Vistula (Component 3).

Component 1 covers various actions implemented within an extensive section of Odra over a total length of about 440 km (so-called free-flow Odra).

Component 2 of the Project shall be implemented within the Kotlina Kłodzka, which covers mountainous and highland sections of the Nysa Kłodzka River Basin.

The objective of Component 3 – Flood Protection of the Upper Vistula – is implementation of measures to limit the hazard associated with flood risk within the selected areas under successive improvements to flood safety within the Upper Vistula River Basin.

Component 3 is divided into the following Subcomponents:

- Subcomponent 3A – Flood Protection of Upper Vistula Towns and Kraków,
- Subcomponent 3B – Protection of Sandomierz and Tarnobrzeg,
- Subcomponent 3C – Passive and Active Protection in Raba Sub basin,
- Subcomponent 3D – Passive and Active Protection in San Basin.

Two other Components shall be implemented under the Project, but they do not contain construction works associated with Works Contract actions, i.e.:

Component 4 Institutional Strengthening and Enhanced Forecasting,

Component 5 Project Management and Studies.

Detailed information on the Project may be found in the Environmental and Social Management Framework published at e.g. websites of the World Bank<sup>2</sup> and of the Odra-

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

## ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE

Vistula Flood Management Project Coordination Unit<sup>3</sup>. A detailed description of the Project is also given in PAD<sup>4</sup> and in the Project Operations Manual<sup>5</sup>.

## 2 Contract Description

Contract 3A.3 Section 4 - Right embankment of the Vistula from the Skawinka estuary to the Kościuszko barrage forms a part of Subcomponent 3A under the Odra-Vistula Flood Management Project.

In accordance with the Contract the planned works comprise the extension including raising and expansion of the embankment bodies within three sections, i.e.:

- Task no. 1 at chainage from km 60+325 to km 61+662 (embankment's register chainage) over a length of 1337 m; km 59+735 – 62+000 (river chainage); maximum raising range for the embankment crest is about 0.65 m;
- Task no. 2 at chainage from km 62+017 to km 63+183 (embankment's register chainage) over a length of 1166 m; km 63+080 – 63 865 (river chainage); maximum raising range for the embankment crest is about 0.4 m;
- Task no. 3 at chainage from km 63+779 to km 65+160 (embankment's register chainage) over a length of 1381 m; km 64+211 – 66+300 (river chainage); maximum raising range for the embankment crest is about 0.4 m.

Furthermore, it is planned to construct or extend descend roads and embankment crossings, including their extension, elongation and connection to the crest of embankments to be extended, under the drafted contract. It is also planned to redevelop/extend or construct embankment objects and anti-filtration membranes (detailed description in chapter 2.2).

An overriding objective of the Works Contract is to improve flood safety for the areas beyond the embankment, i.e. for the City of Cracow and for Skawina, and for areas in their vicinity.

The Project Implementation Unit (PIU) for the Contract is the State Water Holding Polish Waters, represented by the Water management Authority in Cracow with its office at 22. Marszałka J. Piłsudskiego Street, 31-109 Cracow.

### 2.1 Contract Location

The planned contract is located in Poland, within Małopolskie Province, in the area of the City of Cracow (District of the City of Cracow, Commune of the City of Cracow), and localities of Piekary and Kryspinów (District of Cracow, Commune of Liszki).

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<sup>3</sup> [http://www.odrapcu.pl/popdow\\_oprojekcie.html](http://www.odrapcu.pl/popdow_oprojekcie.html);

<sup>4</sup> <http://documents.worldbank.org/curated/en/320251467986305800/Poland-Odra-Vistula-Flood-Management-Project>.

<sup>5</sup> [http://www.odrapcu.pl/doc/POM\\_PL.pdf](http://www.odrapcu.pl/doc/POM_PL.pdf)  
wersja obowiązująca w j. angielskim dostępna jest pod adresem:  
<http://www.odrapcu.pl/doc/POM/ENG.pdf>

**ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE**

The Contract has been divided into three sections:

**Task no. 1: Right embankment of the Vistula River at chainage from km 60+325 to km 61+662 (embankment's register chainage):**

The beginning of the Right embankment of the River Vistula (km 60+325) joins the Right embankment of the River Skawinka, whereas the end of the discussed embankment section (km 61+662) reaches the high bank (Grodzisko Mountain 279.9 m a.s.l.). The embankment runs parallel from south to north. In administrative terms the embankment is located within the City of Cracow (Commune of the City of Cracow).

**Task no. 2: Right embankment of the Vistula River at chainage from km 62+017 to km 63+183 (embankment's register chainage):**

The beginning of the Right embankment of the River Vistula (km 62+017) reaches the high bank (Grodzisko Mountain), whereas the end of the discussed embankment section (km 63+183) reaches a hill, where the St Benedict's Abbey in Tyniec is located. The embankment runs parallel to the River Vistula from south to north-east. In administrative terms the embankment is located within the City of Cracow (Commune of the City of Cracow).

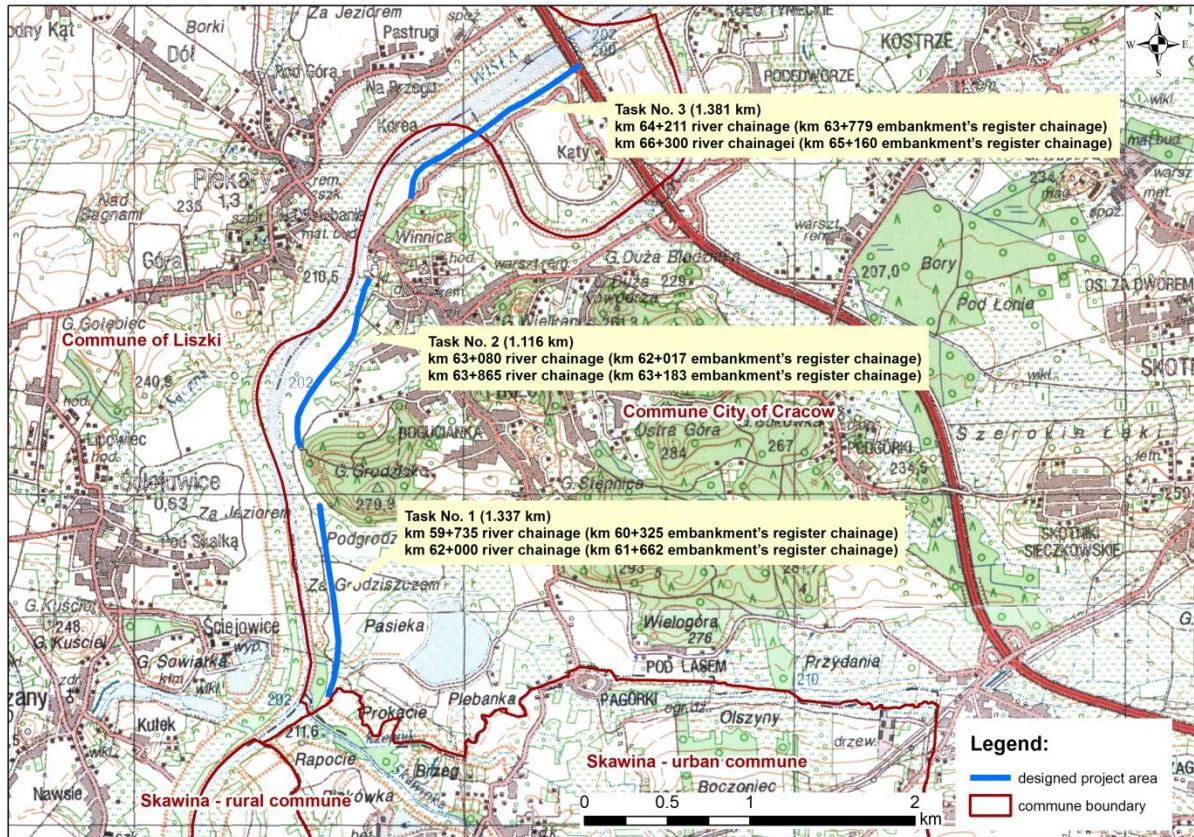
**Task no. 3: Right embankment of the Vistula River at chainage from km 63+779 to km 65+160 (embankment's register chainage):**

The beginning of the Right embankment of the River Vistula (km 63+779) joins land located about 54 m behind the road embankment – Promowa Street (it reaches a road parallel to Promowa Street), whereas the end of the discussed embankment section (km 65+160) joins the road embankment of A4 motorway (at the Kościuszko Water Barrage). The embankment runs parallel to the River Vistula from south-west to north-east. In administrative terms the embankment is located within the City of Cracow (Commune of the City of Cracow) and localities of Piekary and Kryspinów (Commune of Liszki).

The location of contract is presented on a figure given below (Drawing no. 2) and in Appendix 5 to this EMP – Map of Works Contract Location.

# ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE

Drawing no. 1. Contract location



Source: own materials.

The Works Contract area is formed by farmland and meadows with buffer strips (shrubs and groups of trees). The following are currently located there (in accordance with extracts from land registers): permanent pastures (PsIII, PsIV, PsV), forested and shrubbed lands (LzIV), some forests (LsIV) and arable land (RII, RIIIa, RIIIb, RIVa), permanent meadows (ŁIII, ŁIV, ŁV) and various areas (Tr), and grounds underneath ponds (WsrIV), roads (dr), ditches (W) and wasteland (N).

## 2.2 Specificity of objects comprised by the Contract

The discussed embankment objects, i.e. the Right embankment of the Vistula River at chainage from km 60+325–61+662 (river chainage 59+735–62+000), 62+017–63+183 (river chainage 63+080–63+865), 63+779–65+160 (river chainage 64+211–66+300) perform and shall perform – in the operational plan – the function of flood protection for floodplains. The objective of this Contract is to improve flood protection for the area beyond the embankment.

The Works Contract has been divided into three sections (Task no. 1, Task no. 2, and Task no. 3), in accordance with chainage informed above. The total length of embankment sections to be extended – it is raising and extending the embankment body – is about 3 884 m.

In reference to the environmental screening described in the Environmental and Social Management Framework for the OVFM Project the proposed works were included on List no. 1 under item "ID 1\_671\_W" (ordinal number: 997) of Appendix no. 2 titled "Investments which

## ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE

do not adversely affect the achievement of good status of water or which do not deteriorate the status of water” to the Master Plan for the Vistula River Basin (2014)<sup>6</sup>.

### 2.2.1 Task no. 1 – Right embankment of the Vistula River from km 60+325 to km 61+662

#### Embankment body and other grading earthworks

- Extension of the Right embankment of the Vistula River from km 60+325 to km 61+662 over a length of 1 337 m (embankment crest width: 4.0 m, riverside slope grade – 1:n = 1:2.5; landside slope grade over the shelf – 1:n = 1:2.0; landside slope grade below the shelf – 1:n = 1:2.25; cross grade of the embankment crest – i = 2%);
- Construction of an embankment shelf on the embanked area’s side at chainage from km 60+335 to km 60+395 over a length of 68.0 m (shelf width: 3,0 m, cross grade of the embankment shelf – i = 5%, unpassable embankment shelf);
- Construction of an embankment shelf in the area beyond the embankment at chainage from km 60+385 to km 61+538 over a length of 1157 m (shelf width: 3.5 m, cross grade of the embankment shelf – i = 2%, passable embankment shelf);
- Earthworks to grade the area on the landside at chainage from km 60+331 to km 60+366 of the embankment, while keeping 2% drop of land toward the area beyond the embankment to the elevation of about 206.75 m a.s.l. (grading area of about 0.019 ha);
- Earthworks to grade the embanked area at chainage from km 60+375 to km 60+462 of the embankment, while keeping the drop of land toward the embanked area (grading area of about 0.045 ha);
- Earthworks comprising filling (grading) of the part of existing ditch on the embanked area’s side at chainage from km 61+270 to km 61+288 of the embankment, while keeping the drop of land toward the embanked area (grading area of about 0.011 ha);
- Hardening of the road on the embankment crest, on embankment crossings and exits, and on embankment shelves and roads at the embankment;
- Development of technological lanes in the area beyond the embankment and in the embanked area with a width of 3.0 m;
- Top-soiling and sowing with a mix of grass for the embankment body;
- Redevelopment of control network spots and hectometer posts;
- Removal of trees and shrubs in the scope resulting from the designing reasons.

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<sup>6</sup> The MasterPlan for the Vistula River Basin and for the Odra River Basin remains a result of establishments made with the European Committee, which led to implementation of “*Action Plan for Strategic Planning in Water Management*” by Poland (resolution of the Council of Ministers of July 2, 2013, ref. no.: 118/2013). The MasterPlans remained an update to water management plans, since their previous update in 2015, and subsequently their results – in terms of investments, which affect or which may affect the status of water bodies – were transferred to the updated water management plans (adopted by the resolution of the Council of Ministers of October 18, 2016 [OJ item no. 1967]).

## **ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE**

### **Culverts underneath the embankment and supply ditches and discharge ditches**

- Extension of the existing embankment culvert (500 x 750 mm, 31.50 m long) at chainage km 60+535 through extension of the culvert tube on the embanked area's side, and demolition of the existing inlet abutment and construction of a new inlet abutment with correction of the ditch discharging water from the culvert;
- Extension of the existing embankment culvert (Φ600 mm, 38.53 m long) at chainage km 60+566 through extension of the culvert tube in the area beyond the embankment and on the embanked area's side, along with the demolition of existing abutments at the inlet and at the outlet of the culvert, and construction of new abutments at the inlet and at the outlet with correction of discharge and feeding ditches;
- Extension of the existing embankment culvert (2 x 900 x 1100 mm, 27.2 m long) at chainage km 61+239 through extension of the culvert tube in the area beyond the embankment and on the embanked area's side, along with the demolition of existing abutments at the inlet and at the outlet of the culvert, and construction of new abutments at the inlet and at the outlet with correction of discharge and feeding ditches.

### **Embankment crossings and hardening of road surface**

- Construction of an entry road to the embankment from the embankment shelf on the side beyond the embankment at chainage km 60+355 (entry width: 3.5 m, entry length: 40.0 m, grade of entry to the embankment – 1:n = 1:10);
- Extension of the embankment crossing at chainage km 60+512 (crossing width: 4.0 m, crossing length: 138.0 m, grade of entry – 1:n = 1:13, grade of descend – 1:n = 1:12);
- Construction of an entry road to the embankment shelf on the side beyond the embankment at chainage km 60+547 (entry width: 3.0 m, entry length: 54.0 m, grade of entry to the shelf – 1:n = 1:10);
- Construction of an entry road to the embankment shelf on the side beyond the embankment at chainage km 60+771 (entry width: 3.5 m, entry length: 48.0 m, grade of entry to the shelf – 1:n = 1:10);
- Extension of the embankment crossing at chainage km 61+192 (crossing width: 4.0 m, crossing length: 115.0 m, grade of entry – 1:n = 1:12, grade of descend – 1:n = 1:12);
- Construction of a road within the embanked area at chainage km 61+214 to km 61+255 over a length of 49.0 m (road width: 3.0 m, cross grade of the embankment road – i = 2%);
- Construction of a road within the embanked area at chainage km 61+250 to km 61+295 over a length of 47.0 m (road width: 4.0 m, cross grade of the embankment road – i = 2%);
- Construction of a road within the embanked area at chainage km 61+281 to km 61+562 over a length of 282.0 m (road width: 3.0 m, cross grade of the embankment road – i = 2%);

## **ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE**

- Demolition of the existing descend road to the embanked area at chainage km 61+222;
- Construction of a road culvert at a discharge ditch from the embankment culvert at chainage km 61+239;
- Construction of an entry road to the embankment shelf on the side beyond the embankment at chainage km 61+538 (entry width: 3.5 m, entry length: 33.0 m, grade of entry to the shelf – 1:n = 1:10);
- Extension of the embankment crossing at chainage km 61+626 (crossing width: 4.0 m, crossing length: 163.0 m, grade of entry – 1:n = 1:12, grade of descend – 1:n = 1:12);
- Construction of a descend road from the embankment to the embanked area at chainage km 61+645 (width of descend: 3.5 m, length of descend: 15.0 m, grade of descend – 1:n = 1:10).

### **Filtration protection for the embankment**

- Filtration protection for the embankment body using bentomat at chainage km 60+325 to km 61+662.

Maximum rising to the embankment crest in this section is about 0.65 m.

## **2.2.2 Task no. 2 – Right embankment of the Vistula River from km 62+017 to km 63+183**

### **Embankment body and other grading earthworks**

- Extension of the Right embankment of the Vistula River from km 62+017 to km 63+183 over a length of 1 166 m (embankment crest width at chainage km 62+017 ÷ 63+163: 4.0 m, embankment crest width at chainage km 63+163 ÷ 63+169: 3.0 ÷ 4.0 m, embankment crest width at chainage km 63+169 ÷ 63+183: 3.0 m, riverside slope grade – 1:n = 1:2.5; landside slope grade over the shelf – 1:n = 1:2.0; landside slope grade below the shelf – 1:n = 1:2.25; cross grade of the embankment crest – i = 2%);
- Construction of an embankment shelf in the area beyond the embankment at chainage from km 62+119 to km 62+878 over a length of 757.0 m (shelf width: 3.5 m, cross grade of the embankment shelf – i = 2%, passable embankment shelf);
- Construction of an embankment shelf in the area beyond the embankment at chainage from km 63+023 to km 63+117 over a length of 94.0 m (shelf width: 3.5 m, cross grade of the embankment shelf – i = 2%, passable embankment shelf);
- Earthworks to grade the area on the riverside at chainage from km 61+996 to km 62+060 of the embankment, while keeping 1% drop of land toward the embanked area to the elevation of about 206.40 m a.s.l. (grading area of about 0.117 ha);
- Earthworks comprising filling (grading) of the part of existing ditch on the embanked area's side at chainage from km 62+574 to km 62+616 of the embankment, while keeping the drop of land toward the embanked area (grading area of about 0.023 ha);

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- Top-soiling and sowing with a mix of grass for the embankment body;
- Redevelopment of control network spots and hectometer posts;
- Removal of trees and shrubs in the scope resulting from the designing reasons.

### **Culverts underneath the embankment and feeding ditches and discharge ditches**

- Demolition of the existing embankment culvert (1000 x 900 mm, 29.7 m long) at chainage km 63+115, and construction of a new embankment culvert with a diameter of  $\Phi 1200$  mm instead, along with demolition to the existing abutments at the inlet and at the outlet, construction of new abutments at the inlet and at the outlet, and correction of grading for the ditch at the outlet from the culvert;
- Redevelopment of a supply ditch to the embankment culvert at chainage km 63+115, including correction of grading for the ditch bottom and for slopes, along with redevelopment of revetments in a reach of about 44 m.

### **Embankment crossings and hardening of road surface**

- Extension of the embankment crossing at chainage km 62+024 (crossing width: 5.0 m, crossing length: 135.0 m, grade of entry – 1:n = 1:12, grade of descend – 1:n = 1:12);
- Construction of a road within the embanked area at chainage km 62+061 to km 62+327 over a length of 283.0 m (road width: 3.0 m, cross grade of the embankment road – i = 2%);
- Construction of an entry road to the embankment shelf on the side beyond the embankment at chainage km 62+119 (entry width: 3.5 m, entry length: 33.0 m, grade of entry to the shelf – 1:n = 1:10);
- Construction of a road within the embanked area at chainage km 62+313 to km 62+963 over a length of 645.0 m (road width: 3.0 m, cross grade of the embankment road – i = 2%);
- Extension of the embankment crossing at chainage km 62+917 (crossing width: 5.0 m, crossing length: 130.0 m, grade of entry – 1:n = 1:12, grade of descend – 1:n = 1:12);
- Construction of an entry road to the embankment from the embankment shelf on the side beyond the embankment at chainage km 62+920 (entry width: 3.5 m, entry length: 43.0 m, grade of entry to the embankment – 1:n = 1:10);
- Construction of a road within the embanked area at chainage km 62+958 to km 63+160 over a length of 208.0 m (road width: 3.0 m, cross grade of the embankment road – i = 2%);
- Construction of an entry road to the embankment shelf on the side beyond the embankment at chainage km 63+023 (entry width: 3.5 m, entry length: 19.0 m, grade of entry to the shelf – 1:n = 1:10);
- Construction of an entry road to the embankment from the embankment shelf on the side beyond the embankment at chainage w km 63+139 (entry width: 3.5 m, entry length: 23.0 m, grade of entry to the embankment – 1:n = 1:10);



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- Construction of maneuvering yard on the embankment crest at chainage km 63+153 (dimensions of the maneuvering yard: ~7.5 m x 15.0 m);
- Hardening of the road on the embankment crest, at embankment crossings and descend roads, and on embankment shelves and roads at the embankment;
- Development of 3.0 m wide technological lanes in the area beyond the embankment and within the embanked area.

### **Filtration protection for the embankment**

- Development of a reinforced-concrete wall on the embankment crest at chainage km 63+153÷63+183 over a length of 30.0 m (wall width: 0.30 m, wall height: ~1.60 m). The designed wall elevation is from 210.73 m a.s.l. at chainage km 63+153 to 210.71 m a.s.l. at chainage km 63+183;
- Development of a filtration protection for the embankment in a form of anti-filtration membrane in the subbase, and sealing of the embankment body using bentomat at chainage km 62+017 to km 63+163, including injection sealing the embankment body over a length of the wall, i.e. at chainage km 63+153 to km 63+183.

Maximum rising to the embankment crest in this section is about 0.4 m.

### **2.2.3 Task no. 3 – Right embankment of the Vistula River from km 63+779 to km 65+160**

#### **Embankment body and other grading earthworks**

- Extension of the Right embankment of the Vistula River from km 63+779 to km 65+160 over a length of 1 381 m (embankment crest width: 4.0 m, riverside slope grade – 1:n = 1:2.5; landside slope grade over the shelf – 1:n = 1:2.0; landside slope grade below the shelf – 1:n = 1:2.25; cross grade of the embankment crest – i = 2%);
- Construction of an embankment shelf on the embanked area's side at chainage from km 63+913 to km 65+066 over a length of 1153.0 m (shelf width: 3.5 m, cross grade of the embankment shelf – i = 2%, passable embankment shelf);
- Earthworks to grade the embanked area at chainage from km 63+987 to km 64+006 of the embankment, while keeping the drop of land toward the embanked area (grading area of about 0.013 ha);
- Earthworks comprising filling (grading) of the part of existing ditch in the area beyond the embankment at chainage from km 63+925 to km 64+003 of the embankment, while keeping the drop of land toward the area beyond the embankment (grading area of about 0.076 ha);
- Top-soiling and sowing with a mix of grass for the embankment body;
- Redevelopment of control network spots and hectometer posts;
- Removal of trees and shrubs in the scope resulting from the designing reasons.

## **ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE**

### **Slope stairs**

- Demolition of the existing slope stairs and construction of new slope stairs instead at chainage km 64+635 of the embankment;
- Construction of slope stairs in the area beyond the embankment at chainage km 65+115.

### **Embankment crossings and hardening of the surface**

- Extension of the embankment crossing at chainage km 63+842 (crossing width: 6.5 m, width of crossing's strengthening: 3.5 m, crossing length: 99.0 m, grade of entry – 1:n = ~1:20, grade of descend – 1:n = ~1:25);
- Construction of an entry road to the embankment from the embankment shelf on the side beyond the embankment at chainage km 63+871 (entry width: 3.5 m, entry length: 44.0 m, grade of entry to the embankment – 1:n = 1:10);
- Extension of the embankment crossing at chainage km 64+144 (crossing width: 3.5 m, crossing length: 131.0 m, grade of entry – 1:n = 1:10, grade of descend – 1:n = 1:10);
- Construction of an entry road to the embankment on the side beyond the embankment at chainage km 65+037 (entry width: 3.5 m, entry length: 77.0 m, grade of entry to the embankment – 1:n = 1:12);
- Extension of the embankment crossing at chainage km 65+158 (crossing width: 3.5 m, crossing length: 108.0 m, grade of entry – 1:n = 1:10, grade of descend – 1:n = ~1:10);
- Construction a descend road from the embankment crest to the embanked area at chainage km 65+113 (descend width: 3.0 m, descend length: 49.0 m, grade of descend – 1:n = ~1:12);
- Hardening of the road on the embankment crest, at embankment crossings and descend roads, and on embankment shelves and roads at the embankment;
- Development of 3.0 m wide technological lanes in the area beyond the embankment and within the embanked area.

