

# **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 Cracow

### **Contract 3A.1:**

Modernization of Vistula embankments in Cracow

### **Works Contract 3A.1/1**

Modernization of Vistula embankments in Cracow – Section 1, Section 2

### **Works Contract 3A.1/2**

Modernization of Vistula embankments in Cracow – Section 3

<i><b>Edition</b></i>	<i><b>Date</b></i>	<i><b>Developed by</b></i>	<i><b>Verified by</b></i>	<i><b>Customer's approval</b></i>	<i><b>Description</b></i>
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**ENVIRONMENTAL MANAGEMENT PLAN FOR CONTRACT 3A.1:  
WORKS CONTRACT 3A.1/1, WORKS CONTRACT 3A.1/2**

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**ODRA-VISTULA FLOOD MANAGEMENT PROJECT**

co-financed by:

World Bank - International Bank for Reconstruction and Development (WB-IBRD), Loan Agreement no. 8524 PL

Council of Europe Development Bank (CEB), Frame Loan Agreement no. LD 1866

The European Union Cohesion Fund (OPIE 2014-2020) and State Budget

**ENVIRONMENTAL MANAGEMENT PLAN**

**Subcomponent 3A: Flood Protection of Upper Vistula Towns and Cracow**

**Contract 3A.1: Modernization of Vistula embankments in Cracow**

**Works Contract 3A.1/1**

**Modernization of Vistula embankments in Cracow – Section 1, Section 2**

**Works Contract 3A.1/2**

**Modernization of Vistula embankments in Cracow – Section 3**

Environmental category B – according to OP 4.01 WB

**Project Implementation Unit:**

State Water Holding Polish Waters represented by the

Director of State Water Holding Polish Waters

Regional Water Management Authority in Cracow

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Document developed by:

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Regional Water Management Authority in Cracow

OVFM PIO

Technical Assistance Consultant -

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Cracow – March 2020

**ENVIRONMENTAL MANAGEMENT PLAN FOR CONTRACT 3A.1:  
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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.
Contract / Contract 3A.1	Contract 3A.1 <i>Modernization of Vistula embankments in Cracow</i> comprising two Works Contracts 3A.1/1 and 3A.1/2
Contractor	Company or a legal person implementing Contract 3A.1
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 and 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
GUS	Statistics Poland
H&S	Health and Safety
IIS	Investment Information Sheet
IMGW - PIB	Institute of Meteorology and Water Management – National Research Institute
LA&RAP	Land Acquisition and Resettlement Action Plan
MGR	Major Groundwater Reservoirs
MZMiUW	Małopolskie Board for 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 PCU	Odra-Vistula Flood Management Project Coordination Unit <a href="http://www.odrapcu.pl/">http://www.odrapcu.pl/</a>
PGW WP	State Water Holding Polish Waters

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Name	Description
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>
PPIS	State District Sanitary Inspector
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
Section 1	Left embankment of the River Vistula from the Wandy Bridge to the Przewóz Barrage together with backwater embankments for the River Dłubnia; Section 1 is implemented under Works Contract 3A.1/1
Section 2	Left embankment of the River Vistula from the Przewóz Barrage to Suchy Jar; Section 2 is implemented under Works Contract 3A.1/1
Section 3	Right embankment of the River Vistula from the Dąbie Barrage to the Przewóz Barrage; Section 3 is implemented under Works Contract 3A.1/2
WIOŚ	Provincial Inspectorate for Environmental Protection
Waste MP	Waste Management Plan
Works Contract 3A.1/1 / Task 3A.1/1 / Contract 3A.1/1	Works Contract <b>3A.1/1 Modernization of Vistula embankments in Cracow – Section 1, Section 2</b>
Works Contract 3A.1/2 / Task 3A.1/2 / Contract 3A.1/2	Works Contract <b>3A.1/2 Modernization of Vistula embankments in Cracow – Section 3</b>
World Bank (WB)	International Bank for Reconstruction and Development <a href="http://www.worldbank.org/">http://www.worldbank.org/</a>

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**WORKS CONTRACT 3A.1/1, WORKS CONTRACT 3A.1/2**

Name	Description
ZIKiT	Management Board for Communal Infrastructure and Transportation in Cracow



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WORKS CONTRACT 3A.1/1, WORKS CONTRACT 3A.1/2**

**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 - Code of Administrative Procedure (consolidated text: Journal of Laws of 2017, item 1257).
<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>Construction Law</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 2017, item 1405, as amended)
<i>EIA Regulation</i>	Regulation of the Council of Ministers of November 9, 2010 on projects likely to have significant effects on the environment (consolidated text, Journal of Laws of 2016, item 71)
<i>NC Act</i>	Act of April 16, 2004 on nature conservation (consolidated text, Journal of Laws of 2018, item 1614, as amended)
<i>Water Law</i>	Act of July 20, 2017 – Water Law (Journal of Laws of 2017, item 1566, as amended)
<i>Water MP within the Vistula River Basin</i>	Regulation of the Council of Ministers of October 19, 2016 on Water Management Plan for waters within the Vistula River Basin (Journal of Laws 2016, item 1911)

## Summary

This document presents the Environmental Management Plan (EMP) for the Contract 3A.1 *Construction of Vistula embankments in Cracow*, forming a part of Subcomponent 3A, implemented under the Odra-Vistula Flood Management Project, co-financed by the International Bank for Reconstruction and Development (also referred to as the World Bank) and by the Council of Europe Development Bank, and also by the European Union Cohesion Fund (OPIE 2014-2020) and by the State Budget.

This EMP includes the following elements:

- Brief description of the OVFM Project (Chapter 1.1),
- Description of the Contract, to which this EMP refers to (Chapter 2),
- Institutional, legal and administrative conditions for implementation of the 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 (Chapter 3),
- Description of individual elements of the environment in the area of the Contract (Chapter 4),
- Summary of the environmental impact assessments (Chapter 5),
- Description of mitigation measures to be implemented by the Contractor and by the PIU at the stage of implementing the Contract in order to eliminate or limit the potential adverse environmental impact of the Works Contract (Chapter 6), including a tabulated summary of those measures (Appendix 1– Plan of Mitigation Measures),
- Description of monitoring measures at the stage of developing, implementing and operating the Contract (Chapter 7), including a tabulated summary of those measures (Appendix 2 – Plan of Monitoring Measures),
- Description of the course and of the results of public consultations on the stage of environmental impact assessment and on the stage of developing this EMP (Chapter 8);
- Description of organizational structure for implementation of the EMP (Chapter 9),
- Implementation schedule and description of reporting procedures (Chapter 10).

Appendices to the EMP for Contract 3A.1 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 decisions, resolution, permits, notes (Appendix 4), and drawings showing the location of the proposed Works Contract (Appendix 5), a map with location of the Contract in reference to protected areas and Natura 2000 sites (Appendix 6), a map with location of the Contract in reference to areas under potential flood threat (Appendix 7), a map with location of the Contract in reference to areas excluded from the potential flood threat (Appendix 8), a map with location of the Contract in reference to environmental habitats and fauna occurrence sites (Appendix 9), and a map with location of the Contract's elements (Appendix 10).

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A basis for the development of this EMP were the following materials: ESMF, PAD, POM, WB operational policies, investment information sheets, issued environmental decisions, including decisions modifying the ED, 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 in the area situated along the right and left bank of the River Vistula and of the River Dłubnia, and to protect developed areas and limit flood damage in the discussed area through raising and extending 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 and Dłubnia flood embankments. 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\_670\_W" (ordinal no.: 996) 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 Voivodship:

- District of the City of Cracow, Commune: City of Cracow;
- District of Wieliczka, Commune: Wieliczka.

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

Contract 3A.1 was split into:

- Works Contract 3A.1/1 *Modernization of Vistula embankments in Cracow – Section 1, Section 2* (hereinafter referred to as Task 3A.1/1 and Contract 3A.1/1).

Section 1 is the section of embankment to be modernized comprising *the left embankment of the River Vistula from the Wandy Bridge to the Przewóz Barrage, together with backwater embankments of the River Dłubnia*.

Section 2 comprises *the left embankment of the River Vistula from Przewóz Barrage to Suchy Jar*.

- Works Contract 3A.1/2 *Modernization of Vistula embankments in Cracow – Section 3* (hereinafter referred to as Task 3A.1/2 and Contract 3A.1/2).

Section 3 is the section of embankment to be modernized comprising *the right embankment of the River Vistula from the Dąbie Barrage to the Przewóz Barrage*.

Contract 3A.1 includes redevelopment and extension of the embankments of the Vistula River together with the backwater embankments of the Dłubnia River. Under the redevelopment, raising of the embankment crest is planned together with its expansion to 4 m

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

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and construction of an additional shelf on the landside slope with a width of 2.5 m to create space for service vehicles' traffic. A vertical membrane will be driven into the ground to the depth of 6 m at the riverside base of the embankment. A sealing screen of geomembrane or bentomat will be placed on the riverside slope of the embankment joined with the vertical membrane.

Furthermore, it is planned under the subject Contract 3A.1 to redevelop, protect or remove connected auxiliary facilities (embankment locks, descend roads, embankment crossings and service roads), and also to construct, redevelop, protect or remove existing road infrastructure (roads, culverts, ramps - descend roads and embankment crossings), electric, gas, telecom, waterworks, sewerage, and heating networks.

Additionally, construction of a new left backwater embankment of the Dłubnia River over a length of about 476 m is planned under the Works Contract 3A.1/1. Its implementation will allow for protection of all the houses in the area of Bardosa St. The works shall comprise construction of the new backwater embankment together with necessary redevelopment and construction of accompanying facilities (i.e. embankment lock on the existing amelioration dike with an intake port for pumping station for mobile pumps, maneuvering yard, operational traffic routes for provision of services for the embankment). As the designed embankment is an extension of Section 1 of the embankment (Section 1 - *the left embankment of the Vistula River from the Wandy Bridge to the Przewóz Barrage, together with the backwater embankments of the Dłubnia River*) – under the Works Contract 3A.1/1; thus, the technical solutions of the new section of the embankment (including the crest elevation) are the same as for Section 1 in order to unify the technical solutions.

The area of designed Contract 3A.1 shall be finished in the final phase through top-soiling and sowing with a mix of grass (the embankment slopes and berm will be covered with a biomat).

***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:

Contract 3A.1 implementation area:

- There are no species of plants under strict protection within the area of direct Contract 3A.1 impact, i.e. the embankment and the directly adjacent area,
- The occurrence of one partially protected species– common centaury *Centaureum erythraea* was identified within the area of Task 3A.1/2;
- The occurrence of protected natural habitats was identified within the Contract area;
- At least five species of amphibians were identified within the Contract area, i.e. common frog, common toad, European fire-bellied toad, green frogs, common newt. The aforementioned species are protected;
- Protected species of reptiles were not identified within the Contract area;

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WORKS CONTRACT 3A.1/1, WORKS CONTRACT 3A.1/2**

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- In the Contract area the occurrence of over 90 species of protected birds was identified. 10 of them are listed in Annex I to the Birds Directive, and these are: white stork, great white egret, corn crane, grey-headed woodpecker, red-backed shrike, common tern, common kingfisher, western marsh harrier, Syrian woodpecker, middle spotted woodpecker;
- In case of the Contract area the inventory of mammals showed occurrence of European beaver (partially protected species);
- Neither chiropterologic research was done as a part of inventory nor identification of fungi and lichens;
- The analyzed Works Contract is located beyond the legally protected areas.

Implementation area for Task 3A.1/1

- among protected species of invertebrates stands of hermit beetle were identified in the area of Task 3A.1/1;
- there is a zone of archaeological supervision on the left bank of Dłubnia River within Task 3A.1/1.

Implementation area for Task 3A.1/2

- one species under partial protection – common centaury – was identified in the area of Task 3A.1/2;
- ermine was identified in the course of an inventory of mammals in the area of Task 3A.1/2.

Due to the applied restrictions with regard to land acquisition on the water-side as well as on the land-side of the embankment to be redeveloped, 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. The EMP includes a plan of measures mitigating adverse environmental impact during the works, as well as a monitoring measures plan. The Plan of Mitigation Measures and the Plan of Monitoring Measures are included in Appendix 1 and Appendix 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 to move the 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, in the area of planned new embankment construction, as well as due to structural changes to the flood embankment to be redeveloped, i.e. crest raising and

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**WORKS CONTRACT 3A.1/1, WORKS CONTRACT 3A.1/2**

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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 it 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 and Dłubnia 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 (oil 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 Contract will not jeopardize the achievement of environmental objectives for bodies of surface water described within the frame of update of "Water Management Plan for the Vistula River Basin" - Wisła od Skawinki do Podłężanki (PLRW2000192137759), Serafa (PLRW2000262137749) and within BSW Dłubnia od Minóžki (bez Minóžki) do ujścia (PLRW20009213769).

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 131 and BGW 148 during the contract

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implementation. It will not jeopardize reaching the environmental objectives specified for bodies of groundwater under the updated "Water Management Plan for 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 the construction works.

*Nature*

Performance of the planned construction works is associated with the impact of Works Contract on vegetation and fauna. Impact of the Works Contract on fauna shall mainly result from the increased range of noise during the Works Contract implementation, what may cause temporary disturbing and scaring of animals. The most important potential threats to animals during the construction works include the loss of habitats due to land acquisition (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 implementation, 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 habitats 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. It will not come to separation of significant area of valley habitats from the riverbed. 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.

Adverse impact on ichthyofauna is not anticipated due to substantial distance of the Construction Site from the Vistula Riverbed. Also no valuable fish species occur in the inspected water courses (river, channels and amelioration dikes).

As a result of implementation of the mitigation measures described in Appendix 1 to this EMP for Contract 3A.1 (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*

The subject Works Contract runs – in the range of Task 3A.1/2 – at Fort 50a Lasówka that is entered into the heritage register. The Municipal Heritage Conservator (note dated November 22, 2016, ref. no.: KZ-03.4120.6.172.2016.MC) has accepted the presented design solutions that expect to raise the embankment crest without its extension and without locating a pedestrian-bicycle way on the crest along the section adjacent to the fort.

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At the same time the Municipal Heritage Conservator in Cracow has accepted moving of a historic shrine within the embanked area, at Pod Wierzbami St. in the area of Task 2A.1/2. The historic shrine shall stay in the embanked area. Its location will be adjusted in order to keep it outside the embankment body.

*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 Works Contract. This EMP determines relevant conditions to prevent hazards of those types and to efficiently react to the cases of their occurrence.

*Cumulative impact*

The following contracts are planned in addition to Contract 3A.1 – discussed in this EMP – under the OVFM Project to complete the flood protection system for the City of Cracow:

- Contract 3A.3  
*Section 4 – The right embankment of the Vistula River from the estuary of Skawinka to the Kościuszko barrage.* Construction works shall be implemented in a large distance from Contract 3A.1 (about 19 km from the Dąbie Barrage, which forms the beginning of Section 3 – Works Contract 3A.1/2) in the years 2019 – 2022.
- Contract 3A.4  
*Reconstruction of the right embankment between the Dąbie barrage and the Płaszów port, construction of a flood gate with necessary facilities* borders and shall be linked with the extension of the right embankment of the Vistula River from the Dąbie Barrage to the Przewóz Barrage (Section 3) implemented under Works Contract 3A.1/2. Works are planned for the years 2020 – 2022.
- Contract 3A.5  
*Construction of a flood gate for the Kujawy port including necessary facilities* borders and shall be linked with the extension of the left embankment of the Vistula River from the Wandy Bridge to the Przewóz Barrage, including backwater embankments of the River Dłubnia (Section 1) implemented under Works Contract 3A.1/1. Works are planned for the years 2020 – 2021.
- Contract 3A.6  
*Construction of a pumping station for mobile pumps to drain the Lesisko complex* shall be implemented in vicinity of the Wandy Bridge, which forms the beginning of Section 1 (Works Contract 3A1/1), however, the range of impact for works contracts planned



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under Contract 3A.6 and Contract 3A.1/1 do not interfere with each other. Works are planned for the years 2021 – 2022.

None of the aforementioned contracts is associated with the occurrence of significant emission or other significant environmental impact, scale of which would cause possible occurrence of significant threats to abiotic environment or to biotic environment, even in case of simultaneous performance of construction works. Additionally, application of mitigation measures by Contractor in compliance with EMP documents for each of the aforementioned contracts shall allow for avoiding a risk of significant adverse cumulative impact, even in case of simultaneous performance of works in neighboring locations.

***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 embankment to be redeveloped and a new section of the embankment shall not form a landscape dominant in terms of height. Implementation of the contract shall not modify the land function, and shall neither affect the use method for surfaces within its 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 implementation 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 environment and to the 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 nuisance.

***Nature***

No adverse impact on habitats or protected species of animals is anticipated on the operational stage due to periodic maintenance works, i.e. mowing of grass from embankment slopes or conservation and maintenance of the technological roads and lanes.

**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 oil 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 (Sections 1, 2, and 3), works conducted only from 06.00 am to 06.00 pm (the left backwater embankment of the Dłubnia River), use of efficient construction equipment;
- removal of trees and shrubs (logging) only in the necessary range beyond the bird hatching season (in case additional logging would be necessary within the hatching period, the works may be performed under ornithological supervision only). 3 trees growing within the embankment body in the area of fort 50a “Lasówka” within Task 3A.1/2 remain an exception, and those trees shall be logged beyond the hatching period of birds (from October 16 until the end of February); replacement planting shall be done until the end of 2019;
- application of proper protection of the trees growing close to the works, especially the willows creating habitat for the hermit beetle (Section 1);
- prior to the commencement of earthworks, within the indicated deadline, one shall inspect the occurrence of protected animal species, and the removed topsoil 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 side of performance area with fencing 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 No. 2 to the EMP 3A.1 – Plan of Monitoring Measures. Decisions on environmental conditions and decisions modifying the EDs have been reproduced under Appendix 4 to the EMP Decisions, Resolutions, Permits, Notes, and they were issued for the Contract without a complete environmental impact assessment; thus, they do not contain detailed conditions. Guidelines for protection of the environment have been provided in Justifications to EDs / decisions modifying the ED. Those guidelines were informed in the Plan of Monitoring Measures. 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 Works 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 of the Works 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 3A.1 is qualified to so-called Group II, in accordance with the EIA Regulation.

In case of Task 3A.1/1 the Regional Director for Environmental Protection in Cracow in the Resolution dated 12/02/2016, ref. no.: OO.4233.4.2016.BM stated that there is no need to perform an environmental impact assessment. Decision on environmental conditions for Contract 3A.1/1 was issued by the Regional Director for Environmental Protection in Cracow on January 27, 2017, ref. no.: OO.4233.4.2016.BM. As it was necessary to extend the implementation boundaries and the Task 3A.1/1 impact range, as results from provision of details and establishments on design solutions for Contract 3A.1/1, one has applied to the Regional Director for Environmental Protection in Cracow for modification of the aforementioned environmental decision. A decision modifying the decision on environmental conditions dated 01/27/2017, ref. no.: OO.4233.4.2016.BM, has been issued by the Regional Director for Environmental Protection in Cracow on February 1, 2019, ref. no.: OO.420.4.2.2018.BM.

It is planned to construct new left backwater embankment of the River Dłubnia over a length of about 476 m within the framework of Works Contract 3A.1/1. A separate Decision of the Regional Director for Environmental Protection in Cracow dated September 4, 2017, ref. no.: OO.4233.1.2017.BM, was issued for the purpose of developing the left backwater embankment of the River Dłubnia.

In case of Task 3A.1/2 the Regional Director for Environmental Protection in Cracow in the Resolution dated 12/02/2016, ref. no.: OO.4233.3.2016.BM stated that there is no need to perform an environmental impact assessment. Decision on environmental conditions for the

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subject contract was issued by the Regional Director for Environmental Protection in Cracow on January 27, 2017, ref. no.: OO.4233.3.2016.BM. Due to provision of details and establishments on design solutions for Task 3A.1/2, one has applied to the Regional Director for Environmental Protection in Cracow for modification of the aforementioned environmental decision, as results from those details and establishments for design solutions for Works Contract 3A.1/2. A decision modifying the decision on environmental conditions dated 01/27/2017, ref. no.: OO.4233.3.2016.BM, has been issued by the Regional Director for Environmental Protection in Cracow on January 24, 2019, ref. no.: OO.420.4.1.2018.BM.

In the above decisions the authority determined guidelines for implementation of Contract 3A.1 regarding environmental protection.

# 1 Introduction

This paper presents the Environmental Management Plan (EMP) for the Contract 3A.1 titled: *Construction of Vistula embankments in Cracow*, comprising Works Contract 3A.1/1 and Works Contract 3A.1/2. Contract 3A.1 remains a part of Subcomponent 3A implemented within Odra-Vistula Flood Management Project (OVFMP), co-financed by the International Bank for Reconstruction and Development (hereinafter referred to as the World Bank), the Council of Europe Development Bank, and also by the European Union Cohesion Fund and by the State Budget.

## 1.1 Odra-Vistula Flood Management Project

The main objective of the OVFMP Project is the protection of people living within flood plains in the area of selected parts of river basins of the greatest rivers of Poland – Vistula and Odra – against hazards provided by extreme flooding. The most urgent flood protection tasks were expected for implementation under the OVFMP.

3 Works Contract Components were considered under the Project, and they cover actions associated with improvement of flood safety within the: Lower and Middle Odra River (Component 1), Kotlina Kłodzka (Component 2), and 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 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 Cracow,
- 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 about 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 Vistula

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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>;

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

## **2 Contract Description**

Contract 3A.1 *Modernization of Vistula embankments in Cracow*, comprising Works Contract 3A.1/1 and Works Contract 3A.1/2. Contract 3A.1 remains a part of Subcomponent 3A to be implemented under the Odra-Vistula Flood Management Project.

Contract 3A.1 was split into two tasks:

- Task 3A.1/1, which comprises:
  - Section 1 - the left embankment of the River Vistula from the Wandy Bridge to the Przewóz Barrage, together with backwater embankments of the River Dłubnia;
  - Section 2 - the left embankment of the River Vistula from Przewóz Barrage to Suchy Jar.
- Task 3A.1/2, which comprises:
  - Section 3 - the right embankment of the River Vistula from the Dąbie Barrage to the Przewóz Barrage.

The subject of Contract 3A.1 is completion of the rehabilitation of the flood embankments of the Vistula River together with the backwater embankments of the Dłubnia River. The planned works comprise redevelopment of the embankment, including extension and raising of the embankment bodies of the Vistula River, together with the backwater embankments of the Dłubnia River.

Furthermore, it is also planned under Contract 3A.1 to:

- remove or construct and redevelop descend roads, embankment crossings and service roads, what includes their widening, elongation and connection with the crest of embankments to be extended;
- remove, construct and redevelop the existing road infrastructure, what includes its widening, elongation and connection with the planned Works Contract;
- protect, remove, construct and redevelop the existing electric, gas, telecom, waterworks, sewerage, and heating networks;
- remove, redevelop or construct other embankment objects (embankment locks) and anti-filtration membranes.

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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)

The binding English version if available at:  
<http://www.odrapcu.pl/doc/POM/ENG.pdf>

Additionally, construction of a new backwater embankment and necessary auxiliary facilities (i.e. embankment lock on the existing amelioration dike with intake port for pumping station for mobile pumps, maneuvering yard, operational traffic routes) is planned as a part of construction of the left backwater embankment of the Dłubnia River in Cracow (Task 3A.1/1). There are some collisions of the new embankment with existing networks (power, gas and sewage) that will be protected or redeveloped.

A detailed description of Contract 3A.1 is given in Chapter 2.2.

An overriding objective of Contract 3A.1 is to improve flood safety for the areas within Vistula River valley, i.e. for the City of Cracow and for the Commune of Wieliczka, especially due to the observed and forecasted climate changes in Europe.

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

According to the valid bidding documents, the planned Contract's implementation time is about 17 months.

## **2.1 Contract Location**

The planned Contract 3A.1 comprises two Works Contracts:

- a) 3A.1/1 comprising Section 1: the left embankment of the River Vistula from the Wandy Bridge to the Przewóz Barrage, together with backwater embankments of the River Dłubnia, and Section 2: the left embankment of the River Vistula from Przewóz Barrage to Suchy Jar; and
- b) 3A.1/2 comprising Section 3: the right embankment of the River Vistula from the Dąbie Barrage to the Przewóz Barrage.

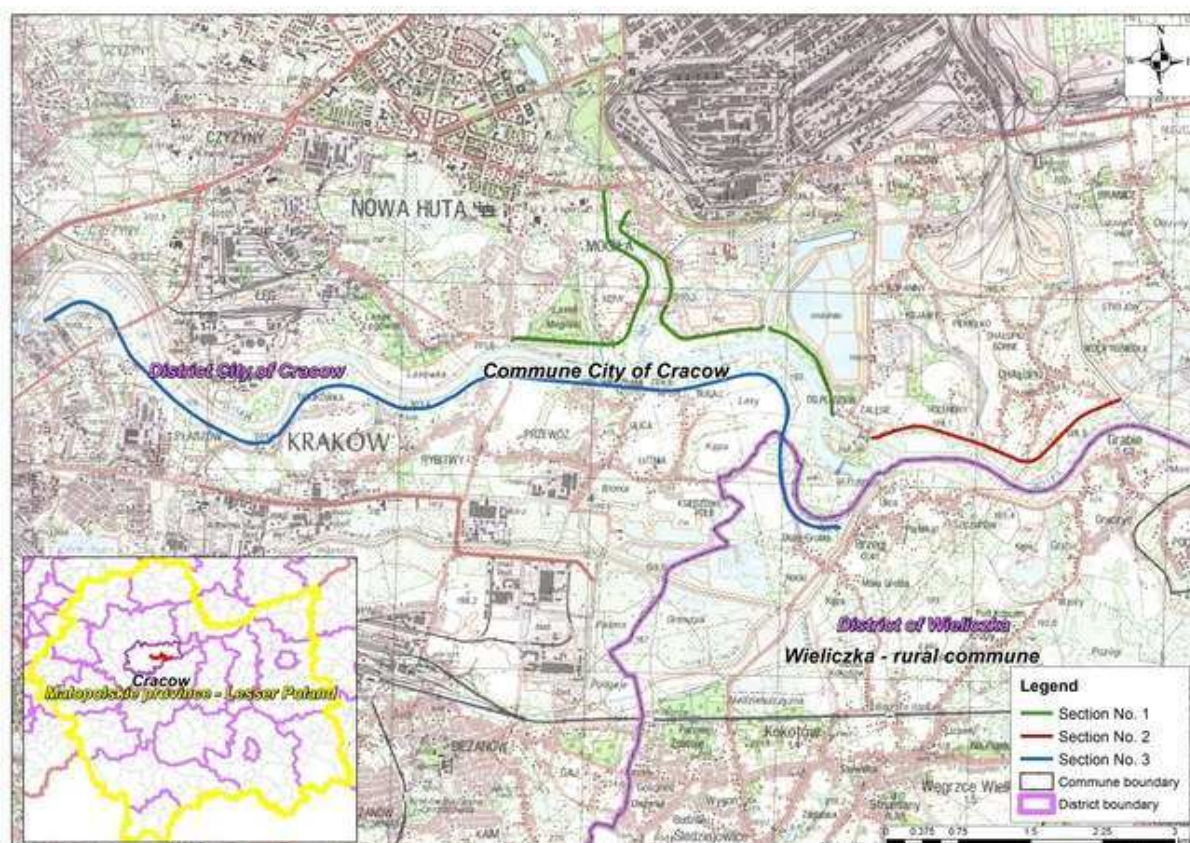
Contract 3A.1 is located in Poland, within Małopolskie Voivodship, in the area of the City of Cracow (District of the City of Cracow, Municipality of Cracow) and the locality of Brzegi (District of Wieliczka, Commune of Wieliczka).

Location of Contract 3A.1 is presented on a figure given below (Figure 1) and in graphical Appendix no. 5 – Map with Contract Location.



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**Drawing no. 1.** Contract Location



*Source: own materials*

The area of Contract 3A.1 covers farming and meadow land with field greenery (shrubs and groups of shrubs). There currently are (in accordance with extracts from land registers): permanent pastures (PsII, PsIII, PsIV), land with trees and shrubs (LzII, LzIII, LzIV, Lz-PsIV), sparse forests (LsII, LsIII) and arable land (RII, RIlla, RIllb, RIVa, RV), permanent meadows (ŁII, ŁIII, ŁIV, ŁV) and various areas (Tr) and grounds underneath ponds (Wsr), grounds underneath flowing surface water (Wp), roads (dr), ditches (W) and wasteland (N), and sparse orchards (S-RIlla, S-RIllb).

### **2.1.1 Location of Task 3A.1/1**

#### **Section 1 Left embankment of the River Vistula from the Wandy Bridge to the Przewóz Barrage**

The beginning of the left embankment of the River Vistula is at the Wandy bridge, then it overlaps Longinusa Podbięty St. (Mogilski Forest adjoins this part of the embankment). Behind the embankment culvert, near the crossing at Zakarnie St., Longinusa Podbięty St. turns north on its own separate embankment. From this place a distinct flood embankment begins. According to the register, about 160 m further the right backwater embankment of the Dłubnia River begins. It turns north and, running parallel to the river, it reaches Ptaszyckiego St. The left backwater embankment of the Dłubnia River reaches Bardosa St. Similar to the right embankment, it runs parallel to the river. At the distance of about 500 m from its estuary the embankment turns south-east and, according to the register, changes into



the embankment of the Vistula River. At this part Na Niwach St. runs along the embankment, which crosses the newly built embankment of the S7 highway, then it passes Thermic Waste Processing Plant and runs parallel to the Vistula River to join the embankment of the Przewóz port channel. On the other side of the channel the next part of the embankment begins, and it runs between the Vistula riverbed and the embankments of Kujawy wastewater treatment plant's sediment tanks and ends near the entry to the upstream channel of the lock at the Przewóz barrage. In administrative terms the embankment is located within the City of Cracow (Municipality of Cracow).

**Construction of the left backwater embankments of the Dłubnia River includes:**

The section of newly constructed embankment is located at the left bank of the river, at km 1+577 – 2+140 of the Dłubnia river. The embankment with a total length of 476 m begins at the end of the existing left embankment (to be extended at Section 1) on the plots No 380, 381, and 379. At the beginning the 214 m part of the embankment is an extension of the existing embankment in a straight line. Then, at the designed maneuvering yard the embankment turns north-east and runs straight along 157 m to the place where it slightly curves and joins the high bank of the Dłubnia river valley. The new embankment will protect the premises at Bardosa St. and neighboring arable fields. In administrative terms the embankment is located within the City of Cracow (Municipality of Cracow).

**Section 2 Left embankment of the River Vistula from the Przewóz Barrage to Suchy Jar**

The beginning of the left embankment is at the downstream lock abutment and runs in a curve at the high bank of the Vistula river flood plain. Then it runs parallel to the Vistula river and, according to the register, it ends at the embankment of the Suchy Jar stream. In administrative terms the embankment is located within the City of Cracow (Municipality of Cracow).

## **2.1.2 Location of Task 3A.1/2**

**Section 3 Right embankment of the River Vistula from the Dąbie Barrage to the Przewóz Barrage**

The redeveloped section of the embankment is located on the right bank of the Vistula River and it begins at the port located at tailwater of the Dąbie barrage. There is a dirt road on the embankment. The planned works overlap the route of the existing embankment, which crosses the body of Nowohucka St., by-passes the Lasówka fort, crosses Półłanki St., steers clear of the Przewóz barrage and the Vistula river oxbow lake. It ends at the turn into the Serafa river embankment. In administrative terms the most part of the embankment is located within the City of Cracow (Municipality of Cracow), and a small part near Brzegi belongs to the Commune of Wieliczka.

## **2.2 Specificity of objects comprised by the Contract**

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\_670\_W" (ordinal number: 996) of Appendix no. 2 titled "*Investments which*

**ENVIRONMENTAL MANAGEMENT PLAN FOR CONTRACT 3A.1:  
WORKS CONTRACT 3A.1/1, WORKS CONTRACT 3A.1/2**

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*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>.*

The discussed embankment objects, i.e. the right and the left embankment of the Vistula River at chainage, together with the backwater embankments of the Dłubnia River, 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.

Under the redevelopment and extension of the embankment, rising of the embankment crest is planned<sup>7</sup> together with its expansion to 4 m (except for Longinusa Podbipięty Street, where the embankment width is greater and it is a result of road course’s dimensions) and construction of an additional shelf on the landside slope with a width of 2.5 m to create space for service vehicles traffic. To join technologically the existing embankment body with the extended part it will be necessary to demolish partly the surface zone of the object i.e. 15 cm of a fertile layer of soil and about 0.5 m layer of ground. A vertical membrane will be driven into the ground to the depth of 6 m at the riverside base of the embankment. A sealing screen of geomembrane or bentomat will be placed on the riverside slope of the embankment joined with the vertical membrane. According to the current estimates<sup>8</sup>, the volume of soil necessary for implementation of the Works Contract 3A.1/1 is about 146 K m<sup>3</sup>, and for the Works Contract 3A.1/2 – about 180 K m<sup>3</sup>.

At any section the planned raising will not go beyond the existing embankment. The works will be performed mainly in the embanked area. Generally, it is caused by close housing or infrastructure on the landside (the area beyond the embankment). The only remarkable correction of the embankment is located along the hermit beetle habitat and it results from the need to preserve this valuable natural habitat. It is related to embankments within Section 1 (the left backwater embankment of the Dłubnia River km 0+190 to 0+000 and the left embankment of the Vistula River km 1+142 to 1+180 - the designed axis of the embankment was moved about 2.5 – 3 m towards the area beyond the embankment).

The basic scope of works are the earthworks related to redevelopment and extension of the embankment, those are mainly the works comprising:

- removal of the top-soil layer from the slopes and crest of the embankment and from a strip of land adjacent to the embankment to prepare it for extension (construction of the embankment);
- shaping of uncovered slopes beneath the earth-fill embankment (i.e. benching) and loosening of adjacent strip of land for superelevation;

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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]).

<sup>7</sup> Specificity of the Works Contract presented in this EMP is illustrative and it does not replace the design documentation. The Contractor shall be obliged to perform the works in conformity with the design documentation and with Technical Specifications referring to particular branches.

<sup>8</sup> Based upon the valid Bill of Quantities.

- placing of the membrane in the subbase;
- construction of the earth-fill embankment – extension;
- placing of the bentomat;
- completion of the embankment – extension;
- arrangement of the transition layer of the mineral soil;
- arrangement of the top-soil layer and sowing with a mix of grass;
- organization of the construction site: place for materials storage, for earth from excavation storage, preparing of access roads for vehicles traffic and social site facilities for the workers.

The above works will be directly related with the redevelopment of embankment locks (culverts), which will be extended what involves construction of new reinforced concrete abutments and redevelopment/construction/removal of descend roads, embankment crossings, culverts under service, dirt or private roads, as well as public roads with asphalt surface. Planned new descend roads generally connect the embankment crest with an embankment shelf or form a bypass of objects at the embankment route or a connection with a cycle path or a sidewalk.

The traffic system within the embankment is composed of the service road for the administrator's services located on a shelf on the landside and the crest hardened with mixed gravel on geotextile and key aggregate that allows for passage of emergency services during flood. Descend roads from the crest to a service shelf have a course made of aggregate. On the embankment crossings and descend roads the reinforced concrete hollowed road boards will be placed or, according to the management authorities requirements – asphalt concrete. Provision of this hardening protects the embankment crest against running over, at the same time the hollowed boards allow additionally to sustain a partly permeable surface.

As a result of extension of the embankment cross-section, local redevelopment or protection of the infrastructure will be necessary such as: power and teletechnical lines, gas, water supply, sewage and heating networks.

## **2.2.1 Characteristics of Task 3A.1/1**

### **Section 1**

Scope of Section 1 includes extension of the following:

- Left embankment of the Vistula River – from the Wandy bridge to the estuary of the River Dłubnia (river chainage km 87+900 – 89+040, designed chainage km 0+000 – 1+142);
- Left embankment of the Vistula River – downstream of the estuary of the River Dłubnia (river chainage km 89+640 – 90+550, designed chainage km 1+142 – 2+097);
- Left embankment of the Vistula River – downstream of the estuary of the port channel (river chainage km 90+640 – 91+540), designed chainage km 2+097 – 3+317;
- Right embankment of the River Dłubnia (river chainage km 0+000 – 2+373, designed chainage km 0+000 – 1+830);
- Left embankment of the River Dłubnia (river chainage km 0+000 – 1+609, designed chainage km 0+000 – 1+263);

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**Planned range of the embankment raising:**

- the left embankment of the Vistula River from the Wandy bridge to the Dłubnia estuary – max about 0.5 m, av. about 0.3 m (along one section from km 0+000 – 0+983 no raising is planned only providing of a membrane from the embankment crest to the depth of 6 m);
- the right embankment of the Dłubnia River from the estuary to the vicinity of Ptaszyckiego St. – max about 1.2 m, av. about 0.75 m;
- the left embankment of the Dłubnia River from the estuary to the vicinity of Bardosa St. – max about 1.2 m, av. about 0.65 m;
- the left embankment of the Vistula River from the Dłubnia estuary to the Przewóz barrage – max about 1 m, av. about 0.3 m.

The height of the existing flood embankment is from 2.8 to 3.8 m. The maximum height of the embankment will rise to about 4.3 m.

According to the valid regulations, the following were adopted as a basis for designing of flood embankments' modernization: design flow – 1 in 100 years water ( $Q_{1\%}$ ), and control flow – 1 in 500 years water ( $Q_{0.2\%}$ ), including freeboard (i.e. 1.0 m over the level of 1 in 100 years water, and 0.3 m over the level of 1 in 500 years water).

**Embankment crossings and descend roads:**

km of the embankment	existing/new	remarks
<b>Vistula - Section 1</b>		
0+983	existing, extended	descend road from the crest to the road
0+992	existing, extended	descend road from the crest to the private plot
1+080	existing, extended	embankment crossing, access road to the private plot
<b>Dłubnia River right embankment</b>		
0+374	existing, extended	embankment crossing, beyond the embankment it joins the road administered by ZIKiT
0+421	existing, extended	descend road from the crest to the road administered by ZIKiT
0+428	existing, extended	descend road from the crest to the road administered by ZIKiT
0+439	existing, extended	descend road from the crest to the road administered by ZIKiT
0+487	existing, extended	crossing, at the embankment crest it joins the road administered by ZIKiT
0+697	new	descend road from the crest to the drainage chamber
1+045	existing, extended	embankment crossing

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1+188	existing, extended	descend road from the crest to the road – connection of the descend road with the private road
1+441	existing, extended	descend road from the crest to the private plot
1+712	existing, extended	descend road from the crest to the private plot
1+772 – 1+806	new	descend road from the crest – by-pass of the drainage chamber
1+829	new	descend road from the crest to a bicycle path
<b>Dłubnia River left embankment</b>		
0+951	existing, extended	embankment crossing
0+823	existing, extended	embankment crossing
0+470	existing, extended	embankment crossing
0+369	existing, extended	descend road from the embankment shelf to the road
0+357	existing, extended	embankment crossing
<b>Vistula Section 1</b>		
1+346	existing, extended	descend road from the embankment shelf to the State Treasury's plot
1+433	existing, extended	embankment crossing
2+086	existing, extended	descend road from the crest to the State Treasury's plot
2+097	existing, extended	descend road from the crest to the State Treasury's plot
2+153	existing, extended	descend road from the crest to the State Treasury's plot
2+403	existing, extended	embankment crossing, access road to the private plot
2+975	existing, dismantled	dismantling of descend road
3+028	existing, extended	embankment crossing, access road to the private plot
3+139	existing, extended	embankment crossing, access road to the private plot
3+204	existing, extended	descend road to the State Treasury's plot
3+314	existing, extended	descend road to the Cracow municipality plot

**Culverts (embankment locks):**

- Culvert P.1.1 – left embankment of the Vistula River – km 0+875 of the embankment (km 88+784 of the river):
  - existing status – culvert with a diameter of 115 cm, reinforced-concrete, underneath Longinusa Podbięty Street;

- no modifications to the culvert – not to be redeveloped;
- Culvert P.1.2 – left embankment of the Vistula River – km 0+924 of the embankment (km 88+540 of the river):
  - existing status – culvert with a diameter of 120 cm,
  - culvert without modifications – not to be redeveloped;
- Culvert P.1.3 – left embankment of the Vistula River – km 2+315 of the embankment (km 90+806 of the river):
  - existing status – culvert with dimensions of 125 x 90 cm,
  - culvert without modifications – not to be redeveloped;
- Culvert P.1.4 – left embankment of the Vistula River – km 2+797 of the embankment (km 91+283 of the river):
  - existing status – culvert with dimensions of 90 x 70 cm,
  - culvert without modifications – not to be redeveloped;
- Culvert P.1.5 – left embankment of the Dłubnia River – km 0+842 of the embankment (km 1+188 of the river):
  - existing status – culvert with a diameter of 60 cm, outlet from the pumping station, reinforced concrete;
  - extension of the culvert – it is designed to build a new object with outlet with a valve in the same place.

**Membranes:**

- left embankment of the Vistula River from km 0+008 to km 0+993 with membrane to the depth of 6 m into the subbase from the embankment crest. The embankment body sealed in the same technology as the subbase;
- left embankment of the Vistula River from km 0+993 to km 1+142 with membrane driven to the depth of 6 m into the ground at the riverside base of the embankment. The embankment body sealed from riverside with bentonite mat or watertight HDPE foil;
- right embankment of the Dłubnia River from km 0+000 to km 1+180 (with a gap 0+420-0+457 at crossing Podbiłę St.) with membrane driven to the depth of 6 m into the ground at the riverside base of the embankment. The embankment body sealed from riverside with bentonite mat or watertight HDPE foil;
- left embankment of the Dłubnia River from km 0+845 to km 1+136 with membrane driven to the depth of 3 m into the ground at the riverside base of the embankment. The embankment body sealed from riverside with bentonite mat or watertight HDPE foil;
- left embankment of the Dłubnia River from km 0+190 to km 0+835 (with a gap 0+359 – 0+397 at crossing Longinusa Podbiłę St.) with membrane driven to the depth of 6 m into the ground at the riverside base of the embankment. The embankment body sealed from riverside with bentonite mat or watertight HDPE foil;

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- left embankment of the Dłubnia River from km 0+000 to km 0+190 with membrane driven to the depth of 6 m into the subbase from the embankment crest. The embankment body sealed in the same technology as the subbase;
- left embankment of the Vistula River from km 1+142 to km 1+200 with membrane driven to the depth of 6 m into the subbase from the embankment crest. The embankment body sealed in the same technology as the subbase;
- left embankment of the Vistula River from km 1+200 to km 2+097 with membrane driven to the depth of 6 m into the ground at the riverside base of the embankment. The embankment body sealed from riverside with bentonite mat or watertight HDPE foil;
- left embankment of the Vistula River from km 3+000 to km 3+315 with membrane driven to the depth of 6 m into the ground at the riverside base of the embankment. The embankment body sealed from riverside with bentonite mat or watertight HDPE foil.

**Construction and redevelopment of a service road:**

- Service road DE 1.1 over a length of 1315 m starting at working chainage km 0+000 of the road DE 1.1 (working chainage km 0+363 of the left embankment of Dłubnia) and ending at working chainage km 1+315 of the road DE1.1 (end of the road at the extended descend road from the embankment at working chainage km 2+097 of the left Vistula embankment);
- Service road no. 1.2 over a length of 587 m starting at working chainage km 0+983 of the left Vistula embankment (Section 1) and ending at working chainage km 0+428 of the right Dłubnia embankment;
- Service road DE 1.3 over a length of 1390 m starting at working chainage km 0+439 of the right Dłubnia embankment and ending at working chainage km 1+829 of the right Dłubnia embankment;
- Service road DE 1.4 over a length of 309 m starting at working chainage km 0+000 of joining section no. 1.6 OD1.6 and ending at working chainage km 1+136 of the left Dłubnia embankment;
- Service road DE 1.5 over a length of 379 m starting at working chainage km 0+470 of the left Dłubnia embankment and ending at working chainage km 0+014 of joining section no. 1.5 OD1.5;
- Service road DE 1.6 over a length of 1231 m starting at working chainage km 0+000 of joining section no. 1.3 OD1.3 and ending at working chainage km 3+314 of the left Vistula embankment;
- Redevelopment of a service road DE 1.7 located at the embankment basis, from km 0+000 DE 1.7 to km 0+036 DE1.7 (at working chainage km 3+321 of the left Vistula embankment), with a width of 2.5 m, surface hardened with sand ballast on geo-textile and gravel, finished with key aggregate.

**Construction and redevelopment of U-turn yards:**

Yard at working chainage from km 1+173 to 1+188 (register chainage km1+174 – 1+189) of the right Dłubnia embankment, with dimensions of 12.5x12.5 m.