### **Filtration protection for the embankment**

- Construction of filtration protection for the embankment in a form of anti-filtration membrane in the subbase within the entire section at chainage km 63+842 to km 65+082, except for the reach from km 64+610 to km 64+880, and sealing of the embankment body using bentomat at chainage km 63+842 to km 65+082, along with sealing injection at a collision with teletechnical cable;
- Construction of a central anti-filtration membrane at chainage km 63+779 to km 63+869, along with sealing injection at a collision with teletechnical cable and at chainage km 65+067 to km 65+160.

Maximum rising to the embankment crest in this section is about 0.4 m.

The aforementioned elements of the Works Contract and their location have been graphically presented in Appendix no. 9.

## **3 Institutional, legal and administrative conditions**

### **3.1 Institutions involved in implementation of the Contract**

Małopolski Board of Amelioration and Water Structures in Cracow – performing functions of the Małopolskie Province Marshal – has been the investor for the Contract until December 31, 2017. From January 1, 2018 the Contract Investor is a newly assigned unit, i.e. State Water Holding Polish Waters Regional Water Management Authority in Cracow (PGW WP RZGW in Cracow).

Additionally, on the stage of performance and of operation, implementation of the Contract may require involvement of public administration units on central, regional, and local levels. For the purpose of ongoing coordination for Project implementation the Odra-Vistula Flood Management Project Coordination Unit was assigned.

### **3.2 Binding Polish law acts with regard to the environment**

In accordance with the Polish Law the Works Contract process related to environmental protection remains a subject of many acts and regulations. A summary of selected, basic legal acts binding in case of environmental protection has been presented in Appendix 3 to this EMP– List of national legal acts related to environmental protection. The number and contents of legal acts given in Appendix 3 may be modified along with adjustments to environmental protection provisions valid in the territory of Poland. The Contractor is obliged – except for application of rules determined under this EMP – to apply valid provisions of law in the scope of environmental protection.

#### **3.2.1 Local spatial development plans**

The analyzed Works Contract is partially located within the Local Spatial Development Plan for the area of Tyniec – Osiedle: Resolution of the Council of the City of Cracow dated December 19, 2012, ref. no.: LXIII/898/12. The following use of land within the LSDP was established within the boundaries of the subject contract:

#### **Task no. 1 – Right embankment of the Vistula River at Chainage km 60+325 to km 61+662**

A part of the Works Contract is located within the area marked as ZL – forests. It is banned to develop objects not related to forest management and to construct fences within that area. There are no local plans for the remaining areas.

#### **Task no. 2 – Right embankment of the Vistula River at Chainage km 62+017 to km 63+183**

It is entirely located within the aforementioned plan. In accordance with the LSDP the following use of land was established within the boundaries of the Works Contract: R – farmlands; WS – areas with in-land surface water; KDW – areas with internal roads. Task no.

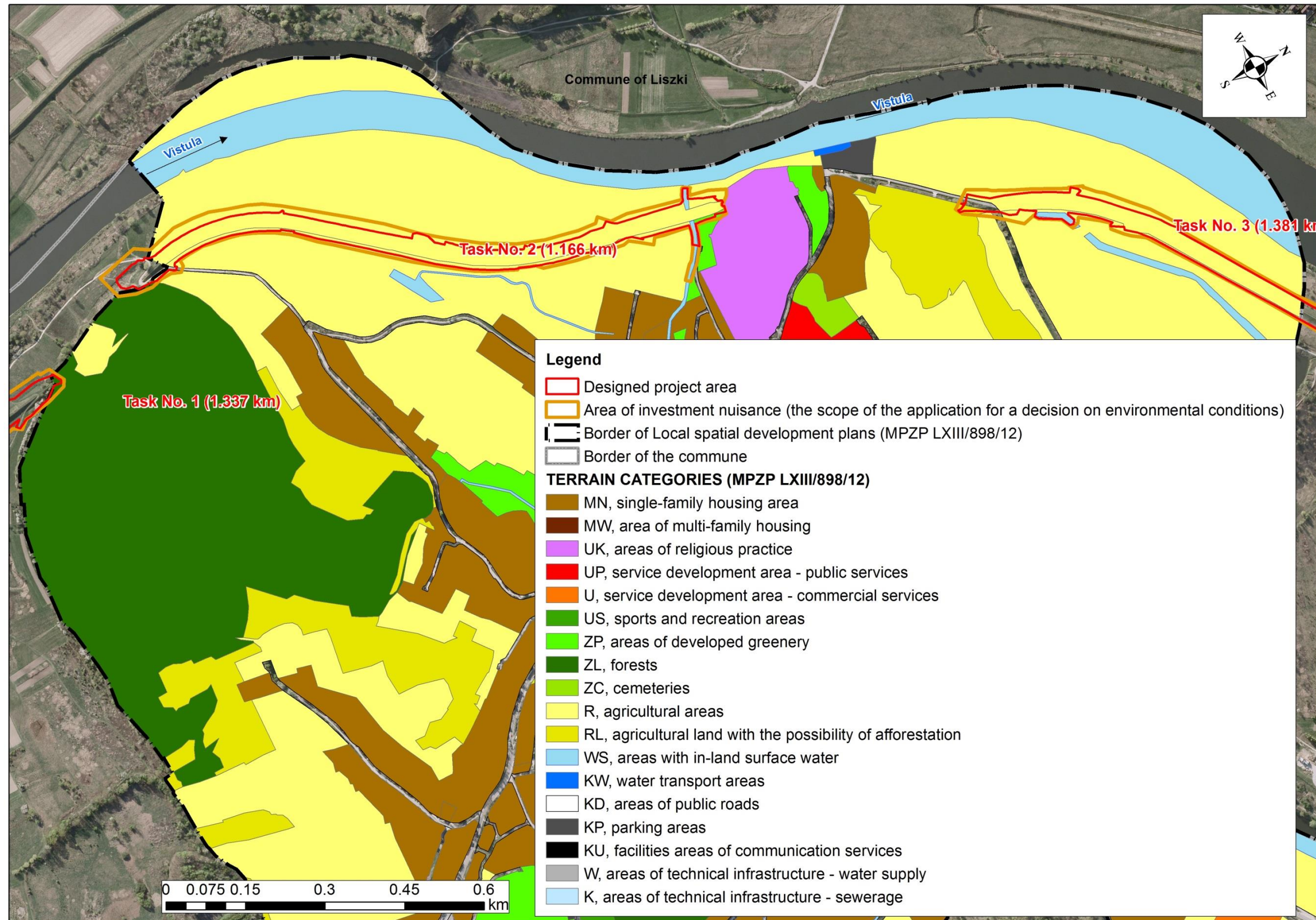
**ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE**

2 borders on UK – areas of religious practice; ZP – areas of developed greenery with a construction ban, including foundation of temporary objects, construction of fences, and with a ban to plant high greenery, except for a line of high greenery along water courses; ZL – forests, where it is banned to develop objects not related to forest management, and to construct fences.

**Task no. 3 – Right embankment of the Vistula River at Chainage km 63+779 to km 65+160**

A part of the subject section is located within the aforementioned plan, whereas in case of the remaining area at Kały there are no local plans. In accordance with the LSDP the basic use of land, where the discussed contract is located, is as follows: R – farmlands; KDL – areas with public roads; and RL – farmlands with possibility of afforestation – a construction ban is valid there, including foundation of temporary objects.

Drawing no. 2. Location of the Contract in reference to the LSDP



Source: own materials

### **3.3 EIA procedure in Poland**

The description of the EIA 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 (WB)<sup>7</sup> and the Odra-Vistula Flood Management Project Coordination Unit<sup>8</sup>. Furthermore, legal provisions listed under Appendix 3 to this EMP - List of national legal acts related to environmental protection are binding for the EIA procedure.

### **3.4 World Bank requirements**

The discussed Contract shall be co-financed by the International Bank for Reconstruction and Development (World Bank). As a consequence, the conditions of its implementation, with regard to environmental protection, are compliant with the following policies of the World Bank<sup>9</sup>:

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

Description of the aforementioned World Bank policies is included in the Environment and Social Management Framework ESMF published on the i.e. websites of the World Bank<sup>4</sup> and of the Odra-Vistula Flood Management Project Coordination Unit<sup>5</sup>.

### **3.5 The current condition of EIA procedures for the Works Contract**

The Contract is qualified to Group II of Works Contracts, which may potentially and significantly affect the environment, as understood by classification given in the EIA Regulation.

The following were issued for the Works Contract in question:

- Decision of the Regional Director for Environmental Protection in Cracow dated May 20, 2015 on environmental conditions for the contract titled: “Design on Extension of Flood Embankments for the Vistula River in Cracow: Section 4 – Right embankment of the Vistula from the Skawinka estuary to the Kościuszko barrage”, ref. no.: OO.4233.8.2014.BM.
- Resolution of the Regional Director for Environmental Protection in Cracow dated November 13, 2015, ref. No.: OO.4240.5.18.2015.BM, clarifying the doubts on contents of the ED dated May 20, 2015, ref. no.: OO.4233.8.2014.BM, on environmental conditions for the contract titled: “Design on Extension of Flood

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<sup>7</sup><http://documents.worldbank.org/curated/en/717671468333613779/Poland-Odra-Vistula-Flood-Management-Project-environmental-and-social-management-framework>;

<sup>8</sup> [http://www.odrapcu.pl/popdow\\_oprojekcie.html](http://www.odrapcu.pl/popdow_oprojekcie.html);

<sup>9</sup> <https://policies.worldbank.org/sites/PPF3/Pages/Manuals/Operational%20Manual.aspx>

## **ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE**

Embankments for the Vistula River in Cracow: Section 4 – Right embankment of the Vistula from the Skawinka estuary to the Kościuszko barrage”.

Copies of documents listed above have been reproduced under Appendix 4 to the EMP–Decisions, Resolutions, Permits, Notes.

The decision of the Regional Director for Environmental Protection in Kraków dated May 20, 2015 on environmental conditions was preceded by the environmental impact assessment of the Contract. This assessment was conducted on the basis of environmental inventory carried out in the period from April to September 2014. An environmental inventory is a basic document developed based upon experience in collecting, analyzing and presenting information on elements of the natural environment that give the basis for assessing the impact of them. It is worth noting that it is not clear from any of the provisions of law for how long the inventory remains valid. Its timeliness is approved through issuing decisions on environmental conditions, and if the environmental elements are subject to changes or tend to change in the decision on environmental conditions, an obligation to conduct a new environmental impact assessment may be stated. This means that the up-to-date environmental inventory is not legally limited in time and the conditions described in it at the stage of issuing a decision on environmental conditions, if the circumstances indicated above have not taken place, should be considered valid after the investment project implementation permit for the project has been issued.

In case of the analyzed contract the environmental impact assessment procedure was implemented as follows:

- The Regional Director for Environmental Protection in Cracow received an application of Mr. Sławomir Szymański, representative of CERMET-BUD Sp. z o.o. PRZEDSIĘBIORSTWO INŻYNIERSKIE in Cracow, acting in the name of the Investor, i.e. Małopolski Board of Amelioration and Water Structures in Cracow, dated 06/30/2014, ref. no.: 92/STK/2013, supplemented with a note dated 07/15/2014, ref. no.: 105/STK/2014, on the issuance of a decision on environmental conditions for implementation of the contract titled: “Design on Extension of Flood Embankments for the Vistula River in Cracow: Section 4 – Right embankment of the Vistula from the Skawinka estuary to the Kościuszko barrage”;
- Based upon Article 64 (4) of the Administrative Procedure Code (APC) the RDOŚ in Cracow informed all of the parties in notification dated 07/09/2014, ref. no.: OO.4233.8.2014.BM, about the commencement of proceedings for the issuance of ED. Due to the fact that the number of parties exceeds 20, Article 49 of the APC was applied, stating notification of the parties via an announcement. The subject announcement was published through placement on notice boards in the: City Office of Cracow on 07/11/2014 for 14 days; City Office of Liszki on 07/16/2014 for 14 days; and City and Commune Office of Skawina on 07/17/2014 for 14 days; and on the notice board of the Regional Directorate for Environmental Protection in Cracow on 07/10/2014 for 14 days. Furthermore, information on the commencement of proceedings was published in the Public Information Bulletin, on website of the Regional Directorate for Environmental Protection in Cracow, as well as in the publicly accessible data register on website of the Ministry of Environment;

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- The Regional Director for Environmental Protection in Cracow applied in the note dated 07/09/2014, ref. no.: OO.4233.3.2013.BM, to the State Sanitary Inspector in Cracow for the issuance of opinion prior to the issuance of ED for the subject Works Contract. The State District Sanitary Inspector in Cracow stated in the note dated 07/23/2014, ref. no.: NZ-PG-420-302/14ZL/2014/07/601, that the subject Works Contract does not require an environmental impact assessment;
- The Regional Director for Environmental Protection in Cracow imposed an obligation to perform the environmental impact assessment and determined the scope of report in the Resolution dated 09/16/2014, ref. no.: OO.4233.8.2014.BM. That resolution was published through placement on notice boards in the: City Office of Cracow on 09/17/2014 (the environmental decision contained a mistaken date of 07/17/2014, the mistake was corrected in a resolution of the RDOŚ dated 08/24/2018 – Appendix 4e to this EMP) for 14 days; City Office of Liszki on 09/19/2014 for 14 days; and City and Commune Office of Skawina on 09/18/2014 for 14 days; and on the notice board of the Regional Directorate for Environmental Protection in Cracow on 09/17/2014 for 14 days. Furthermore, information on the obligation to perform the environmental impact assessment was published in the Public Information Bulletin, on website of the Regional Directorate for Environmental Protection in Cracow, as well as in the publicly accessible data register on website of the Ministry of Environment;
- In the course of conducted proceeding the Regional Director for Environmental Protection in Cracow suspended the administrative proceedings *ex officio* on the issuance of environmental decision for the Works Contract in question with a resolution dated 10/27/2014, ref. no.: OO.4233.8.2014.BM. The subject resolution suspending the administrative proceedings was published through placement on notice boards in the: City Office of Cracow on 10/28/2014 for 14 days; City Office of Liszki on 10/31/2014 for 14 days; and City and Commune Office of Skawina on 10/29/2014 for 14 days; and on the notice board of the Regional Directorate for Environmental Protection in Cracow on 10/27/2014 for 14 days. Furthermore, information on the suspension of proceedings was published in the Public Information Bulletin, on website of the Regional Directorate for Environmental Protection in Cracow, as well as in the publicly accessible data register on website of the Ministry of Environment;
- Mr. Sławomir Szymański, Proxy of the Investor, provided RDOŚ in Cracow with three copies of the environmental impact assessment report for the subject Contract with the note dated 12/01/2014, ref. no.: 178/STK/2014;
- The Regional Director for Environmental Protection in Cracow recommenced through the Resolution dated 12/11/2014, ref. no.: OO.4233.8.2014.BM, the administrative proceeding on the issuance of environmental decision for the subject Works Contract suspended on 10/27/2014. That resolution was published through placement on notice boards in the: City Office of Cracow on 12/15/2014 for 14 days; City Office of Liszki on 12/17/2014 for 14 days; and City and Commune Office of Skawina on 12/16/2014 for 14 days; and on the notice board of the Regional Directorate for Environmental Protection in Cracow on 12/12/2014 for 14 days. Furthermore, information on the suspension of proceedings was published in the Public Information Bulletin, on website of the Regional Directorate for Environmental Protection in



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Cracow, as well as in the publicly accessible data register on website of the Ministry of Environment;

- Acting within its legal liabilities, RDOŚ in Cracow analyzed provisions of the environmental impact report for the planned contract. As a consequence, the Regional Director for Environmental Protection in Cracow called the Proxy to supplement the discussed report with a note dated 01/26/2015, ref. no.: OO.4233.8.2014.BM. The Proxy provided the Director of RDOŚ in Cracow with two copies of updated report and with missing extracts from the land register in a note dated 02/26/2015, ref. no.: 28/STK/215;
- The Regional Director for Environmental Protection in Cracow applied in the note dated 03/20/2015, ref. no.: OO.4233.8.2014.BM, to the State Sanitary Inspector in Cracow for the issuance of opinion on conditions for implementation of the subject Works Contract. The State District Sanitary Inspector in Cracow issued a sanitary decision dated 04/07/2015, ref. no.: NZ-PG-420-115/15 ZL/2015/03/1018, and provided a positive opinion for the subject Works Contract in the scope of hygiene and health requirements, with a reservation that at implementation one shall consider remarks and conclusions given in the environmental conditions report developed for the subject Contract;
- In accordance with Article 33 (1) and in reference to Article 79 (1) of the EIA Act, in order to assure the public participation in the proceedings, resolution of the Regional Director for Environmental Protection in Cracow dated 03/20/2015, ref. no.: OO.4233.8.2014.BM, was placed on the notice board and on website of the Regional Directorate for Environmental Protection in Cracow, and on notice boards in the: City Office of Cracow; City Office of Liszki; and City and Commune Office of Skawina; informing that within the framework of the commenced proceedings on the issuance of environmental decision an environmental impact report for the planned Works Contract and update to the report for the Works Contract were filed. Furthermore, it informed on the commencement of environmental impact assessment for the subject contract, on the unit relevant for the issuance of the decision and on the unit relevant for the issuance of opinion on implementation of the Works Contract, and on the possibility of acknowledging case documentation and of provision of remarks and applications in the subject case within 21 days. The announcement was placed on the notice board of RDOŚ in Cracow from 03/23/2015 to 04/13/2015, and on notice boards of the: City Office of Cracow from 03/23/2015 to 04/13/2015; City Office of Liszki from 03/23/2015 to 04/13/2015; and City and Commune Office of Skawina from 03/23/2015 to 04/13/2015. Furthermore, that announcement was published in the Public Information Bulletin, on website of the Regional Directorate for Environmental Protection in Cracow, as well as in the publicly accessible data register on website of the Ministry of Environment. RDOŚ in Cracow did neither receive related remarks nor applications from the parties, the society, and social and ecological organizations within a legal deadline of 21 days;
- In the course of proceedings the Investor's Proxy applied in the note dated 04/14/2015, ref. no.: 36/STK/2015, based upon Article 108 (1) APC, to the Regional Director for Environmental Protection in Cracow for ordering immediate enforceability

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for that decision and for withdrawing from an obligation resulting from Article 10 (1) of the APC;

- While assuming that rationale under Article 108 of the APC were met and that the Works Contract is factually significant for the public interest and for the interest of the party, the Regional Director for Environmental Protection in Cracow accepted the application and ordered immediate enforceability for the decision, and – due to Article 10 (2) of the Act of June 14, 1960 APC – stated that it is justified to withdraw from notifying the parties on the completion of evidence proceeding in case of issuing that decision;
- Decision on environmental conditions for the subject contract was issued by the Regional Director for Environmental Protection in Cracow on May 20, 2015, ref. no.: OO.4233.8.2014.BM.

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## 4 Description of environmental elements

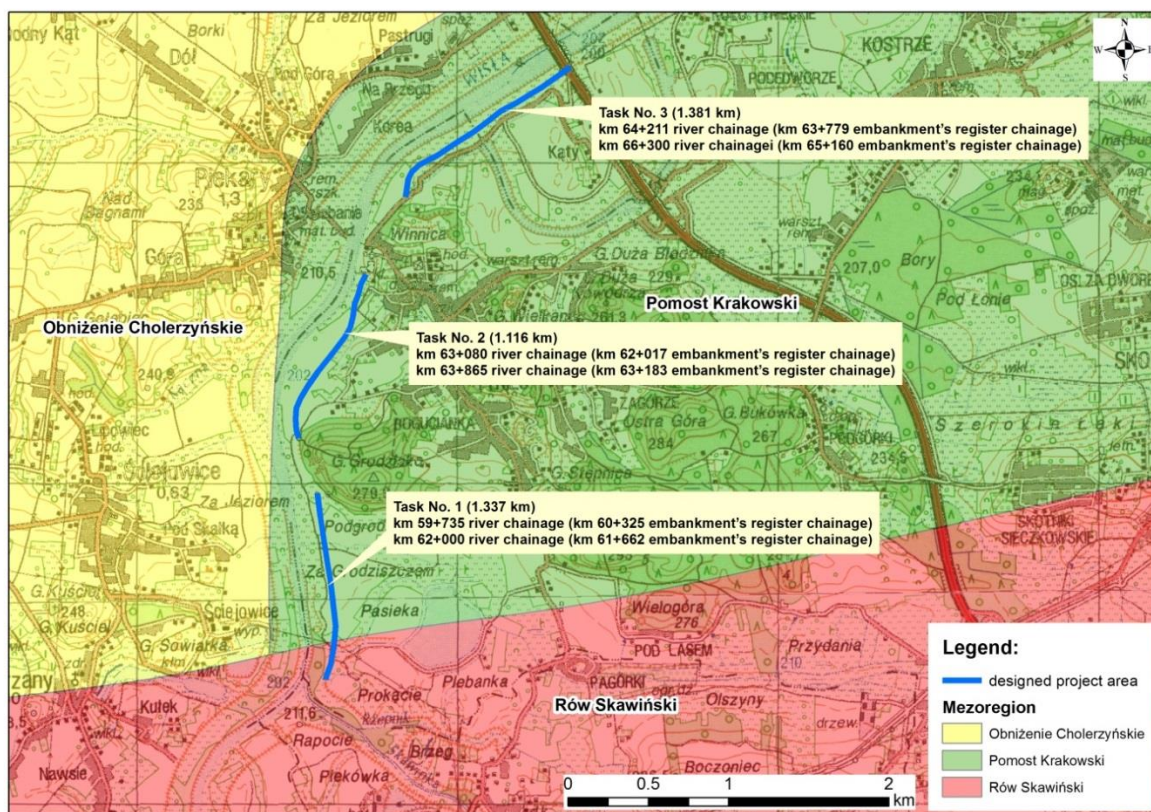
### 4.1 Land surface and landscape

According to physical and geographic regionalization by Kondracki (2001), the analyzed section of embankments is located within Pomost Krakowski and Rów Skawiński:

- megaregion: Carpathian Region;
- province: Western Carpathian Mountains with Western and Northern Podkarpacie;
- subprovince: Northern Podkarpacie;
- macroregion: Brama Krakowska;
- mezoregion: Pomost Krakowski;
- mezoregion: Rów Skawiński.

Tasks no. 2 and 3 are entirely located within the mezoregion of Pomost Krakowski, whereas Task no. 1 only in a part – its small starting fragment is located within Rów Skawiński. Location of the Works Contract in reference to physical and geographic units is presented in a drawing given below (Drawing no. 4).

**Drawing no. 3.** Location of the analyzed Works Contract in reference to physical and geographic units



Source: own materials based upon Kondracki J.: *Geografia regionalna Polski*, Wydawnictwo Naukowe PWN, Warsaw 2001

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Pomost Krakowski is a system of hills made of limestone and tectonic drops, where the River Vistula flows. In the western part of the region there are small remnants of forest areas (Bielańsko–Tyniecki Landscape Park), where the analyzed Works Contract is located. Some nature and geological reserves were formed within the mezoregion. As the region is entirely located within the City of Cracow, anthropogenic changes to the natural environment are significant.

Rów Skawiński is a graben covering a narrow valley of Vistula filled with Miocene sea sediments. The graben is about 2 km wide, about 22 km long, and is flat. There is no distinct boundary in the north; the graben smoothly turns into an eminence of Obniżenie Cholerzyńskie. There are no forests within the region, it is developed, and partially grown with meadows.