**Demolition and construction of other engineering objects:**

- Demolition of the existing outbuilding at plot no. 213/1, area no. 43, register unit Nowa Huta, development area 2.7m<sup>2</sup>, height 2.5m, working chainage km 0+510 (register chainage km 0+510) of the right Dłubnia embankment;
- Construction of reinforced-concrete slope stairs at working chainage km 0+843 (register chainage km 0+842 of the left Dłubnia embankment) on the landside slope, and at working chainage km 0+846 (register chainage km 0+845 of the left Dłubnia embankment) on the riverside slope;
- Development of a reinforced-concrete retaining wall over a length of 65m, at working chainage km 1+142 – 1+173, register chainage km 89+640-89+670 of the left Vistula embankment, and at working chainage km 0+000-0+036, register chainage km 0+000-0+036,
- Construction works associated with land levelling over an area of 400 m<sup>2</sup> from working chainage km 3+317 to 3+354 (km 91+540-91+570 of the Vistula River).

**Demolition and development of fences:**

**Section 1 – left Vistula embankment**

- Demolition of the existing fence and development of a new one over a length of 13m at working chainage km 1+012 – 1+027 (register chainage km 88+629 – 88+644);
- Demolition of the existing fence and development of a new one over a length of 227m at working chainage km 1+223 – 1+424 (register chainage km 89+720 – 89+922);
- Demolition of the existing fence and development of a new one over a length of 192m at working chainage km 1+552 – 1+745 (register chainage km 90+050 – 90+242).

**Section 1 - right Dłubnia embankment**

- Demolition of the existing fence and development of a new one over a length of 5m at working chainage km 0+355 – 0+363 (register chainage km 0+355 – 0+363);
- Demolition of the existing fence and development of a new one over a length of 39m at working chainage km 0+482 – 0+520 (register chainage km 0+482 – 0+520);
- Demolition of the existing fence and development of a new one over a length of 5m at working chainage km 0+515 – 0+522 (register chainage km 0+515 – 0+522);
- Demolition of the existing fence and development of a new one over a length of 167m at working chainage km 1+450 – 1+620 (register chainage km 1+451 – 1+620).

**Section 1 - left Dłubnia embankment**

- Demolition of the existing fence and development of a new one over a length of 205m at working chainage km 0+010 – 0+230 (register chainage km 0+010 – 0+230);
- Demolition of the existing fence and development of a new one over a length of 6m at working chainage km 0+835 – 0+850 (register chainage km 0+834 – 0+849);



- Demolition of the existing fence and development of a new one over a length of 35m at working chainage km 0+942 – 0+950;
- Demolition of the existing fence and development of a new one over a length of 125m at working chainage km 0+953 – 1+060 (register chainage km 0+951 – 1+058).

### **Construction of the left backwater embankment of the Dłubnia River**

Under construction of the left backwater embankment of the Dłubnia River in the City of Cracow construction of a new backwater embankment together with necessary redevelopment and construction of accompanying facilities is planned. The subject of the works is construction of the left flood embankment of the Dłubnia River over a length of 476 m from the end of the existing embankment (to be extended at Section 1) of the Dłubnia River at km 1+136 to the high bank at km 1+612, i.e. at km 1+577 – 2+140 of the Dłubnia River together with accompanying infrastructure. The designed embankment is an extension of the existing backwater embankment from the Vistula River. The existing route of the embankment (1+136 – 1+263) disables its raising and extension due to the dense development; thus it is necessary to demolish a part of the embankment and construct its remaining part beyond the developed area. The new flood embankment planned will be constructed in a new location and the previous use of land in the area of planned object will be changed to the function of flood protection.

The scope of works will comprise the following:

- removal of the top-soil layer from the ground under the planned embankment,
- placing of anti-filtration membrane in the subbase,
- construction of the earth-fill embankment,
- placing of the bentomat,
- completion and shaping of the embankment,
- arrangement of the transition layer of the mineral soil,
- arrangement of the top-soil layer and sowing with a mix of grass (covering of embankment slopes and berm with a biomat is provided to protect them – the biomat shall be placed on 5 cm thick top-soil layer and covered with 3 cm thick top-soil layer).

The analyzed flood embankment was designed as an earth structure with sealing elements and service roads' surface.

Under planned works necessary redevelopment and construction of accompanying facilities is expected (i.e. embankment lock on the existing amelioration dike with an intake port for pumping station for mobile pumps, maneuvering yard, operational traffic routes). Moreover, there are some collisions of the new embankment with existing infrastructure networks (power and gas) that will be redeveloped and protected according to the conditions imposed by the networks administrators.

As the newly designed embankment is an extension of the existing embankment that is subject to current redevelopment (Section 1 - the left embankment of the Vistula River from the Wandy bridge to the Przewóz barrage, together with the backwater embankments of the Dłubnia River); thus the technical solutions of the new section (including the crest elevation) are the same as for Section 1 to unify the technical solutions.

**Scope of works includes:**

- construction of an earth-fill embankment over a length of 476 m from km 1+136 to km 1+612 (km 1+577 – 2+140 of the Dłubnia River) with waterproof membrane in the subbase,
- - I hydrotechnical class with derogation from technical conditions for II class, in reference to determination of a design flow and of a control flow for the transfer of Q1% and Q0.2% respectively, without inclusion of an estimation error,
  - earth-fill structure,
  - embankment crest width 4.0 m,
  - riverside slope grade 1:2.5,
  - landside slope grade 1:2.0,
  - embankment crest elevation: at km 1+136 of the embankment - crest elevation 200.91 m a.s.l.; at km 1+612 of the embankment – crest elevation 200.96 m a.s.l.,
  - embankment berm at landside at km 1+204 – 1+342, width 4.0 m;
- provision of anti-filtration protection at km 1+136 – 1+576 of the embankment:
  - sealing of the embankment subbase with vertical waterproof membrane at riverside toe minimum 40 cm thick and 3.0 m deep using deep soil mixing method, except for crossing of the embankment with a gas pipe where jet grouting method will be used,
  - sealing of the embankment body with bentomat screen placed on riverside slope anchored in the embankment crest, connected with the vertical membrane and additionally protected with steel mesh against the rodents,
- construction of the embankment lock with diameter Ø800 mm at km 1+244, length of the tube 24.50 m;
- construction of the embankment ramps at km 1+186, 1+309, 1+604;
- construction of returning yard at km 1+366;
- construction of maneuvering yard with mobile pump station near a lock at km 1+252;
- construction of operational traffic route on the embankment crest at km 1+136 – 1+612 (road surface from reinforced concrete openwork boards on sand and gravel foundation km 1+136 – 1+321; crushed stone surface on foundation km 1+321 – 1+612);
- construction of operational traffic route on the embankment berm at km 1+204 – 1+342 (road surface from reinforced concrete openwork boards on sand and gravel foundation);
- construction of operational traffic route (green road) at landside slope toe at km 1+136 – 1+612 (unhardened road surface - grass);
- construction of operational traffic route (green road) at landside slope toe at km 1+136 – 1+612 (unhardened road surface - grass);
- logging of trees and shrubs.

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As a result of the embankment construction the left side embanked area will be created with the width of about 20 to 110 m. The land acquisition shall amount to about 1.3 ha.

## **Section 2**

The scope of Section 2 includes extension of the left embankment of the River Vistula – from the Przewóz Barrage to Suchy Jar (river chainage km 91+990 – 96+680, designed chainage km 0+000 – 2+875).

### **Planned range of the embankment raising:**

- the left embankment of the Vistula River from the Przewóz barrage to Suchy Jar – max about 1.2 m, av. about 0.75 m;

The height of the existing flood embankment is from 2.8 to 3.8 m. The maximum height of the embankment will rise to about 4.3 m.

According to the valid regulations, the following were adopted as a basis for designing of flood embankments' modernization: design flow – 1 in 100 years water ( $Q_{1\%}$ ), and control flow – 1 in 500 years water ( $Q_{0.2\%}$ ), including freeboard (i.e. 1.0 m over the level of 1 in 100 years water, and 0.3 m over the level of 1 in 500 years water).

### **Embankment crossings and descend roads:**

km of the embankment	existing/new	remarks
<b>Vistula River section 2</b>		
0+259	existing, extended	embankment crossing
0+308	existing, extended	descend road from the embankment shelf to the road
0+433	existing, extended	descend road from the embankment shelf to the private plot
0+511	new	descend road from the embankment shelf to the private plot
0+551	existing, extended	embankment crossing
1+030	existing, extended	embankment crossing
1+211	existing, extended	embankment crossing – at whole length part of the private road
1+327	existing, extended	descend road from the embankment crest to the private plot
1+327	new	descend road from the embankment crest to the road on the embankment shelf
1+429	existing, extended	embankment crossing – access road to the private plots
1+429	new	descend road from the embankment crest to the road on the embankment shelf

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1+655	new	descend road from the embankment crest to the road on the embankment shelf
1+665	existing, extended	embankment crossing – access road to the private plots
1+655	new	descend road from the embankment crest to the service road
1+684	existing, extended	embankment crossing
1+702	new	descend road from the embankment crest to the road on the embankment shelf
1+979	existing, extended	embankment crossing – access road to the private plots
1+979	new	descend road from the embankment crest to the road on the embankment shelf
2+040	new	descend road from the embankment crest to the road
2+094	existing, extended	embankment crossing
2+099	new	descend road from the embankment crest to the road on the embankment shelf
2+780	new	descend road from the embankment crest to the road on the embankment shelf
2+784	existing, extended	embankment crossing

**Culverts (embankment locks):**

- Culvert P.2.1 – km 1+059 of the embankment (km 94+524 of the river):
  - existing status - 2x (230cm x205cm) rectangular. Reinforced concrete object, outlet from the pumping station.
  - Extension of the outlet, including rising of the front wall and construction of side walls of the abutment and construction of reinforced concrete slope stairs.
- Culvert P.2.2 – km 1+073, existing object, out of order, the pumping station close to it took over its function. Object designated for dismantling.
- Culvert P.2.3 – km 2+813 of the embankment (km 96+481 of the river):
  - existing status - parameters 80x120 cm bell-shaped. Reinforced concrete object;
  - extension of the culvert – it is designed to build a new object with a diameter of DN1000mm in the same place. Inlet and outlet in the form of reinforced concrete retaining wall equipped with stop log (inlet) and with return valve (outlet).

**Membranes:**

- left embankment of the Vistula River from km 0+080 do km 2+870 (with a gap 1+050 – 1+067 for outflow from the embankment culvert at MPWiK pumping station) with membrane driven to the depth of 6 m into the ground at the riverside base of the embankment. The embankment body sealed from riverside with bentonite mat or watertight HDPE foil.

**Additional works:**

A ditch discharging water from the embankment lock at km 2+813 over a length of about 330 m between the lock and outlet to the Vistula River will be dredged and its cross-section restored (it is not planned to modify the depth or to extend cross-section of the ditch). The existing ditch discharging water through the embanked area was significantly silted – due to accumulation of sediments brought by flood water to the embanked area – and it does not allow for the proper discharge of rainfall water from the embankment lock at chainage km 2+813. The lack of discharge hampers closing of the return valve at the embankment lock and forms a risk of flooding for the area beyond the embankment during floods.

**Construction and redevelopment of service roads:**

- Service road DE 2.1 over a length of 972 m starting at working chainage km 0+000 of the road DE2.1 (working chainage km 0+308 of the left Vistula embankment, section 2) and ending at working chainage km 0+972 of the road DE 2.1 (working chainage km 1+274 of the left Vistula embankment);
- Service road DE 2.2 over a length of 128 m starting at working chainage km 0+000 of the road DE2.2 (working chainage km 1+482 of the left Vistula embankment, section 2) and ending at working chainage km 0+128 of the road DE 2.2 (working chainage km 1+611 of the left Vistula embankment);
- Service road DE 2.3 over a length of 190 m starting at working chainage km 0+000 of the road DE2.3 (working chainage km 1+746 of the left Vistula embankment, section 2) and ending at working chainage km 0+190 of the road DE 2.3 (working chainage km 1+941 of the left Vistula embankment);
- Service road DE 2.4 over a length of 600 m starting at working chainage km 0+000 of the road DE2.4 (working chainage km 2+143 of the left Vistula embankment, section 2) and ending at working chainage km 0+600 of the road DE 2.4 (working chainage km 2+740 of the left Vistula embankment).

**Construction and redevelopment of U-turn yards:**

- Yard at working chainage km from 0+002 to 0+050 (register chainage km 91+999 – 92+047) of the left Vistula embankment, having a shape of triangle 18x38x44m.
- Yard at working chainage km from 2+860 to 2+875 (register chainage km 95+147 – 95+162) of the left Vistula embankment, having dimensions of 14x15 m.

**Demolition and construction of new engineering objects**

- Demolition of the existing fence and development of a new one over a length of 3 m at working chainage km 1+995 – 1+999 (register chainage km 94+192 – 94+196),
- Repairs to the existing 2m wide sidewalk over a length of 5 m from working chainage km - 0+003 to 0+000 of the left Vistula embankment (km 91+990 of the Vistula River);
- Development of reinforced-concrete slope stairs (on the landside slope and on the riverside slope) at working chainage km 2+800 (register chainage km 95+078) of the left Vistula embankment.

## 2.2.2 Characteristics of Task 3A.1/2

### Section 3

The scope of Section 3 covers extension of the right embankment of the River Vistula from the Dąbie Barrage to the Przewóz Barrage (river chainage km 81+256 – 92+800, designed chainage km 0+000 – 10+678).

#### Planned range of the embankment raising:

- the right embankment of the Vistula River from the Dąbie barrage to Nowohucka St. (3.1) – max 0.42 m, av. 0.25 – 0.35 m;
- the right embankment of the Vistula River from Nowohucka St. to Półanki St. (3.2) – max 0.95 m, av. 0.4 – 0.5 m;
- the right embankment of the Vistula River from Półanki St. to the Przewóz barrage (3.3) – max 0.85 m, av. 0.55 – 0.7 m;

The height of the existing flood embankment is from 2.8 to 3.8 m. The maximum height of the embankment will rise to about 4.3 m.

In a reach at chainage km 1+245 – 1+345 there is a structure remaining a right abutment of a flyover carrying heating pipes from the Łęg thermal-electric power station to receivers in the southern part of Cracow. Due to the placement of the structure within the embankment body the modernization works shall not include any performance except for putting a 0.2 m thick layer of ground at the building, what results from insufficient height of the embankment in that reach. The structure shall not be redeveloped.

According to the valid regulations, the following were adopted as a basis for designing of flood embankments' modernization: design flow – 1 in 100 years water ( $Q_{1\%}$ ), and control flow – 1 in 500 years water ( $Q_{0.2\%}$ ), including freeboard (i.e. 1.0 m over the level of 1 in 100 years water, and 0.3 m over the level of 1 in 500 years water).

#### Embankment crossings and descend roads:

km of the embankment	existing/new	remarks
Vistula River section 3		
0+010	existing, extended	embankment crossing – link into the road on the State Treasury plot (Na Zakolu Wisły St.)
0+030	new	descend road from the service road – link into the road on the private plot (Na Zakolu Wisły St.)
0+515	existing, extended	embankment crossing
0+800	new	descend road from the embankment shelf to the private plot
0+934	new	descend road – link of cycle and pedestrian path into sidewalk (Nowohucka St.) the State Treasury's plot

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0+934	existing, extended	descend road – link of the road on embankment shelf into sidewalk (Nowohucka St.) the State Treasury's plot
0+956	new	descend road – link of cycle and pedestrian path into sidewalk (Nowohucka St.) the State Treasury's plot
0+974	existing, extended	embankment crossing
0+977	new	descend road from the embankment crest to the road on the embankment shelf
1+221	existing, extended	embankment crossing – link into the dirt road, the State plot
1+222	new	descend road from the embankment crest to the road on the embankment shelf
1+254	existing, extended	descend road from the embankment shelf to the private plot
1+300	new	descend road from the road on the embankment shelf to the private plot
1+316	new	descend road from the embankment shelf to the private plot
2+046	existing, dismantled	embankment crossing
2+119	existing, extended	embankment crossing – link into the dirt road, Cracow Municipality plot
2+670	existing, extended	embankment crossing - link into the road, Cracow Municipality plot (Golikówka St.)
2+920	new	descend road from the road on the embankment shelf, Cracow Municipality plot
2+944	new	descend road from the embankment crest to the road
3+128	new	descend road from the embankment crest – link into the road, Cracow Municipality plot (Golikówka St.)
3+388	existing, extended	embankment crossing - link into the road, Cracow Municipality plot (Golikówka St.)
3+420	new	descend road from the road on the embankment shelf – link into the road, Cracow Municipality plot (Golikówka St.)
3+722	existing, extended	embankment crossing – link into the road, Cracow Municipality plot
3+923	existing, extended	embankment crossing – link into the dirt road, private plot
4+266	existing, extended	embankment crossing – link into the dirt road, private plot
4+395	existing, extended	embankment crossing - link into the road, Cracow Municipality plot (Golikówka St.)

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4+690	new	descend road from the embankment crest to the road on the embankment shelf
4+720	existing, extended	embankment crossing – link into the dirt road, Cracow Municipality plot
4+732	new	descend road from the embankment crest to the road on the embankment shelf
5+586	new	descend road from the embankment crest to the road on the embankment shelf
5+644	existing, extended	embankment crossing - link into the road, Cracow Municipality plot (Szparagowa St.)
5+648	new	descend road from the embankment crest to the road on the embankment shelf
5+871	new	descend road from the road on the embankment shelf – link into the dirt road, Cracow Municipality plot
5+888	new	descend road – link of cycle and pedestrian path into sidewalk (Półnaki St.) Cracow Municipality plot
5+902	new	descend road – link of cycle and pedestrian path into sidewalk (Półnaki St.) Cracow Municipality plot
5+920	new	descend road from the road on the embankment shelf – link into the dirt road, Cracow Municipality plot
6+382	new	descend road from the road on the embankment shelf to the private plot
6+432	new	descend road from the embankment crest to the road on the embankment shelf
6+445	new	descend road from the embankment crest to the private plot
7+058	existing, extended	embankment crossing – link into Cracow Municipality plot (Pod Wierzbami St.)
7+205	existing, extended	embankment crossing – link into the dirt road, the State Treasury plot
7+643	existing, extended	embankment crossing - link into the road, the State plot (Bugaj St.)
7+697	new	descend road from the embankment crest to the road on the embankment shelf
8+673	existing, extended	embankment crossing – link into the dirt road, Cracow Municipality plot
8+957	new	descend road from the embankment crest to the road on the embankment shelf
9+105	existing, extended	embankment crossing
9+111	new	descend road from the embankment crest to the road on the embankment shelf



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9+721	new	descend road from the embankment crest to the road on the embankment shelf
9+724	existing, extended	embankment crossing - link into the road (Łutnia St.)
10+210	existing, extended	embankment crossing - link into the road (Łutnia St.)
10+213	new	descend road from the embankment crest to the road on the embankment shelf
10+631	new	descend road from the embankment crest to the road on the embankment shelf

Construction of two maneuvering yards is also provided under the planned Works Contract at km 0+909 and km 6+411 of the embankment.

**Culverts (embankment locks):**

- Culvert P.3.1 – km 1+060 of the embankment (km 83+040 of the river):
  - existing status - diameter of the culvert is 50x50 cm. Reinforced concrete object with abutments. Outlet revetted with concrete slabs and grates with steel flap.
  - Demolition of existing culvert with abutments is planned and construction of a new one with diameter 100 cm, including development of inlet and outlet abutments with bottom and slopes pitching, as well as installation of new return valve.
- Culvert P.3.2 – km 2+637 of the embankment (km 84+430 of the river):
  - existing status - diameter of the culvert is 52x50 cm. Object with reinforced concrete abutments. Bottom at inlet revetted with prefabricated concrete trough, outlet revetted with concrete slabs and grates with steel flap.
  - It is planned to demolish the existing culvert with abutments and to construct a new one with a diameter of 110 cm, including development of inlet and outlet abutments with bottom and slopes pitching, as well as installation of new return valve.
- Culvert P.3.3 – km 3+095 of the embankment (km 84+728 of the river), existing status - diameter of the culvert is 55x50 cm. Reinforced concrete object – no redevelopment required.
- Culvert P.3.4 – km 5+166 of the embankment (km 86+952 of the river):
  - existing status - diameter of the culvert is 50x80 cm. Object with reinforced concrete abutments, bell-shaped cross-section, inlet and outlet revetted with concrete slabs and grates, outlet with steel flap.
  - It is planned to demolish the existing culvert with abutments and to construct a new one with a diameter of 100 cm. Construction of inlet and outlet abutments with bottom and slopes protection. Installation of new return valve.
- Culvert P.3.5 – km 6+442 of the embankment (km 88+482 of the river):

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- existing status - diameter of the culvert is 80 cm. Reinforced concrete object with abutments. Outlet revetted with concrete slabs and grates with steel flap.
  - Redevelopment of the culvert is planned consisting in extension of the culvert outlet part (diameter not changed), demolition of existing outlet abutment with return valve, provision of bottom and slopes protection in inlet and outlet part.
- Culvert P.3.6 – km 7+274 of the embankment (km 89+014 of the river). Existing culvert in the right embankment of the Vistula River is completely silted, without visible abutments and the opening itself – object designated for dismantling.
- Culvert P.3.7 – km 9+330 of the embankment (km 91+790 of the river):
  - existing status - diameter of the culvert is 90 cm. Object with reinforced concrete abutments, bell-shaped cross-section. Outlet revetted with concrete grates with steel flap.
  - It is planned to demolish the existing culvert with abutments and to construct a new one with a diameter of 100 cm, including construction of inlet and outlet abutments with bottom and slopes protection, as well as installation of new return valve.
- Culvert P.3.8 – km 9+851 of the embankment (km 92+014 of the river):
  - existing status - diameter of the culvert is 60 cm. Outlet revetted with concrete slabs with steel flap and reinforced concrete abutment.
  - It is planned to demolish the existing culvert with abutments and to construct a new one with a diameter of 100 cm, including construction of inlet and outlet abutments with bottom and slopes protection, as well as installation of new return valve.

**Membranes:**

- right embankment of the Vistula River from km 0+007 to km 0+922 with membrane driven to the depth of 6 m into the ground at the riverside base of the embankment. The embankment body sealed from riverside with bentonite mat or watertight HDPE foil;
- right embankment of the Vistula River from km 0+966 to km 2+925 with membrane driven to the depth of 6 m into the ground at the riverside base of the embankment. The embankment body sealed from riverside with bentonite mat or watertight HDPE foil;
- right embankment of the Vistula River from km 2+925 to km 3+142 (Lasówka fort) with membrane driven to the depth of 6 m into the subbase from the embankment crest. The embankment body sealed in the same technology as the subbase;
- right embankment of the Vistula River from km 3+142 to km 5+878 with membrane driven to the depth of 6 m into the ground at the riverside base of the embankment. The embankment body sealed from riverside with bentonite mat or watertight HDPE foil;
- right embankment of the Vistula River from km 5+910 to km 7+394 with membrane driven to the depth of 6 m into the ground at the riverside base of the embankment. The embankment body sealed from riverside with bentonite mat or watertight HDPE foil;
- right embankment of the Vistula River from km 7+394 to km 7+506 with sheet pile membrane driven in the embankment centerline to the minimum depth of 6 m below the ground level;

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- right embankment of the Vistula River from km 7+506 to km 10+678 with membrane driven to the depth of 6 m into the ground at the riverside base of the embankment. The embankment body sealed from riverside with bentonite mat or watertight HDPE foil.

**Construction of service roads:**

- DE1 from register embankment chainage km 81+240 (working chainage km 0+047) to register embankment chainage km 81+686 (working chainage km 0+493) over a length of 453.7 m on the riverside slope of the embankment;
- DE2 from register embankment chainage km 81+223 (working chainage km 0+030) to register embankment chainage km 82+102 (working chainage km 0+909) over a length of 872.7m on the landside shelf of the embankment;
- DE3 from register embankment chainage km 82+170 (working chainage km 0+997) to register embankment chainage km 82+415 (working chainage km 1+222) over a length of 245.7m on the landside shelf of the embankment;
- DE4 from register embankment chainage km 82+493 (working chainage km 1+300) to register embankment chainage km 84+113 (working chainage km 2+920) over a length of 1627.6m on the landside shelf of the embankment;
- DE5 from register embankment chainage km 84+613 (working chainage km 3+420) to register embankment chainage km 85+838 (working chainage km 4+656) over a length of 1215.5m on the landside shelf of the embankment;
- DE6 from register embankment chainage km 85+966 (working chainage km 4+773) to register embankment chainage km 86+739 (working chainage km 5+546) over a length of 777.1m on the landside shelf of the embankment;
- DE7 from register embankment chainage km 86+875 (working chainage km 5+682) to register embankment chainage km 87+064 (working chainage km 5+871) over a length of 207.2 m on the landside shelf of the embankment,
- DE8 from register embankment chainage km 87+113 (working chainage km 5+920) to register embankment chainage km 87+583 (working chainage km 6+390) over a length of 469.9m on the landside shelf of the embankment;
- DE9 from register embankment chainage km 88+940 (working chainage km 7+747) to register embankment chainage km 90+104 (working chainage km 8+911) over a length of 1151.9m on the landside shelf of the embankment;
- DE10 from register embankment chainage km 90+349 (working chainage km 9+156) to register embankment chainage km 90+914 (working chainage km 9+721) over a length of 532.9m on the landside shelf of the embankment;
- DE11 from register embankment chainage km 91+406 (working chainage km 10+213) to register embankment chainage km 91+784 (working chainage km 10+591) over a length of 385.4m on the landside shelf of the embankment.

**Demolition and construction of engineering objects:**

- Demolition of an outbuilding at register chainage km 84+901 of the embankment (working chainage km 3+708), located on plot no. 47 area no. 21, Precinct of Podgórze,

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- Development of a slope on the riverside of the embankment at chainage km 88+257 of the embankment (working chainage km 7+064), with dimensions of about 11x11 m, where a historic shrine – colliding with the embankment to be extended – shall be relocated from chainage km 88+260 (working chainage km 7+067),
- Development of concrete slope stairs at the following register chainage of the embankment km:
  - 82+249 (working chainage km 1+056),
  - 83+821 (working chainage km 2+628),
  - 84+313 (working chainage km 3+120),
  - 86+308 (working chainage km 5+115),
  - 86+368 (working chainage km 5+175),
  - 87+626 (working chainage km 6+433),
  - 88+257 (working chainage km 7+064),
  - 88+696 (working chainage km 7+503),
  - 90+523 (working chainage km 9+330),
  - 91+053 (working chainage km 9+860)

**Demolition and development of fences:**

- Demolition of the existing fence and development of a new one on the retaining wall (at working chainage km 2+127 - 2+140 of the embankment), at register chainage km 83+320 - 83+313 of the embankment, over a length of 10.8 m;
- Demolition of the existing fence and development of a new one (at working chainage km 3+671-3+708), at register chainage km 84+864 – 84+901 of the embankment, over a length of 42 m;
- Demolition of the existing fence and development of a new one with a gate (at working chainage km 4+715 - 4+728), at register chainage km 85+908 - 85-921 of the embankment, over a length of 20.3 m;
- Demolition of the existing fence (at working chainage 6+415 – 6+418 of the embankment), at register chainage km 87+608 – 87+611 of the embankment, over a length of 8.7 m;
- Demolition of the existing fence and development of a new one (at working chainage km 7+200), at register chainage km 88+393 of the embankment, over a length of 15.7 m;
- Demolition of the existing fence and development of a new one (at working chainage km 7+210), at register chainage km 88+403 of the embankment, over a length of 26.5 m;

Elements of the Contract listed above and their location have been graphically presented in Appendix 10 to the EMP.

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

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

Małopolskie Board for Amelioration and Water Structures in Cracow – performing tasks of the Małopolskie Voivodship Marshal – has been the investor for the Contract until December 31, 2017. From 1 January 2018 the Contract Investor is a newly assigned unit, i.e. State Water Holding Polish Waters represented by the Regional Water Management Authority in Cracow (PGWWP, 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 investment process related to environmental protection remains a subject of several 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 3A.1 – 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 also obliged – except for application of rules determined under this EMP – to apply valid provisions of law in the scope of environmental protection.

### **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>9</sup> and of the Odra-Vistula Flood Management Project Coordination Unit<sup>10</sup>.

### **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>11</sup>:

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

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<sup>9</sup><http://documents.worldbank.org/curated/en/717671468333613779/Poland-Odra-Vistula-Flood-Management-Project-environmental-and-social-management-framework>;

<sup>10</sup> [http://www.odrapcu.pl/popdow\\_oprojekcie.html](http://www.odrapcu.pl/popdow_oprojekcie.html);

<sup>11</sup> <https://policies.worldbank.org/sites/PPF3/Pages/Manuals/Operational%20Manual.aspx>

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 and of the Odra-Vistula Flood Management Project Coordination Unit.

### **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.

Impact Assessment for Works Contracts under Contract 3A.1 has been developed based upon an environmental inventory done from August to November 2015 and from March to May 2016 for Sections 1, 2, and 3, and in July 2016 for the left backwater embankment of the River Dłubnia. The environmental inventory remains a basic document – developed as a practical approach for collection, analysis, and provision of data on environmental elements – allowing for assessing the environmental impact. It is worthy to emphasize that none of the provisions of law determines the time of inventory's validity. Its validity is verified at the issuance of a decision on environmental conditions, and if the environmental elements were modified or prove a trend of such modifications the decision on environmental conditions may impose an obligation to repeat the environmental impact assessment. It means that the validity of the environmental inventory is not legally limited in time, and conditions described therein shall be deemed as binding after the issuance of an investment project implementation permit on the stage of issuing the decision on environmental conditions, if circumstances defined above did not take place.

Status of EIA procedure was described separately for Task 3A.1/1 and for Task 3A.1/2 below.

#### **3.5.1 Decisions for Task 3A.1/1**

The following decisions were issued for Task 3A.1/1:

- Decision of the Regional Director for Environmental Protection in Cracow dated 01/27/2017 on environmental conditions for the contract titled: "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 1 – the left embankment of the Vistula from the Wandy bridge to the Przewóz barrage, together with the backwater embankments of the Dłubnia River; Section 2 - the left embankment of the Vistula from the Przewóz barrage to Suchy Jar", ref. no.: OO.4233.4.2016.BM.
- Decision of the Regional Director for Environmental Protection in Cracow dated 09/04/2017 on environmental conditions for the contract titled: "Construction of the left backwater embankment of the Dłubnia River in Cracow", ref. no.: OO.4233.1.2017.BM.
- Resolution of the Regional Director for Environmental Protection in Cracow dated M05/26/2017, ref. No.: OO.4240.5.9.2017.BM, clarifying the doubts on contents of the decision of the Regional Director for Environmental Protection in Cracow dated 01/27/2017, ref. no.: OO.4233.4.2016.BM, on environmental conditions for the contract titled: "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 1 – the left embankment of the Vistula from the Wandy bridge to the Przewóz barrage, together with the backwater embankments of the Dłubnia River; Section 2 - the left embankment of the Vistula from the Przewóz barrage to Suchy Jar".

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- Resolution of the Regional Director for Environmental Protection in Cracow dated 01/17/2018, ref. No.: OO.4233.4.2016.BM, correcting obvious editorial mistakes in contents of the decision of the Regional Director for Environmental Protection in Cracow dated 01/27/2017, ref. no.: OO.4233.4.2016.BM, on environmental conditions for the contract titled: "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 1 – the left embankment of the Vistula from the Wandy bridge to the Przewóz barrage, together with the backwater embankments of the Dłubnia River; Section 2 - the left embankment of the Vistula from the Przewóz barrage to Suchy Jar".
- Resolution of the Regional Director for Environmental Protection in Cracow dated 10/11/2018, ref. No.: OO.420.4.4.2018.BM, correcting obvious editorial mistakes in contents of the decision of the Regional Director for Environmental Protection in Cracow dated 09/04/2017, ref. no.: OO.4233.1.2017.BM, on environmental conditions for the contract titled: "Construction of the left backwater embankment of the Dłubnia River in Cracow".
- Decision of the Regional Director for Environmental Protection in Cracow dated 02/01/2019, ref. no.: OO.420.4.2.2018.BM, modifying the decision on environmental conditions dated 01/27/2017, ref. no.: OO.4233.4.2016.BM, for the contract titled: "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 1 – the left embankment of the Vistula from the Wandy bridge to the Przewóz barrage, together with the backwater embankments of the Dłubnia River; Section 2 - the left embankment of the Vistula from the Przewóz barrage to Suchy Jar".
- Resolution of the Regional Director for Environmental Protection in Cracow dated 02/08/2019, ref. no.: OO.4220.5.3.2019.BM, clarifying doubts related to contents of the decision on environmental conditions dated 09/04/2017, ref. no.: OO.4233.1.2017.BM, for the contract titled: "Construction of the left backwater embankment of the Dłubnia River in Cracow", in reference to deadlines for performance associated with logging of trees located within the investment implementation boundaries. Copies of the documents listed above have been reproduced under Appendix 4 to the EMP for Contract 3A.1 – Decisions, Resolutions, Permits, Notes.

In case of Task 3A.1/1 the environmental impact assessment procedure was implemented as follows:

- The Regional Director for Environmental Protection in Cracow received an application of Mr. Jarosław Maciaś, representative of Sweco Engineering Sp. z o.o. in Cracow, acting in the name of the Investor, i.e. Małopolskie Board for Amelioration and Water Structures in Cracow, dated 07/22/2016, ref. no.: HTK/JM/15007/2771/16 (HK-2403/17/2771/16), formal insufficiencies supplemented with a note dated 08/23/2016, ref. no.: HTK/JM/15008/3077/16 (HK-2402/66/30778/16), formal insufficiencies revised and supplemented with a note dated 09/27/2016, ref. no.: HTK/JM/15008/3037/16 (HK-2402/74/3537/16) and explanations submitted with a note dated 01/20/2017, ref. no.: HTK/JM/15008/0219/17 (HK-2402/107/0219/17), on the issuance of a decision on environmental conditions for implementation of the contract titled: "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 1 – the left embankment of the Vistula from the Wandy bridge to the Przewóz barrage,

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together with the backwater embankments of the Dłubnia River; Section 2 - the left embankment of the Vistula from the Przewóz barrage to Suchy Jar”;

- The subject assignment was addressed based upon an application submitted in July 2016, and as a consequence – for the investment implemented in the mode of Act of July 8, 2010 on detailed rules for developing flood protection structures Works Contracts – there was no obligation to obtain the opinion of a competent authority of the State Sanitary Inspection in accordance with Article 64 (1.2) of the EIA;
- The documentation completed in formal respect allowed for the commencement of proceedings and therefore the RDOŚ in Cracow informed all of the parties in notification dated 10/21/2016, ref. no.: OO.4233.4.2016.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: Regional Directorate for Environmental Protection in Cracow from 10/21/2016 to 11/02/2016, City Office of Cracow from 10/24/2016 to 11/08/2016. 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 Environment Information Centre;
- Due to substantial deficiencies of Investment Information Sheet with a note dated 11/10/2016, ref. no: OO.4233.4.2016.BM Proxy of the Investor has been called to supplement it. The required supplement was provided to the RDOŚ in Cracow with a note dated 11/21/2016, ref. no: HTK/JM/15008/4708/16 (HK-2402/92/4708/16). Additionally, with a note dated 01/20/2017, ref. no: HTK/JM/15008/0219/17 (HK-2402/107/0219/17) the Proxy provided more detail information on auxiliary facilities mentioned in IIS;
- After analysis of the material provided with application on the issuance of Environmental Decision for the subject Works Contract it was assumed that no significant impact on the environment is expected and therefore there is no need for an environmental impact assessment. The Regional Director for Environmental Protection in Cracow stated in the Resolution dated 12/02/2016, ref. no.: OO.4233.4.2016.BM, that there is no need to perform an environmental impact assessment for the subject Works Contract. On the same day the RDOŚ in Cracow informed all of the parties in notification dated 12/02/2016, ref. no.: OO.4233.4.2016.BM, on the resolution issued and on the completion of evidence proceeding in case of issuing Environmental Decision as well as on the possibility of acknowledging and commenting collected documentation. Any of the parties did neither comment nor submit remarks on Works Contract 3A.1/1. The notification was published through placement on notice boards in the: Regional Directorate for Environmental Protection in Cracow from 12/02/2016 to 12/16/2016; City Office of Cracow from 12/02/2016 to 12/19/2016. Furthermore, information on the completion 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 Environment Information Centre;
- As the obligation to perform the environmental impact assessment was not determined, there was no need to assure the public participation in the proceedings, according to Article 79 (1) of the EIA;



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- Decision on environmental conditions for the subject contract was issued by the Regional Director for Environmental Protection in Cracow on 01/27/2017, ref. no.: OO.4233.4.2016.BM.
- Due to necessary extension of the implementation boundaries and the investment impact range, as results from provision of details and establishments on design solutions for Works Contract 3A.1/1, the Regional Water Management Authority in Cracow, represented by Mr. Radosław Radoń, applied on 05/07/2018, ref. no.: KR.JRP.081.8.11.2018, for modification of the decision on environmental conditions dated January 27, 2017, ref. no.: OO.4233.4.2016.BM. During the proceeding the aforementioned application was supplemented with formal parts with notes: dated 06/06/2018, ref. no.: KR.JRP.081.8.11.2018; dated 06/27/2018, ref. no.: KR.JRP.081.8.11.2018; dated 07/05/2018, ref. no.: KR.JRP.081.8.11.2018; and dated 07/13/2018, ref. no.: HTK/AD/1500/1310/18; and supplemented with substantial parts with notes: dated 09/17/2018, ref. no.: HTK/AD/15008/1627/18; dated 11/09/2018, ref. no.: HTK/AD/15008/1932/18; and dated 12/07/2018, ref. no.: HTK/AD/15008/2067/18; updated with clarifications submitted by e-mail on 12/20/2018 (those clarifications have been directly transmitted by the Proxy to the Ministry of Navigation and Maritime Affairs).
- Formally complete documentation allowed for commencing the proceedings, and the RDOŚ in Cracow informed all of the parties in notification dated 07/25/2018, ref. no.: OO.420.4.2.2018.BM, about commencement of the proceedings to issue a decision modifying the ED and about a possibility of acknowledging with the case documents. Due to the fact that the number of proceeding parties exceeded 20, in accordance with Article 74 (3) of the Law of October 3, 2008 on access to information on the environment and its protection, public participation in environmental protection and environmental impact assessments (EIA Act), Article 49 of the Administrative Proceeding Code – stating notification of the parties through a public announcement – was applied. The subject notification was successfully placed on the noticeboard of the Regional Directorate for Environmental Protection in Cracow, as well as on the noticeboard of the City Office of Cracow. Furthermore, information on the commencement of proceedings was included in the Public Information Bulletin at the website of the Regional Directorate for Environmental Protection in Cracow, and also in the publicly accessible data register at the website of the Center on Information on the Environment. Additionally, the Regional Director for Environmental Protection in Cracow corrected a mistake related to the Investor's Proxy – as indicated in the notification – in the notification dated 08/14/2018, ref. no.: OO.420.4.2.2018.BM.
- The Regional Director for Environmental Protection in Cracow applied in the note dated 11/13/2018, ref. no.: OO. 420.4.2.2018.BM, to the State District Sanitary Inspector in Cracow and to the Ministry of Maritime Affairs and Inland Navigation in Warsaw for opinions on an obligation to provide an environmental impact assessment for the investment in question and for potential establishment of the range of report. Information on application for opinions has been placed on the noticeboard of the Regional Directorate for Environmental Protection in Cracow, as well as in the Public Information Bulletin at the website of the Regional Directorate for Environmental Protection in Cracow. The Ministry of Maritime Affairs and Inland Navigation and the State District Sanitary Inspectorate in Cracow stated that it is not necessary to provide an environmental impact assessment.

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- The Regional Director for Environmental Protection in Cracow, while taking into account opinions of units participating in the proceeding, stated in its resolution dated 01/04/2019, ref. no.: OO.420.4.2.2018.BM, that it is not obligatory to implement an environmental impact assessment for the investment in question. Information on the issued resolution was placed on the noticeboard of the Regional Directorate for Environmental Protection in Cracow, included in the Public Information Bulletin at the website of the Regional Directorate for Environmental Protection in Cracow, and also in the publicly accessible data register at the website of the Center on Information on the Environment.
- In the note dated 01/03/2019, ref. no.: PK/OI/15008/11/2019, the Investor's Proxy applied for deviation from application of Article 10 (1) of the Act of June 14, 1960 Administrative Procedure Code (OJ of 2018, item 2096, as amended), and justified that fast issuance of modification to the decision on environmental conditions is necessary due to the objective of Works Contract 3A.1/1, i.e. flood protection for citizens of Cracow. Furthermore, delay in implementation of actions also remains a realistic threat to Task 3A.1/1, due to the funding method for Works Contract 3A.1/1 (World Bank), which may cause the loss of funds and stoppage of the implementation for the following years. Considering the above and the lack of applications and remarks in the course of proceeding, the Investor's application dated 01/03/2019, ref. no.: PK/OI/15008/11/2019, was accepted.
- Based upon an application of the Investor dated 01/03/2019, ref. no.: PK/OI/15008/12/2019, this decision has been made immediately enforceable based upon the mode under Article 108 (1) of the APC.
- The decision modifying the decision on environmental conditions dated 01/27/2017, ref. no.: OO.4233.4.2016.BM, has been issued by the Regional Director for Environmental Protection in Cracow on 02/01/2019, ref. no.: OO.420.4.2.2018.BM.

In case of the *Construction of the left backwater embankment of the River Dłubnia in the City of Cracow* – implemented under Works Contract 3A.1/1 – the environmental impact assessment procedure was implemented as follows:

- On 03/31/2017 the Regional Director for Environmental Protection in Cracow received an application (with Investment Information Sheet) of Mr. Michał Węgrzyn, representative of Habitat Selection s.c. Kolecki Mateusz, Węgrzyn Michał, Sławkowice 305, 32-020 Wieliczka, acting in the name of the Investor, i.e. Małopolskie Board for Amelioration and Water Structures in Cracow, formal insufficiencies supplemented with a note dated 04/27/2017, its scope widened with a note dated 05/29/2017.
- The RDOŚ in Cracow informed, in accordance with Article 17 (3) of the Act of July 8, 2010 on detail rules for developing flood protection structures Works Contracts (Journal of Laws of 2010, No.145, item 963), with the note dated 05/30/2017 ref. no.: OO.4233.1.2017.BM, the General Director for Environmental Protection on submission of application on the issuance of a decision on environmental conditions for implementation of the subject contract.
- According to Article 61 (4) of the Administrative Procedure Code, the RDOŚ in Cracow informed all of the parties in notification dated 05/31/2017, ref. no.: OO.4233.1.2017.BM, about the commencement of proceedings for construction of the left backwater embankment of the River Dłubnia. The total number of parties exceeded 20, therefore

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according to Article 74 (3) of 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 (hereinafter referred to as the EIA Act), Article 49 of the Administrative Procedure Code (hereinafter referred to as the APC) was applied, stating notification of the parties via an announcement.

- The subject announcement was published through placement for 14 days on notice boards in the Regional Directorate for Environmental Protection in Cracow and City Office of Cracow. The announcement was displayed on notice boards in the RDOŚ in Cracow from 06/01/2017 to 06/14/2017, and in City Office of Cracow from 06/01/2017 to 06/16/2017. 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 Environment Information Centre.
- In the course of conducted proceeding the RDOŚ in Cracow called the Proxy with the note dated 06/22/2017 ref. no.: OO.4233.1.2017.BM, to supplement the Investment Information Sheet with substantive issues. The Proxy provided relevant substantive update with a note dated 06/22/2017.
- The RDOŚ in Cracow informed all of the parties with the note dated 06/29/2017 ref. no.: OO.4233.1.2017.BM, that it applied to the State Sanitary Inspector in Cracow for the opinion on obligation to perform the environmental impact assessment. The announcement about the commencement of proceedings and about asking PPIS in Cracow for the opinion was displayed on notice boards in the RDOŚ in Cracow from 06/29/2017 to 07/14/2017, and in City Office of Cracow from 06/29/2017 to 07/14/2017. Information on the 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 Environment Information Centre.
- The State District Sanitary Inspector in Cracow issued a sanitary opinion dated 07/17/2017 (received on 07/27/2017), ref. no.: NZ-PG-420-261/17 ZL/2017/07/75, in which he stated that there is no need to perform an environmental impact assessment for the subject Works Contract.
- Addressing the sanitary opinion of the State District Sanitary Inspector in Cracow dated 07/17/2017, ref. no.: NZ-PG-420-261/17 ZL/2017/07/75, the Regional Director for Environmental Protection in Cracow stated in the Resolution dated 08/08/2017, ref. no.: OO. 4233.1.2017.BM, that there is no need to perform an environmental impact assessment for the subject Works Contract. The resolution dated 08/08/2017, ref. no.: OO. 4233.1.2017.BM, was published through placement on notice boards in the: RDOŚ in Cracow from 08/08/2017 to 08/22/2017 and City Office of Cracow from 08/09/2017 to 08/24/2017. Furthermore, information on the resolution issued and on the completion of evidence proceeding 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 Environment Information Centre.
- Any of the parties did neither comment nor submit remarks on the subject case.

- The Investor's Proxy applied in the note dated 08/09/2017 (received on 08/10/2017), to the Regional Director for Environmental Protection in Cracow for ordering immediate enforceability for the subject decision. The Proxy justified his request with the significant interest of the party. The planned Works Contract will improve flood safety for the City of Cracow. The Proxy also indicated that the planned Works Contract will continue flood protection of the Vistula River within the City of Cracow. The effectiveness of planned embankment system depends on the completion of all elements, including construction of the left embankment of the Dłubnia River.
- Taking into consideration the above arguments of the Proxy and assuming that rationale under Article 108 of the APC were met, and that the Works Contract is factually significant for the interest of the party, the RDOŚ in Cracow accepted the application and ordered immediate enforceability for the subject decision.