### **4.2 Climate**

The City of Cracow is located within the bottom boundary of moderately warm climatic level of Carpathian Mountains, as a type of dale climate (according to Mieczysław Hess). It is specified by huge diversity of weather conditions resulting mainly from the inflow of various air masses to this area – marine polar mainly, and less often warm tropic marine or continental air within the entire year, as well as cold and dry arctic air.

Meteorological conditions for the City of Cracow in 2016<sup>10</sup> :

- Average annual temperature 9.4°C,
- Annual total of precipitations 745 mm,

### **4.3 Air quality**

Rate of air pollution depends on the volume of emission for emitters located within a particular area, inflow of pollutions from other area, climate and meteorological conditions, and land development and lay of land.

The main source of air pollution within the city is so-called anthropogenic emission resulting from actions of human. Anthropogenic emission includes both: emission from power and industrial plants, as well as low emission from communal units (boiler-plants, individual domestic furnaces, and private plants) and traffic emission.

Main pollution sources in the area of Cracow are as follows (WIOŚ, Cracow 2016):

- Emission of pollution associated with traffic;
- Local sources (e.g. cement plant, thermal-electric power station, steel mill, fire-resistant materials plant) and neighboring industrial areas: pollutions coming from Skawina, Oświęcim, Trzebinia, Olkusz, Tarnów, Katowice;
- Emission of gases and dusts from individual domestic furnaces and boiler-plants forming a central source of heat supply.

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<sup>10</sup><http://stat.gov.pl/obszary-tematyczne/roczniki-statystyczne/roczniki-statystyczne/rocznik-statystyczny-wojewodztw-2017,4,12.html>

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In accordance with data presented in the Report on Environmental Conditions in Małopolskie Province for the years 2013-2015 (WIOŚ, Cracow 2016) the condition of air in the years 2010-2015 was as follows:

- Average annual concentration of sulphur dioxide (SO<sub>2</sub>) in Cracow and in Małopolskie Province was in the years 2010-2015 on low level (it did not exceed the permissible level),
- Concentration of nitrogen dioxide (NO<sub>2</sub>) exceeds the permissible level only at the traffic station in Cracow, whereas in case of other stations and in Skawina the concentration is within the standard values,
- Maximum 8-hours concentration of carbon oxide (CO) in Cracow and in other towns remained on an average level, and reached 30-60% of permissible level,
- Concentration of benzene has not exceeded permissible values in any of analyzed stations,
- The highest average annual concentration of suspended particulates PM<sub>10</sub> in the air is recorded for Cracow by the traffic station at Krasieńskiego Alley and by the industrial station at Bulwarowa Street (those concentrations exceed permissible values). In case of Skawina PM<sub>10</sub> rate was also exceeded in the years 2010-2013 and in 2015, and only in 2014 the level of concentration dropped below the permissible level.
- Annual concentration of PM<sub>2.5</sub> particulates exceeded or was equal to the target level in case of all stations (the highest values were recorded for Cracow and for Nowy Sącz),
- Average annual concentration of benzo(a)pyrene of over 1 ng/m<sup>3</sup> occurred in case of all measuring stations within the province (the highest one was in Nowy Sącz),
- Annual concentration of metals: lead, arsenic, cadmium, and nickel in suspended particulates PM<sub>10</sub> is on low level not exceeding the permissible rate and the target value.

In terms of protection of health the Agglomeration of Cracow exceeds values for the following substances in the air: nitrogen dioxide, suspended particulates PM<sub>10</sub>, benzo(a)pyrene, suspended particulates PM 2.5.

### **4.4 Soils and grounds**

Currently the area beyond the embankment forms a mosaic of wasteland, arable land, forest areas, and developed sites. However, the embanked area is mainly formed by wasteland with local groups of trees and shrubs.

Alluvial soil formed by alluvial sediments is mainly present within the analyzed Works Contract. In case of this area we can find light loamy alluvial soils (very fertile) mainly, but there locally are some soil-less sandy sites. Turf peat and boggy soils and glial and loam glial soils were formed in land pits and in holding fluvial terraces.

In accordance with the land register, the areas where the Works Contract is to be implemented are classified as permanent pastures (PsIII, PsIV, PsV), afforested and shrubbed areas (LzIV), modest forests (LsIV) and arable land (RII, RIIIa, RIIIb, RIVa),

## **ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE**

permanent meadows (ŁIII, ŁIV, ŁV) and various areas (Tr), and grounds underneath ponds (WsrIV), roads (dr), ditches (W) and wasteland (N).

### **4.5 Surface water**

The Contract is located within the Upper Vistula River Basin, and that area is administered by the PGW WP Regional Water Management Authority in Cracow. In case of the discussed reach of the Vistula River the biggest tributary river is its right-bank tributary – River Skawinka, whereas the left-bank tributaries are smaller, and those are Rączna and Sanka.

That Contract is located within BSW Wisła od Skawinki do Podłężanki (PLRW2000192137759) and within BSW Sidzinka (PLRW200016213572). In conformity with currently binding Water Management Plan for waters within the Vistula River Basin (Water MP), as approved by the Regulation of the Council of Ministers of October 18, 2016 (OJ of 2016, item 1911), specificity of BSW in the area of the analyzed Works Contract is as follows:

#### **Wisła od Skawinki do Podłężanki (PLRW2000192137759):**

- BSW type: lowland sandy and loamy river (19),
- Status: heavily modified body of water,
- Is it monitored: yes,
- Assessment of the current status (2016): bad (the ED presented the status of water for the years 2010-2012),
- Risk assessment for not obtaining the environmental objective: under risk,
- Derogations: yes,
- Derogation type: establishment of less rigorous objectives,
- Deadline for achievement of good status: 2021,
- Justification for derogation: no technical possibilities and disproportional costs. Effects of anthropogenic activities on the status of BSW and the lack of technical possibilities to limit those effects on water generate a necessity of establishing less rigorous objectives for indexes specifying the salinity. Simultaneously, the time necessary for implementation of the action to establish a boundary value for the good status or for the good potential, in case of parameters with decreased environmental objective, requires rescheduling for achievement of environmental objectives by the BSW. The present business activities are strictly associated with the occurrence of natural resources and with the industrial character of the river basin.
- Environmental objective: good ecological potential; migration possibilities for water organisms within the reach of significant watercourse – Wisła od Podłężanki do Skawinki; good chemical status.

#### **Sidzinka (PLRW200016213572):**

- BSW type: lowland loess or loamy stream (16),
- Status: natural body of water,

**ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE**

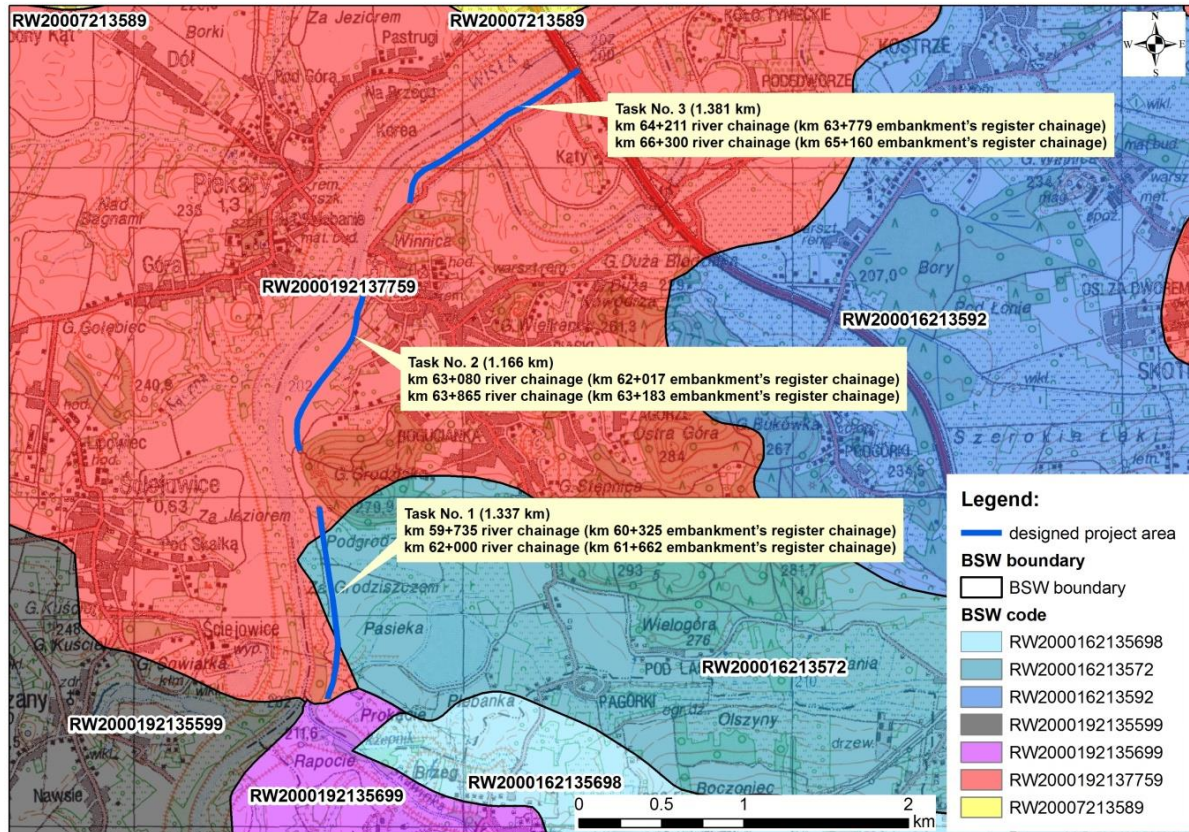
- Is it monitored: no,
- Assessment of the current status (2016): bad (the ED presented the status of water for the years 2010-2012),
- Risk assessment for not obtaining the environmental objective: under risk,
- Derogations: yes,
- Derogation type: extension of time for achievement of the objective due to the lack of technical possibilities and disproportional costs,
- Deadline for achievement of good status: 2021,
- Justification for derogation: no technical possibilities and disproportional costs. Due to low credibility of the assessment and to the related lack of possibility to indicate a reason for not achieving the good status it is not possible to plan rational recovery measures. Planning and implementation of any measures shall generate unjustified costs. As a consequence, in case of the BSW, actions were planned to identify the actual ecological status – performance of research monitoring. In case of confirming the bad status after 2 years, a measure would be implemented to identify reasons for it. Such staging of the proceeding would allow for rational planning of necessary measures and for the assurance of the required efficiency.
- Environmental objective: good ecological status; good chemical status.

Implementation of the planned Works Contract is not related to the interference in the Vistula River Bed. The Contract therefore does not affect the morphological continuity of the River Vistula, and it shall also not effect in impact on hydro-morphological and biological elements.

Location of the Contract in reference to JCWP was presented on the drawing given below (Drawing no. 5).

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Drawing no. 4. Location of the Contract in reference to BSW



Source: Own materials.

## 4.6 Groundwater

### Geological formation and hydrogeological conditions

In geological terms the site of research is located within Zapadlisko Przedkarpackie – the Works Contract site is placed in its western part. The subsidence basin is filled with Miocene molasse sediments. Neogene sediments are placed within rocks of various age – from Precambrian ones to cretaceous ones; and within tectonic units of various age. Thickness of those sediments is varied and reflects the subbase morphology. Tertiary sediments (of Neogene) in the form of Skawina layers made of loams, locally with admixture of sands, are covered with Quaternary sediments produced in the form of alluvial sands and gravels, and of alluvial soils (loams, clays, and sands).

The body of the existing embankment is made of cohesive soil in the form of clays, dusts and loamy sands of very low permeability, as well as of non-cohesive ground with good permeability. Considering the granular composition of soils in the body, the embankment has been developed using local ground.

There is one water-bearing layer in the discussed area, which is associated with Tertiary formations formed by sands of various granulations and by gravels. It is a continuous water-bearing level, and the water-table is both: unconstrained and tight. The retracting layer is formed by cohesive soil covering permeable formations. Feeding of the water-bearing level is



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done through infiltration of precipitation water. Groundwater has a direct hydraulic relation with surface water in the River Vistula, and therefore the ground water level is determined by the level of water in the river.

The analyzed Contract is located beyond the boundaries of MGR.

### **Bodies of groundwater**

Division of the area of Poland into bodies of groundwater in the process of implementation for the Water Framework Directive is subject to modifications. The current version of the division contains 172 bodies and 3 sub-bodies, and is valid from 12/31/2016. The analyzed Works Contract is located in south-western areas of BGW 148 (European code: PLGW2000148) and in south-eastern areas of BGW 147 (European code: PLGW2000147). Numbers of BGW have been indicated in the ED, in conformity with the previous division, and those were BGW no. 139 and 150, respectively.

The Water Management Plan for waters within the Vistula River Basin, as approved by the Council of Ministers on October 18, 2016 (OJ 2016, item 1911), evaluates the quantitative status and the chemical status for BGW 148 and BGW 147 as good. In terms of risk of not achieving environmental objectives under the plan, unit no. 148 was defined as not at risk, whereas unit no. 147 was determined as at risk.

Environmental objective: good chemical status, good quantitative status.

In compliance with provisions under the Water Management Plan for waters within the Vistula River Basin (Water MP) the main environmental objectives for BGW are as follows:

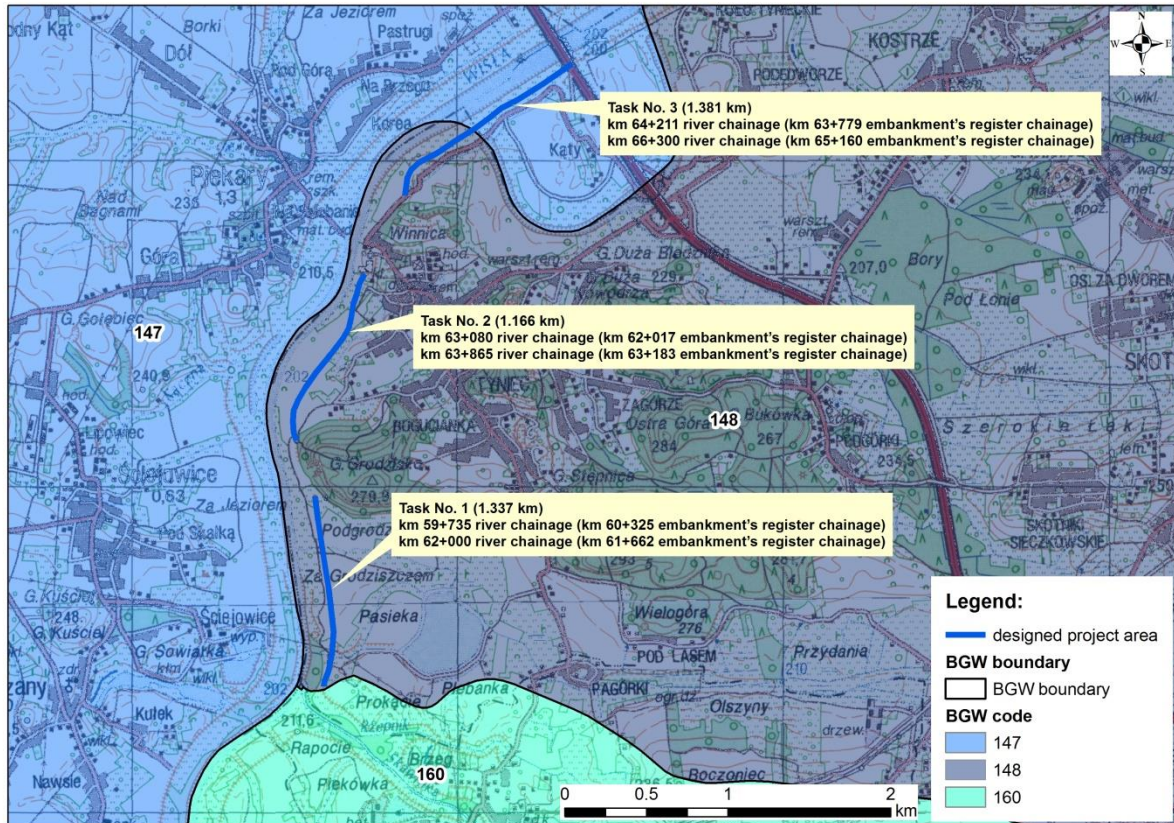
- Preventing the inflow or limitation of the inflow of pollutions to groundwater,
- Preventing the deterioration of status for all bodies of groundwater (including reservations listed under the Water Framework Directive),
- Assurance of balance between the intake and the supply for groundwater,
- Implementation of measures necessary for reversing significant and constant increasing concentration trend for any pollution generated due to human actions.

In order to meet the requirements for the lack of deterioration for status of waterbodies having at least good chemical and quantitative status, the environmental objective for those would be the maintenance of that status.

Location of the Contract in reference to BGW was presented on the drawing given below (Drawing no. 6).

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Drawing no. 5. Location of the Contract in reference to BGW



Source: Own materials.

## 4.7 Acoustic climate

When analyzing the noise source, one may classify it to the following groups:

- Traffic noise: road transport, railway transport,
- Industrial noise: installations and used devices,
- Noise associated with the work environment.

Traffic noise affects the acoustic climate status in Małopolskie Province significantly. The acoustic climate in the area of the analyzed site is mainly generated by A4 motorway located in its vicinity.

The subject Contract covers areas, which are not acoustically protected (fields, meadows, forests, wasteland). In case of land, which requires protection (developed areas in the area of St Benedict's Monastery in Tyniec), exceedance of permissible noise values does not occur in case of A4 motorway. The exceedance by 0-15 dB occurs in the direct vicinity of A4 motorway, where single buildings are located – those objects are located in a distance of about 200 m from the analyzed Works Contract.

## **4.8 Nature**

Environmental inventory has been carried out in the area in question from April to September 2014. The results of the conducted research were the basis for assessing the impact of the Contract covered by this EMP on the environment, and their validity was verified during issuing the decision on the environmental conditions for the Works Contract. The up-to-date environmental inventory is not legally limited in time and the conditions described in it at the stage of issuing a decision on environmental conditions should be considered valid after issuing the investment project implementation permit.

### **4.8.1 Protected natural habitats and protected species of plants, animals, and fungi**

#### **Flora**

Inventory of plants has been done within the discussed area from April to September 2014, and it proves that:

- There are no protected species of plants within the area of direct Works Contract impact, i.e. embankment and directly adjacent area,
- There are no protected natural habitats within the Works Contract site. Single trees or groups of willow prove that remnants of riparian forests were present there in the past,
- Such invasive species as Canadian goldenrod and such highly invasive arborescent species as boxelder maple and black cherry were identified within the area,
- The area beyond the embankment is formed by a mosaic of arable fields, orchards, wasteland, and urbanized areas. Plants growing on slopes of river embankments on the riverside and on the landside are mainly anthropogenic grass groups with features and structure of lowland hay meadows; however, they are used intensively, as the embankments are regularly mown. Groups of viper's bugloss and sweet clover may be especially identified in that area.
- A dirt road is located on the embankment crest, where parts of trampleable plant groups were formed – broadleaf plantain and annual bluegrass mainly,
- The occurrence of protected species of fungi, lichens, mosses, and plants was not identified within the section in question.

#### **Fauna**

Research done on the stage of obtaining the decision on environmental conditions proved that:

- Due to the temporarily marshy character of the embanked area and to the close neighborhood of the river, avifauna of that site is represented by numerous water and mud birds. The occurrence of 25 species of birds in total was identified in the area covered by the inventory along the Vistula River, including 2 unprotected species (birds of prey), 4 species partially protected, and 19 species under strict protection,

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- Three species of amphibians were identified within the inspected area, i.e. common toad, edible frog, and pool frog, and two species of reptiles, i.e. grass snake and sand lizard. The aforementioned species are strictly protected,
- In case of protected species of invertebrates bumblebee was only identified during the research;
- Water ponds were not identified in the direct vicinity of the embankment.

### **4.8.2 Protected areas**

The analyzed Contract is located within the area of Bielańsko–Tyniecki Landscape Park – a landscape park covering a part of the Vistula Valley between Cracow and Ściejowice. Within the park there are three major forest complexes: Lasek Wolski, and forest stands in the area of Tyniec and Czernichów. There are 63 natural monuments within the park, e.g. alley of small-leaved limes at the St Benedict's Abbey, Kryspinowska Cave, Park at Willa Decjusza, or Świętojańskie Source. Numerous churches and monasteries are considered as historic objects within the park, e.g. St Benedict's Abbey Complex in Tyniec located in the area of the Works Contract in question, and numerous manor complexes and historic parks.

The following are located in vicinity of the Works Contract (within the Landscape Park):

- Skolczanka Nature Reserve (about 1500 m from the analyzed Works Contract),
- Dębnicko–Tyniecki (PLH120065) meadow area – located about 1900 m from the analyzed Works Contract,
- Skawiński (PLH120079) meadow area - located about 2300 m from the analyzed Works Contract.

There are no ecological use lands in vicinity of the Works Contract.

There are no natural monuments with the area of planned Works Contract.

The location of the Works Contract in reference to the protected areas was presented in a map given in Appendix 6 to the EMP– Map with location of the Works Contract in reference to protected areas and to NATURA 2000 sites

### **4.9 Cultural landscape and monuments**

The end of embankment at Task no. 2 reaches a hill, where a historic object is located: St Benedict's Abbey Complex in Tyniec built in 11<sup>th</sup> century, and the church of St Paul and St Peter from the turn of 15<sup>th</sup> and 16<sup>th</sup> century is located there.

In conformity with an opinion of the Provincial Heritage Conservator in Cracow dated March 5, 2015, ref. no.: OZKr.5183.116.2015.MTW.DW, the designed Works Contract is not located within an area entered into the Małopolski Heritage Register, and it does not collide with relics of earth defenses existing within the aforementioned site. That opinion was reproduced in Appendix 4 to the EMP– Decisions, Resolution, Permits, Notes.

The cultural landscape within that reach of the Vistula Valley is dominated by sacral structures of the St Benedict's Abbey of Apostles St Peter and St Paul in Tyniec. Remaining

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cultural elements are structures of neighboring villages (Piekary, Ściejowice, Jeziorzany) and a mosaic of arable fields, orchards, and intensively used meadows.

### 4.10 Population

The planned Contract is a linear Works Contract, which – within its course – is located in the area of two districts: City of Cracow and Cracow.

The Works Contract is located in the area of the Tyniec, district in the City of Cracow. In conformity with data valid on June 30, 2017<sup>11</sup> the City of Cracow is inhabited by 766739 people, population density is 2342 people/km<sup>2</sup>.

In case of the District of Cracow the Works Contract shall be implemented within the area of Piekary and Kryspinów – Commune of Liszki.

The number of inhabitants of Piekary in 2011 was 1491 people. People of Piekary are 9% of the Commune's population. Percentage of people in non-working age in the Commune of Liszki is 56.5%.

The number of inhabitants of Kryspinów is 1360 people. People of Kryspinów are 8% of the Commune's population.

The issues associated with a social context for the implemented Works Contract were described in more details in the document titled *Land Acquisition and Resettlement Action Plan (LA&RAP)* for the subject Contract.

### 4.11 Remaining ESHS issues

ESHS related issues (i.e. the ones related to environmental, social and health and safety aspects) are regulated in Poland by several provision given in binding legal acts, including e.g. the Act of April 27, 2001 Environmental Protection Law, the Act of October 3, 2008 on providing information on the environment and its protection, public participation in the environmental protection, and on environmental impact assessments, the Act of April 16, 2004 on nature conservation, the Act of April 13, 2007 on preventing of damages to the environment and on repairing them, the Act of December 14, 2012 on waste, the Act of July 20, 1991 on Environmental Protection Inspectorate, the Act of March 14, 1985 on the State Sanitary Inspectorate, the Act of July 7, 1994 Construction Law, the Act of July 20, 2017 Water Law, the Act of June 26, 1974 Labour Code, the Act of April 13, 2007 on the State Labour Inspectorate, the Act of December 3, 2010 on implementation of some provisions of the European Union in reference to equal treatment, the Act of April 23, 1964 Civil Code, the Act of June 6, 1997 Penal Code, and others.