### **3.5.2 Decisions for Task 3A.1/2**

The following decisions were issued for Task 3A.1/2:

- Decision of the Regional Director for Environmental Protection in Cracow dated 01/27/2017, ref. no.: OO.4233.3.2016.BM, on environmental conditions for the Works Contract titled: "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 3 – the right embankment of the Vistula from the Dąbie barrage to the Przewóz barrage".
- Decisions of the Regional Director for Environmental Protection in Cracow dated 01/24/2019, ref. no.: OO.420.4.1.2018.BM, on modification of the decision on environmental conditions dated 01/27/2017, ref. no.: OO.4233.3.2016.BM, for the Works Contract titled: "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 3 – the right embankment of the Vistula from the Dąbie barrage to the Przewóz barrage".

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

In case of the analyzed Task 3A.1/2 the environmental impact assessment procedure was implemented as follows:

- The Regional Director for Environmental Protection in Cracow received an application of Mr. Jarosław Maciaś, representative of Sweco Engineering Sp. z o.o. in Cracow, acting in the name of the Investor, i.e. Małopolskie Board for Amelioration and Water Structures in Cracow, dated 07/22/2016, ref. no.: HTK/JM/15007/2771/16 (HK-2403/17/2771/16), formal insufficiencies supplemented with a note dated 08/23/2016, ref. no.: HTK/JM/15007/3078/16 (HK-2403/20/3078/16), on the issuance of a decision on environmental conditions for implementation of the contract titled: "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 3 – the right embankment of the Vistula from the Dąbie barrage to the Przewóz barrage";
- The subject assignment was addressed based upon an application submitted in July 2016, and as a consequence – for the investment implemented in the mode Act of July 8, 2010 on detail rules for developing flood protection structures Works Contracts there

was no obligation to obtain the opinion of a competent authority of the State Sanitary Inspection in accordance with Article 64 (1.2) of the EIA;

- The documentation completed in formal respect allowed for the commencement of proceedings and therefore the RDOŚ in Cracow informed all of the parties in notification dated 09/27/2016, ref. no.: OO.4233.3.2016.BM, about the commencement of proceedings for the issuance of ED. Due to the fact that the number of parties exceeds 20, in accordance with Article 74 (3) of 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 (EIA Act), 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: Regional Directorate for Environmental Protection in Cracow from 09/29/2016 to 10/14/2016, City Office of Cracow from 10/03/2016 to 10/18/2016, City and Commune Office in Wieliczka from 10/03/2016 to 10/18/2016. 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 Environment Information Centre;
- Due to factual deficiencies of Investment Information Sheet with a note dated 11/10/2016, ref. no: OO.4233.3.2016.BM, the Proxy of the Investor has been called to supplement it. The required supplement was provided to the RDOŚ in Cracow with a note dated 11/21/2016, ref. no: HTK/JM/15007/4709/16 (HK-2403/364709/16). Additionally, with a note dated 01/20/2017, ref. no: HTK/JM/15007/0220/17 (HK-2402/46/0220/17), the Proxy provided more detail information on auxiliary facilities mentioned in IIS;
- After analysis of the material provided with application on the issuance of Environmental Decision for the subject Works Contract it was assumed that no significant impact on the environment is expected and therefore there is no need for an environmental impact assessment. The Regional Director for Environmental Protection in Cracow stated in the Resolution dated 12/02/2016, ref. no.: OO.4233.3.2016.BM, that there is no need to perform an environmental impact assessment for the subject Works Contract. On the same day RDOŚ in Cracow informed all of the parties in notification dated 12/02/2016, ref. no.: OO.4233.3.2016.BM, on the resolution issued and on the completion of evidence proceeding in case of issuing Environmental Decision as well as on the possibility of acknowledging and commenting collected documentation. Any of the parties did neither comment nor submitted remarks on the subject case. The notification was published through placement on notice boards in the: Regional Directorate for Environmental Protection in Cracow from 12/02/2016 to 12/16/2016; City Office of Cracow from 12/02/2016 to 12/19/2016, City and Commune Office in Wieliczka from 12/05/2016 to 12/19/2016. Furthermore, information on the completion 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 Environment Information Centre;

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- As the obligation to perform the environmental impact assessment was not determined, there was no need to assure the public participation in the proceedings, according to Article 79 (1) of the EIA;
- Decision on environmental conditions for the subject contract was issued by the Regional Director for Environmental Protection in Cracow on 01/27/2017, ref. no.: OO.4233.3.2016.BM;
- Due to provision of details and establishments on design solutions for Works Contract 3A.1/2, the Regional Water Management Authority in Cracow, represented by Mr. Radosław Radoń, applied on 05/07/2018, ref. no.: KR.JRP.081.8.11.2018, for modification of the decision on environmental conditions dated January 27, 2017, ref. no.: OO.4233.3.2016.BM. During the proceeding the aforementioned application was supplemented with formal parts with notes: dated 06/06/2018, ref. no.: KR.JRP.081.8.11.2018; dated 06/27/2018, ref. no.: KR.JRP.081.8.11.2018; dated 07/05/2018, ref. no.: KR.JRP.081.8.11.2018; and dated 07/13/2018, ref. no.: HTK/AD/1500/1310/18; and supplemented with substantial parts with notes: dated 10/05/2018, ref. no.: HTK/AD/15007/1755/18; dated 11/09/2018, ref. no.: HTK/AD/15007/1933/18; and dated 12/07/2018, ref. no.: HTK/AD/15007/2067/18; updated with clarifications submitted by e-mail on 12/20/2018 (those clarifications have been directly transmitted by the Proxy to the Ministry of Navigation and Maritime Affairs);
- Formally complete documentation allowed for commencing the proceedings, and the RDOŚ in Cracow informed all of the parties in notification dated 07/25/2018, ref. no.: OO.420.4.1.2018.BM, about commencement of the proceedings to issue a decision modifying the ED and about a possibility of acknowledging with the case documents. Due to the fact that the number of proceeding parties exceeded 20, in accordance with Article 74 (3) of the Law of October 3, 2008 on access to information on the environment and its protection, public participation in environmental protection and environmental impact assessments (EIA Act), Article 49 of the Administrative Proceeding Code – stating notification of the parties through a public announcement – was applied. The subject notification was successfully placed on the noticeboard of the Regional Directorate for Environmental Protection in Cracow, as well as on the noticeboard of the City Office of Cracow. Furthermore, information on the commencement of proceedings was included in the Public Information Bulletin at the website of the Regional Directorate for Environmental Protection in Cracow, and also in the publicly accessible data register at the website of the Center on Information on the Environment;
- The Regional Director for Environmental Protection in Cracow applied in the note dated 11/13/2018, ref. no.: OO. 420.4.1.2018.BM, to the State District Sanitary Inspector in Cracow and to the Ministry of Maritime Affairs and Inland Navigation in Warsaw for opinions on an obligation to provide an environmental impact assessment for the investment in question and for potential establishment of the range of report. Information on application for opinions has been placed on the noticeboard of the Regional Directorate for Environmental Protection in Cracow, as well as in the Public Information Bulletin at the website of the Regional Directorate for Environmental

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Protection in Cracow. The Ministry of Maritime Affairs and Inland Navigation and the State District Sanitary Inspectorate in Cracow stated that it is not necessary to provide an environmental impact assessment;

- The Regional Director for Environmental Protection in Cracow, while taking into account opinions of units participating in the proceeding, stated in its resolution dated 01/03/2019, ref. no.: OO.420.4.1.2018.BM, that it is not obligatory to implement an environmental impact assessment for the investment in question. Information on the issued resolution was placed on the noticeboard of the Regional Directorate for Environmental Protection in Cracow, included in the Public Information Bulletin at the website of the Regional Directorate for Environmental Protection in Cracow, and also in the publicly accessible data register at the website of the Center on Information on the Environment;
- In the note dated 01/03/2019, ref. no.: PK/OI/15007/13/2019, the Investor's Proxy applied for deviation from application of Article 10 (1) of the Act of June 14, 1960 Administrative Procedure Code (OJ of 2018, item 2096, as amended), and justified that fast issuance of modification to the decision on environmental conditions is necessary due to the objective of Works Contract 3A.1/2, i.e. flood protection for citizens of Cracow. Furthermore, delays in implementation of actions also remain a realistic threat to Works Contract 3A.1/2, due to the funding method for Works Contract 3A.1/2 (World Bank), which may cause the loss of funds and stoppage of the implementation for the following years. Considering the above and the lack of applications and remarks in the course of proceeding, the Investor's application dated 01/03/2019, ref. no.: PK/OI/15007/13/2019, was accepted;
- Based upon an application of the Investor – acting through the Proxy – dated 01/03/2019, ref. no.: PK/OI/15007/14/2019, this decision has been made immediately enforceable based upon the mode under Article 108 (1) of the APC.
- The decision modifying the decision on environmental conditions dated 01/27/2017, ref. no.: OO.4233.3.2016.BM, has been issued by the Regional Director for Environmental Protection in Cracow on 01/24/2019, ref. no.: OO.420.4.1.2018.BM.

## 4 Description of environmental elements

### 4.1 Land surface and landscape

According to physical and geographic regionalization by Kondracki (2001), Contract 3A.1 is located within Płaskowyż Proszowicki and Nizina Nadwiślańska :

- megaregion: Carpathian Region;
- province: Western Carpathian Mountains with Western and Northern Podkarpacie;
- subprovince: Northern Podkarpacie;
  - macroregion: Kotlina Sandomierska;
    - mezoregion: Nizina Nadwiślańska;
  - macroregion: Niecka Nidziańska;
    - mezoregion: Płaskowyż Proszowicki.

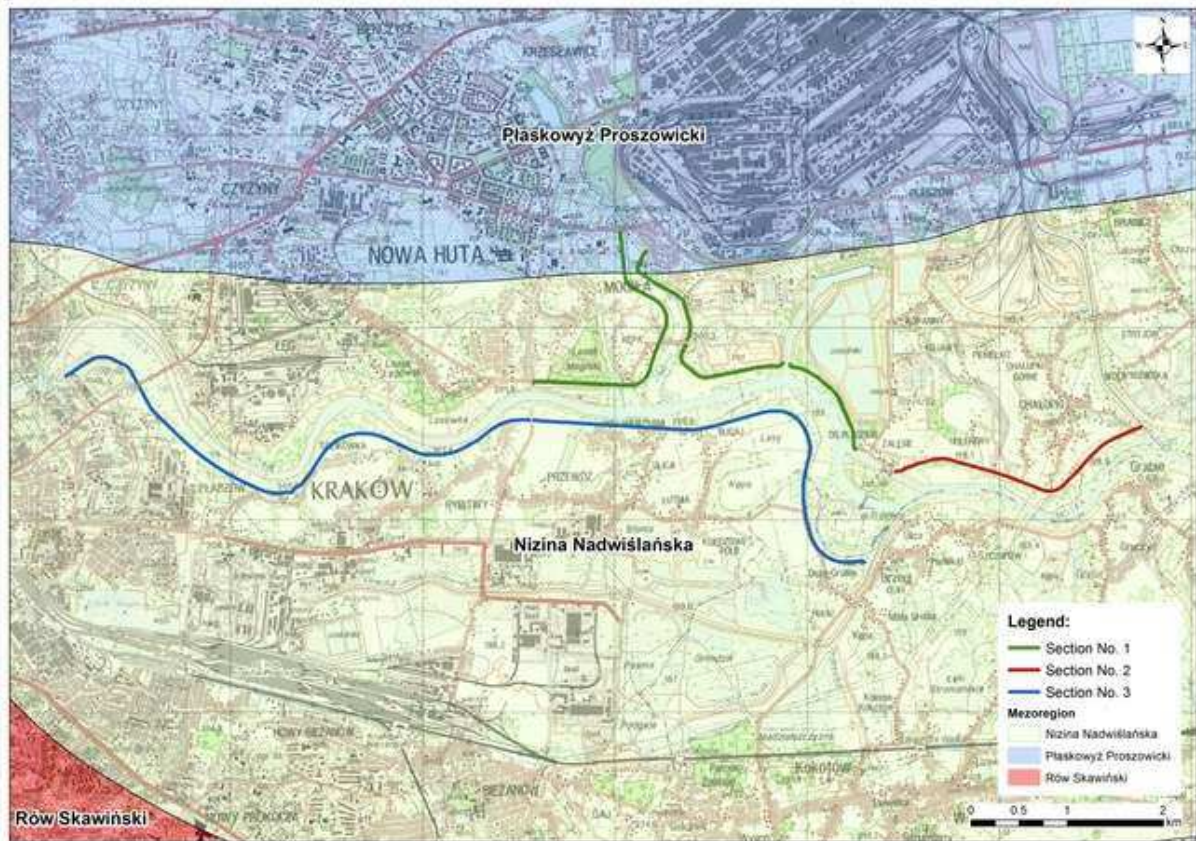
According to physical and geographic regionalization of Poland the majority of the area of subject works is located within the mezoregion of Nizina Nadwiślańska that is north-west part of Kotlina Sandomierska (macroregion), in the borderland of Małopolska Upland and Northern Podkarpacie (Kondracki 2001). A small part of Section 1 and part of new left backwater embankment of the Dłubnia River are located within Płaskowyż Proszowicki being a part of Niecka Nidziańska.

Location of the Works Contract in reference to physical and geographic units is presented in a drawing given below (Figure no. 2).



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**Drawing no. 2.** Location of the Works Contract in reference to physical and geographic units



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

Nizina Nadwiślańska is a part of Kotlina Sandomierska covering a valley of Vistula River, 8-12 km wide and about 175 km long. The river valley forms a widespread tectonic drop filled with fluvial sediments, up to about a dozen meters thick. Some levels of floodplain and strath terraces were formed within the valley. The surface of the lowland is not much varied, elevation within the analyzed Works Contract varies within a range 193-195 m a.s.l. In the area, where the Contract 3A.1 will be implemented, the embanked and regulated river bed neighbors a wide and improved land beyond the embankment, mostly – developed area.

Płaskowyż Proszowicki is a highland in southern part of Niecka Nidziańska. The border between the Płaskowyż and the Nizina Nadwiślańska is defined by an erosive bench dozens meters high. The whole area is covered with loess, with fertile black earth soils formed thereover. In hypsometrical terms the area varies between 280 – 220 m a.s.l. declining towards south-east.

## 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 2018 (WIOŚ, Cracow 2018):

- Average annual temperature 10.6°C,
- Annual total of precipitations in the region was from 500 mm at Wyżyna Małopolska to 1200-1400 mm in Carpathian Mountains.

### 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 2018):

- 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.

Data given in *Annual Assessment of Air Quality in Małopolskie Voivodship – Provincial Report for 2018*, as developed by the WIOŚ Cracow, proves that:

- Average annual concentration of sulphur dioxide (SO<sub>2</sub>) in Cracow and in Małopolskie Voivodship in 2018 was on low level. As a consequence, according to the classification adopted for the Małopolskie Voivodship, as well as for the Agglomeration of Cracow, both were qualified to Zone A – zone, where there is no exceedance of acceptable values,
- 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 the concentration is within the standard values; thus, the Agglomeration of Cracow was qualified to Zone C – zone, where concentration of a given substance exceeds the permissible level;
- concentration of CO – concentration of CO within the voivodship was much smaller than the acceptable level (10mg/m<sup>3</sup>), as determined by maximum 8 hours concentration basing upon sliding average. The entire voivodship, along with the Agglomeration of Cracow, was classified as Zone A;
- Concentration of benzene has not exceeded permissible values in any of analyzed stations – the voivodship, along with the Agglomeration of Cracow, was classified as Zone A;
- Ozone – based upon the results of measurements done from 2016 to 2018, exceedance of permissible number of days (25 days) with values beyond the acceptable volume of ozone was not identified. As a consequence, both: the voivodship, as well as the Agglomeration of Cracow, were classified to Zone A;

- PM10 – the acceptable frequency of exceeding the permissible level of daily concentration in 2018 was exceeded at most of the measurements station, what formed a basis for qualifying the voivodship, as well as the Agglomeration of Cracow to Zone C. The tests done proved that year after year (from 2010 to 2018) the average annual concentration of PM10 drops significantly for all measurement stations;
- Annual concentration of PM2.5 particulates exceeded or was equal to the target level in case of all stations, except for the City of Tarnów, which was classified to Zone A – the remaining part of Małopolskie Voivodship, including the Agglomeration of Cracow, was classified to Zone C;
- Average annual concentration of benzo(a)pyrene of over 1 ng/m<sup>3</sup> occurred in case of all measuring stations within the voivodship. The area of exceedance includes the Agglomeration of Cracow, the City of Tarnów, and 98.4% of Małopolskie Voivodship. Concentration smaller than the target level occurs in some areas of the District of Gorlice and the District of Tatra Mountains. The main reason for occurrence of concentration of benzo(a)pyrene beyond standards is emission associated with individual heating for buildings;
- Annual concentration of metals: lead, arsene, cadmium, and nickel in suspended particulates PM10 is on low level not exceeding the permissible rate and the target value. Both: the voivodship, as well as the Agglomeration of Cracow, were classified as Zone A.

In terms of protection of health the Agglomeration of Cracow exceeds values for the following substances in the air: nitrogen dioxide, suspended particulates PM10, 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, meadows, pastures, orchards, developed sites (housing/industrial/technological), and allotments. However, the embanked area is mainly formed by wasteland with local groups of trees and shrubs, agricultural land and allotments.

Alluvial soil formed by alluvial sediments is mainly present within Contract 3A.1. 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 Contract 3A.1 is to be implemented are classified as permanent pastures (PsIII, PsIV, PsV), afforested and shrubbed areas (LzII, LzIII, LzIV, Lz-PsIV), modest forests (LsII, LsIII) and arable land (RII, RIIIa, RIIIb, RIVa, RV), permanent meadows (ŁII, ŁIII, ŁIV, ŁV) and various areas (Tr), and grounds underneath ponds (Wsr), roads (dr), ditches (W) and wasteland (N) as well as modest orchards (S-RIIIa, S-RIIIb).

## **4.5 Surface water**

Contract 3A.1 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 rivers are its right-bank tributaries – rivers Dłubnia and Prądnik (Białucha).

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Hydrological characteristics of the River Vistula in Cracow are presented in the table below:

Marking	Kościuszko Barrage	Bielany Water Gauge	Dąbie Barrage	Przewóz Barrage
Chainage of Vistula	63+450	69+280	80+910	92+200
Area of river-basin [km <sup>2</sup> ]	7 529	7 634	8 109	8 620
Characteristic flows from the years 1951-1980 [m <sup>3</sup> /s]:				
• lowest (NNQ)	19	19	20	–
• average low (SNQ)	30	31	33	–
• average annual (SSQ)	92	93	98	–
• average high (SWQ)	760	768	790	–
• observed maximum (WW1970)	2 260	2 300	2 350	–
Probable high flows from the years 1931-2000 [m <sup>3</sup> /s]:				
• Q <sub>50%</sub>	570	580	600	630
• Q <sub>10%</sub>	1 320	1 330	1 370	1 415
• Q <sub>5%</sub>	1 650	1 660	1 720	1 755
• Q <sub>2%</sub>	2 070	2 080	2 150	2 190
• Q <sub>1%</sub>	2 400	2 410	2 480	2 520
• Q <sub>0.5%</sub>	2 680	2 690	2 760	2 800
• Q <sub>0.3%</sub>	2 960	2 970	3 040	3 060
• Q <sub>0.1%</sub>	3 490	3 500	3 560	3 600

*Source: own materials based upon Kondrack IMGW data.*

The Contract 3A.1 is located within the following Bodies of Surface Water: BSW Wisła od Skawinki do Podłężanki (PLRW2000192137759), BSW Serafa (PLRW2000262137749) and within BSW *Dłubnia od MinóŹki (bez MinóŹki) do ujścia* (PLRW20009213769). 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,

**ENVIRONMENTAL MANAGEMENT PLAN FOR CONTRACT 3A.1:  
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- 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.

**Serafa (PLRW2000262137749):**

- BSW type: water course in lowland large river valley (26),
- Status: heavily modified body of water,
- Is it monitored: yes,
- Assessment of the current status (2016): bad,
- 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,
- Deadline for achievement of good status: 2027,
- Justification for derogation: no technical possibilities. The municipal pressures are observed in the BSW basin. As a part of programme of measures, actions were planned to review water permits for discharge of wastewater to the surface water or to the ground by the users of the BSW, in view of a risk for the achievement of environmental objectives, in accordance with Article 136 (3) of the Water Law Act. The aim of those actions is to identify thoroughly the pressures and as a result to limit them in order to enable the achievement of indexes meeting values for the good status. However, due to the time necessary for implementation of those actions and then for specific remedial measures, as well as time necessary for the implemented measures may bring tangible effects, the good status may be achieved by 2027.



- Environmental objective: good ecological potential; good chemical status.