Legal regulations included in those acts are to e.g.:

- assure proper condition for abiotic environment and for biotic environment on site and in the areas surrounding the implemented construction investments;

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<sup>11</sup> [GUS – Demography Database: Results of Current Research: Status and Structure of Population: 2017: Status of Population on June the 30<sup>th</sup>: Population in Reference to Gender and Cities: Małopolskie Province.](#)

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- assure safety and health of people in reference to implementation of construction investments;
- prevent cases of sexual harassment and mobbing on work sites;
- assure proper social and labour conditions, and payment for the personnel.

Supervision over observing of provisions included in the aforementioned legal acts is performed by e.g. such numerous institutions and state authorities as the: General Directorate for Environmental Protection, Regional Directorates for Environmental Protection, Environmental Protection Inspectorate, State Sanitary Inspectorate, Construction Supervision Authorities (including Provincial Construction Inspectorates and District Construction Inspectorates), State Labour Inspectorate, Ombudsman, Governmental Proxy for Equal Treatment, Governmental Proxy for Rights of the Disabled, Police, and others.

Nonetheless, considering the importance of ESHS issues and the requirements of international institutions financing the OVFM Project (including the World Bank), this Environmental Management Plan and other documents of the Contract contain numerous detailed conditions to assure the proper implementation of any valid provisions and to keep high proceeding standards in the aforementioned scope.

## 5 Environmental Impact Assessment – Summary

### 5.1 Land surface and landscape

Impact on landscape and land surface shall occur at implementation of particular stages of works requiring the application of construction equipment. Adverse impact on land surface shall be associated with dislocation of soil and – as a result – with transformation of the site under the planned extension of the embankment and the development of accompanying facilities. The planned works shall require permanent acquisition of adjacent land up to 5 meters from the embanked area's side and – due to the expected development of service roads and embankment supports – about 5-6 m of the area beyond the embankment. That impact shall also be connected with acquisition of land for the purpose of Works Contract implementation (temporary land acquisition for traffic purposes, traffic of machines and equipment, storage of materials, parking lots for machines and construction equipment, waste storage site). Land acquisition was described in details in the document titled *Land Acquisition and Resettlement Action Plan (LA&RAP)*. The aforementioned impacts shall be short-term and reversible, and their scale depends on good organization of the construction site. Adverse impact during the performance shall not be significant, and – considering the absence of emergency situations – it shall be short-term and reversible.

Changes resulting from the necessary removal of selected trees and shrubs from the embanked area and from the area beyond the embankment shall be permanent; however, due to a small scale of that measure (about 63 trees and 3195 m<sup>2</sup> of shrubs shall be removed) that change shall not be significant.

The works are performed at the existing objects, and therefore the range of changes to the landscape is minor. Effects of the works for the landscape structure shall be local. After completion of the planned construction works the site covered by earthworks and the adjacent land – transformed due to e.g. the traffic of machines and means of transport, etc. – shall be cleared and reinstated to the condition prior to the commencement of works.

No new adverse impact shall be generated on the Contract's operational stage. Functioning of the Works Contract shall allow for the transfer of water through the Vistula river-bed in a manner not posing hazard to adjacent land in case of high water levels. Impact on the land surface may however be associated with an emergency situation (damage of the embankment) or with the occurrence of water levels causing catastrophic flood. Assuming "regular" operations of the Works Contract in accordance with the assumed objectives, impact on the land surface shall not occur.

In order to limit the impact of works on land surface and on landscape during implementation of the Contract, one shall implement mitigation measures described in Appendix 1 to the EMP– Plan of mitigation measures, item in the table: 3, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 24, 26, 54, 97, 98, 99.

### 5.2 Climate

The Works Contract shall not cause changing of local climate neither during the construction works nor after handing the Works Contract over for use. Due to maintenance of the present

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embanked area, air humidity shall not be changed, which is strictly connected with vicinity of surface water and floodplains.

Significant modification of micro-climate parameters is not expected on the Works Contract's operational stage; thus it is not necessary to implement additional mitigation measures. However, some measures shall be implemented during the works (e.g. removal of plants) and they may affect such elements of climate as e.g. insolation associated with the presence of vegetation, or air humidity. It shall however be an impact of a minor scale.

A potential permanent change in the context of local climate shall result from increased flood safety (reduced risk of flood occurrence), and limitation of the flood risk would allow for avoiding its consequences, one of which may be creation of local climate due to local adjustments to water relations.

### **5.3 Air quality**

Emission of gaseous and dusty pollutants shall occur on the construction stage mainly, when works will require use of heavy equipment, diesel vehicles and machines, causing emission of gaseous and dusty pollutants, and consequently an increase of pollution level in the air. It will be unorganized emission, the range of which will correspond to the area of construction works and routing of the access and technological roads. It will have localized and periodic character. It will cease completely on completion of works.

Main factors affecting the air during the construction phase are as follows:

- Dust produced at operations of machines and devices executing the earthworks,
- Combustion gases produced by engines of working machines and means of transport,
- Dust generated during deliveries of materials and their storage.

Size of the emission will depend on the number of diesel vehicles and machines used for the construction and on their working time. The work organization (optimization of equipment utilization, work efficiency, etc.) will be important for the reduction of emission, as well as the organization of site facilities and access roads (optimization of routes, location of site facilities). Additional possible ways to reduce emission are related to keeping the equipment and vehicles in good technical condition, and compliance with environmental and work safety standards. To minimize the adverse impact on air it is advised to sprinkle dirt roads and yards with water (reduction of dusting) or even to suspend the works in dry and windy weather conditions.

Deliveries of construction materials shall not cause changes to the current general condition of air. Due to cyclicity of deliveries, emission within access and temporary roads shall practically have no meaning and shall not cause exceedance of standard values beyond traffic routes.

During the operational stage the Works Contract will not be a source of significant emission of pollutants into the air. The operations of objects and flood defenses, which are subject to modernization, do not involve regular emission of pollutants.

The source of periodic unorganized emission will only be the fuel combustion from vehicles on service roads as a part of maintenance and control of the embankment's condition, or



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work of diesel lawnmowers curing the embankment's slopes. However, due to the scale that emission will have no significant impact on the quality of air.

One shall assume that the construction stage shall not result in permanent adverse changes to the air environment.

In order to limit the impact of works on the quality of air during implementation of the Contract, one shall implement mitigation measures described in Appendix 1 to the EMP - Plan of mitigation measures, items in the table: 69, 70, 71, 72, 73, 75.

### **5.4 Soil and grounds**

The Works Contract will have impact on soil environment only during construction period, just like in the case of majority of other environmental components. Execution of proposed construction works will involve the necessity to remove or at least disturb topsoil, or excavate trenches for the embankment's modernization elements. An additional area will also be acquired for the embankment's extension (rising and widening), as well as for access roads (roads will be demolished on completion of works and the area will be reinstated to its original condition). Apart from the above, there will be no interference in soil layer.

The use of land shall be locally changed (e.g. permanent acquisition within pastures/wasteland/fields). Due to the range of works and exclusion of biologically active sites, that impact would be local and would not effect in significant deterioration of soil condition within that area.

Risks for soils are mainly associated with the occurrence of such emergency situations as leakage of diesel derivatives, which may result in local contamination of the ground. That impact shall be local.

At keeping the environmental protection and H&S standards there should not be a significant impact and deterioration of soil quality due to implementation of the Works Contract. Adverse impact connected with temporary removal of soil during the earthworks performed shall be temporary. After completion of the works the site shall be cleared and reinstated by the Contractor.

It was however assumed that in order to limit the impact of works on the status of soils and grounds during implementation of the Contract one shall implement mitigation measures described in Appendix 1 to the EMP - Plan of mitigation measures, items in the table: 13, 16, 17, 20, 21, 22, 23, 24, 25, 26, 49, 50, 51, 55 56, 57, 58, 59, 60, 61, 62, 63, 64, 74, 75, 76, 77, 78, 97, 98, 99.

### **5.5 Surface water**

Implementation of the subject Contract shall not be related to interference in the Vistula river-bed. The Contract shall not exert impact on morphological continuity of the river, and it shall also not affect hydro-morphological and biological elements of the river. The planned works shall not modify the volume and dynamics of flow in the river, and acquisition of additional sites within the embanked area shall be minor. The subject Works Contract shall not form a risk to achievement of environmental objectives for BSW established in the river basin where it is to be implemented. The Works Contract shall not relate to the intake of water and to the discharge of wastewater to the ground, and therefore it shall not affect the quantitative and

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quantitative status of surface water, and shall not be a risk for the achievement of environmental objectives for BSW.

Impact during the construction works may result from penetration of substances harmful to the environment, i.e. increased suspension volume in the discharge, leak of fuel or other substances used during the construction works. One shall undertake any measures to remove adverse effects of the event then. Also the occurrence of a flood wave during the construction process may result in washing the embankments out and in deterioration of the surface water quality. However, due to incidental character of the discussed cases, they should not be considered for the general status of water.

Domestic sewage and minor volume of technological wastewater shall be produced during the construction process. Wastewater shall be collected in tight tanks and successively handed over to the treatment plant. The planned works shall also result in generation of a small amount of waste, domestic waste mainly, and they should be delivered to municipal disposal facilities. Assuming the correct course of works, the analyzed Works Contract shall not result in the production of hazardous waste posing a risk of deterioration to the water quality.

The use of embankments shall not change the surface water quality.

It was however assumed that in order to limit the impact of works on the status of water during implementation of the Contract one shall implement mitigation measures described in Appendix 1 to the EMP - Plan of mitigation measures, items in the table: 11, 12, 13, 14, 15, 16, 17, 20, 49, 50, 51, 52, 53, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 74, 75, 76, 77, 78.

### **5.6 Groundwater**

Implementation of the subject Contract shall not affect the hydraulic relation between the river and the area beyond the embankment, as anti-filtration membranes planned within the framework of Task no. 2 and Task no. 3 shall be “suspended” in a layer of sands, and they shall not reach the non-permeable layer. In case of Task no. 1 it is not expected to develop anti-filtration membranes. The Works Contract shall not be related to the intake of water and to the discharge of sewage to the ground, and therefore it shall not affect the quantitative and qualitative status of groundwater, and shall not remain a risk for the achievement of environmental objectives for BGW.

The use of embankments shall not change the groundwater quality.

It was however assumed that in order to limit the impact of works on the status of groundwater during implementation of the Contract one shall implement mitigation measures described in Appendix 1 to the EMP - Plan of mitigation measures, items in the table: 11, 12, 13, 15, 16, 17, 20, 49, 50, 51, 52, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 74, 75, 76, 77, 78.

### **5.7 Acoustic climate**

A potential source of noise would be machines and devices operating on site and means of transport during the performance phase. The noise sources shall be mainly concentrated in the area of the construction site and within site facilities. Impact on acoustic climate shall be short-term and local, and shall cease at the completion of works. The most extensive

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acoustic impact shall occur during the works in vicinity of land requiring acoustic protection (Task no. 2 – development at chainage km 62+320–62+350 is placed in a distance of about 50 m from the planned foot in the area beyond the embankment to the facade's gauge, and structures at chainage km 62+950 are located in a similar distance; bigger groups are present at the St Benedict's Abbey – in a distance of about 150-200 m from the designed embankment foot in the area beyond the embankment).

The noise associated with truck deliveries may too a minor extent affect the area's acoustic climate. Nonetheless, it shall be emphasized that deliveries of materials during the construction process shall be temporary, and the noise generated during deliveries of materials may be omitted.

In case of the works performed within the embanked area, the standard noise value shall not be exceeded for areas located just beyond the flood embankment. In some sections the works shall be performed in the area beyond the embankment, and operations of heavy equipment shall be done on the embankment crest within the entire length of the embankment. As a consequence, within the area beyond the embankment the acoustic background shall locally exceed the permissible value. Those cases would be local and shall not cause irreversible changes to the environment.

During the use of the planned contract the impact on acoustic climate shall not occur. There may be temporary impact in the form of noise emission during mowing of plants growing on the crest and on slopes of the embankment.

In order to limit the impact of works on the status of acoustic climate during implementation of the Contract one shall implement mitigation measures described in Appendix 1 to the EMP - Plan of mitigation measures, items in the table: 14, 65, 66, 67, 68, 69.

## **5.8 Nature**

### **5.8.1 Protected natural habitats and protected species of plants and animals**

Performance of the planned construction works is related to the Works Contract impact on vegetation and fauna within the area. A method assumed for implementation minimizes the impact, and limits it to effects to the vegetation directly colliding with the Works Contract. Herbaceous plants shall be destructed and trees directly colliding with the planned Works Contract and placed in the area acquired for temporary roads and maneuvering yards shall be logged. It is expected to log about 63 trees and about 3195 m<sup>2</sup> of shrubs directly colliding with the planned Contract. For the purpose of reinstating the natural value, top-soiling and sowing with vegetation mix shall be done after completion of the works within the area damaged during the performance.

Impact of the Works Contract on fauna shall mainly result from the increased range of noise during the implementation, what may cause temporary scaring of animals. The Works Contract shall exert a direct impact on soil fauna through interference in the soil structure during redevelopment of the embankments and during the development of technological roads; however, those would be reversible and short-term effects. Furthermore, reinstatement of a natural soil cover within that site shall – with a lapse of time – reproduce previous plant groups and fauna due to the natural succession.

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Adverse impact on plants and animals shall cease to a great extent in the operational phase. It is related to the expected reinstatement of the work site to its original condition, while keeping the previous use of land.

In order to limit the impact of works on the status of flora and fauna during implementation of the Contract one shall implement mitigation measures described in Appendix 1 to the EMP - Plan of mitigation measures, items in the table: 11, 12, 13, 14, 15, 21, 22, 23, 25, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 53, 54, 98.

### **5.8.2 Protected sites**

The planned Contract is located within the Bielańsko–Tyniecki Landscape Park. Skołczanka Nature Reserve and two Natura 2000 sites are also located in vicinity.

Due to the local and very limited character, implementation of the Contract shall not affect landscape values of Bielańsko–Tyniecki Landscape Park. Protected natural habitats were not identified within the area of the planned Works Contract. Almost the entire embanked area is currently formed by habitats of invasive plants. Furthermore, it is not expected to fill water ponds within the framework of that Works Contract, and it is not planned to perform any works within the Vistula river-bed.

As a consequence, due to the character of the Works Contract and its location beyond Natura 2000 sites and a nature reserve, and due to the scale of the Works Contract and type of works to be performed, it was stated that its implementation shall not adversely affect the status of natural habitats and species of animals, for protection of which sites of European Ecological Network Natura 2000 and the nature reserve were established.

## **5.9 Cultural landscape and monuments**

In reference to Task no. 2 the subject Works Contract borders on one of the objects subject to heritage conservator's protection (St Benedict's Monastery in Tyniec). Despite the small distance to the object, adverse impact on protected elements is not expected on the stage of implementation and of operation.

The Provincial Heritage Conservator in Cracow issued a positive opinion for the designed Works Contract in the decision dated March 5, 2015, ref. no.: OZKr.5183.116.2015.MTW.DW (that opinion has been reproduced in Appendix 4 to the EMP– Decisions, Resolutions, Permits, Notes), provided that:

- Archaeological supervision would be assured for the earthworks,
- A reinforced-concrete wall with stone cladding would be designed at the historic St Benedict's Abbey in Tyniec,
- Traffic on the crest shall be limited for two-track vehicles, as the designed path should be used for maintenance of the embankments and for leisure purposes.

The design addressed those conditions. In order to limit the earthworks (related to the extension of the embankment body) at the monastery to the necessary minimum, rising of the embankment in that place was designed using a reinforced-concrete wall over a length of 30 m, with the required crest gradeline. It is additionally expected to perform low-pressure

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injection in that location, which would replace the essential sealing for the embankment body in the form of bentomat.

In order to limit the impact of works on the cultural landscape and on historic objects during implementation of the Contract one shall implement mitigation measures described in Appendix 1 to the EMP - Plan of mitigation measures, items in the table: 87, 88, 89.

### **5.10 Material goods**

In case of protection for the material goods implementation of the Contract shall improve flood safety for the City of Cracow and for Skawina, and also for localities within the Commune of Liszki. The extension of the planned embankment under the Works Contract will contribute directly to the protection of farmlands of inhabitants of the area of 300 ha beyond the embankment. It should be emphasized, however, that Contract 3A.3 Section 4 - the right embankment of the Vistula River from the Skawinka estuary to the Kościuszko barrage should be treated as an element of the entire flood protection system for the city of Cracow.

Impact on buildings placed in a small distance may occur in vicinity of construction sites and delivery routes. No adverse impact on the material goods was identified.

The issues associated with a social context for the implemented Works Contract, including expropriation of properties, limitation of the previous method of use or of the access to properties, were described in more details in the document titled *Land Acquisition and Resettlement Action Plan (LA&RAP)* for the subject Contract.

### **5.11 Health and safety of people**

The designed Works Contract shall temporarily effect in deterioration of the life quality and standard for inhabitants; however, that shall be a short-term and reversible impact. Due to the works noise emission would increase in vicinity of performance sites, and air dusting would increase locally too a small extent, and – as a result of intensive traffic of vehicles – emission of combustion gases shall raise. Objects located in the area beyond the Vistula's embankment shall suffer the greatest impact. Furthermore, intensive traffic of delivery vehicles may deteriorate the comfort of traffic participants, and construction equipment applied for construction of revetments may generate vibrations. It shall however be emphasized that those impacts would be temporary and limited, and they shall cease at the completion of construction stage.

The operational stage is related to the positive impact on people and their properties. The main objective of the Works Contract is to protect people and their material goods against flooding at high water levels. The extension of the planned embankment under the Works Contract will contribute directly to the protection of farmlands of inhabitants of the area of 300 ha beyond the embankment. Functioning of the Works Contract shall improve the sense of security in case of people living in the areas located along the Vistula River.

## **5.12 Exceptional hazard to the environment**

Hazard associated with contamination of the environment may occur on both: the implementation stage, as well as on the operational stage, e.g.: identification of unexploded shells and misfires, failures of embankments, or failure of devices during the operations.

Due to the possible accommodation of a flood wave during the performance, the Contractor shall be obliged to organize and establish detailed rules of proceeding in case of the discussed event.

The Contractor is obliged to perform the works under sapper supervision, which includes constant inspection and clearance of the site from dangerous military items, including their treatment.

The most likely event, which may occur during the performance, is leakage of substances from machines and vehicles operating within the site. Constant inspections of the machines and proper organization of the site and site facilities shall be assured to remove the contamination as soon as possible.

The proper performance and use, and observation of rules of proper organization for the works and of obeying the law would allow for providing full safety for the construction site and for the environment.

## **5.13 Other hazards related to ESHS**

Implementation of the Contract may relate to numerous impacts related to ESHS issues (i.e. environmental, social and health and safety aspects). Except for the issues discussed above in Sections 5.1-5.12, the following additional issues or hazards related to that subject may occur during implementation of the Contract, e.g.:

- Accidents and near misses, including participation of people associated with implementation of the Contract and/or of third parties;
- Cases of such unacceptable behavior on work sites as sexual harassment or mobbing;
- Cases of intentional or unintentional violation of labour law's provisions, including the ones associated with social conditions and labour conditions, and with payment to the personnel;
- Cases of infections with sexually transmitted diseases, including HIV/AIDS, resulting from the lack of knowledge on preventing and controlling infections of that type.

Due to significant social effects of those hazards, this Environmental Management Plan and other documents of the Contract contain numerous detailed conditions to prevent and efficiently react in case such event occurs, and to assure proper implementation of any provisions of national legislation in that scope (see e.g.: section 6.14).

## **5.14 Cumulative impact**

Impact associated with the works to extend the Right embankment of the River Vistula within the discussed sections might have cumulated, if another Works Contract would be

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implemented in the neighborhood in the same time. However, performance of other works, which may in any way result in accumulation of adverse impact on the environment, is not planned in vicinity of the site in foreseeable time.

The use of embankment shall not cause accumulation of adverse impact.

## **6 Description of mitigation measures**

This section presents mitigation measures included in the following documents:

- Environmental Impact Report with update for the Contract titled: “Design on Extension of Flood Embankments for the Vistula River in Cracow: Section 4 – Right embankment of the Vistula from the Skawinka estuary to the Kościuszko barrage”. CERMET-BUD Sp. z o.o. Przedsiębiorstwo Inżynierskie Kraków;
- Decision of the Regional Director for Environmental Protection in Cracow dated May 20, 2015 on environmental conditions for the contract titled: “Design on Extension of Flood Embankments for the Vistula River in Cracow: Section 4 – Right embankment of the Vistula from the Skawinka estuary to the Kościuszko barrage”, ref. no.: OO.4233.8.2014.BM.
- World Bank policies:
  - OP/BP 4.01 – on environmental impact assessment,
  - OP/BP 4.04 – on natural habitats,
  - OP/BP 4.11 – on physical cultural resources.
- Odra-Vistula Flood Management Project – Project Operations Manual, Wrocław 2015.
- Odra-Vistula Flood Management Project – Environmental and Social Management Framework, Cracow 2015.

Mitigation measures cover such elements of the environment as: land surface and landscape, air quality, soils and grounds, surface water and groundwater, acoustic climate, cultural heritage and nature. They are associated with detailed guidelines for the Contractor, which need to be implemented prior to, during, and after implementation of the contract for works.

### **6.1 Land surface and landscape**

#### **Implementation stage**

In reference to the issue of direct impact on land surface and on landscape, it shall be only exerted on the Works Contract implementation stage. The land transformation shall be noticeable to the highest extent then.

In order to limit adverse impact of the Contract on land surface and on landscape mitigation measures were established, and their implementation was planned during performance of the construction works, and also prior to their commencement. The performance stage shall be preceded with works associated with preparation of the Works Contract implementation site, including e.g. preparation of storage yards for construction materials, site facilities, etc., and setting-out, preparation (and agreement with road administrators) of delivery routes for machines and vehicles.



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Locations of temporary acquisition (technological roads, yards, site facilities, storages sites for construction materials, parking lots and others) should be placed and developed in accordance with the guidelines of the Contractor's environmental supervision, as approved by the Engineer.

Machines and vehicles may move only within technological roads and maneuvering yards within the site. Order should be kept within the construction site and proper organization of the works should be assured.

The most important mitigation measures are as follows:

- Delivery of materials should be done using existing public roads running in vicinity of the planned Contract and using technological roads, with maximum possible application of the existing road network;
- Storage sites for materials, rest and refreshment facilities, and parking lots for the equipment and for machines shall be located in places of the lowest environmental value, including rules of minimization for acquisition of land and for transformation of its surface;
- The site facilities shall be hardened and equipped with sanitary facilities;
- The area of planned Works Contract shall be cleared after completion of the works;
- The area of works and land adjacent to the construction site shall be reinstated to its original conditions due to e.g. the traffic of machines and means of transport.

In accordance with valid standards and at keeping environmental protection rules in conformity with the conditions determined in relevant decisions, the performance shall minimize adverse impact of the Works Contract on the soil environment.

Mitigation measures related to the protection of land surface and landscape were listed in Appendix 1 to the EMP– Plan of mitigation measures, item in the table: 3, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 20, 24, 26, 54, 97, 98, 99.

### **Operational stage**

During the operational stage no adverse impacts on ground surface and landscape are anticipated. Grounds located in the area beyond the embankment will be protected against flooding, as a result of which rational farming is feasible within the area.

## **6.2 Climate**

The Works Contract will not cause significant change to local climate at any stage. Due to lack of negative impacts on climate it was stated that no mitigation measures were necessary.

## **6.3 Air quality**

### **Implementation stage**

The impact of the Works Contract on the air will take place only at construction stage, during the execution of works using heavy equipment, and diesel vehicles and machines. It will be unorganized emission, the range of which will correspond to the area of construction works and to the course of access and technological roads. It is recommended to apply e.g. the following mitigation measures to reduce/eliminate the adverse Works Contract impact on the air quality:

- Equipment used on the implementation stage shall be fully efficient and meet the legal requirements to protect against the emission of dusts and gases to the air,
- Loose materials and aggregate necessary for the planned works shall be properly protected against outblowing and excessive dusting during transportation, storage, and embedding,
- Access roads shall be kept in proper cleanliness,
- One shall limit the operational time of diesel engines, construction machines and vehicles, and reduce traffic velocity for vehicles within the site.