**Dłubnia od Minóžki (bez Minóžki) do ujścia (PLRW20009213769):**

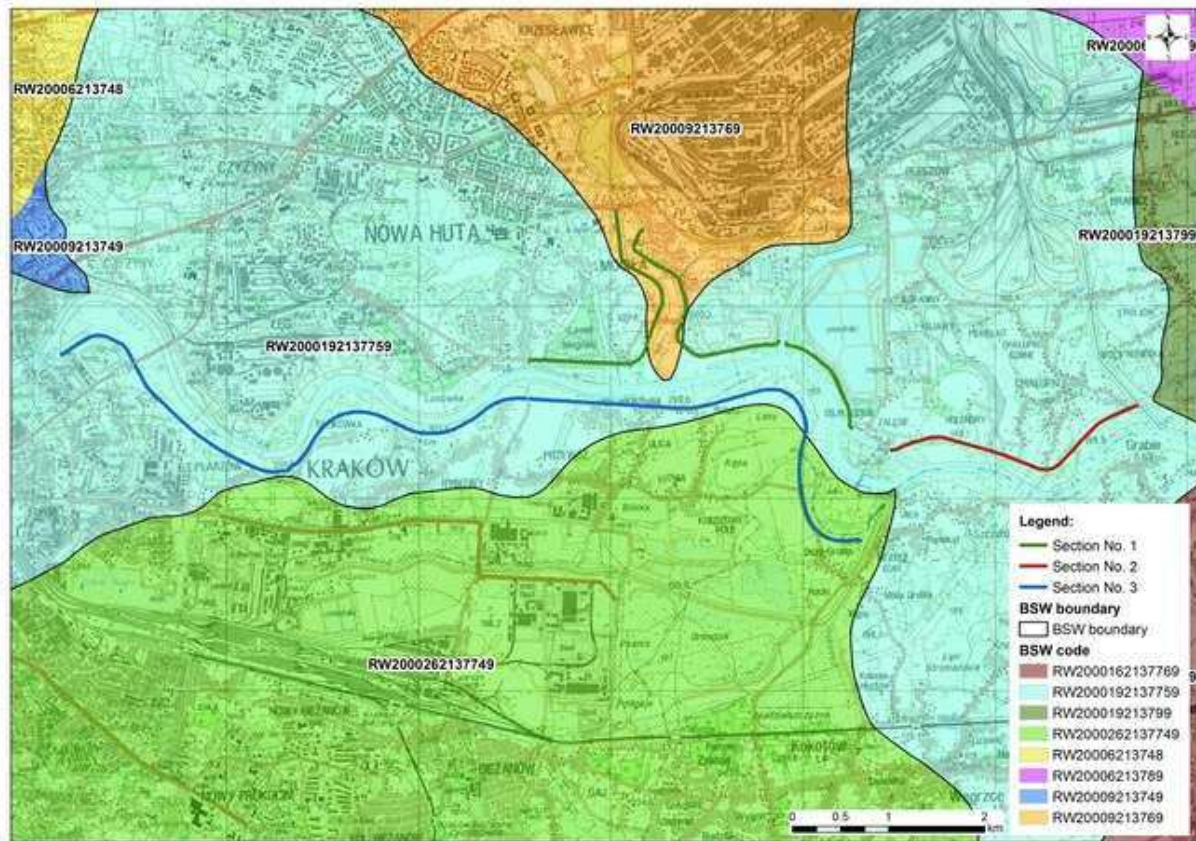
- BSW type: highland carbonate small river (9),
- Status: heavily modified body of water,
- Is it monitored: yes,
- Assessment of the current status (2016): bad,
- Risk assessment for not obtaining the environmental objective: under risk,
- Derogations: yes,
- Derogation type: extension of time for achievement of the objective due to the lack of technical possibilities,
- Deadline for achievement of good status: 2021,
- Justification for derogation: no technical possibilities. No pressures that can cause exceedance of quality indexes have been identified in the BSW basin. The thorough identification of reasons is necessary to plan accurately the remedial measures. Identification of reasons of not obtaining the good status will guarantee implementation of measures on national level: to establish the national data base on hydromorphological changes, to conduct a deep analysis of pressures with respect to hydromorphological changes, to elaborate good practices for hydraulic engineering and maintenance works in line with establishing rules for implementation, and to develop national programme for restoration of surface waters.
- Environmental objective: good ecological potential; good chemical status.

Implementation of the planned Contract 3A.1 is not related to the interference in the Vistula River Bed and Dłubnia River Bed. The Contract therefore does not affect the morphological continuity of the rivers, and it shall also not effect in impact on hydro-morphological and biological elements. The planned works do not involve any condition that can justify derogation nor discharge of sewage to surface water. No impact is expected on the achievement of environmental objectives for mentioned bodies of surface water.

Location of Contract 3A.1 in reference to BSW is presented on the drawing given below (Figure no. 3).

**ENVIRONMENTAL MANAGEMENT PLAN FOR CONTRACT 3A.1:  
WORKS CONTRACT 3A.1/1, WORKS CONTRACT 3A.1/2**

**Drawing no. 3.** Location of the Contract in reference to BSW



Source: Own materials.

## 4.6 Groundwater

### Geological formation and hydrogeological conditions

In geological terms Contract 3A.1 is located within western part of Zapadlisko Przedkarpackie filled with Neogene formations - Miocene molasse sediments. The sediments are placed on Jurassic petrous limestones or Late Cretaceous carbonate rocks. Mesozoic sediments are of no importance for Contract 3A.1 as they only provide bedding for Neogene formations. Neogene sediments represent Miocene sea sediments i.e. loamy-marly sediments and loamy-siltstone sediments. The top of the sediments occurs a dozen meters deep (10-15 m b.g.l.). Neogene formations are of no importance for embankment founding either, as the non-permeable formations (locally of very low permeability) they form a non-permeable layer bedding the first essential Quaternary water-bearing level. Tertiary sediments (of Neogene) are covered with Quaternary sediments produced in the form of alluvial sands and gravels, and of alluvial soils (loams, clays, and sands), organic soils, mainly alluvions, may occur locally in oxbow lakes.

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. The non-cohesive ground occurs in form of inserts of various thickness between cohesive soil.

**ENVIRONMENTAL MANAGEMENT PLAN FOR CONTRACT 3A.1:  
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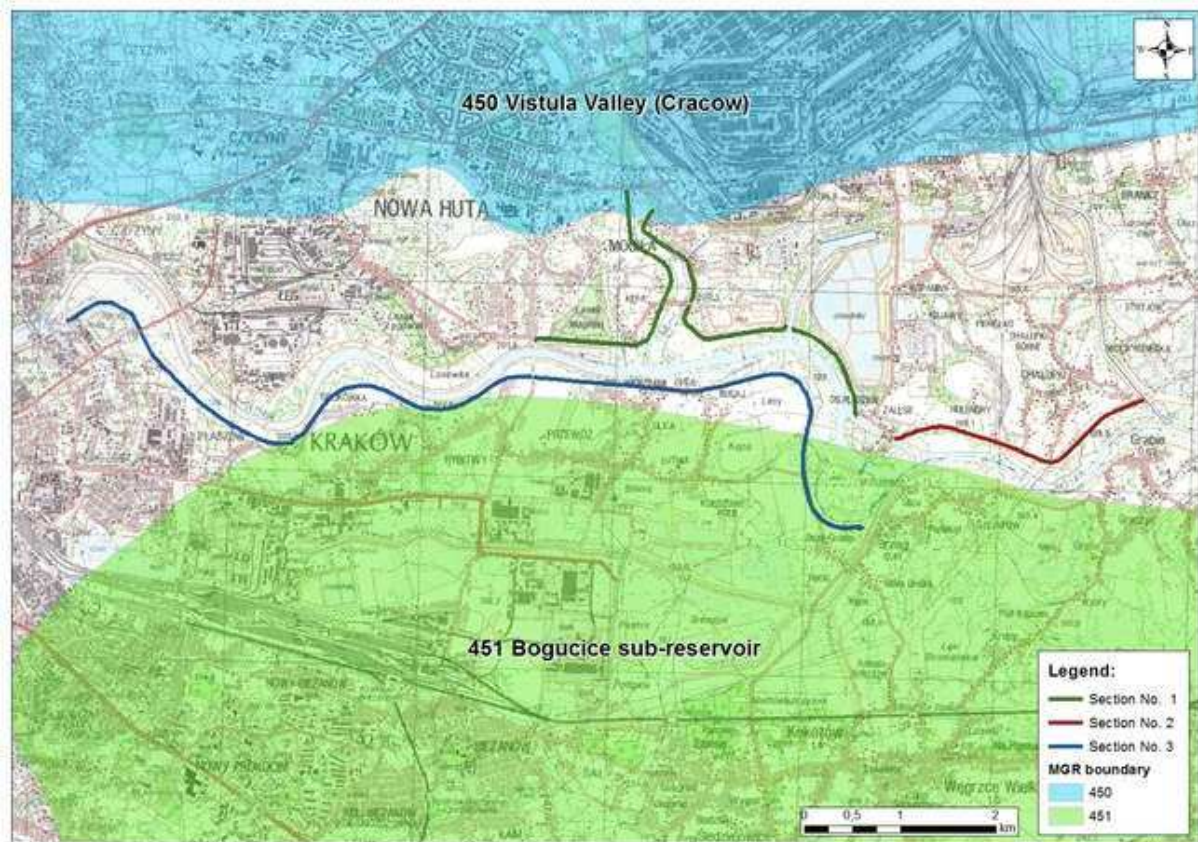
There is one water-bearing layer in the discussed area, which is associated with Quaternary formations formed by sands and gravels. It is a continuous water-bearing level, and the water-table is both: unconstrained and tight. Depth to water-table met during drilling is unstable and varies between 1.5 – 5.5 m b.g.l.. Height of piezometric surface (locally) is 0.2 do 0.5 m, intermittently in gullies filled with alluvions height of piezometric surface reaches 3.1 m. The retracting layer is formed by cohesive soil of alluvial type. Feeding of the water-bearing level is 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 section of the embankment is located between two water barrages damming water of the Vistula River.

A small part of analyzed Contract 3A.1 is located within the boundaries of two MGR:

- MGR 451 – Subreservoir Bogucice with total area of 122.55 km<sup>2</sup>. Tertiary reservoir in pores, estimated disposable resource is 40 m<sup>3</sup>/d, depth of water intakes 60-200 m; isolation of the reservoir from the surface is sufficient and protects it against any impact from the land surface;
- MGR 450 – Vistula River Valley (Cracow), reservoir with total area of 69.16 km<sup>2</sup>. The reservoir is created in Quaternary porous formations agglomerated in valleys. Estimated disposable resource is 20 m<sup>3</sup>/d, depth of water intakes 15-30 m.

Location of the Contract in reference to MGR is presented on the drawing given below.

**Drawing no. 4.** Location of the Contract in reference to MGR



Source: Own materials.



### **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 Contract 3A.1 is located in central areas of the Body of Ground Water BGW 148 (European code: PLGW2000148) and in south-eastern areas of BGW 131 (European code: PLGW2000131).

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 131 as good. In terms of risk of not achieving environmental objectives under the plan, units no. 148 and 131 were defined as not at risk.

Environmental objective: good chemical status, good quantitative status.

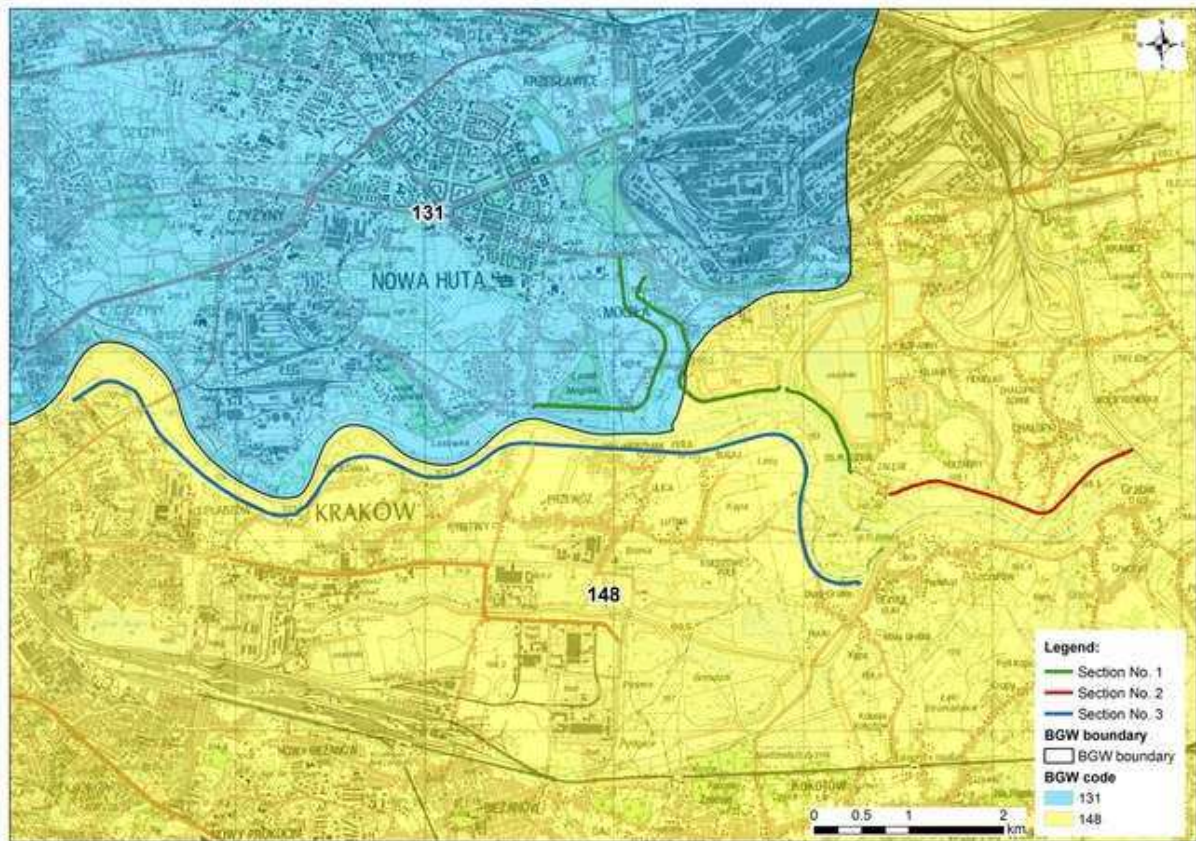
In compliance with provisions under the Water Management Plan for waters within the Vistula River Basin (Water MP) the main environmental objectives for BGW are as follows:

- 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 feeding 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 is presented on the drawing given below (Figure no. 5).

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 Voivodship significantly. The acoustic climate in the area of the analyzed Contract 3A.1 is mainly generated by traffic on the following streets: Nowohucka, Klasztorna/Półnanki, Aleja Pokoju and Ofiar Dąbia.

Exceedance of permissible noise values does not occur in case of the most part of areas in the vicinity of the subject Contract. The exceedance by 0-15 dB occurs at the direct crossing of the river with Nowohucka and Klasztorna/Półnanki streets.

In general implementation of the analyzed Works Contract will take place in undeveloped areas or in the vicinity of some buildings. Locally the houses are located directly at the embankment base. However, it should be noted that the houses were built after the embankment was constructed. The embankment at the modernized section was created after 1865. Those objects have to accept short-term impacts during implementation of Contract 3A.1.

## 4.8 Nature

All habitats and protected species identified within boundaries of Contract 3A.1 and just in its vicinity (in accordance with the inventory) have been presented on a map reproduced under Appendix 9 to this EMP - *Map with location of the Contract in reference to environmental habitats and fauna occurrence sites*.

### 4.8.1 Protected natural habitats and protected species of plants, animals, and fungi for Task 3A.1/1

Environmental inventory in the area of Task 3A.1/1 has been done from August to November 2015 and from March to May 2016 for Section 1 and 2, and for the construction of the left backwater embankment of the Dłubnia River – in July 2016. Validity of the results was verified during the issuance of a decision on environmental conditions. Validity of the environmental inventory is not legally limited in time, and conditions described therein shall be deemed as binding after the issuance of an investment project implementation permit.

#### Flora

- There are no species of plants under protection within the area of direct Works Contract 3A.1/1 impact, i.e. embankment and directly adjacent area,
- The occurrence of protected natural habitats was identified within the Works Contract 3A.1/1 site. Those habitats are: Lowland hay meadows (code 6510) and Hydrophilous tall herb fringe communities of plains (code 6430), however their conservation status is unsatisfactory. Moreover within the area of Works Contract 3A.1/1 Alluvial forests *Salicetum albae*, *Populetum albae*, *Alnenion glutinoso-incane* (code 91E0) and Riparian mixed forests *Ficario ulmetum* (code 91F0) were identified,
- Such invasive species as Canadian goldenrod and late goldenrod, and such highly invasive arborescent species as boxelder maple, black cherry and northern red oak were identified within the area,
- The embankment/area beyond the embankment/embanked area is formed by a mosaic of arable fields, meadows and pastures, orchards and allotments, wasteland/bulrush/fallows, trees and shrubs, forests and urbanized areas,
- The inventory did not comprise identification of fungi and lichens.

#### Fauna

- During field research along discussed sections adult specimen of butterflies in the genus *Phengaris* were identified in the embanked area. No habitats appropriate for whole life cycle of observed protected butterfly species in the genus *Phengaris* were found in the area located acquired within the planned Works Contract 3A.1 implementation boundaries,
- In the trees growing within the planned Works Contract 3A.1 implementation boundaries in the area of Sections 2 not a trace of the hermit beetle presence was identified. The occurrence of hermit beetle was identified in the willows growing right at the embankment foot at Section 1 of the Vistula Embankments, between the Dłubnia estuary and a bridge crossing S7 under construction (from km 0+000 to 0+185). Due

to the numbers and age of the trees this habitat is of great value. In vicinity of the River Dłubnia – due to inspection of old trees with hollows – no characteristic feeding traces of larvae or adult specimens of hermit beetle were identified,

- In view of the scope of planned works adverse impact of the planned Works Contract 3A.1/1 (Section 1 and Section 2) on ichthyofauna living in Vistula river is not anticipated. This results from substantial distance between the embankment and the Vistula Riverbed. Also no valuable fish species occur in the inspected water courses (river, channels and amelioration dikes). During implementation of works the rehabilitation of the embankments will not adverse impact the river and amelioration dikes as during the most part of the year they are practically without water or water level is minimal. In one case, at a small water course close by the Lasek Mogilski there is a risk of siltation during works but in view of only one species of common fish occurring there, no significant problem is expected. Nonetheless, in terms of ichthyology, the Dłubnia River is very good habitat for rainbow trout (this species was artificially introduced in the '40s of 20<sup>th</sup> century). In addition, such fish species as perch, chub, roach, gudgeon, stickleback, grayling, ide and silver bream occur rarely in the Dłubnia River. No protected species were identified in this river so far. The planned Works Contract crosses directly the existing amelioration dike at km 0+108, where fish were not identified during the inventory,
- At least five species of amphibians were identified within the inspected area (Section 1 and Section 2), i.e. common frog, common toad, European fire-bellied toad, green frogs, common newt. The aforementioned species are protected; no amphibians were identified in vicinity of the River Dłubnia,
- In the whole period when field research was performed no reptile specimens were found at inspected sections of Vistula embankments either on adjacent embanked area or in the area beyond the embankment,
- In the area covered by the inventory for Section 1 and Section 2 the occurrence of 92 species of protected birds was identified. 10 of the species are birds listed in Annex I to the Birds Directive, and these are: white stork, great white egret, corn crake, grey-headed woodpecker, red-backed shrike, common tern, common kingfisher, western marsh harrier, Syrian woodpecker, middle spotted woodpecker. In vicinity of the River Dłubnia a total number of 53 species of birds was identified. In the inspected area taxons were observed that are connected with the following habitats: groups of trees and area transformed due to anthropogenic activity i.e. arable land, wasteland and developed area. No taxons listed in the Red Book of Animals were found in the inspected area. However, some species listed in Annex I to the Birds Directive were observed i.e. Syrian woodpecker, grey-headed woodpecker and red-backed shrike. Single specimen used the inspected area for seeking food,
- Inventory of mammals showed occurrence of European beaver (partially protected species) along the Vistula riverside and in the embanked area at Section 1 from the Wandy bridge to the Przewóz Barrage. No damages resulting from beavers' activity were identified at the embankment body. The planned boundary of land acquisition is at a distance of up to 5 m from the embankment foot. In Section 2 the Vistula River Bed is deep, with steep, sliding banks and agriculture land and wasteland dominating within

the embanked area. There are no places colonized by beavers at this section. The presence of beavers was not identified in vicinity of the Dłubnia River;

- Furthermore, on the embanked area and in the area beyond the embankment occurrence of fox, European hare, boar and roe deer was identified in Section 1 and in Section 2. During the construction works the animals (boar, roe deer, fox, hare) will be scared and disturbed, but no impact on the numbers of population of those species is expected in the discussed area. At the completion of works this impact shall cease. It should be mentioned that these are wild animals species identified in municipal area, while their natural habitat is forest, field and woodland mosaic and open area. Within the analyzed site neighboring with the Dłubnia River, presence of roe-deer was identified, and furthermore boars, hares, foxes, martens, and polecats may occur there,
- No chiropterologic research was done as a part of the inventory.

#### **4.8.2 Protected environmental habitats and protected species of plants and animals at Task 3A.1/2**

Environmental inventory was done in the area of Section 3 from August to November 2015, and from March to May 2016.

##### **Flora**

- In the area of direct impact of the Works Contract 3A.1/2, i.e. at the embankment and the directly adjacent land, presence of species under strict protection was not identified;
- The occurrence of one partially protected species – common centaury;
- The occurrence of protected natural habitats was identified within the Works Contract 3A.1/2 site. Those habitats are: Lowland hay meadows (code 6510) and Hydrophilous tall herb frige communities of plains (code 6430), however their conservation status is unsatisfactory. Moreover within the area of Works Contract Alluvial forests *Salicetum albae*, *Populetum albae*, *Alnenion glutinoso-incane* (code 91E0) and Riparian mixed forests *Ficario ulmetum* (code 91F0) were identified;
- Such invasive species as Canadian goldenrod and late goldenrod, and such highly invasive arborescent species as boxelder maple, black cherry and northern red oak were identified within the area;
- The embankment/area beyond the embankment/embanked area is formed by a mosaic of arable fields, meadows and pastures, orchards and allotments, wasteland/bulrush/fallows, trees and shrubs, forests and urbanized areas;
- The inventory did not comprise identification of fungi and lichens.

##### **Fauna**

- During field research in the embanked area adult specimen of butterflies in the genus *Phengaris* were identified in the embanked area. No habitats appropriate for whole life cycle of observed protected butterfly species in the genus *Phengaris* were found in the area within the planned Works Contract acquisition boundaries;
- Due to the scope of planned works the planned works Contract 3A.1/2 shall not affect ichthyofauna of the Vistula River adversely. It is a consequence of huge distances between the embankments and the river-bed. The inspected water-courses (river, channels, and



amelioration ditches) do not also form occurrence sites of valuable fish species. Modernization of the embankments shall not affect the river and amelioration ditches adversely during the implementation, as for the most of the year they do not contain water or its level is minimal;

- At least five species of amphibians were identified within the inspected area, i.e. common frog, common toad, European fire-bellied toad, green frogs, common newt. The aforementioned species are protected;
- In the whole period when field research was performed no reptile specimens were found at inspected sections of Vistula embankments either on adjacent embanked area or in the area beyond the embankment;
- In the inspected area the occurrence of 95 species of protected birds was identified. 10 of the species are birds listed in Annex I to the Birds Directive. Those are: white stork, great white egret, corn crake, grey-headed woodpecker, red-backed shrike, common tern, common kingfisher, western marsh harrier, Syrian woodpecker, middle spotted woodpecker;
- Inventory of mammals showed occurrence of European beaver (partially protected species) along the Vistula riverside in places grown with trees and bushes. The highest numbers of recent traces were identified near the Łęg power and heating station and at the Wandy bridge. Their presence was also confirmed in meander of the Vistula oxbow lake close to the Przewóz water barrage. This habitat is partly located within the area where the Works Contract is to be implemented, about 15 m from the planned works. No damages resulting from beavers' activity were identified at the embankments;
- The inventory showed the occurrence of ermine (partially protected species);
- Furthermore, in the embanked area and in the area beyond the embankment occurrence of fox, European hare, boar and roe deer was identified. During the construction works the animals (boar, roe deer, fox, hare) will be scared and disturbed, but no impact on the numbers of population of those species is expected in the discussed area. At the completion of works this impact shall cease. It should be mentioned that these are wild animals species identified in municipal area, while their natural habitat is forest, field and woodland mosaic and open areas;
- No chiropterologic research was done as a part of the inventory.

### **4.8.3 Protected areas**

The analyzed Contract 3A.1 is located beyond the legally protected areas established under the Act of April 16, 2004 on nature conservation (NC Act).

A Natura 2000 site is located in vicinity of the Works Contract: Łąki Nowohuckie (PLH120069). The area located within the Vistula river valley (on the old floodplain) is the last well preserved part of the Vistula riparian meadows in Nowa Huta district. The main goal of the protection is preservation of meadow habitats as a habitat for butterflies which are the main object of protection. The area is simultaneously the ecological use land. The area is located about 1.1 km to north/west (from the embankment located closest to the Natura 2000 site – Section 1 and Dłubnia river embankment). The embankment at Section 2 and at Section 3 is also located beyond the protected area at a distance of 1.5 – 4.5 km from the Natura 2000 site. There are no natural monuments within the area of planned Contract 3A.1, the closest natural

monuments are located in Lasek Mogilski about 200 m from the Works Contract (Task 3A.1/1). The closest ecological use land is located about 600 m to south-east from Task 3A.1/2. It is a hatching site for water birds – big island and small island.

The location of Contract 3A.1 in reference to the protected areas was presented in a map given in Appendix 6 to EMP 3A.1 – *Map with location of the Works Contract in reference to protected areas and to NATURA 2000 sites*.

## **4.9 Cultural landscape and monuments**

The river valley within the area of Contract 3A.1 is a separate landscape interior and the Vistula river has a character of a great lowland river. The river bed is embanked and regulated. The greenery is dominating in this interior. Within the area of Works Contract Alluvial forests (willow, poplar, alder and elm-ash) are growing. The embanked area/embankment/area beyond the embankment is formed by a mosaic of arable fields, meadows and pastures, orchards, allotments and wasteland. Those are accompanied by buffer trees and shrubs, and forests. Strongly anthropogenic objects are: the water barrage and lock at Przewóz in Section 2, buildings of the power and heating station PGE Energia Ciepła S.A at Section 3 and structures of neighboring villages along the entire area of Contract 3A.1.

### Task 3A.1/1 implementation site

In the area of Task 3A.1/1, within left side area of the Dłubnia River there is a zone of archaeological supervision (Opinion of the Municipal Heritage Conservator dated April 21, 2017, ref. no: KZ-03.4120.6.303.2017.EB - Appendix no. 4. to EMP 3A.1 - Decisions, Resolution, Permits, Notes). In the vicinity of Section 2, at Popielnik St., there is a shrine entered into the communal heritage register and a residential building at 18. Popielnik St., also entered into this register.

### Task 3A.1/2 implementation site

The works planned within Task 3A.1/2 (Section 3) collide with one historical monument – Fort 50a Lasówka. It was established in 1899 and was an interfield reinforced fort belonging to fortified area of Kraków Fortress. The fort was designed by Emil Gołogórski, the object stood out with unusual solutions, among others filling of moats with Vistula river water and therefore called a water fort. The task of the fort was protection of the south Vistula river bank, and exactly of the river valley, embankments and nearby crossing to the other side.

In the area of Task 3A.1/2 (Section 3), within the embanked area at Pod Wierzbami Street there also is a historic shrine.

## **4.10 Population**

The planned Contract 3A.1 is a linear Works Contract, which – within its course – is located in the area of two districts: City of Cracow and Wieliczka.

The Works Contract is located in the area of the Nowa Huta, district in the City of Cracow. In conformity with data valid on December 31, 2018<sup>12</sup> the City of Cracow is inhabited by 771,069 people, population density is 2,359 people/km<sup>2</sup>. In case of the District of Wieliczka the Works

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<sup>12</sup> [GUS – Demography Database: Results of Current Research: Status and Structure of Population: 2018: Status of Population on December 31: Population in Reference to Gender and Cities: Małopolskie Voivodship.](#)

Contract shall be implemented within the area of Duża Grobla – Commune of Wieliczka. According to the data for December 31, 2018, the number of inhabitants of Commune of Wieliczka was 36,019 people, about 51% of population were women and about 49% – men.

Basing upon data given in the Feasibility Study (SWEKO, 2018) for Section 1 and Section 2<sup>13</sup> and for Section 3<sup>14</sup>, the estimated number of people protected by the embankments against Q1% water is: for Section 1 and Section 2 – about 9.0 K people, for Section 3 – about 30.9 K people.

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;
- assure safety and health of people in reference to implementation of construction investments;
- prevent cases of sexual harassment and mobbing on work sites;

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<sup>13</sup> FEASIBILITY STUDY for "Completion of the rehabilitation of the flood embankments of the Vistula River in Cracow: section 1 - *the left embankment of the River Vistula from the Wandy Bridge to the Przewóz Barrage, together with backwater embankments of the River Dłubnia*; section 2- *the left embankment of the River Vistula from the Wandy Bridge to the Przewóz Barrage, together with backwater embankments of the River Dłubnia*", SWEKO 2018.

<sup>14</sup> FEASIBILITY STUDY for "Completion of the rehabilitation of the flood embankments of the Vistula River in Cracow: section 3 - *the right embankment of the River Vistula from the Dąbie Barrage to the Przewóz Barrage*", SWEKO 2018.



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- 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

Due to implementation of Contract 3A.1 there shall be no significant and permanent adverse changes to the local landscape.

Impact of Contract 3A.1 implementation on landscape and land surface shall only occur at implementation 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 redevelopment/development of accompanying facilities.

The planned works of redevelopment/rising of embankments at Section 1, Section 2, and Section 3 shall require permanent acquisition of adjacent land. In the embanked area, due to extension of the embankment – about 4-7 meters from the base of the slope of the existing embankment and a technological lane with a width of 3.0 m from the base of landside slope of the extended embankment. The total land acquisition in the embanked area will be about 7-10 meters from the base of the riverside slope of the existing embankment. The acquisition in the area beyond the embankment will be marginal at the majority of planned works - 1-2 m from the existing embankment slope. Only due to moving the embankment body towards the embanked area for protection of the hermit beetle habitat as well as due to designing a service road at the abutment of the embankment in the embanked area, the land acquisition will be about 4-9 m from the existing embankment base at the length of about 1200 m at Section 1.

The greater land acquisition at the embanked area side is planned also for Section 3 under Task 3A.1/2, where due to construction of a service road the land acquisition will be about 5 m from the existing embankment slope over a length of about 2200 m.

In case of a new embankment construction at the left side of the Dłubnia river over a total length of about 476 m – the permanent land acquisition will be about 20-30 m.

Moreover, the performance in the area of Contract 3A./1 shall be connected with temporary land acquisition of a width about 2-5 m 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 (except for permanent acquisition for the Contract) shall be short-term and reversible, and their scale shall depend on good organization of the construction site. Adverse impact on the performance stage 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 trees and shrubs growing on the embankment body and on 3m wide land strips at the embankment basis shall be permanent.

For the purpose of performance under Task 3A.1/1 a total number of about 2,110 trees and 7,136 m<sup>2</sup> of shrubs shall be removed within the planned redevelopment/extension/ construction of the embankments. For the purpose of performance under Task 3A.1/2 a total number of about 745 trees and 4,335 m<sup>2</sup> of shrubs shall be removed within the planned

redevelopment/extension of the embankments. Removal of trees along mentioned sections is necessary due to construction and maintenance reasons as according to the Water Law Act Art.176 (1) soil cultivation, planting trees or shrubs on the embankment body and closer than 3 m from the embankment foot shall be prohibited, in order to assure tightness and stability of the flood embankment.

The works are planned at the existing objects, and therefore the expected range of changes to the landscape is minor (Section 1, Section 2, and Section 3). **The only new landscape element will be a new left backwater embankment of the Dłubnia River over a length of ca 476 m.** However, with respect to the higher objective that is to protect housing against flooding, this element can be considered negligible. 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 proper condition.

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 and Dłubnia 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 for Contract 3A.1 – Plan of Mitigation Measures, items in the table: 3, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 20, 21, 29, 31, 63, 109, 110, 111, 122, 123, 124.

## **5.2 Climate**

Implementation of Contract 3A.1 shall not cause changing of local climate neither during the construction works nor after handing over for use. Due to maintenance of the present 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 Contract 3A.1 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.

### **Adaptation of the Contract to adverse phenomena associated with climate change**

Modernized flood embankments were designed in accordance with applicable hydrotechnical regulations, which take into account extreme weather phenomena related, among others, to with climate change (this is regulated by the relevant provisions on the design, construction

and operation of hydrotechnical facilities). In addition, the implementation of the Contract will improve the flood protection of collapses along the banks of the Vistula and the estuary section of the Dłubnia and thus will contribute to reducing the effects of negative phenomena accompanying climate change.

### **5.3 Air quality**

Emission of gaseous and dusty pollutants shall occur on the construction stage mainly, when works will require the 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 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 for Contract 3A.1 - Plan of Mitigation Measures, items in the table: 79, 80, 81, 82, 83, 85.

## 5.4 Soil and grounds

Contract 3A.1 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 to excavate trenches for the embankment's modernization elements. An additional area will also be acquired for the embankment's construction/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 oil 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.

On the stage of obtaining the Environmental Decision ground and the decision modifying the ED, extraction of ground for Contract 3A.1 purposes from following available deposits was provisionally determined:

a) **Task 3A.1/1 - Section 1:**

- **Deposit no. 4** – about km 88+900 of the Vistula River, left bank, embanked area, area of 2.01 ha. Deposit made of a layer of up to 3.0 m of cohesive soil (loam and loamy sand), placed on non-cohesive soil (medium sand, dusty sand). Groundwater level – about 3.3 m below the ground level. Expected extraction – up to 3.0 m below the ground level,
- **Deposit – Brzegi** – area used for extraction of aggregate by Krakowskie Zakłady Eksploatacji Kruszyw [Aggregate Extraction Plant of Cracow]. Soil from that deposit – in case of layers of cohesive soil at the surface – forms waste for the extraction works (KZEK extracts non-cohesive soil and assorts it), although it would be a valuable material for developing a static body of the embankments. That soil shall be purchased from KZEK and delivered to the embedding site.

b) **Task 3A.1/1 - Section 2**

- **Deposit no. 6** - about km 93+700 of the Vistula River, left bank, embanked area, area of 1.18 ha. Deposit made of a layer of up to 1.6 m of cohesive soil (sandy dust), placed on non-cohesive soil (fine sand). Groundwater level – about 5.7 m below the ground level,
- **Deposit – Brzegi** – as above.

c) **Task 3A.1/2 - Section 3:**

- **Deposit no. 1** - about km 82+500 of the Vistula River, right bank, embanked area. Due to the significant volume of waste materials stored in the past, the deposit may be used only in its small part to extract non-cohesive soil over the groundwater table. The deposit's area is 3.94 ha,
- **Deposit – Brzegi** – as above.

The aforementioned sites for ground extraction from deposits are located in the areas without plant production where the excavation location shall not impact the risk of flood embankment damage during accommodation of a flood wave. The assumed level of exploitation above the groundwater water-table, which is corresponding to the Vistula river water level impounded at Przewóz barrage, shall allow for exploitation of ground in such a state that it can be embedded into embankment body without drying. At the same time the scope of exploitation shall not cause stagnation of water after precipitation or high water level because the bottom of excavation shall remain in ground of high permeability, above the groundwater -table. Occurrence of a water-table in the excavation at the same level as the Vistula river water level (not applicable to Brzegi deposit) shall become quite an inconvenience during high water level. In conclusion, abandoning of excavations shall not impact the groundwater water level and water environment as the assumed level of exploitation shall avoid formation of any water environment. According to the design on exploitation of deposits no. 1, 4 and 6 the Contractor shall be obliged to form slopes at the edges of the excavation with grade 1:2.5 together with top-soiling and sowing them.

The material purchased from Brzegi deposit is natural ground without any pollution that shall be embedded above the groundwater level, so no impact on water and groundwater environment is expected.

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 for Contract 3A.1 - Plan of Mitigation Measures, items in the table: 13, 20, 21, 24, 25, 26, 27, 28, 29, 30, 31, 58, 59, 60, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 84, 85, 86, 87, 88, 109, 110, 111, 122, 123, 124.

## **5.5 Surface water**

Implementation of Contract 3A.1 shall neither be related to interference in the Vistula river bed nor in the Dłubnia 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 qualitative status of surface water, and shall not remain 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 for Contract 3A.1 - Plan of Mitigation Measures, items in the table: 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 24, 25, 58, 59, 60, 61, 62, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 84, 85, 86, 87, 88, 122, 123, 124.

## **5.6 Groundwater**

Implementation of Contract 3A.1 shall not affect the hydraulic relation between the river and the area beyond the embankment, as anti-filtration membranes planned within the framework of Contract implementation shall be “suspended” in a layer of sands, and they shall not reach the non-permeable layer. Contract 3A.1 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 for Contract 3A.1 - Plan of Mitigation Measures, items in the table: 11, 12, 13, 18, 19, 20, 21, 24, 25, 58, 59, 60, 61, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 84, 85, 86, 87, 88, 122, 123, 124.

## **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 small exceedance of permissible noise values can occur in the area of the closest housing (often enough adjacent to the embankment base). 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 and during work of mobile pumps pumping out the water from amelioration dike (left backwater embankment of the Dłubnia River from km 1+136 to 1+612).

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 for Contract 3A.1 - Plan of Mitigation Measures, items in the table: 14, 15, 16, 17, 74, 75, 76, 77, 78, 79.

## **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 Works Contract implementation 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 and shrubs placed in the area of construction and extension shall be logged. All trees in the direct vicinity of the works performed will be protected against damage. It is expected to log about 2,110 trees and about 7,136 m<sup>2</sup> of shrubs within the framework of Task 3A.1/1 in reference to redevelopment, extension and construction of the embankments. In case of Task 3A.1/2 about 745 trees and 4,335 m<sup>2</sup> of shrubs shall be removed in reference to redevelopment and extension of the embankments. 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. Additionally, for a new left backwater embankment at the Dłubnia river at final stage it is expected to cover the slopes and berm of the embankment with a biomat.

Impact of the Works Contract on fauna shall mainly result from the increased range of noise during implementation of Contract 3A.1, what may cause temporary disturbing and scaring of animals. In case of beavers habitats located close to the planned works, during the construction works the specimen living in areas grown with trees and bushes close to the embankment will be scared and disturbed. It will be necessary to obtain a decision of the Regional Director for Environmental Protection in Cracow allowing for derogations from the protection of species of animals. On completion of the works the adverse impact will cease. In case of works in amphibians' breeding sites it will be necessary to catch and dislocate them (adult specimen, eggs-spawn and larvae-tadpoles) basing on the decision of the RDOŚ in Cracow for derogations from the protection of species of animals. Contract 3A.1 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.

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 for Contract 3A.1 - Plan of Mitigation Measures, items in the table: 11, 12, 13, 14, 15, 16, 17, 18, 19, 25, 26, 27, 28, 30, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43,, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 62, 63, 110, 122, 123, 124.

### **5.8.2 Protected sites**

The planned Contract 3A.1 is located beyond protected sites. There is no risk of any adverse effect of the Contract on the subject of protection for the Natura 2000 site (the nearest site is located 1.1 km away from the subject Contract).

## **5.9 Cultural landscape and monuments**

The works planned for implementation of Section 3 under Task 3A.1/2 run at Fort 50a Lasówka that is entered into the heritage register. The Municipal Heritage Conservator (note dated November 22, 2016, ref. no.: KZ-03.4120.6.172.2016.MC - Appendix no. 4 to the EMP – Decisions, Resolution, Permits, Notes) has accepted the presented design solutions that expect to raise the embankment crest without its extension and without locating a pedestrian bicycle way on the crest along the section adjacent to the fort. Along the section of the embankment in the fort area the design expects to perform a membrane from the crest of the embankment into the ground to a depth of 6 m at km 2+925 – 3+142. Moreover, to construct a part of the embankment within Fort 50a Lasówka, that is entered into the heritage register under No A-973, it will be necessary to log 3 trees that grow in the embankment body in the mentioned fort area. The additional permit was required for the above works (Permit No 988/17 dated October 31, 2017, Appendix no. 4 to the EMP – Decisions, Resolution, Permits, Notes). The subject permit is associated with imposition of additional obligations for the Contractor, discussed in detail in Chapter 6.10 of this EMP.

In conformity with an opinion of the Municipal Heritage Conservator in Cracow dated July 19, 2017, ref. no.: KZ-03.4120.6.172.2016.MC and a resolution of Podgórze District Board dated November 29, 2016 (Appendix no. 4 to the EMP – Decisions, Resolution, Permits, Notes) a historic shrine - located within Section 3 (Task 3A.1/2) – shall stay in the embanked area. Its location will be adjusted in order to stay outside the embankment body.

In addition, in the area of Task 3A.1/1, within the left side area of the Dłubnia River, there is a zone of archaeological supervision (Opinion of the Municipal Heritage Conservator dated April 21, 2017, ref. no: KZ-03.4120.6.303.2017.EB - Appendix no. 4. to EMP 3A.1 - Decisions, Resolution, Permits, Notes), thus the Investor is obliged to assure an archaeological supervision during the earthworks.

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 for Contract 3A.1 - Plan of Mitigation Measures, items in the table: 97,98, 99, 100, 101.

## **5.10 Material goods**

In case of protection for the material goods, implementation of Contract 3A.1 shall improve flood safety for the City of Cracow and also for localities within the Commune of Wieliczka. Temporary 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 Contract 3A.1 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 and Dłubnia's embankments 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 Contract 3A.1 is to protect people and their material goods against flooding at high water levels. Functioning of the Works Contract shall improve the sense of security in case of people living in the areas located along the Vistula River and the Dłubnia 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 observation of 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 Contract 3A.1 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 Chapters 5.1-5.12, the following additional issues or hazards related to that subject may occur during implementation of Contract 3A.1, 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.: Chapter 6.14).

### **5.14 Cumulative impact**

The following contracts are planned in addition to Contract 3A.1 – discussed in this EMP – under the OVFM Project to complete the flood protection system for the City of Cracow:

- Contract 3A.3  
*Section 4 – The right embankment of the Vistula River from the estuary of Skawinka to the Kościuszko barrage.* Construction works shall be implemented in a large distance from Contract 3A.1 (about 19 km from the Dąbie Barrage, which forms the beginning of Section 3 – Works Contract 3A.1/2) in the years 2019 – 2022.
- Contract 3A.4  
*Reconstruction of the right embankment between the Dąbie barrage and the Płaszów port, construction of a flood gate with necessary facilities* borders and shall be linked with the extension of the right embankment of the Vistula River from the Dąbie Barrage to the Przewóz Barrage (Section 3) implemented under Works Contract 3A.1/2. Works are planned for the years 2020 – 2022.
- Contract 3A.5  
*Construction of a flood gate for the Kujawy port including necessary facilities* borders and shall be linked with the extension of the left embankment of the Vistula River from the Wandy Bridge to the Przewóz Barrage, including backwater embankments of the

**ENVIRONMENTAL MANAGEMENT PLAN FOR CONTRACT 3A.1:  
WORKS CONTRACT 3A.1/1, WORKS CONTRACT 3A.1/2**

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River Dłubnia (Section 1) implemented under Works Contract 3A.1/1. Works are planned for the years 2020 – 2021.

– Contract 3A.6

*Construction of a pumping station for mobile pumps to drain the Lesisko complex* shall be implemented in vicinity of the Wandy Bridge, which forms the beginning of Section 1 (Works Contract 3A1/1), however, the range of impact for works contracts planned under Contract 3A.6 and Contract 3A.1/1 do not interfere with each other. Works are planned for the years 2021 – 2022.

None of the aforementioned contracts is associated with the occurrence of significant emission or other significant environmental impact, scale of which would cause possible occurrence of significant threats to abiotic environment or to biotic environment, even in case of simultaneous performance of construction works. Additionally, application of mitigation measures by Contractor in compliance with EMP documents for each of the aforementioned contracts shall allow for avoiding a risk of significant adverse cumulative impact, even in case of simultaneous performance of works in neighboring locations.

## **6 Description of mitigation measures**

In order to limit adverse impact of the planned Contract 3A.1 on the environment, Appendix 1 to this EMP provides a set of mitigation measures, which shall be implemented prior to, during, and after performance of the construction works.

The mitigation measures were developed based upon the following documents:

### **For Task 3A.1/1**

- Works Contract Information Sheet with amendments titled: "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 1- the left embankment of the Vistula from the Wandy bridge to the Przewóz barrage, together with the backwater embankments of the Dłubnia River; Section 2 - the left embankment of the Vistula from the Przewóz barrage to Suchy Jar". SWECO, September 2016;
- Works contract information sheet for modification of the decision – Materials for application on modification of the decision on environmental conditions for implementation of the investment titled: "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 1- the left embankment of the Vistula from the Wandy bridge to the Przewóz barrage, together with the backwater embankments of the Dłubnia River; Section 2 - the left embankment of the Vistula from the Przewóz barrage to Suchy Jar". SWECO, April 2018;
- Works Contract Information Sheet titled: "Construction of the left backwater embankment of the Dłubnia River in Cracow". Habitat Selection S.C. Kolecki M, Michał Węgrzyn, March 2017;
- Decision of the Regional Director for Environmental Protection in Cracow dated January 27, 2017 on environmental conditions for the contract titled: "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 1 – the left embankment of the Vistula from the Wandy bridge to the Przewóz barrage, together with the backwater embankments of the Dłubnia River; Section 2 - the left embankment of the Vistula from the Przewóz barrage to Suchy Jar", ref. no.: OO.4233.4.2016.BM;
- Decision of the Regional Director for Environmental Protection in Cracow dated February 1, 2019, ref. no.: OO.420.4.2.2018.BM, modifying the decision dated 01/27/2017 on environmental conditions for the contract titled: "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 1 – the left embankment of the Vistula from the Wandy bridge to the Przewóz barrage, together with the backwater embankments of the Dłubnia River; Section 2 - the left embankment of the Vistula from the Przewóz barrage to Suchy Jar", ref. no.: OO.4233.4.2016.BM;
- Decision of the Regional Director for Environmental Protection in Cracow dated September 4, 2017 on environmental conditions for the contract titled: "Construction of the left backwater embankment of the Dłubnia River in Cracow", ref. no.: OO.4233.1.2017.BM.