Detailed recommendations for mitigation measures related to air protection are shown in Appendix 1 to EMP– Plan of mitigation measures, items in the table: 69, 70, 71, 72, 73, 75.

### **Operational stage**

During the operational stage the only source of temporary and unorganized emission of pollutants into the air will be combustion of fuel by vehicles and machines (e.g. lawn mowers) used for maintenance and inspection of condition of the embankment. That emission shall not have a significant impact on the air quality, and therefore there is no need for introduction of mitigation measures concerning protection of air during the operational stage.

## **6.4 Soils and grounds**

### **Implementation stage**

The Works Contract will affect the soil environment only on the construction stage. This will result from the necessity to remove or disturb the top layer of soil layer on the crest and on the slopes of the embankment, as well as on technological routes and at excavations for elements of embankment modernization.

The most important mitigation measures are as follows:

- One shall remove about 10 cm thick layer of top-soil and then about 40 cm thick layer of mineral soil (locally more due to arrangement of a bentomat) prior to the commencement of earthworks. The collected ground and top-soil shall be stored for embedding in the final construction phase. Storage sites for top-soil/mineral ground should be selected by the Contractor to protect top-soil/mineral ground against

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pollution, overdrying, mixing, overpassing, and compaction, and to allow for its re-embedding;

- In case of polluting the ground, one shall immediately remove the polluted soil layers and hand them over to a specialized company having relevant permits for business actions related to the dangerous waste management;
- During the performance one shall apply efficient equipment only to protect the soil against pollutions;
- Site facilities, where vehicles, machines and devices shall move, shall be sealed on the subbase side using insulation materials assuring protection for the soil;
- Maintenance of vehicles, machines and devices (e.g. diesel exchange, liquid change, etc.) may be done in designated spots within site facilities only, while meeting determined conditions (e.g. proper marking, protection on the subbase side, etc.);
- One shall arrange a station with sorbent for removal of potential leakage and spills of diesel derivatives within locations designated for fueling and parking of vehicles and machines;
- Fueling should be done using mobile or fixed fuel distribution stations having relevant protection, e.g. a station with sorbent to remove leakage and spills of diesel derivatives to the ground;
- Grounds (including spoil) and aggregate used for construction works and transported from beyond the site should meet requirements related to soil quality standards and to earth quality standards (in conformity with the Environmental Protection Law and its secondary regulations), and any other valid regulations and standards.

Additional measures mitigating impact on soils include the following: ban to repair equipment and machines, to change diesel and to fuel and store fuels within the Vistula embanked area and within environmentally valuable areas determined by the Contractor's environmental supervision; as well as ban to park machines within the Vistula embanked area and within environmentally valuable areas determined by the Contractor's environmental supervision.

Ongoing regular inspections of technical condition of vehicles and construction equipment will be carried out during the construction stage, and the site will be provided with sorbents enabling quick neutralization of possible spills or leaks of harmful substances.

After completion of the construction works the embankment will be covered with a layer of top-soil. Ground area will be sown with native plant mix and with grass in a way which would limit the surface erosion to minimum.

Mitigation measures related to protection of land are shown in Appendix 1 to EMP– Plan of mitigation measures, items in the table: 13, 16, 17, 20, 21, 22, 23, 24, 25, 26, 49, 50, 51, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 74, 75, 76, 77, 78, 97, 98, 99.

### **Operational stage**

During the operational stage there will be no negative impact of the Works Contract on the soil environment. There is no need for introduction of mitigation measures concerning protection of soil and ground during the operational stage

## **6.5 Surface water**

### **Implementation stage**

Measures to protect surface water are coherent with measures to protect against contamination of soils and the ground (in reference to the proper organization of works and locations of temporary acquisition, and providing them with relevant sorbent).

Limitation of nuisance and adverse impact of the Works Contract on the implementation stage is associated with the proper performance. In order to meet requirements related to the protection of environment the construction works shall be preceded with a detailed plan and a schedule of works addressing relevant protection.

In case of the Works Contract implementation stage a hazard for the ground and water environment may occur due to an uncontrolled emission of liquid pollutions caused by unpredictable events (failures, collisions), and also due to e.g. improper storage of waste, improper sewage management or improper application of single vehicles and machines and construction devices.

One shall keep the site clean and shall assure the proper organization of works. One shall apply materials which would not be harmful for the environment or remain neutral only for the purpose of performance.

One shall apply a proper drainage system for excavations in the area of excavations, which would assure keeping them dry – without water pits. One shall maximally limit the time of drainage and shall apply methods limiting the volume of discharged water, along with its protection against contamination.

During implementation of the Contract one cannot interfere in channels and banks of water courses (e.g. traffic of vehicles, machines and devices is banned, contamination is banned, devastation is banned, and storage of materials is banned, etc.).

In case of diesel derivatives' leakage to surface water the Contractor is obliged to assure immediate mechanic collection of diesel derivatives from the surface of water, and also to apply proper sorbent. Site facilities shall be equipped with relevant volume of sorbent throughout the Contract implementation period.

For the time of construction works the Contractor shall develop a flood protection plan, which shall be agreed with the Engineer. That plan shall include a reference to the time of evacuation or protection of construction equipment and the occurrence of particular hydro-meteorological situation.

Occurrence of adverse impact on the status of BSW established within the Contract implementation area is not expected.

Mitigation measures related to protection of water are shown in Appendix 1 to EMP– Plan of mitigation measures, items in the table: 11, 12, 13, 14, 15, 16, 17, 20, 49, 50, 51, 52, 53, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 74, 75, 76, 77, 78.

### **Operational stage**

No risk for surface water will occur on the operational stage. Operations, including constant maintenance of the modernized flood embankment, would not cause emission of pollutions

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to the ground and to surface water. As a consequence, it is not expected to implement mitigation measures for protection of surface waters on the operational stage.

### **6.6 Groundwater**

#### **Implementation stage**

Measures to protect groundwater are coherent with measures to protect against contamination of soils and the ground, and also surface water (in reference to the proper organization of works and locations of temporary acquisition, and providing them with relevant sorbent).

No significant impact on the water and soil environment is foreseen, in particular such an intended impact as e.g.: intake of groundwater, sewage discharge into the environment, lowering the level of groundwater, or other type of change in water relations.

Mitigation measures related to protection of water are shown in Appendix 1 to EMP– Plan of mitigation measures, items in the table: 11,12, 13, 15, 16, 17, 20, 49, 50, 51, 52, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 74, 75, 76, 77, 78.

#### **Operational stage**

During the use of embankments there will be no negative impact on the groundwater. Water circulation will not change during the operation stage, in comparison to the current condition. Ongoing maintenance of modernized flood embankment will not cause emission of pollutants to soil or groundwater. There is no need for introduction of mitigation measures concerning protection of groundwater during the operation stage.

### **6.7 Acoustic climate**

#### **Implementation stage**

Acoustic nuisance associated with the analyzed Contract may occur only on the implementation stage, as a result of execution of construction works with the use of motor vehicles and equipment. This will be a temporary inconvenience (only during the daytime) and will be limited to the construction site and its vicinity as well as to roads used for deliveries associated with the construction process.

Noise emitted during implementation of the Works Contract shall move along with the work site, and that impact shall be short-term and ceaseable. It is expected to implement the following mitigation measures:

- Construction works shall be performed within the day, i.e. from 6 am to 10pm,
- Construction equipment applied during the works should be fully technically efficient and shall be specified by low noise emission.

Mitigation measures related to reduction of noise emission are summarized in Appendix 1 to EMP– Plan of mitigation measures, items in the table: 14, 65, 66, 67, 68, 69, 70, 71, 72.

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## Operational stage

The noise emission during the operational stage will not exceed the value admissible by law. There is no need for introduction of mitigation measures concerning acoustic protection during the operational stage.

## 6.8 Nature

### 6.8.1 Natural habitats, flora and fauna

#### Implementation stage

Performance of the planned construction works is associated with impact of the Works Contract on vegetation and fauna of that area. Due to the works performed, the following mitigation measures are expected:

- Storage sites for materials, rest and refreshment facilities, and parking lots for the equipment and for machines shall be located in places of the lowest environmental value, after obtaining a prior approval of the Engineer's environmental supervision for their location; Prior to the commencement of works the Contractor's environmental supervision shall perform a single inventory for areas of temporary acquisition and permanent acquisition, which is to establish the current placement of potential habitats of plant species under protection, and to identify environmentally valuable sites. The Contractor's environmental supervision team shall include experts of the following branches: ornithology, herpetology, chiropterology, entomology, botany/phytosociology. During the construction works one cannot damage plants located beyond the area covered by the Contract;
- Due to the hatching period for birds the logging of trees and shrubs shall be scheduled for autumn and winter (the works shall be performed from September the 1<sup>st</sup> until the end of February). It is acceptable to perform the logging in a different time provided that an ornithological supervision would be done by the environmental supervision, which would state that bird nests or hatches would not be damaged as a consequence of logging;
- The removal of trees (logging) having a diameter of over 40 cm at breast height shall be preceded by inspection of those trees – in terms of occurrence of protected species of invertebrates and bats – performed by an expert entomologist and an expert chiropterologist within the period not longer than 1 week before the logging of particular tree;
- Trees not determined for logging shall be properly protected against damage. The works in vicinity of roots and trunks shall be done manually. One cannot leave rootage uncovered for a long time, so its overdrying would be avoided. In case of damaging a tree, the Contractor shall immediately perform necessary curing actions limiting effects of the damage under supervision of its own environmental supervisor;
- Construction works shall be done in a manner not harmful to trees and shrubs, which are not expected for removal (logging);
- It is banned to store any soil materials or construction waste in vicinity of tree trunks;

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- In case of exposing tree boughs and branches to mechanical damage by operating or moving vehicles, machines, and devices, one shall execute preventive cutting for tree branches exposed to breakage. That cutting shall be done under supervision of an expert dendrologist;
- Prior to the commencement of earthworks within a particular area one shall inspect it in relation to the occurrence of protected animal species (e.g. amphibians, reptiles, birds). The works associated with the removal of top layer shall be done from September to February. Identified specimen shall be transferred to the area beyond the Works Contract site to the location having similar habitat conditions and placed in such a distance from the Works Contract that the animals would not be able to return to the site until the completion of works. The earthworks shall be performed under the Contractor's environmental supervision;
- If seasonal migration of amphibians would be identified within the Works Contract site, the Works Contract area shall be protected to disable the amphibians from reaching the site, where – due to the works performed – they would be at risk. For that purpose one shall arrange a temporary fence made of materials having tight structure. At every 20-30 m along the fence one shall excavate shallow pits and lay them with foil, what would form traps for the migrating amphibians. In case of finding amphibians in them, one shall transfer them to the area beyond the Works Contract site to the location having similar habitats conditions and placed in such a distance from the Works Contract that the animals would not be able to return to the site until the completion of works. Locations with similar habitat conditions shall be determined by the Contractor's environmental supervision;
- The works shall be performed in a way assuring the possibility of safe migration for amphibians, including migration of amphibians through internal roads designed within the Contract implementation area. Detailed rules for implementation of that condition shall be established with the expert herpetologist;
- The construction site and excavations shall be kept dry during the Works Contract and during the performance;
- Prior to the commencement of earthworks one shall remove a layer of humus, store it beyond the area of earthworks, and assure the possibility of its re-embedding for the development of a fertile layer on further construction stages;
- The excavations shall be protected against falling down of small animals. The Contractor shall inspect the sites, which may remain traps to small animals;
- Mixes of grass and other species of native plants shall be applied for the development of the planned Contract, and their regular mowing shall be assured;
- The Contractor should assure such organization of works that the Contract implementation time would be maximally reduced, and therefore adverse impact of the works on animals living in the Contract implementation area and in its vicinity would be minimized;
- The works and other actions performed within the Contract implementation period shall be done under constant supervision of the environmental experts' team.

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The Contractor's environmental supervision shall develop necessary materials and applications, and shall obtain permits for derogation from bans to protect species of plants, fungi or animals based upon the rules and in the mode determined under the NC Act; the aforementioned decisions issued by RDOŚ/GDOŚ shall be obtained by the Contractor.

Mitigation measures related to protection of natural environment are shown in Appendix 1 to EMP– Plan of mitigation measures, items in the table: 11, 12, 13, 14, 15, 21, 22, 23, 25, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 53, 54, 98.

### **Operational stage**

Adverse impact on the natural environment is not anticipated on the operational stage.

### **6.8.2 Protected sites**

Due to the specificity and type of the works performed, and the location of Contract beyond protected areas and in a huge distance from the existing Skołczanka Nature Reserve, it was stated that the implementation would not adversely affect natural habitats and species of animals, for protection of which the aforementioned protected sites have been established.

## **6.9 Cultural landscape and monuments**

### **Implementation stage**

In accordance with an opinion of the Provincial Heritage Conservator in Cracow, the designed Works Contract is not located within the area entered to the Małopolski Heritage Register, and it does not collide with the relics of earth defenses existing within the aforementioned area. The Provincial Heritage Conservator issued a positive opinion for the designed Works Contract provided that: the archaeological supervision over the earthworks would be assured; a reinforced-concrete wall with stone cladding on both sides would be designed in the embankment section neighboring directly with the historic St Benedict's Abbey in Tyniec; and traffic on the crest would be limited for two-track vehicles, as the designed path should be used for maintenance of the embankments and for leisure purposes. The construction design addressed the aforementioned conditions.

If any objects that might be monuments or archaeological artefacts are discovered during the construction works, according to the Act of July 23, 2003 on the Protection of Monuments (consolidated text Journal of Law 2014, item 1446, as amended), the Contractor is obliged to stop the works in the place of finding, secure the place and report it to the Provincial Heritage Conservator in Cracow, while notifying the Employer and the Engineer at the same time. Further works in this area will resume and then will be carried out strictly in accordance with the provisions of the relevant decision issued by the Conservator.

Mitigation measures related to the cultural environment are shown in Appendix 1 to EMP– Plan of mitigation measures, item in the table: 87, 88, 89.



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### **Operational stage**

Adverse impact on monuments and archaeological sites is not anticipated on the operational stage. As a consequence, no mitigation measures were foreseen, except for limitation of traffic on the embankment crest for two-track vehicles in vicinity of the St Benedict's Abbey in Tyniec.

## **6.10 Organization of the site facilities and the construction site**

The Contractor, by its own effort, will acquire the area for site establishment and storage yards respecting the requirements and conditions of the World Bank regarding compensation. Any approval for temporary acquisition must be preceded by a site inspection in terms of its impact on particular environmental elements.

Location of the site facilities should take into account environmental aspects, including the following:

- favorable soil conditions, geological structure, vegetation coverage and groundwater level for the environment;
- convenient road access, and access to power supply and water supply for social purposes, and favorable location in relation to developed areas;
- exclusion of the embanked area and protected natural habitats as potential locations for that site.

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 development, including: the location of parking lots for the construction equipment and other vehicles, the method of soil and water protection against contamination with substances harmful to the soil environment and groundwater, the method of draining rain water, the location of the storage sites for construction materials, and the places for municipal and dangerous waste storage.

From the environmental and social point of view, the site facilities are a place of potentially adverse impact, due to a risk of contamination of land surface, soil, groundwater, and air as a result of accumulation of waste, building materials, as well as hazardous materials (i.e. fuel, diesel), and also concentration of activities including the use of trucks and heavy equipment (loading, unloading, transportation).

The site facilities should comply with H&S regulations valid in Poland and in the European Union regarding provision of sealed septic tanks for collection of sewage, and management of solid waste and sewage.

Mitigation measures related to organization of site facilities and storage yards are shown in Appendix 1 to EMP– Plan of mitigation measures, item in the table: 6, 7, 13, 14, 37, 51, 54, 55, 56, 57, 58, 59, 60, 62, 63, 77.

## **6.11 Health and safety of people**

Ensuring protection of human health and life in the case of flooding is the main goal for the implementation of the subject contract. The Contractor will be also responsible for

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implementation of the activities related to protection of health and safety of people during the construction stage. These activities will be the basis for securing the necessary technical means, ensuring proper organization of works, as well as fire protection, medical care and preventive care.

The Contractor's H&S supervision shall be responsible for adequate marking of construction site according to applicable laws. This marking shall be regularly controlled, in the case of destruction or theft of marking the Contractor shall promptly rebuild or supplement it. The Contractor shall be responsible for any damage to the bulk objects, structures, roads, elements of technical facilities (ditches, culverts, transmission networks), as well as information boards, historic objects, etc., caused by the Contractor or its subcontractors during the execution of works. That liability shall relate to an obligation of repairing any damage at own expense.

The Contractor shall be obliged to agree with road management authorities on the traffic organization and on the works security plan, and to subsequently organize the traffic in accordance with the agreed plans (marking and securing the site and marking of de-tours and recommended road signage related to the change of traffic organization, etc.). The Contractor shall respect the legal limitations of speed and loads per vehicle axle during deliveries of materials and equipment to and from the construction site. The Contractor shall also obtain all necessary permits from the authorities for transportation of non-standard loads and shall constantly inform the Engineer about each case of such a delivery.

The Contractor shall provide training on rules of and conditions under the EMP for the managing staff and for the engineering and technical personnel.

Mitigation measures related to human health and safety are shown in Appendix 1 to EMP– Plan of mitigation measures, item in the table: 4, 6, 7, 9, 10, 49, 72, 79, 80, 81, 82, 83, 84, 85, 86, 109.

## **6.12 Extraordinary hazards to the environment**

### **Crisis situation**

In the case of emergency, in the first place, the competent services should be notified:

- Emergency number (all services) – 112;
- Police – 997;
- Fire Brigade – 998;
- Medical Emergency – 999.

### **Flood**

The occurrence of flood during the construction works on extension of the existing embankment is a real extraordinary threat to the environment resulting from the character of the Works Contract.

During accommodation of a flood wave there should be no vehicles, construction equipment, building materials, or mobile objects/elements used for the works on the riverside of the

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embankment. For the duration of construction works, Flood Management Plan should be provided, specifying the relation between the time of commencement of the evacuation or protection of the equipment and the occurrence of a certain hydro-meteorological situation. This plan must be approved by the Engineer. The Contractor will be obliged to establish communication with IMGW-PIB to receive current information on weather forecast. In case of a warning on high water level, the Contractor shall immediately notify the Engineer and the Employer, and shall undertake appropriate actions according to the procedures described by the Flood Management Plan.

Mitigation measures related to flood protection are shown in Appendix 1 to EMP– Plan of mitigation measures, item in the table: 84.

### **Leakage of diesel derivatives**

A common type of extraordinary risk to the environment on the construction site is the leakage of diesel derivatives causing pollution of soil, ground or groundwater. However, for this purpose appropriate preventive measures are provided, relating to appropriate organization of sites and site facilities, constant control of the condition of applied construction equipment, and also technical measures allowing for neutralization of the effects of such an event in the form of sorbents available at site facilities.

In case of the leakage one shall immediately remove its source and effects, and contaminated soil layers shall be properly treated in a manner safe for the environment.

Mitigation measures related to the protection of ground and water environment are shown in Appendix 1 to EMP– Plan of mitigation measures, item in the table: 61, 63, 64.

### **Identification of unexploded shells**

In the event of discovering unexploded shells or misfires, the Contractor shall immediately stop the works, evacuate the workers and notify the police, a licensed sapper unit as well as the Engineer and the PIU. It is strictly forbidden to dig unexploded shells or misfires out, bury them, touch them, and especially to raise them, transfer them, throw them to the fire or to such locations as rivers, channels, oxbow lakes, ditches, etc. The Investor did not inspect the site for unexploded shells or misfires.

The Contractor is obliged to ensure the sapper supervision throughout the performance of earthworks (Contractor's sapper supervision), which would include an on-going inspection of the site in terms of unexploded shells or misfires presence, and – if necessary - clearance of the site from hazardous objects and their proper treatment.

Mitigation measures related to sapper supervision are shown in Appendix 1 to EMP– Plan of mitigation measures, item in the table: 80, 86, 91, 94.

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### **Fire**

The Contractor is responsible for fire protection in the area of the Works Contract. Detailed procedure in case of fire will be contained in the BIOZ Plan prepared by the Site Manager.

### **6.13 Waste and sewage**

Prior to the commencement of Works the Contractor – being a waste producer – shall develop and present for the Engineer's approval the Waste Management Plan (Waste MP) determining proceeding methods for waste to be produced during the performance, and including e.g. the conditions related to the waste treatment determined under the EMP.

The waste management shall be implemented in conformity with provisions of the Act of December 14, 2012 on waste (uniformed text, OJ of 2018, item 2134, as amended). One of the significant rules related to the construction works comprising modernization of a flood embankment is a ban to store waste within the embanked area. The waste, as well as soil and other materials shall also not be stored in vicinity of trees, which would not be removed. On the other hand, one of general and universal rules forming a basis for rational waste management is the rule of minimization for produced waste volume, and the Contractor shall be obliged to implement it throughout the construction works. Furthermore, the Contractor shall be obliged to segregate the waste produced and to secure its successive reception by authorized recipients. On the temporary storage stage one shall secure proper containers and separate, mark, and properly prepare sites designated for that purpose in a way preventing dusting and blowing light fractions out, and rinsing of substances harmful to the natural environment out by precipitation water. A special supervision shall be performed over hazardous waste management. In case of identifying illegal waste storage site, such locations shall be cleared through removal of waste and their transportation to the treatment site prior to the commencement of works.

The construction sites must be equipped with sealed sanitary facilities to collect wastewater. Sewage should be transported to a sewage treatment plant by authorized recipients.

Guidelines for waste and sewage management are contained in Appendix 1 to EMP–measure – Plan of mitigation measures, item in the table: 20, 32, 73, 74, 75, 76, 77, 78.

### **6.14 Other ESHS hazards**

Exemplary forms of additional hazards associated with ESHS issues (other than the ones discussed previously in sections 5.1-5.12) were presented in section 5.13.

In order to prevent hazards of that type, except for the measures listed in sections 6.1-6.13, Appendix 1 to the EMP implements additional mitigation measures to e.g.:

- prevent accidents and near misses on work site and in other places related to the implementation of the Contract  
(e.g. items no. 100, 101, 102, 103, 108 and others listed in sections 6.11 and 6.12);
- combat such unacceptable behavior on work site as cases of sexual harassment or mobbing (e.g. items no. 104, 105, 108);

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- assure proper social conditions, and labour conditions and payment to the personnel engaged in implementation of the Contract, in compliance with the law (e.g. items no. 106, 107, 108);
- assure proper procedures for ongoing information provision on issues and hazards associated with the aforementioned subject (e.g. item no. 108).

### **6.15 Requirements for implementation of action plans in the construction phase**

Taking into account provisions of the Environmental Decision and description of mitigation measures under this EMP, the Contractor should develop numerous documents necessary for the performance and subsequently obtain approval of the Engineer for them. The documents are as follows:

- Construction site organization plan, which should contain such elements as e.g.:
  - location of the site facilities,
  - development of the site facilities,
  - protection of the site facilities,
  - service roads,
  - environmental protection on the site facilities, technological roads and yards.
- Waste management plan, which should contain such elements as e.g.:
  - encountered and predicted types and volumes of waste,
  - means of preventing adverse impact of waste on the environment,
  - means of waste management considering collection, transportation, recovery and treatment of waste,
  - type of generated waste and method for its storage.
- Quality assurance plan/plans, which should contain such elements as e.g.:
  - works performance organization,
  - organization of traffic at the construction site, including marking of the works,
  - H&S and environmental protection,
  - list of working teams,
  - scope of duties of the key personnel,
  - quality control,
  - laboratory tests.
- Flood protection plan for the site for the performance time:
  - monitoring of hydrological and meteorological conditions,
  - conditions for accommodation of flood flows during the performance,

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- the rules of work for the Contractor's team in the period of flood risk,
  - basic duties of the managing staff during the flood risk,
  - list of managing staff in the period of flood risk,
  - list of equipment and transport means needed to conduct rescue actions.
- BIOZ Plan, which should contain such elements as e.g.:
    - indication of plot or land development elements, which may create a risk to safety and health of people,
    - information concerning expected hazards that could occur during the performance, defining the scale and types of hazards and the place and time of occurrence, including reference to the natural environment,
    - information on designation and marking for construction work sites, according to the type of hazard,
    - information on the method of training for the employees prior to the commencement of particularly hazardous works,
    - determining the method of storing and transport of hazardous materials, goods, substances and preparations at the construction site,
    - indication of technical and organizational means of safeguarding against hazards connected with the construction works in increased health risk zones, or in their immediate vicinity, including means of safe and efficient communication allowing for quick evacuation in the case of fire, failure, and other hazards,
    - indication of the storage location for construction site's documentation and documents necessary for proper operation of machines and other technical devices.

**NOTE:**

At the development of plans for organization of the construction site, including the Health and Safety Plan, the Contractor shall consider appropriate actions as indicated in the Guidelines of the World Bank concerning protection of health and environment, as well as safeguard policies. Organization plans for the construction site that will be drawn up by the Contractor shall be reviewed and then submitted for approval by the Engineer.

## **7 Description of measures related to environmental monitoring**

### **7.1 Environmental monitoring during the works**

Prior to the commencement of works the Contractor should develop an own monitoring measures Plan that should be correlated with the monitoring measures Plan of the Engineer and of other institutions involved in the Works Contract execution. The plan should focus on such environmental elements as: land surface and landscape, climate, air quality, soils and grounds, water, acoustic climate, nature (habitats, flora, fauna), cultural landscape and monuments, organization of the site facilities and the construction site, health and safety of people, extraordinary hazards for the environment, waste and wastewater, requirements for implementation of action plans in the construction phase.

#### **7.1.1 Surface of land, landscape, and soils and grounds**

Monitoring for the subject Contract shall comprise the following elements:

- Location of temporary acquisition beyond the environmentally valuable areas indicated by the Contractor's environmental supervision;
- Location of roads, yards, parking lots, etc., including limitation of impact on vegetation and on surface of land, and their proper protection and equipping;
- Observation of traffic regulations by vehicles on established technological roads;
- Overview of materials/building materials applied for the extension/construction, so they would not contain substances particularly harmful to the water environment in the form of dissoluble compounds;
- Inspection of protection for excavations;
- Proper reinstatement of temporary acquisition sites;
- In case of emergency (e.g. leakage of diesel, grease from the construction equipment to the ground, spilling of substances hazardous to the environment in storage locations) one shall undertake mitigation measures (replacement of the ground, inclusive).

Monitoring measures related to the protection of land, landscape, soil and ground were indicated in Appendix 2 to the EMP– Plan of monitoring measures, item in the table: 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 20, 21, 22, 23, 24, 25, 26, 49, 50, 51, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 74, 75, 76, 77, 78, 97, 98, 99.

#### **7.1.2 Climate and air quality**

It is not necessary to monitor the air quality due to implementation of the Contract. It is however necessary to monitor implementation of mitigation measures.

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Monitoring measures shall be implemented in the form of visual assessment during site inspections undertaken at least once a week in places which are subject to monitoring, and especially at the site facilities and service roads. Monitoring will relate to the assessment of protection for the area against potential dusting from dirt roads and yards, as well as storage areas and means of transport for loose materials, and also the use of motor vehicles and equipment.

Monitoring measures related to the protection of air quality are indicated in Appendix 2 to the EMP– Plan of monitoring measures, items in the table: 69, 70, 71, 72, 73, 75.

### **7.1.3 Surface water**

Due to the anticipated small scale of Works Contract impact on surface water there is no need to monitor the quality of water during the construction stage in the usual way, i.e. without the occurrence of unusual events which could cause the pollution. However, one shall monitor proper implementation of measures mitigating the impact on ground and water environment (proper location and protection of yards, parking lots, waste storage sites, fueling sites for vehicles, etc.; providing work sites with neutralization agents for possible leakage of dangerous substances, including diesel derivatives).

Monitoring measures related to the protection of water are indicated in Appendix 2 to the EMP– Plan of monitoring measures, items in the table: 11, 12, 13, 14, 15, 16, 17, 20, 49, 50, 51, 52, 53, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 74, 75, 76, 77, 78.

### **7.1.4 Groundwater**

Due to the anticipated small scale of Works Contract impact on groundwater there is no need to monitor the quality of water during the construction stage in the usual way, i.e. without the occurrence of unusual events which could cause the pollution. However, one shall monitor proper implementation of measures mitigating the impact on ground and water environment (proper location and protection of yards, parking lots, waste storage sites, fueling site for vehicles, etc.; providing work sites with neutralization agents for possible leakage of dangerous substances, including diesel derivatives).

However, if such case occurs (concentrated leakage or surface emission of liquid substance to the environment, e.g. as a result of road accident) it is advisable to conduct water quality tests for the first water-bearing level. The following parameters should be subject to assessment: pH, BOD<sub>5</sub>, suspension, turbidity, and concentration of diesel derivatives.

Monitoring measures related to the protection of water are indicated in Appendix 2 to the EMP– Plan of monitoring measures, items in the table: 11, 12, 13, 15, 16, 17, 20, 49, 50, 51, 52, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 74, 75, 76, 77, 78.

### **7.1.5 Acoustic climate**

The analyzed site is not exposed to excessive constant noise (i.e. everyday traffic, operation of industrial plant, etc.). Based on the conclusions of the environmental impact assessment performed, it is assumed that the analyzed Works Contract, at meeting all requirements and recommendations contained in the Environmental Decision and in the EMP, shall also not cause such nuisance.



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The scope of monitoring for noise protection will include checking of time and manner of execution of works using devices that remain sources of the nuisance noise.

In addition, it is recommended to conduct regular inspections of technical conditions of equipment used for construction works in terms of noise emission, and to undertake rational and appropriate actions, adequate to current assessment of the situation in response to any comments or complaints from residents or users of the adjacent land regarding acoustic nuisance, source of which may be related to the Works Contract implementation.

Monitoring measures related to the protection of acoustic climate are indicated in Appendix 2 to the EMP – Plan of monitoring measures, items in the table: 14, 65, 66, 67, 68, 69.

### **7.1.6 Nature**

The Contractor should provide the environmental team which will monitor the impact of the construction works on habitats, flora and fauna at the stage of the performance. The monitoring should include e.g. checking of adherence to acceptable dates (periods) for carrying out specific type of works (removal of soil layer, removal of vegetation), control of physical condition of habitat and protection of trees not to be logged, as well as control of security measures to protect small animals (herpetofauna mainly), and control of places conducive to cause danger to animals (depressions, excavations, and other types of traps). It is also necessary to monitor the effectiveness of activities related to the removal of invasive plants, if necessary.

Monitoring measures related to the protection of habitats, flora and fauna are indicated in Appendix 2 to the EMP – Plan of monitoring measures, items in the table: 11, 12, 13, 14, 15, 21, 22, 23, 25, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 53, 54, 98.

### **7.1.7 Cultural landscape and monuments**

Due to performance of the works in the area of St Benedict's Monastery in Tyniec it is recommended to inspect walls around that object. The purpose of inspections shall be verification, if the subject works would not cause dislocation of foundation, cracks, etc. Furthermore, as indicated in the Plan of mitigation measures (Appendix 1 to the EMP), as well as in the Heritage Conservator's opinion, the Contractor is obliged to provide permanent archaeological supervision during the earthworks, comprising ongoing inspections of the Site in terms of the presence of objects of historic value.

Monitoring measures related to this issue are indicated in Appendix 2 to the EMP – Plan of monitoring measures, items in the table: 87, 88, 89.

### **7.1.8 Organization of the site facilities and the construction site, health and safety of people, extraordinary hazards for the environment, waste and wastewater, requirements for implementation of action plans during the construction phase**

The responsibility of the Contractor is to monitor proper implementation of all mitigation measures related to organization of the site facilities and of the construction site, health and safety of people, extraordinary threats to the environment, waste and sewage, and requirements regarding implementation of action plans during the construction phase.

Monitoring measures related to those issues are indicated in Appendix 2 to the EMP – Plan of monitoring measures, items in the table: 4, 6, 7, 9, 10, 13, 14, 37, 49, 51, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85.

## **7.2 Monitoring of the environment during the use**

It is not necessary to monitor the environment in case of the subject Contract on the operational stage. Implementation of mitigation measures assures limitation of the scale and intensity of potential adverse impact to the performance time only.

## **8 Public consultations**

### **8.1 Public consultations on EIA stage**

In accordance with the Polish EIA procedure, on the stage of issuing a decision on environmental decision it was necessary to perform public consultations for the Contract. Public consultations were conducted on the EIA procedure stage by the unit issuing the ED, i.e. RDOŚ in Cracow:

In conformity with the procedure for the subject Works Contract, on July 9, 2014 RDOŚ in Cracow notified all of the parties on the commencement of proceedings on the issuance of ED. RDOŚ in Cracow applied for an opinion to the State Sanitary Inspector. The State Sanitary Inspector stated that the subject Contract requires an environmental impact assessment. The Regional Director for Environmental Protection in Cracow imposed an obligation to perform the environmental impact assessment and determined the scope of report in the Resolution dated 09/16/2014, ref. no.: OO.4233.8.2014.BM. In the course of conducted proceeding the Regional Director for Environmental Protection in Cracow suspended the administrative proceedings *ex officio* on the issuance of environmental decision for the Works Contract in question with a resolution dated 10/27/2014, ref. no.: OO.4233.8.2014.BM.

- The Regional Director for Environmental Protection in Cracow recommenced the administrative proceeding on the issuance of environmental decision for the subject Contract suspended on 10/27/2014 through the Resolution dated 12/11/2014, ref. no.: OO.4233.8.2014.BM. That resolution was published through placement on notice boards in the: City Office of Cracow on 12/15/2014 for 14 days; City Office of Liszki on 12/17/2014 for 14 days; and City and Commune Office of Skawina on 12/16/2014 for 14 days; and on the notice board of the Regional Directorate for Environmental Protection in Cracow on 12/12/2014 for 14 days. Furthermore, information on the obligation to perform environmental impact assessment was published in the Public Information Bulletin, on website of the Regional Directorate for Environmental Protection in Cracow, as well as in the publicly accessible data register on website of the Ministry of Environment;
- In accordance with Article 33 (1) and in reference to Article 79 (1) of the Act on providing information on the environment and its protection, public participation in the environmental protection and environmental impact assessments, in order to assure the public participation in the proceedings, resolution of the Regional Director for Environmental Protection in Cracow dated 03/20/2015, ref. no.: OO.4233.8.2014.BM, was placed on the notice board and on website of the Regional Directorate for Environmental Protection in Cracow, and on notice boards in the: City Office of Cracow; City Office of Liszki; and City and Commune Office of Skawina; informing that within the framework of the commenced proceedings on the issuance of environmental decision an environmental impact report for the planned Works Contract and update to the report for that Works Contract were filed. Furthermore, it informed on the commencement of environmental impact assessment for the subject Works Contract, on the unit relevant for the issuance of the decision and on the unit relevant for the issuance of opinion on implementation of the Works Contract, and on the possibility of acknowledging case

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documentation and of provision of remarks and applications in the subject case within 21 days. The announcement was placed on the notice board of RDOŚ in Cracow from 03/23/2015 to 04/13/2015, and on notice boards of the: City Office of Cracow from 03/23/2015 to 04/13/2015; City Office of Liszki from 03/23/2015 to 04/13/2015; and City and Commune Office of Skawina from 03/23/2015 to 04/13/2015. Furthermore, that announcement was published in the Public Information Bulletin, on website of the Regional Directorate for Environmental Protection in Cracow, as well as in the publicly accessible data register on website of the Ministry of Environment.

**The Regional Directorate for Environmental Protection in Cracow did neither receive related remarks nor applications from the parties, the society, and social and ecological organizations within a legal deadline of 21 days**

### 8.2 Public consultations on Environmental and Social Management Framework (2015)

The draft ESMF was subject to public consultations conducted in accordance with the World Bank's operational policy OP 4.01. Their purpose was to allow the society to acknowledge contents of that document and to assure the possibility of filing potential remarks, enquiries, and applications to its contents.

Documentation on the public consultations process for the ESMF is available on a website of the Odra-Vistula Flood Management Project Coordination Unit<sup>12,13</sup>.

### 8.3 Public consultations on EMP (2019)

The draft EMP was subject to the procedure of public consultations conducted in accordance with the operational policy of the World Bank OP 4.01. The purpose of public consultations was to allow individuals, institutions and all interested parties to acknowledge the document and to have an opportunity to submit comments, queries and requests regarding its contents.

In accordance with operational policy OP 4.01, the disclosure of the draft Environmental Management Plan (EMP) started officially on May the 23<sup>rd</sup>, 2019, when public consultations were announced in a local newspaper – Dziennik Polski (daily newspaper with regional coverage).

Any interested party could, in the period from **May the 23<sup>rd</sup>, 2019 until June the 5<sup>th</sup>, 2019** (inclusive), acknowledge the Draft EMP (hard copy) in the office of the following:

- State Water Holding Polish Waters Regional Water Management Authority in Cracow (PGW WP RZGW in Cracow), Project Implementation Unit, 36. Kraszewskiego Str., 30-110 Cracow, on working days between 7:30 a.m. and 3:30 p.m.,
- State Water Holding Polish Waters Regional Water Management Authority in Cracow, Water Inspectorate in Cracow, 278. Kryspinów Str., 32-060 Liszki, on working days between 10:00 a.m. and 1:00 p.m.,

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<sup>12</sup>[http://www.odrapcu.pl/doc/OVFMP/RPZSiS\\_Zalacznik\\_08\\_Raporty\\_z\\_procedury\\_upublicznienia\\_projektu\\_EMA\\_F.pdf](http://www.odrapcu.pl/doc/OVFMP/RPZSiS_Zalacznik_08_Raporty_z_procedury_upublicznienia_projektu_EMA_F.pdf)

<sup>13</sup>[http://www.odrapcu.pl/doc/OVFMP/RPZSiS\\_Zalacznik\\_09\\_Raporty\\_z\\_konsultacji\\_spoecznych\\_RAF.pdf](http://www.odrapcu.pl/doc/OVFMP/RPZSiS_Zalacznik_09_Raporty_z_konsultacji_spoecznych_RAF.pdf)

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- OVFM Project Office, AECOM Polska Sp. z o.o., 1. Pokoju Al. (building K1), 31-548 Kraków, on working days from 7:30 am to 3:30 pm;

or with the digital version of the document posted on publicly available websites:

- PGW WP RZGW in Cracow, at - [www.krakow.rzgw.gov.pl](http://www.krakow.rzgw.gov.pl) (Fig. 1),
- OVFM PCU, at – [www.odrapcu.pl](http://www.odrapcu.pl) (Fig. 2),
- Commune Office of Liszki, at - [www.liszki.pl](http://www.liszki.pl) (Fig. 3),
- City Office of Cracow, at – [www.bip.krakow.pl](http://www.bip.krakow.pl) (Fig. 4),

Any interested party could submit remarks and motions referring to the Draft EMP in writing and in oral form to the minutes, using the addresses mentioned above, or in a digital form to the following e-mail address: [krakow@wody.gov.pl](mailto:krakow@wody.gov.pl) on working days between 05/23/2019 and 06/05/2019 (inclusive). The State Water Holding Polish Waters Regional Water Management Authority in Cracow was a competent institution to consider the remarks and motions, and a contact person was: Monika Grzywacz, telephone: +48 12 628 09 84.

Detailed information on the possibility of acknowledging the document and on the possibility of filing motions and remarks (along with indication of detailed contact data: e-mail address; addresses of offices, where the draft document was made accessible, office opening hours) were publicly informed in the announcement (Fig. 5) placed in the following locations:

- website of the PGW WP RZGW in Cracow, at: [www.krakow.rzgw.gov.pl](http://www.krakow.rzgw.gov.pl) (Fig. 1), website of the OVFM PCU, at [www.odrapcu.pl](http://www.odrapcu.pl) (Fig. 2), website of the Commune Office of Liszki, at [www.liszki.pl](http://www.liszki.pl) (Fig. 3) and website of the City Office of Cracow, at – [www.bip.krakow.pl](http://www.bip.krakow.pl) (Fig. 4);
- local press – **Dziennik Polski** (Fig. 6);
- information boards in PGW WP RZGW in Cracow, PGW WP RZGW in Cracow - Water Inspectorate in Cracow, in City Office of Cracow, and on information boards in Commune Office of Liszki, and in Podgórze Cultural Center –Tyniec Club.

The aforementioned announcement also included information on the possibility of taking part in a meeting and in a discussion opened for interested people, organizations and institutions, which was planned for June the 6<sup>th</sup>, 2019 (including information on a place, date and time of the meeting).

In addition the information (individual invitations) was sent to the public institutions interested in the Works Contract implementation:

- District Governor in Cracow: Department of Environmental Protection, Agriculture and Forestry
- City Office of Cracow: Environmental Development Department
- City Council of Cracow
- Prefect of the Commune of Liszki
- Administrator of Liszki village

The publication of the draft EMP, officially launched on **May the 23<sup>rd</sup>, 2019**, was completed after 10 working days, i.e. on **June the 5<sup>th</sup>, 2019**. During the publication period the visits of persons acknowledging the available draft EMP were not observed. Until the completion of

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works on this report neither additional remarks nor questions were provided in relation to contents of the draft EMP.

After completion of the publication process, an opened meeting for interested people, organizations and institutions was held on **June the 6<sup>th</sup>, 2019** at 5:00 p.m. in the office of: PGW WP RZGW in Cracow – Water Inspectorate in Cracow, 278. Kryspinów Str., 32-060 Liszki, where a public presentation of and discussion on the draft EMP were organized (Fig. 7, 8, 9 and 10).

Thirteen people participated in the meeting, including representatives of the following: PCU, PGW WP RZGW in Cracow, Engineer/Consultant; as well as local authorities and inhabitants (a list of attendees enclosed in appendix No. 1 to this report).

During the meeting, the the attendees asked the following questions:

1) *What is the purpose for redevelopment of the embankment?*

The answer provided clarified that an overriding purpose for redevelopment of the embankment is the enhancement of flood safety for people living in the area beyond the embankment, i.e. citizens of Cracow and inhabitants of Skawina and areas located within the Contract area.

Extension of the embankments was designed to adapt the structures to the current requirements of regulations on technical conditions, and to include the valid hydrological data verified after the flood of 2010.

2) *What works would be done during redevelopment of the embankment?*

The answer provided clarified that the planned works include extension comprising raising and widening of the embankment crest in three sections:

- a. Task no. 1 km 60+325 to km 61+662 of the embankment over a length of 1337 m; maximum raising of the embankment crest amounts to about 0.65 m;
- b. Task no. 2 km 62+017 to km 63+183 of the embankment over a length of 1166 m; maximum raising of the embankment crest amounts to about 0.4 m;
- c. Task no. 3 km 63+779 to km 65+160 of the embankment over a length of 1381 m; maximum raising of the embankment crest amounts to about 0.4 m.

Furthermore, the range of the planned Contract includes construction and extension of descend roads and embankment crossings, including their extension, elongation, and joining with the crest of embankments to be redeveloped. It is also planned to redevelop / extend or construct other embankment objects (embankment culverts, locks, technological roads, and others) and land utilities colliding with the embankment. It is also expected to seal the embankments using anti-filtration membrane and bentomat. For the purpose of performance under Contract 3A.3 it shall be necessary to log trees and shrubs – after completion of the works the embankment body shall be finished through top-soiling and sowing with a mix of native grass, in reference to the surrounding plant cover.

3) *What class is designed for embankments to be modernized?*

The answer provided clarified that in accordance with the regulations a class of object is determined while considering an area to be flooded (prior to the development) at

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occurrence probability of  $p = 1\%$ . Hydraulic structures cannot be classified to class lower than I, if their destruction may provide catastrophic effects for agglomerations and heritage and industrial plants of a basic meaning for the economy. As the embankments in question protect the area of the City of Cracow, they were classified as Class I hydraulic objects.

Register kept by the PGW WP RZGW in Cracow classified those particular sections of embankments for the River Vistula as Class I hydraulic objects.

- a. *What is the class of embankments in Cracow – are they higher than the designed embankments, and will the redevelopment of embankments under Contract 3A.3 result in increasing the flood hazard for the center of Cracow?*

The answer provided clarified that the embankments to be extended under Contract 3A.3 shall not increase flood hazard for the center of Cracow. The flood embankments in the center of Cracow, just as in case of the embankment in the range of Contract 3A.3, correspond with Class I of water structures, with a departure from regulations in terms of the volume of control flow and design flow, and the value of safe freeboard for the embankment crest in case of the control flow.

Due to architectural and landscape reasons, in a reach of Vistula in vicinity of the center of Cracow and Wawel, an earth-filled body of the embankment is lower, whereas a solution containing application of mobile walls assembled for the time of flood flows was applied to reach the legally required height of flood protection.

- 4) *Was the number of people protected due to the planned redevelopment of the embankment established (the EMP indicated the number of citizens living in Cracow, and not within the addressed area)?*

The answer provided clarified that the analyzes carried out for Contract 3A.3, proved that the extension of the planned embankment under the Works Contract will contribute directly to the protection of inhabitants of the area of 300 ha beyond the embankment. It should be emphasized, however, that Contract 3A.3 Section 4 - the right embankment of the Vistula River from the Skawinka estuary to the Kościuszko barrage should be treated as an element of the entire flood protection system for the city of Cracow.

- 5) *What would be the source of materials for the extension?*

The answer provided clarified that the extension of the embankment would be done using native (local) materials, while keeping lithological continuity of layers in their natural condition. As a consequence, while considering tested geological conditions within the Contract area, and due to the direction of embankment extension, the extension of embankments shall be done using cohesive soil (e.g. clay, dusty clay). In case of an embankment shelf in the area beyond the embankment it is recommended to apply non-cohesive soil (medium sand, fine sand). A deposit in Kostrze, which is located on the right embanked area of Vistula, was indicated as a soil bank for construction of the embankment under Contract 3A.3.

- 6) *What is the expected delivery method to the construction site?*

**ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE**

The answer provided clarified that the delivery of materials shall be done using the existing public roads running in a close vicinity of the planned Works Contract and using technological roads, while maximally applying the existing road system after obtaining all necessary permits from a road administrator. Due to insufficiently developed road system in vicinity of Contract 3A.3 it is also expected to deliver the materials to the site using water route.

7) *Is the embankment crest going to be paved?*

The answer provided clarified that the embankment crest shall be reinforced with asphalt within most of the embankments to be modernized within Task no. 1, Task no. 2, and Task no. 3; and only a small section at Task no. 2 shall be reinforced with breakstone.

8) *Are there going to be technological roads on the embankment?*

The answer provided clarified that the works under Contract 3A.3 comprise construction of technological roads along embankment shelves to be developed and along the route of the embankment to be extended, at its foot. Except for a section of road within the embanked area at Task no. 2 – from Browarniana Street towards the Cloister (asphalt reinforcement) – the technological roads shall be reinforced using breakstone.

9) *For how long will the construction works be performed?*

The answer provided clarified that the currently binding schedule expects performance of construction works for about 2 years.

10) *Are the works going to be performed in winter?*

The answer provided clarified that the works would be performed all year long, including winter, if the weather would allow for that.

11) *Why it is necessary to repair the embankment?*

The answer provided clarified that the analysis of technical conditions done for the embankments of River Vistula in the area of Contract 3A.3 proved sectional weak condensation of embankment bodies and local hydraulic punctures. The occurrence of zones of weak condensation – not meeting the standards – forms a trend of faster local watering of the embankment body. In case of water damming by the embankment, weak condensation may lead to seepage and water leaks at slopes on the landside, and to plasticizing of cohesive soil, and – finally – to breaking the embankment crest's stability.

Due to low condensation of the embankment body, as well as due to insufficient height of the embankment crest – in comparison to requirements determined in the currently binding technical regulations for the adopted Class I of hydraulic structure – it is necessary to extend the embankments within the framework of Contract 3A.3.

12) *What is going to happen with section of the embankment located on the other side (left embankment of the River Vistula)?*

The answer provided clarified that the PGW WP RZGW in Cracow, which from January the 1<sup>st</sup>, 2018 became a legal successor for the Małopolski Board of Amelioration and Hydraulic Structures in Cracow, provided an inventory of needs for modernization of the



**ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE**

existing embankment and for construction of new embankments, and – within the financial resources available – it shall perform the most urgent works.

13) *What is the chainage on maps and in the presentation – to which unit does the chainage refer to (embankment?, river?).*

The answer provided clarified that for the purpose of the Contract the chainage provided for the embankment is the actual chainage of the embankment, starting from the registered chainage at the beginning of Task no. 1.

Table 1. Synchronization table for the registered chainage and for the actual chainage of the embankments and the embankment objects covered by the Works Contract in question.

Embankment section	Object	REGISTERED chainage of the embankment	REGISTERED chainage of the river	ACTUAL chainage of the embankment
Section 1 Task no. 1	Beginning of redevelopment of 1 embankment section	60+325	59+735	60+325
	Embankment culvert 500 x 750 mm	60+501		60+535
	Embankment culvert ø 600 mm	60+709		60+566
	Embankment culvert 2 x 900 x 1100 mm	61+201		61+238
	End of redevelopment of 1 embankment section	61+625	62+000	61+662
Section 2 Task no. 2	Beginning of redevelopment of 2 embankment section	62+030	63+080	62+017
	Embankment culvert 1000 x 900 mm	63+120		63+115
	End of redevelopment of 2 embankment section	63+190	63+865	63+183
Section 3 Task no. 3	Beginning of redevelopment of 3 embankment section	63+790	64+211	63+779
	End of redevelopment of 3 embankment section	65+120	66+300	65+160

The meeting was closed after answering all of the questions provided.

Remarks and motions handed over during the debate were analyzed in terms of necessary adjustments to the final version of the document, and subsequently the amendments were introduced during the final editing of the EMP. After updating the document with contents of a memo on the publication procedure and after implementation of some additional corrections to the document (correction of mistakes identified within the publication period), the final EMP will be submitted to the World Bank in order to obtain the final acceptance clause, i.e. “no objection”.

# ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE

Figure 1. Digital version of the draft EMP and announcement on public hearings for the draft EMP published at the website of the PGW WP RZGW in Cracow.

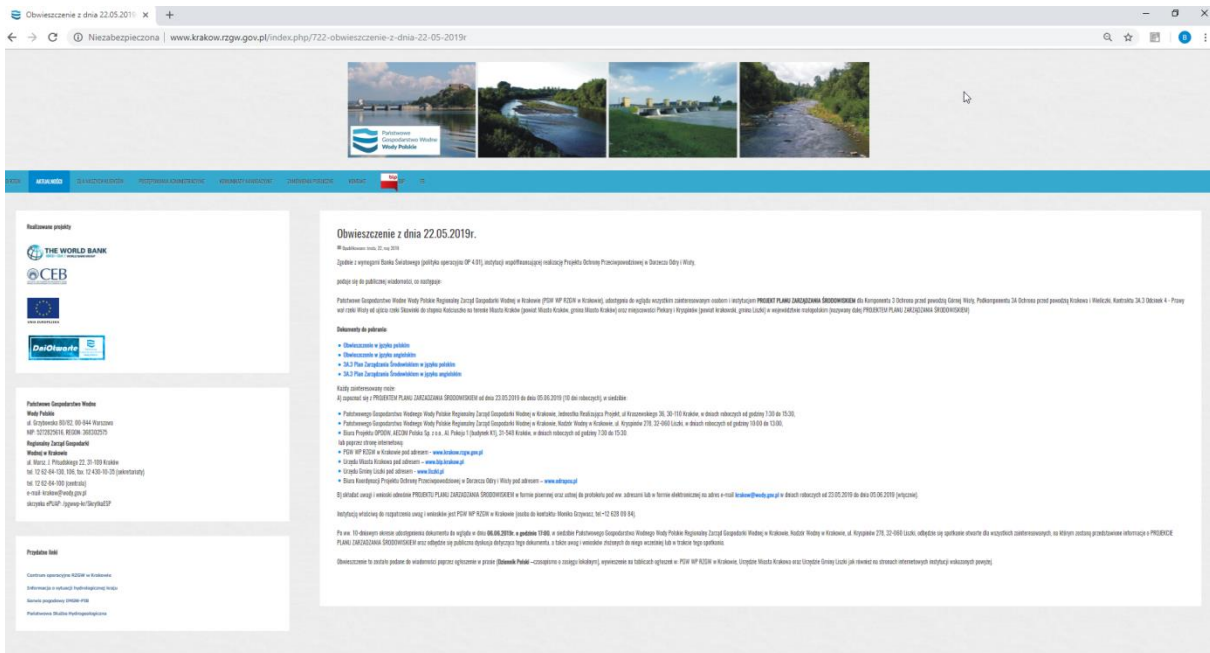


Figure 2. Digital version of the draft EMP and announcement on public hearings for the draft EMP published at the website of the OVFM Project Coordination Unit.



# ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE

Figure 3. Digital version of the draft EMP and announcement on public hearings for the draft EMP published at the website of the Commune Office of Liszki.

The screenshot displays the website of Liszki Gmina. The top navigation bar includes links for Aktualności, Samorząd, Dla mieszkańca, Dla turysty, Dla inwestora, Multimedia, and Kontakt. Below the navigation is a header with the commune logo and the name 'Liszki Gmina'. The main content area features a large image of the Vistula River and a video player. The announcement is titled 'Obwieszczenie Państwowego Gospodarstwa Wodnego Wody Polskie Regionalny Zarząd Gospodarki Wodnej w Krakowie' and is dated 'środa, 22 maja 2019'. The text of the announcement is as follows:

**OBWIESZCZENIE**

Zgodnie z wymogami Banku Światowego (polityka operacyjna OP 4.01), instytucji współfinansującej realizację Projektu Ochrony Przepływowości w Dorzeczu Odry i Warty,

podaje się do publicznej wiadomości, co następuje:

Państwowe Gospodarstwo Wodne Wody Polskie Regionalny Zarząd Gospodarki Wodnej w Krakowie (PGW WP RZGW w Krakowie), udostępniła do wglądu wszystkim zainteresowanym osobom i instytucjom **PROJEKT PLANU ZARZĄDZANIA ŚRODOWISKIEM** dla Komponentu 3 Ochrona przed powodzią Górnej Warty, Podkomponentu 3A Ochrona przed powodzią Krakowa i Wietliski, Kontraktu 3A.3 Odcinek 4 - Prawy wale rzeki Warty od ujścia rzeki Skawinki do stopnia Kościuszkto na terenie Miasta Kraków (powiat Miasto Kraków, gmina Miasto Kraków) oraz miejscowości Piekary i Kryspinów (powiat krakowski, gmina Liszki) w województwie małopolskim (załączony data) **PROJEKTEM PLANU ZARZĄDZANIA ŚRODOWISKIEM**.

Każdy zainteresowany może:

A) zapoznać się z **PROJEKTEM PLANU ZARZĄDZANIA ŚRODOWISKIEM** od dnia 23.05.2019 do dnia 05.06.2019 (10 dni roboczych), w siedzibie:

- Państwowego Gospodarstwa Wodnego Wody Polskie Regionalny Zarząd Gospodarki Wodnej w Krakowie, Jadrzanka Realizująca Projekt, ul. Koszarskiego 36, 30-110 Kraków, w dniach roboczych od godziny 7:30 do 15:30,
- Państwowego Gospodarstwa Wodnego Wody Polskie Regionalny Zarząd Gospodarki Wodnej w Krakowie, Nadzór Wodny w Krakowie, ul. Kryspinów 278, 32-080 Liszki, w dniach roboczych od godziny 10:00 do 13:00,
- Biura Projektu GPCCW, AECOM Polska Sp. z o.o., Al. Pokoju 1 (Budynek K1), 31-548 Kraków, w dniach roboczych od godziny 7:30 do 15:30.

lub poprzez stronę internetową:

- PGW WP RZGW w Krakowie pod adresem - [www.krakow.rzgw.gov.pl](http://www.krakow.rzgw.gov.pl)
- Urzędu Miasta Krakowa pod adresem - [www.um.krakow.pl](http://www.um.krakow.pl)
- Urzędu Gminy Liszki pod adresem - [www.liszki.pl](http://www.liszki.pl)
- Biura Koordynacji Projektu Ochrony Przepływowości w Dorzeczu Odry i Warty pod adresem - [www.ostrajcu.pl](http://www.ostrajcu.pl)

B) składać uwagi i wnioski odnośnie **PROJEKTU PLANU ZARZĄDZANIA ŚRODOWISKIEM** w formie papiernej oraz usłysz do protokołu pod ww. adresami lub w formie elektronicznej na adres e-mail [liszki@wody.gov.pl](mailto:liszki@wody.gov.pl) w dniach roboczych od 23.05.2019 do dnia 05.06.2019 (włącznie).

Instytucja właściwą do rozpatrzenia uwag i wniosków jest PGW WP RZGW w Krakowie (osoba do kontaktu: Monika Grzyważ, tel +12 629 09 94).

Po ww. 10-dniowym okresie udostępnienia dokumentu do wglądu w dniu **06.06.2019** o godzinie 17:00, w siedzibie Państwowego Gospodarstwa Wodnego Wody Polskie Regionalny Zarząd Gospodarki Wodnej w Krakowie, Nadzór Wodny w Krakowie, ul. Kryspinów 278, 32-080 Liszki, odbędzie się **spotkanie otwarte** dla wszystkich zainteresowanych, na którym zostaną przedstawione informacje o **PROJEKTCIE PLANU ZARZĄDZANIA ŚRODOWISKIEM** oraz odbędzie się publiczne dyskusje dotyczące tego dokumentu, a także uwag i wniosków złożonych do niego wcześniej lub w trakcie tego spotkania.

Obwieszczenie to zostało podane do wiadomości poprzez ogłoszenie w prasie (**Dziennik Polski** - czesopismo o zasięgu ogólnym), wywieszenie na tablicach ogłoszeń w PGW WP RZGW w Krakowie, Urzędzie Miasta Krakowa oraz Urzędzie Gminy Liszki jak również na stronach internetowych instytucji wskazanych powyżej.

Więcej informacji na: <http://www.krakow.rzgw.gov.pl/index.php/722-obwieszczenie-2-dnia-22-05-2019>

# ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE

Figure 4. Digital version of the draft EMP and announcement on public hearings for the draft EMP published at the website of the City Office of Cracow.

The screenshot shows a web browser window displaying a public notice on the website of the City Office of Cracow. The page title is "Obwieszczenie Państwowego Gospodarstwa Wodnego Wody Polskie Regionalnego Zarządu Gospodarki Wodnej w Krakowie". The notice is titled "Obwieszczenie" and concerns the "PROJEKT PLANU ZARZĄDZANIA ŚRODOWISKIEM" (Environmental Management Plan) for the "Projekt Ochrony Przeciwpowodziowej" (Flood Protection Project) in Dorzeczu Odry i Wisły. The notice is dated 2019-05-22 and is published by the "WYDZIAŁ BEZPIECZEŃSTWA I ZARZĄDZANIA KRYZYSOWEGO" (Department of Safety and Crisis Management). The notice includes information about public hearings and the availability of the draft EMP for public review.

Obwieszczenie Państwowego Gospodarstwa Wodnego Wody Polskie Regionalnego Zarządu Gospodarki Wodnej w Krakowie

Obwieszczenie

Zgodnie z wymogami Banku Światowego (polityka operacyjna OP 4.01), instytucji współfinansującej realizację Projektu Ochrony Przeciwpowodziowej w Dorzeczu Odry i Wisły, podaje się do publicznej wiadomości, co następuje:

**Państwowe Gospodarstwo Wodne Wody Polskie Regionalny Zarząd Gospodarki Wodnej w Krakowie** (PGW WP RZGW w Krakowie), udostępniła do wglądu wszystkim zainteresowanym osobom i instytucjom **PROJEKT PLANU ZARZĄDZANIA ŚRODOWISKIEM** dla Komponentu 3 Ochrona przed powodzią Górnej Wisły, Podkomponent 3a Ochrona przed powodzią Krakowa i Wieliczki, Kontrakt 3a.3 Odcinek 4 - Prawy nad rzeką Wisłą od ujścia rzeki Skawinki do stopnia kościuszkowego na terenie Miasta Kraków (powiat Miasto Kraków, gmina Miasto Kraków) oraz miejscowości Piekary i Kryspinów (powiat krakowski, gmina Liszki) w województwie małopolskim (nazywany dalej **PROJEKTEM PLANU ZARZĄDZANIA ŚRODOWISKIEM**).

Dokumenty do pobrania

**Każdy zainteresowany może:**

**A)** zapoznać się z **PROJEKTEM PLANU ZARZĄDZANIA ŚRODOWISKIEM** od dnia 23.05.2019 do dnia 05.06.2019 (10 dni roboczych), w siedzibie:

- Państwowego Gospodarstwa Wodnego Wody Polskie Regionalny Zarząd Gospodarki Wodnej w Krakowie, Jednostka Realizująca Projekt, ul. Kraszewskiego 36, 30-110 Kraków, w dniach roboczych od godziny 7:30 do 15:30,
- Państwowego Gospodarstwa Wodnego Wody Polskie Regionalny Zarząd Gospodarki Wodnej w Krakowie, Nadzór Wodny w Krakowie, ul. Kryspinów 278, 32-060 Liszki, w dniach roboczych od godziny 10:00 do 13:00,
- Biura Projektu OPDOW, AECOM Polska Sp. z o.o., Al. Pokoju 1 (budynek K1), 31-548 Kraków, w dniach roboczych od godziny 7:30 do 15:30.

lub poprzez stronę internetową:

- PGW WP RZGW w Krakowie pod adresem - [www.krakow.rzgw.gov.pl](http://www.krakow.rzgw.gov.pl)
- Urzędu Miasta Krakowa pod adresem - [www.bip.krakow.pl](http://www.bip.krakow.pl)
- Urzędu Gminy Liszki pod adresem - [www.liszki.pl](http://www.liszki.pl)
- Biura koordynacji Projektu Ochrony Przeciwpowodziowej w Dorzeczu Odry i Wisły pod adresem - [www.odrapcu.pl](http://www.odrapcu.pl)

**B)** składać uwagi i wnioski odnośnie **PROJEKTU PLANU ZARZĄDZANIA ŚRODOWISKIEM** w formie pisemnej oraz ustnej do protokołu pod ww. adresami lub w formie elektronicznej na adres e-mail [krakow@wody.gov.pl](mailto:krakow@wody.gov.pl) w dniach roboczych od 23.05.2019 do dnia 05.06.2019 (włącznie).

Institucją właściwą do rozpatrzenia uwag i wniosków jest PGW WP RZGW w Krakowie (osoba do kontaktu: Monika Grzywańczak, tel. +12 628 09 84).

Po ww. 10-dniowym okresie udostępnienia dokumentu do wglądu w **dnio 06.06.2019r. o godzinie 17:00**, w siedzibie Państwowego Gospodarstwa Wodnego Wody Polskie Regionalny Zarząd Gospodarki Wodnej w Krakowie, Nadzór Wodny w Krakowie, ul. Kryspinów 278, 32-060 Liszki, odbędzie się **spotkanie otwarte** dla wszystkich zainteresowanych, na którym zostaną przedstawione informacje o **PROJEKcie PLANU ZARZĄDZANIA ŚRODOWISKIEM** oraz odbędzie się publiczna dyskusja dotycząca tego dokumentu, a także uwag i wniosków złożonych do niego w czasie tego spotkania.

Obwieszczenie to zostało podane do wiadomości poprzez ogłoszenie w prasie (**Dziennik Polski** - czasopiśmie o zasięgu lokalnym), wywieszenie na tablicach ogłoszeń w: PGW WP RZGW w Krakowie, Urzędzie Miasta Krakowa oraz Urzędzie Gminy Liszki jak również na stronach internetowych instytucji wskazanych powyżej.

Podmiot publikujący: **WYDZIAŁ BEZPIECZEŃSTWA I ZARZĄDZANIA KRYZYSOWEGO**  
Osoba odpowiedzialna: **BOGDAN KLIMEK - DYREKTOR WYDZIAŁU**  
Osoba publikująca: **PROTR RUSOWICZ**  
Data wytworzenia: 2019-05-22  
Data publikacji: 2019-05-22  
Data aktualizacji: 2019-05-22

Diennik zmian dokumentu

# ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE

**Figure 5.** Announcement on public hearings for the draft EMP submitted to local press and published on the web sites and on the bulletin boards.

## ANNOUNCEMENT

In accordance with the requirements of the World Bank (Operational Policy OP 4.01), the institution co-financing the *Odra-Vistula Flood Management Project*,

### the following is made publicly available:

State Water Holding Polish Waters Regional Water Management Authority in Cracow (PGW WP RZGW in Cracow) makes the **DRAFT ENVIRONMENTAL MANAGEMENT PLAN** for Component 3 *Flood Protection of the Upper Vistula*, Subcomponent 3A *Flood Protection of Upper Vistula Towns and Kraków*, Works Contract 3A.3 *Section 4 - Right embankment of the Vistula from the Skawinka estuary to the Kościuszko barrage* in the area of the City of Cracow (District of the City of Cracow, Municipality of Cracow) within Małopolskie Province (hereinafter called the DRAFT ENVIRONMENTAL MANAGEMENT PLAN) available for reviewing to all interested people and institutions.

Any interested party may:

A) acknowledge the DRAFT ENVIRONMENTAL MANAGEMENT PLAN from 05/23/2019 till 06/05/2019 inclusive (10 working days), in the office of:

- State Water Holding Polish Waters Regional Water Management Authority in Cracow, Project Implementation Unit, 36. Kraszewskiego Str., 30-110 Cracow, on working days between 7:30 a.m. and 3:30 p.m.,
- State Water Holding Polish Waters Regional Water Management Authority in Cracow, Water Inspectorate in Cracow, 278. Kryspinów Str., 32-060 Liszki, on working days between 10:00 a.m. and 1:00 p.m.,
- OVFM Project Office, AECOM Polska Sp. z o.o., 1. Pokoju Al. (building K1), 31-548 Kraków, on working days from 7:30 am to 3:30 pm;

or via a website:

- PGW WP RZGW in Cracow, at – [www.krakow.rzgw.gov.pl](http://www.krakow.rzgw.gov.pl),
- Cracow City Hall, at – [www.bip.krakow.pl](http://www.bip.krakow.pl),
- Liszki Commune Office, at – [www.liszki.pl](http://www.liszki.pl),
- Odra – Vistula Flood Management Project Coordination Unit, at – [www.odrapcu.pl](http://www.odrapcu.pl).

B) submit remarks and motions referring to the DRAFT ENVIRONMENTAL MANAGEMENT PLAN in writing and inform them orally to the minutes to the addresses mentioned above or in a digital form to the following e-mail address: [krakow@wody.gov.pl](mailto:krakow@wody.gov.pl), between 05/23/2019 and 06/05/2019 (inclusive).

State Water Holding Polish Waters Regional Water Management Authority in Cracow is a competent institution to consider the remarks and motions (contact person: Monika Grzywacz, telephone +48 12 628 09 84).

After making the document available for review for 10 days, as mentioned above, there will be a **meeting** on **06/06/2019** at **5:00 p.m.** in the office of State Water Holding Polish Waters Regional Water Management Authority in Cracow, Water Inspectorate in Cracow, 278. Kryspinów Str., 32-060 Liszki, **open** to all interested parties, where information on the DRAFT ENVIRONMENTAL MANAGEMENT PLAN shall be presented, and where a public discussion concerning the document, as well as the motions and remarks submitted to the document both prior to the meeting and during the meeting itself, shall be organized.

The Announcement has been published in the press (**Dziennik Polski** - a local newspaper), through placing it on notice boards in: PGW WP RZGW in Cracow, City Office of Cracow, and Commune Office in Liszki; as well as on the websites of the institutions indicated above.

Figure 6. Announcement on public consultations for the draft EMP published in a local newspaper (*Dziennik Polski*).

# Stworzymy z Michałem świetny duet

Rozmowa z LUKASEM HROSSO, słowackim bramkarzem, który podpisał trzyletni kontrakt z Cracovią. Polską ligę poznał wiosną w Sosnowcu

**- Kiedy Cracovia wykształcała zainteresowanie pańską osobą?**  
- Pierwszy kontakt był po meczu, który w Zagłębiu graliśmy w Krakowie z Cracovią. Zapytano mnie, czy byłbym zainteresowany grą w tym klubie. W tym tygodniu dogadaliśmy się już na dobre.  
**- Czyba nie wahał się pan, czy podpisać umowę?**  
- Koncentrowałem się na grze w Zagłębiu Sosnowiec, na tym, byśmy utrzymali się w lidze. Niestety, nie udało się. Miałem klauzulę w kontrakcie, że stanę się wolnym graczem, że stanę się wolnym graczem. Wiedziałem, że Cracovia jest jednym z topowych klubów w Polsce, ma kibiców, wywalczyła awans do europejskich pucharów, więc to jest duży plus.  
**- Miał pan propozycje z innych klubów z polskiej ekstraklasy?**  
- Menedżer przekazywał mi, że interesowała się mną Ja-

giellonta Białystok, ale nie było to nic konkretnego. Czekalem więc, jednak jak przyszła konkretna oferta z Cracovią, to się nie wahałem.  
**- Podoba się panu polska liga? Zagrat pan w niej wiosną dwa miesiące wcześniej.**  
- Poznałem ligę bardzo dobrze. Słowaccy bramkarze zrobili jej dobrą opinię w naszym kraju. Chciałem w niej zostać na dłużej i jestem szczęśliwy, że to się udało.  
**- W Cracovii spotyka pan bardzo poważnego konkurenta do miejsca numer jeden w bramce - jest nim pański rodak Michał Pesković. Świetnie spisywał się w minionym sezonie. Czekają na pana niezwykle trudne zadanie w rywalizacji o to, kto będzie bronił.**  
- Wiem, że Michał to jest bardzo dobry bramkarz, świetnie się spisywał w walce o europejskie puchary. Zdaję sobie doskonale sprawę z tego, jakie czeka mnie zadanie, że nie będzie ono łatwe. Znam Michała jeszcze z dawnych czasów.



Lukasz Hrosso ma 32 lata, mierzy 195 cm. Wiosną zagrat w 12 meczach

Graliśmy w Nitrze. Gdy on opuszczał ten klub, ja byłem w nim młodym zawodnikiem. Nie znamy się osobiście, ale doskonale go pamiętam z występów w lidze słowackiej. Uważam, że teraz będziemy stanowili bardzo dobry duet bramkarzy, który powalczy ze sobą o skład.

**- Nie odda pan mi miejsca za darmo, ale, przy najmniejszym razie, może być panu trudno wygrać rywalizację z Peskovićem.**  
- Tak, w Zagłębiu też była konkurencja, musiałem rywalizować z Dawidem Kudlą. Niezależnie od tego, czy będę grał, czy nie, na pierwszym miej-

scu będzie Cracovia, chodzi o to, by klub zwyciężył się dobrze. To jest najważniejsze.  
**- Podpisał pan umowę ważną od 1 lipca. Stawił się pan na treningi dopiero wtedy, czy też może wcześniej?**  
- Do 30 czerwca jestem związany kontraktem z Zagłębiem. Zobaczymy, jak dogadają się kluby. Chciałbym przyjechać na początek przygotowań do sezonu i pojechać z zespołem na obóz.  
**- Po to, by jak najlepiej przygotować się do sezonu i meczów pierwszej rundy eliminacji Ligi Europy, które są 11 i 18 lipca.**  
- No właśnie.  
**- Powinno mieć pan dobre wejście do nowej drużyny, w której oprócz Peskovića grają i inni pańscy rodacy - Mihał Dimitrić i Mihał Štalić.**  
- To zaważyło też na mojej decyzji o przenosinach. Ale już po tych kilku miesiącach spędzonych w Polsce nauczyłem się trochę języka.  
**- Będzie mieszkał pan w Krakowie sam czy z rodziną?**

- Zoną i dwójką dzieci. Kraków jest blisko domu, to też mnie przekonało do tego, by związać się z Cracovią. Rodzina będzie mieszkała ze mną, choć będzie wracać do czasu do czasu na Słowację. Jakoś to ustawimy, by było dobrze.  
**- Umowa obowiązuje na trzy lata, to korzystne rozwiązanie dla pana.**  
- Tak, jestem zadowolony z tego, że moja praca na boisku przelożyła się na taki kontrakt. Będę się starał, byśmy zrobili z Cracovią dobry wynik.  
**- W Zagłębiu grał pan z Piotrem Polozakiem, z zawodnikiem, który lata spędził w Cracovii, był jej kapitanem. Rozmawiał pan z nim o klubie?**  
- Nie było okazji, bo mój kontrakt z Cracovią nie był pewny, a chciałem się skoncentrować na grze w Zagłębiu. Rozmawiałem jednak z Tomaszem Vestenickim, który jest zawodnikiem Cracovii, a grał ostatnio w Nitrze.  
**Rozmawiał Jacek Żukowski**

## Awantura o miejsce w reprezentacji

**Kajakarstwo górskie**  
W szóstym dniu mistrzostw Polski, które odbyły się w Krakowie, poznaliśmy nie tylko medalistów, ale i reprezentację na zbliżające się mistrzostwa Europy oraz Pucharu Świata. Nie obyło się bez kontrowersji i niespodzianek.



Mateusz Polaczyk, medalista ME i MS, nie zapisał się do kadry

Kwalifikacje do kadry tradycyjnie składały się z kilku startów. Dwa pierwsze były w Liptowskim Mikulášu, dwa następne podczas MP w Krakowie. Do rankingu liczone trzy najlepsze wyniki. Sensacyjne rozstrzygnięcie przyniosły zmagania w K-1, bo poza kadrą wybierającą się na ME do francuskiego Pau (od 30 maja) znalazł się Mateusz Polaczyk (Zawisza Bydgoszcz), który miał bronić złota. W MP zdobył brąz, ale do reprezentacji się nie zapisał.

Podczas zawodów w Krakowie były kontrowersje. W piątek zrezygnowano z drugiego przejazdu eliminacyjnego do MP, który miał być punktowany do rankingu, w zamian uznano wynik pierwszego. Oficjalnym powodem zmiany był wysoki stan wody i zagrożenie zakłamania śluz przy torze niesionym przez Wisłę śmieciami. Końcowy efekt był taki, że ostatnie wolne miejsce w kadrze otrzy-

mał Krzysztof Majerczak (KKK Kraków). Przepustki uzyskał także Dariusz Popiela (Start Nowy Sącz), który indywidualnym mistrzem kraju został po raz ósmy, a także wicemistrz Michał Pastus (AZS AWF Kraków).

Regulamin kwalifikacji przewidywał zmianę zasad ze względu na problemy z rozegraniem którychś zawodów. Niesmak pozostał, bo w trakcie walki zmieniono reguły gry. A jednym z opcji było przeprowadzenie przejazdu w innym terminie, np. następnego dnia rano.

Po zawodach z pracy z reprezentacją - w ramach protestu wobec takiej decyzji organizato-

rów - zrezygnował trener Grzegorz Polaczyk, który opiekował się jedną z grup zawodników, w tym bratem Mateuszem. Do Pau pełną obsadę (trzy osoby) związek wysłał także tylko w C-1 mężczyźni, a miejsca zdobyli: mistrz Polski Grzegorz Hedwig (Start) oraz Igor i Kacper Sztubowiec (AZS AWF). W sfiśskich konkurencjach PZKaj, sfinansuje start w K-1 kobiet Natali Pacierpnik (KKK) po raz 9. została mistrzynią i Klaudii Zwolńskiej (Start) oraz w C-1 Aleksandry Stach (KKK), wygrała kwalifikacje, zdobyła srebrny 12wzlotki (złoto MP). © (ART)

### OBWIESZCZENIE

Zgodnie z wymogami Banku Światowego (polityka operacyjna CP 4.01), instytucji współfinansującej realizację Projektu Ochrony Przodkowodociowej w Dorzeczu Odry i Warty,

podaje się do publicznej wiadomości, co następuje:

Państwowe Gospodarstwo Wodne Wody Polskie Regionalny Zarząd Gospodarki Wodnej w Krakowie (PGW WP RZGW w Krakowie), udostępni do wglądu wszystkim zainteresowanym osobom i instytucjom PROJEKT PLANU ZARZĄDZANIA ŚRODOWISKIEM dla Komponentu 3 Ochrona przed powodzią Górną Wartą, Podkomponentu 3A Ochrona przed powodzią Krakowa i Wiołczki, Kontraktu 3A.3 Odcinek 4 - Prawy wal rzeki Warty od ujścia rzeki Skawinki do stopnia Kościuszko na terenie Miasta Kraków (powiat Miasto Kraków, gmina Miasto Kraków) oraz miejscowości Piaski i Krypinów (powiat krakowski, gmina Liszki) w województwie małopolskim (nazywany dalej PROJEKTEM PLANU ZARZĄDZANIA ŚRODOWISKIEM).

Każdy zainteresowany może:

- zapoznać się z PROJEKTEM PLANU ZARZĄDZANIA ŚRODOWISKIEM od dnia 23.05.2019 r. do dnia 5.06.2019 r. (10 dni roboczych), w siedzibie:
  - Państwowego Gospodarstwa Wodnego Wody Polskie Regionalny Zarząd Gospodarki Wodnej w Krakowie, Jednostka Realizująca Projekt, ul. Krzeszowskiego 36, 30-110 Kraków, w dniach roboczych od godziny 7:30 do 15:30,
  - Państwowego Gospodarstwa Wodnego Wody Polskie Regionalny Zarząd Gospodarki Wodnej w Krakowie, Nadzór Wodny w Krakowie, ul. Krysypinów 27B, 32-060 Liszki w dniach roboczych od godziny 10:00 do 13:00,
  - Biurowo Projektu OPDOW, AECOM Polska Sp. z o.o., al. Pokoju 1 (budynki K1), 31-548 Kraków, w dniach roboczych od godziny 7:30 do 15:30.

lub poprzez stronę internetową:

- PGW WP RZGW w Krakowie pod adresem - [www.krakow.rzgw.gov.pl](http://www.krakow.rzgw.gov.pl)
- Urzędu Miasta Krakowa pod adresem - [www.bip.krakow.pl](http://www.bip.krakow.pl)
- Urzędu Gminy Liszki pod adresem - [www.liszki.pl](http://www.liszki.pl)
- Biurowo Koordynacji Projektu Ochrony Przodkowodociowej w Dorzeczu Odry i Warty pod adresem - [www.odrappou.pl](http://www.odrappou.pl)

B) składać uwagi i wnioski odnośnie PROJEKTU PLANU ZARZĄDZANIA ŚRODOWISKIEM w formie pisemnej oraz ustnie do protokołu pod ww. adresami lub w formie elektronicznej na adres e-mail [krakow@wody.gov.pl](mailto:krakow@wody.gov.pl) w dniach roboczych od 23.05.2019 r. do dnia 5.06.2019 r. (włącznie).

Instytucja właściwa do rozpatrzenia uwag i wniosków jest PGW WP RZGW w Krakowie (osoba do kontaktu: Monika Grywca, tel. +48 22 628 09 84).

Po ww. 10-dniowym okresie udostępnienia dokumentu do wglądu w dniu 5.06.2019 r. o godzinie 17:00, w siedzibie Państwowego Gospodarstwa Wodnego Wody Polskie Regionalny Zarząd Gospodarki Wodnej w Krakowie, Nadzór Wodny w Krakowie, ul. Krysypinów 27B, 32-060 Liszki, odbędzie się spotkanie otwarte dla wszystkich zainteresowanych, na którym zostaną przedstawione informacje o PROJEKcie PLANU ZARZĄDZANIA ŚRODOWISKIEM oraz odbędzie się publiczna dyskusja dotycząca tego dokumentu, a także uwag i wniosków złożonych do niego wcześniej lub w trakcie tego spotkania.

Obwieszczenie to zostało podane do wiadomości poprzez ogłoszenia w prasie (*Dziennik Polski*) - za darmo i za darmo lokalnymi, wywieszenia na tablicach ogłoszeń w: PGW WP RZGW w Krakowie, Urzędzie Miasta Krakowa oraz Urzędzie Gminy Liszki, jak również na stronach internetowych instytucji wskazanych powyżej.

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**Figure 7.** Public hearings for the draft EMP held in the office of the PGW WP RZGW in Cracow - Water Inspectorate in Cracow, Commune of Liszki, June the 6<sup>th</sup>,



2019.

**Figure 8.** Public hearings for the draft EMP held in the office of the PGW WP RZGW in Cracow - Water Inspectorate in Cracow, Commune of Liszki, June the 6<sup>th</sup>, 2019.



**ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE**

**Figure 9.** Public hearings for the draft EMP held in the office of the PGW WP RZGW in Cracow - Water Inspectorate in Cracow, Commune of Liszki, June the 6<sup>th</sup>, 2019





## **9 Organizational structure of EMP implementation**

The subject Contract remaining a part of Subcomponent 3A is a part of the Odra-Vistula Flood Management Project co-financed from the funds of the World Bank, the Council of Europe Development Bank, the European Union Cohesion Fund and the State budget. Therefore, the structure of supervision over implementation of the EMP must correspond to both: regulations of the Polish law, as well as the requirements of the World Bank

### **9.1 Odra-Vistula Flood Management Project Coordination Unit**

The Project Coordination Unit (PCU), currently remaining a budgetary unit subordinated to the minister relevant for water management issues, is responsible for the total coordination of implementation of individual EMPs under the OVFMP.

The PCU assignments are as follows:

- cooperation with relevant ministers, State Water Holding Polish Waters, and other governmental or local administration units related to the OVFMP implementation;
- coordination of activities of particular Project Implementation Units and supporting those units in EMP implementation;
- monitoring and assessment of the EMP implementation progress;
- ongoing cooperation with the World Bank, including development of quarterly progress reports on the Project implementation.

### **9.2 Project Implementation Unit**

An entity which is directly responsible for implementation of the EMP for the Contract and for monitoring of the progress of its implementation is the Project Implementation Unit (PIU), i.e. State Water Holding Polish Waters Regional Water Management Authority in Cracow.

Due to implementation of the OVFMP Project, the Project Implementation Office (PIO) was assigned within the PIU structure, which is a separate structure supervised by the President of State Water Holding Polish Waters. This structure is transparent and has a high decisive level, which increases the effectiveness of the Contract implementation.

As a part of EMP implementation supervision, the PIO fulfils the following assignments:

- 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 in the EMP implementation.

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

- managing, coordinating, and supervising the EMP implemented by the Designer, the Consultant, and the Contractor;

## **ENVIRONMENTAL MANAGEMENT PLAN FOR THE WORKS CONTRACT 3A.3 SECTION 4 - RIGHT EMBANKMENT OF THE VISTULA FROM THE SKAWINKA ESTUARY TO THE KOŚCIUSZKO BARRAGE**

- direct supervision over the correct Contract implementation;
- cooperation with the PCU;
- conducting an administrative and legal supervision over the EMP implementation;
- verifying the Reports and studies on the EMP implementation, as prepared by the Consultant and by the Contractor;
- conducting a financial supervision over the EMP implementation;
- supervising the proper application of formal procedures during the implementation of EMP, as required by the Building Law, Works Contract, the Environmental Protection Law, and others.

### **9.3 Engineer - Consultant**

The role of the Engineer is to support the PIU (PGW WP, RZGW in Cracow) in an effective conduction of the whole Works Contract process (from preparation of the Contract to its settlement).

The Consultant/Engineer shall be selected 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 Contract Engineer Agreement, the Engineer/Consultant shall be obliged to perform e.g. the supervision over EMP implementation, comprising the following:

- monitoring of EMP implementation by the Contractor;
- monitoring of the Contractor's activities;
- checking the quality of construction works performed by the Contractor and built-in construction products, and especially preventing the usage of building materials which are defective and not accepted for use in the construction industry;
- representing the Investor on site by performing the control of the compliance of the construction process with the design and with the construction permit/investment project implementation permit, and with regulations related to the environmental protection and technical know-how;
- supervision over all issues related to the environmental protection by specialists experienced in the field of environmental protection and by other Engineer's personnel;
- constant monitoring over proper implementation of measures mitigating the adverse environmental impact;
- conduction of additional tests if it would be necessary to verify the reports of the Contractor;
- identifying problems resulting from harmful environmental impact caused by the construction works, and presentation of solutions to those problems;
- verifying and acceptance of construction works being covered or of concealed works, participation in tests and technical commissioning of technical installations and devices, as well as preparation and participation in performing the commissioning activities for finished engineering objects and handing them over for use;
- confirmation of the works factually completed and of the removal of defects, as well as, at the request of the Investor, verification of site's settlements.

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## 9.4 Contractor

A Contractor shall be selected for the purpose of performance, and it shall be responsible for implementation of individual EMPs. The Contractor's liabilities in that scope are as follows:

- conducting construction works according to the rules specified in the EMP, in accordance with contract conditions and design documentation, pursuant to applicable legal provisions and requirements of administrative decisions issued for the this Contract;
- ensuring the permanent environmental, sapper, and archeological supervision;
- ensuring the permanent H&S supervision;
- implementation of the Engineer's recommendations (including the recommendations of Engineer's environmental and of the Investor's supervision inspector) concerning implementation of the EMP;
- ensuring – prior to the commencement of works – the preparation of: BIOZ Plan, Waste management plan, Quality assurance plan/plans, Flood protection plan for the site for the performance time, and Draft traffic plan for the construction site;
- if it will be necessary, the Contractor's environmental team would develop necessary materials and applications for the obtainment of permits/decisions for derogations from bans to protect species of plants, fungi or animals based upon the rules and in the mode specified by the NC Act (of April 16, 2004). The above-mentioned decisions issued by RDOŚ/GDOŚ are to be requested for by the Contractor. The Contractor's duty is to implement the provisions of obtained decisions for derogations from the protection of species of plants, fungi or animals;
- keeping the construction site records;
- drafting monthly reports and inspection reports (commencement report, monthly report, quarterly report, final report, report to RDOŚ in Cracow only in the scope resulting from decisions obtained on the implementation stage, if they would state it necessary to report subject actions);
- preparing reports concerning the environmental protection;
- applying to the Investor for modification of design solutions, if it is justified by a necessity of increasing safety for performance of the construction works or improving the construction process related to implementation of the EMP;
- repairing the potential faults/defects, which would be notified by the Engineer and/or by the Client (in case the notification period for defects, guarantee, and warranty would be supported by the Engineer) during the works and during the defects, guarantee, and warranty notification period. The Contractor is obliged to report any actions implemented to remove the faults/defects. The report shall be filed to the Engineer/Client;
- provision of the ESHS Proceeding Code and of ESHS Management Strategy and Implementation Plans - to be developed on the bid submission stage - for the Contract Engineer's acceptance, as described in the Bidding Documents, ItB 11.1 (h), and verification of those documents as a result of periodical CE guidelines.

## **10 EMP implementation schedule and reporting procedures**

Implementation of the EMP shall allow the parties involved in the preparation, performance and supervision of the Works Contract to:

- identify different environmental aspects which have a considerable impact on the state of the environment, and therefore allow for controlling, correcting, and reducing them, but which consequently generate economic effects;
- rectify adverse consequences of the works conducted during the implementation to the benefit of the environment and financial results;
- determine the aims and measures performed within the adopted environmental policy, covered by the EMP, which require expenditures and bring tangible effects;
- identify and eliminate 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 natural resources, with minimum environmental loss and optimum generation of costs.

Furthermore, implementation of recommendations and measures required under the EMP may reduce or even eliminate a risk of occurrence of adverse social, environmental and economic events and phenomena related to the Contract, and in particular:

- a risk to ignore the environmental protection issues during the process of implementation of measures by the Contractor;
- a risk of 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 additional damage to the environment.

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

- prior to the selection of the Contractor, the Employer shall submit a draft of this EMP to the World Bank in order to obtain its opinion;
- after obtaining a positive opinion of the World Bank, the draft EMP shall be consecutively subject to public consultations;
- after the public consultations (and supplementing the document with the consultations report), the EMP shall be updated and submitted in its final version for the approval by the World Bank;
- upon the approval of EMP by the World Bank, the final document shall be attached to the Bidding Documents for selection of the Contractor;
- all activities of the Contractor shall be systematically reported (once a month), in Polish and, if required, in English, in paper and in electronic versions, with reference

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to the obligations required by the EMP and other contractual documents. Those reports shall be subject to the approval of the Engineer and the Employer.

Furthermore, relevant units involved in implementation of the Contract shall be obliged to fulfil additional obligations related to monitoring and reporting of issues associated with the environmental protection, as determined in administrative decisions issued for the subject Contract (see: Section 3.5) and given in Appendix 1 and Appendix 2 to the EMP (Plan of mitigation measures, Plan of monitoring measures).

Monitoring at the works execution stage involves the preparation of summary reports on monitoring of nature by the Contractor, confirmed by the experts of the Contractor's environmental team, approved by the Engineer's environmental team and submitted to RDOŚ by the PIU. Detailed contents of the report shall be defined by the Engineer (commencement report, periodical reports – monthly, ad-hoc, closure); it shall also determine the due dates.

The Project reporting system shall also base on monthly reports submitted by Contractors to the PIO through the Engineer, and upon Engineer's monthly and quarterly reports. Monthly and quarterly reports on the EMP implementation (Contractor's and Engineer's) shall be prepared as part of monthly reports or as a separate document. The PIU shall supply the PCU with quarterly reports in the part referring to measures implemented by them. They shall contain a required set of information and descriptions allowing for the preparation of the Project's quarterly report by the PCU. Furthermore, especially in the case of problems with the Works Contract implementation, the PCU shall expect the PIU to submit summaries and data in the monthly periods.

The following reporting procedures were established:

### 1) Reporting:

- a) Reports (commencement, monthly, quarterly, ad-hoc, final) shall be developed by the Contractor,
- b) Report review by the Engineer,
- c) Submission of the report to the Employer (for information),
- d) submission to RDOŚ in Cracow (only in the scope resulting from issued administrative decisions obtained on the implementation stage, if they would state the necessity of reporting for the subject actions),
- e) Submission of a PIU's quarterly report to the PCU,
- f) Final report on implementation of the EMP prepared by the Engineer (after verification by the PIU and by the PCU, submitted to the World Bank not later than 3 months after the completion of works).

### 2) Filing system:

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

### 3) Evaluation:

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- a) ongoing assessment of the outcomes of the planned activities implementation which arise from the EMP;
- b) ongoing analysis of documentation (Reports of the Contractor) by the Engineer;
- c) providing the Employer with reliable information on the course of the construction process, with special consideration of the execution of activities limiting the adverse impact on the environment, and recommendations arising from environmental decisions;
- d) development and provision of quarterly reports to the World Bank by the PCU.

The following is planned:

- *ex-ante* evaluation: Report prior to the commencement of the Works Contract implementation (Engineer's Report),
- ongoing evaluation: Engineer's quarterly reports,
- *ex-post* evaluation:
  - Report upon the completion of the works (final reports on implementation of the EMP developed by the Contractor and by the Engineer),
  - EMP Report upon expiry of the Defects, Guarantee and Warranty Notification Period drawn up by the Contractor.

## **11 Source materials**

1. Works Contract Information Sheet titled: "Design on Extension of Flood Embankments for the Vistula River in Cracow: Section 4 – Right embankment of the Vistula from the Skawinka estuary to the Kościuszko barrage", City of Cracow, District of Cracow – Małopolskie Province.
2. Environmental Impact Report with supplementation for the Contract titled: "Design on Extension of Flood Embankments for the Vistula River in Cracow: Section 4 – Right embankment of the Vistula from the Skawinka estuary to the Kościuszko barrage".
3. Decision dated May 20, 2015 on environmental conditions (ref. no.: OO.4233.8.2014.BM) for the subject Contract titled: "Design on Extension of Flood Embankments for the Vistula River in Cracow: Section 4 – Right embankment of the Vistula from the Skawinka estuary to the Kościuszko barrage".
4. MasterPlan for the Vistula River Basin. National Water Management Authority, Warsaw 2014.
5. Architectural and construction design for the Contract titled "Extension of the Right embankment of the Vistula River from the Estuary of Skawinka to the Kościuszko Barrage at Chainage: from km 60+325 to km 61+662 with a length of 1.337 km (Task no. 1), from km 62+017 to km 63+183 with a length of 1.166 km (Task no. 2), and from km 63+779 to km 65+160 with a length of 1.381 km (Task no. 3), located within the City of Cracow and localities of Piekary and Kryspinów (Commune of Liszki), District of Cracow, Małopolskie Province".
6. Decision no. 06/2015 dated December 22, 2015 (ref. no.: WI-IX.7840.1.8.2015) on the Works Contract implementation permit for the: "Extension of the Right embankment of the Vistula River from the Estuary of Skawinka to the Kościuszko Barrage at Chainage: from km 60+325 to km 61+662 with a length of 1.337 km (Task no. 1), from km 62+017 to km 63+183 with a length of 1.166 km (Task no. 2), and from km 63+779 to km 65+160 with a length of 1.381 km (Task no. 3), located within the City of Cracow and localities of Piekary and Kryspinów (Commune of Liszki), District of Cracow, Małopolskie Province".
7. Report on environmental status in Małopolskie Province in the years 2013-2015. Provincial Inspectorate for Environmental Protection in Cracow, Cracow 2016.
8. Environmental Management Programme and Waste Management Plan remaining an element of the Programme for the City of Cracow – plan for the years 2005–2007, including measures implemented in 2004 and perspective for the years 2008 – 2011 – Volume I Environmental Protection Programme.
9. World Bank Operational Policy OP 4.01 – Environmental Impact Assessment (<http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTOPMANAL/0,,contentMDK:20064724~pagePK:64141683~piPK:64141620~theSitePK:502184~isCURL:Y~isCURL:Y~isCURL:Y~isCURL:Y,00.html>).
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14. Website: [www.isok.gov.pl/](http://www.isok.gov.pl/)
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[http://www.krakow.pl/encyklopedia\\_krakowa/13140,artykul,mapa\\_akustyczna\\_miasta\\_krakowa.html](http://www.krakow.pl/encyklopedia_krakowa/13140,artykul,mapa_akustyczna_miasta_krakowa.html)
16. Geo-service GDOŚ: <http://geoserwis.gdos.gov.pl/mapy/>



## **12 Appendices**

- Appendix 1. Plan of mitigation measures;
- Appendix 2. Plan of monitoring measures;
- Appendix 3. List of national legal acts related to environmental protection;
- Appendix 4. Decisions, resolutions, permits, notices;
  - Appendix 4a Decision on environmental conditions of May 20, 2015;
  - Appendix 4b Resolution of RDEP of November 19, 2015;
  - Appendix 4c A water-law permit;
  - Appendix 4d Opinion of the Provincial Heritage Conservator in Cracow;
  - Appendix 4e Resolution of the RDOŚ dated August 24, 2018 correcting an editorial mistake in the Decision on environmental conditions dated May 20, 2015.
- Appendix 5. Map with location of the Works Contract;
- Appendix 6. Map with location of the Works Contract in reference to protected areas and to NATURA 2000 sites;
- Appendix 7. Map with location of the Works Contract in reference to areas of potential flood hazard;
- Appendix 8. Map with location of the Works Contract in reference to areas excluded from land of potential flood hazard.
- Appendix 9. Map with location of the Works Contract's elements.

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