**For Task 3A.1/2:**

- Works Contract Information Sheet with amendments titled: "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 3 - the right embankment of the Vistula from the Dąbie barrage to the Przewóz barrage". SWECO, June 2016;
- Works contract information sheet for modification of the decision – Materials for application on modification of the decision on environmental conditions for implementation of the investment titled: "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 3 - the right embankment of the Vistula from the Dąbie barrage to the Przewóz barrage". SWECO, April 2018;
- Decision of the Regional Director for Environmental Protection in Cracow dated January 27, 2017 on environmental conditions for the contract titled: "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 3 – the right embankment of the Vistula from the Dąbie barrage to the Przewóz barrage", ref. no.: OO.4233.3.2016.BM;
- Decision of the Regional Director for Environmental Protection in Cracow dated January 24, 2019, ref. no.: OO.420.4.1.2018.BM, modifying the decision dated 01/27/2017 on environmental conditions for the contract titled: "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 3 – the right embankment of the Vistula from the Dąbie barrage to the Przewóz barrage", ref. no.: OO.4233.3.2016.BM.

The mitigation measures were moreover developed based upon the following documents:

- 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, Wroclaw 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 3A.1/1, which need to be implemented prior to, during, and after implementation of the Contract.

A summary and general characteristics of main categories of mitigation measures were provided below, with a division into particular environmental components. **The mitigation measures described below are related to the performance in the entire area of Contract 3A.1, except for the measures dedicated only to the works in selected areas of Task 3A.1/1 or Task 3A.1/2 – in such a case, description of the measure distinctly determines the area, where the measure shall be implemented (Chapter 6.8.1 and Chapter 6.9).**

## **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 Contract 3A.1 implementation stage. The land transformation shall be noticeable too the highest extent then.

In order to limit adverse impact of Contract 3A.1 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.

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 outside the area of valuable habitats;
- 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 the planned Contract 3A.1 shall be cleared after completion of the works;
- The area of works and land adjacent to the construction site shall be reinstated to proper 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 Contract 3A.1 on the soil environment.

Mitigation measures related to the protection of land surface and landscape were listed in Appendix 1 to the EMP for Contract 3A.1 – Plan of Mitigation Measures, items in the table: 3, 5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 19 20, 21, 29, 31, 63, 109, 110, 111, 122, 123, 124.

### **Operational stage**

During the operational stage no adverse impacts on the ground surface and on 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 work stage under Contract 3A.1. 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 Contract 3A.1 on the air will take place only at the 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 for Contract 3A.1 – Plan of Mitigation Measures, items in the table: 79, 80, 81, 82, 83, 85.

### **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

Contract 3A.1 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:

- Prior to the commencement of earthworks under Contract 3A.1 one shall remove about 15 cm thick layer of top-soil, that shall be used for further area restoration;
- In case of failure 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;
- One shall arrange a station with sorbent for removal of potential leakage and spills of oil derivatives within locations designated for fueling and parking of vehicles and machines;
- Sites for service and fueling of vehicles shall be sealed on the subbase side using insulation materials assuring protection for the soil;
- 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 oil derivatives to the ground.

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

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 (in case of construction of a new left backwater embankment on the Dłubnia River the ground surface shall be covered with a biomat on the 5 cm thick top-soil and the biomat covered with 3 cm thick top-soil), and the ground will be sown with native grass mix 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 for Contract 3A.1 – Plan of Mitigation Measures, items in the table: 13, 20, 21, 24, 25, 26, 27, 28, 29, 30, 31, 58, 59, 60, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 84, 85, 86, 87, 88, 109, 110, 111, 122, 123, 124.

### **Operational stage**

During the operational stage there will be no adverse 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 Contract 3A.1 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 Contract 3A.1 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 would 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.

In case of oil derivatives' leakage to surface water the Contractor is obliged to assure immediate mechanic collection of oil 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 3A.1 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 3A.1 implementation area is not expected.

Mitigation measures related to protection of water are shown in Appendix 1 to EMP for Contract 3A.1 – Plan of Mitigation Measures, items in the table: 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 24, 25, 58, 59, 60, 61, 62, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 84, 85, 86, 87, 88, 122, 123, 124.

### **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 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 for Contract 3A.1 – Plan of Mitigation Measures, items in the table: 11, 12, 13, 18, 19, 20, 21, 24, 25, 58, 59, 60, 61, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 84, 85, 86, 87, 88, 122, 123, 124.

### **Operational stage**

During the use of embankments there will be no hazard for the groundwater. The hydro-geological regime or the flow will not change during the operation stage, in comparison to the current condition. Function, including ongoing maintenance of modernized flood embankment, will not cause emission of pollutants to soil or groundwater. As a consequence, 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 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 Contract 3A.1 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 carried out in a daytime, i.e. from 6:00 am to 10:00 pm and from 6:00 am to 6:00 pm where housing is close to the embankment (construction of the left backwater embankment on the Dłubnia River),
- 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 for Contract 3A.1 – Plan of Mitigation Measures, items in the table: 14, 74, 75, 76, 77, 78, 79.

### **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 Contract 3A.1 on vegetation and fauna of that area. Due to the works performed, the following mitigation measures are expected:

- The works and other actions performed within the Contract 3A.1 implementation period shall be done under constant supervision of the environmental experts' team;
- 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 (outside valuable habitats, outside the areas of medium and high ornithological value, outside habitats of amphibians and beavers);

According to provisions of the Environmental Decision an indicative location of storage sites for materials and lots for the equipment is assumed as follows:

- for Task 3A.1/1:
  - the left embankment of the Vistula River km 0+950 – 1+000,
  - the right embankment of the Dłubnia River km 0+350 – 0+450,
  - the left embankment of the Dłubnia River 0+600 – 0+700;
  - the left embankment of the Vistula River km 0+000 – 0+250 and 2+600 – 2+780;
  - between the final section of Bardosa Street and the existing embankment.
- for Task 3A.1/2 – the right embankment of the Vistula River:
  - km 0+950 – 1+070,
  - km 3+690 – 3+795,
  - 5+900 – 6+300,
  - 7+900 – 8+150,
  - 8+960 – 9+060.
- Works shall be performed in the way to avoid draining of water stagnating in the Vistula oxbow lakes;
- It is banned to perform any works, to quarry natural materials as well as to set technological roads in the area of Mesophile grassland habitat (code 6510);

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- Any work associated with modernization of the embankment shall be done only within the boundaries of the designed Contract area;
- The trunks of trees growing within the works lane or in the direct vicinity, that can be exposed to mechanical damage, shall be protected at least to the height of 1.5 m from ground level;
- It is banned to store any materials or set new transport roads within 1 m from tree trunks and shrubs;
- 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 October 1 until the end of February). If necessary, it is acceptable to perform the additional logging in the hatching period provided that an ornithological supervision would be done;
- 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;
- It is required to inspect vehicles and construction machines in terms of their technical efficiency. In case of machine failure, any leaks of operating fluids and fuel shall be neutralized with a proper volume of absorbent, which would be stored at any site facilities;
- The site facilities, where machines and trucks shall operate, shall be protected;
- Parts of site facilities – tightly insulated from the ground – shall be set out for servicing and fueling of the machines;
- Waste produced during the performance shall be segregated and stored selectively in containers or on sites separated and adapted for the purpose, in conditions preventing dusting and blowing away light fractions and their adverse impact on the environment;
- Successive taking over of waste by units authorized for their further treatment shall be assured;
- 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). Identified specimens 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 Contract 3A.1 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;
- All the works in the vicinity of amphibians' breeding habitats identified ongoingly by the environmental supervision may be performed only when herpetological fencing that protects the Works Contract area against migration of amphibians is used. In case of their identification the amphibian specimen shall be without delay caught and transferred to substitute habitats existing at the safe distance. The list of such habitats shall be attached to the application for derogation from prohibited activities against the protected species. Prior to spring seasonal migration of amphibians the area of works

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in the vicinity of culverts, dikes and water courses shall be surrounded with the temporary herpetological fencing.

During migration the amphibians gathering at the fencing shall be caught and transferred to the area beyond the construction site, i.e. to a site opposite to the one, where amphibians were identified. After the completion of works the temporary fencing shall be removed. In case when works are performed in places where amphibians live from March to October, the adult specimen, eggs and larvae shall be caught and transferred basing on the decision of the RDOŚ in Cracow for derogations from bans regarding protected species of amphibians. Potential burying of the habitats shall be performed in autumn and in winter (November – February);

- The construction site and excavations shall be kept dry during the project and during the performance;
- 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 assignment, and their regular mowing shall be assured;
- No works shall be performed in the areas of the valuable habitats of Alluvial forests (91E0, 91F0). It is recommended to take precautions when planning works in this area to prevent damaging habitats. It is banned to set technological roads across or in close vicinity of mentioned habitats out. In case of the habitat at km 0+250 – 0+350 of Vistula river embankment at Section 2 within Task 3A.1/1 (the Alluvial forest grows on both sides of the embankment) any works shall be performed only within the scope of its redevelopment;
- Due to the occurrence of hermit beetle in the old willows close to the embankment in the embanked area, the redevelopment works at this section are planned so that they do not pose risk to this habitat. Moving of the embankment body will ensure protection of the trees themselves and their roots. The technological road shall be set on the opposite side, i.e. behind the embankment. Prior to the commencement of the works the additional protection of the trees against damaging or burying is expected – the shields made of straw mats and wooden fences will be used. All the works shall be supervised by a naturalist. During the works along this section of the embankment the trees shall be additionally protected with temporary barrier from the temporary road's side;
- For construction of the left backwater embankment of the Dłubnia River, if the environmental supervision identifies additional amphibian habitats that were not inventoried earlier and are in collision with the works, one shall apply to the competent Authority for a consent for habitat damaging. Works connected with removal of amphibians' breeding habitats shall be performed only from the beginning of November till the end of February;
- It is banned to introduce any measures aimed to drain the area of the Vistula oxbow lake near the locality of Brzegi (within Task 3A.1/2), that could adversely affect the habitats of variable moisture content or wet habitats formed in this area.

Mitigation measures related to protection of natural environment are shown in Appendix 1 to EMP for Contract 3A.1 – Plan of Mitigation Measures, items in the table: 11, 12, 13, 14, 15, 16, 17, 18, 19, 25, 26, 27, 28, 30, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43,, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 62, 63, 110, 122, 123, 124.

### **Operational stage**

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

## **6.8.2 Protected sites**

Due to the location of Contract in a huge distance from the existing Nature 2000 Site it is not expected to implement additional mitigation measures.

## **6.9 Cultural landscape and monuments**

### **Implementation stage**

During performance of the works within the entire area of Contract 3A.1 a measure was provided to assure archaeological supervision throughout the time of earthworks. 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.

### **Additional conditions for the implementation area of Task 3A.1/2**

The planned works for Section 3 under Task 3A.1/2 run at Fort 50a Lasówka. The Municipal Heritage Conservator (note dated November 22, 2016, ref. no.: KZ-03.4120.6.172.2016.MC - Appendix no. 4 to the EMP – Decisions, Resolution, Permits, Notes) has accepted the presented design solutions that expect to raise the embankment crest without its extension and without locating a pedestrian bicycle way on the crest along the section adjacent to the fort. Along the section of the embankment in the fort area the design expects to perform a membrane from the crest of the embankment into the ground to a depth of 6 m at km 2+925 – 3+142.

Additionally, to construct a part of the embankment within Fort 50a Lasówka, that is entered into the heritage register under No A-973, it will be necessary to log 3 trees that grow in the embankment body in the mentioned fort area. The additional permit was required for the above works (Permit No 988/17 dated October 31, 2017, Appendix no. 4 to the EMP – Decisions, Resolution, Permits, Notes). During visual inspection of the trees expected for logging no protected species of fungi, plants or animals have been identified within the trunks, crowns and roots. The subject permit is associated with imposition of additional obligations for the Contractor that are as follows: all works connected with logging shall be performed outside the hatching period from October 16 till the end of February, as a replacement for logged plants 3 black locusts shall be planted (between European ash and black locust) to supplement the row along the Golikówka Street, that forms a masking factor for a military lateral route leading to

the Fort 50a Lasówka. The planted locust trees must have well developed root systems, straight trunks of a girth of at least 16-18 cm, regularly formed crowns and other parameters following the standards used in ornamental tree nurseries. The deadline for replacement planting is the end of 2019, the Office of Municipal Heritage Conservator in Cracow shall be informed about completion of the works within 14 days.

In conformity with an opinion of the Municipal Heritage Conservator in Cracow dated July 19, 2017, ref. no.: KZ-03.4120.6.172.2016.MC, and a resolution of the Podgórze District Board dated November 29, 2016 (Appendix no. 4 to the EMP – Decisions, Resolution, Permits, Notes) a historic shrine – located in the area of Section 3 within Task 3A.1/2 – shall stay in the embanked area. Its location will be adjusted in order to leave it outside the embankment body.

Mitigation measures related to the cultural environment are shown in Appendix 1 to EMP for Contract 3A.1 – Plan of Mitigation Measures, items in the table: 97, 98, 99, 100, 101.

### **Operational stage**

Adverse impact on monuments and archaeological sites is not anticipated on the operational stage. As a consequence, no mitigation measures were foreseen.

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

During the performance under Contract 3A.1 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, the areas of medium and high ornithological value and amphibians and beavers 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, oil), 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 for Contract 3A.1 – Plan of Mitigation Measures, items in the table: 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 46, 60, 63, 64, 65, 66, 67, 68, 69, 71, 72, 87.

## **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 3A.1. The Contractor will be also responsible for 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 for Contract 3A.1 – Plan of Mitigation Measures, items in the table: 4, 6, 7, 9, 10, 58, 82, 89, 90, 91, 92, 93, 94, 95, 96, 121.

## **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 described 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 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 for Contract 3A.1 – Plan of Mitigation Measures, item in the table: 94.

## **Leakage of oil derivatives**

A common type of extraordinary risk to the environment on the construction site is the leakage of oil 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 for Contract 3A.1 – Plan of Mitigation Measures, items in the table: 70, 72, 73.

## **Identification of unexploded shells and misfires**

In the event of discovering unexploded shells or misfires, the Contractor shall immediately stop the works at a given site, 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 has not inspected the construction site in terms of the presence of 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 for Contract 3A.1 – Plan of Mitigation Measures, items in the table: 90, 96, 103, 106.

### **Fire**

The Contractor is responsible for fire protection in the implementation 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**

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 for Contract 3A.1 – measure – Plan of Mitigation Measures, items in the table: 24, 39, 83, 84, 85, 86, 87, 88.

## **6.14 Specific requirements for the World Bank's ESHS policies (environmental, social, health and safety aspects)**

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

The Contract 3A.1 implementation is related to the need to meet a number of ESHS requirements (environmental, social, health and safety aspects), which are regulated by national regulations governing environmental protection, health and safety at work and labour law. Their observance is supervised by state institutions and bodies. In particular, with regards to the occupational health and safety regulations and labour law, the state health and safety

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inspection bodies and the state labour inspection are authorised to control the activities of entrepreneurs, including those on construction sites. However, due to the high importance of the ESHS requirements for the World Bank, the terms of the contracts subsidized by the World Bank loan impose obligations to ensure the implementation of regulations in force. Special attention is paid to such issues as:

- Protection of minors employed in the implementation of the Contract;
- Elimination of inappropriate conduct of persons employed in the implementation of the Contract (including sexual harassment and mobbing);
- Ensuring the safety and health protection of persons employed in the implementation of the Contract, including the provision of health and safety services required by the law;
- Ensuring proper social and employment conditions for employees employed in the implementation of the Contract (including fair pay conditions).

Below, there is a list of issues, in the form of requirements for the Contractor, related to ESHS WB policies. It should be noted that the ESHS requirements and conditions set for the Contractor and its employees also apply to the Contractor's subcontractors and their employees or subcontractors.

- The Contractor will provide training and implement an awareness-raising programme to prevent sexual harassment and mobbing. These activities shall be carried out throughout the entire term of the Contract, including the defects notification period at least every second month. These will take the form of information, educational and awareness-raising campaigns.
- The Contractor shall immediately inform the Consultant of all cases of reported and suspected sexual harassment and mobbing.
- The Contractor shall inform all employees on the construction site about the possibility of lodging complaints about working and pay conditions and will provide an information leaflet with the necessary information on how to lodge complaints and requests, in which it will ensure that there are no repercussions for a person reporting a problem. The content of the leaflet will be agreed with the Consultant.
- The Contractor shall inform the Consultant about all accidents involving employees and third parties in accordance with the procedure presented by the Consultant. In the event of an accident, the Contractor shall take all actions to which the Contractor is obliged by the applicable laws, such as the Construction Law and the Labour Code, among others.
- The Contractor shall ensure equal pay for employees executing the same work without taking into account gender, sexual orientation or age, and such persons employed for the Contract shall not be persecuted or discriminated against on the basis of gender, sexual orientation or age.
- The Contractor shall, as far as possible in accordance with the possibilities and conditions and the Polish provisions of the Labour Code, satisfy the living and social needs of employees in the workplace.

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- The Contractor shall make it easier for employees to improve their professional qualifications.
- The Contractor may employ only such a minor who is at least 15 years old, has completed at least eight years of primary school and has submitted a medical certificate stating that the work in question does not put at risk his or her health.
- The Contractor shall employ a health and safety specialist with qualifications and professional experience in accordance with the Polish labour law.

In connection with the above, in order to prevent hazards associated with ESHS issues, except for the measures listed in Chapters 6.1-6.13, Appendix 1 to the EMP implements additional detailed 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. 113, 114, 115, 120, and others listed in Chapters 6.11 and 6.12);
- combat such unacceptable behavior on work site as cases of sexual harassment or mobbing (e.g. items no. 116, 117, 120);
- 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. 118, 119, 120);
- assure proper procedures for ongoing information provision on issues and hazards associated with the aforementioned subject (e.g. item no. 120).

However, it should be stressed that the Contractor shall be obliged to apply and observe all provisions of the Labour Code and WBGs Environmental, Health and Safety (EHS) Guidelines<sup>15</sup>, as well as shall act in accordance with the ESHS Code of Conduct developed on the stage of filing a bid<sup>16</sup>.

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

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,

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<sup>15</sup> The guidelines are published on the World Bank's internet service at:  
[https://www.ifc.org/wps/wcm/connect/Topics\\_Ext\\_Content/IFC\\_External\\_Corporate\\_Site/Sustainability-At-IFC/Policies-Standards/EHS-Guidelines/](https://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/Sustainability-At-IFC/Policies-Standards/EHS-Guidelines/) and  
<https://www.ifc.org/wps/wcm/connect/29f5137d-6e17-4660-b1f9-02bf561935e5/Final%2B-%2BGeneral%2BEHS%2BGuidelines.pdf?MOD=AJPERES&CVID=jOWim3p>

<sup>16</sup> In accordance with conditions given in the bidding documents in part ITB 11.1 (h).

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- protection of the site facilities,
  - service roads,
  - environmental protection on the site facilities, technological roads and yards.
- Waste management plan (Waste MP), 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,
  - 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,

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- 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.
- Contractor's Environmental and Social Management Plan (C-ESMP), which include:
    - ESHS Management Strategies and Implementation Plans (MSIP), (i.e. management strategies and implementation plans with regards to environmental, social, health and safety risks), developed on the stage of filing a bid<sup>17</sup>, and verified and accepted by the Engineer on the Contract implementation stage,
    - additional ESHS Management Strategies and Implementation Plans, which are necessary to manage ESHS risk factors and to limit adverse effects of the performance (including e.g. a description of applied materials, equipment; a description of management processes; etc.), developed prior to the commencement of particular work types, and accepted by the Engineer,

At developing the aforementioned documents the Contractor shall include e.g. provisions of the decision on environmental conditions (and of other administrative decisions related to the environmental protection, if applicable), conditions determined in the EMP and in the WBG's Environmental, Health and Safety (EHS) Guidelines<sup>18</sup>, and binding provisions of the state law.

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<sup>17</sup> In accordance with conditions given in the bidding documents in part ITB 11.1 (h).

<sup>18</sup> See: footnote in Chapter 6.14.

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

Appendix 2 to this EMP provides a set of monitoring measures binding for the Contractor 3A.1 (Works Contract 3A.1/1 or/and Works Contract 3A.1/2). The measures were developed based upon conditions/guidelines included in valid administrative decisions issued for Works Contracts under Contract 3A.1, along with additional conditions established on the stage of developing the EMP.

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

Prior to the commencement of works the Contractor should develop an own Plan of Monitoring Measures that should be correlated with the Plan of Monitoring Measures 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 3A.1 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 oil, 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 for Contract 3A.1 – Plan of Monitoring Measures, items in the table: 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 24, 25, 26, 27, 28, 29, 30, 31, 58, 59, 60, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 84, 85, 86, 87, 88, 109, 110, 111, 122, 123, 124.



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

It is not necessary to monitor the air quality due to implementation of Contract 3A.1. It is however necessary to monitor implementation of mitigation measures.

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 at 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 for Contract 3A.1 – Plan of Monitoring Measures, items in the table: 79, 80, 81, 82, 83, 85

### **7.1.3 Surface water**

Due to the anticipated small scale of Contract 3A.1 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 oil derivatives).

Monitoring measures related to the protection of water are indicated in Appendix 2 to the EMP for Contract 3A.1 – Plan of Monitoring Measures, items in the table: 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 24, 25, 58, 59, 60, 61, 62, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 84, 85, 86, 87, 88, 122, 123, 124.

### **7.1.4 Groundwater**

Due to the anticipated small scale of Contract 3A.1 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 extraordinary events which could cause significant emissions of pollutions. 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 oil derivatives).

However, if such case occurs (large surface emission of liquid substances to the environment, which may cause significant pollution of the soil and water environment, e.g. as a result of a serious breakdown of construction equipment, a road accident, etc.) 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 oil derivatives.

Monitoring measures related to the protection of water are indicated in Appendix 2 to the EMP for Contract 3A.1 – Plan of Monitoring Measures, items in the table: 11, 12, 13, 18, 19, 20, 21, 24, 25, 58, 59, 60, 61, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 84, 85, 86, 87, 88, 122, 123, 124.

### **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 Contract, at meeting all requirements and recommendations contained in the Decision on environmental conditions and in the EMP, shall also not cause such nuisance.

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 for Contract 3A.1 – Plan of Monitoring Measures, items in the table: 14, 15, 16, 17, 74, 75, 76, 77, 78, 79.

### **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). Logging of trees with a diameter over 40 cm shall be done under supervision of an expert entomologist and an expert chiropterologist. 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 for Contract 3A.1 – Plan of Monitoring Measures, items in the table: 11, 12, 13, 14, 15, 16, 17, 18, 19, 25, 26, 27, 28, 30, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43,, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 62, 63, 110, 122, 123,124.

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

As indicated in the Plan of Mitigation Measures (Appendix 1 to the EMP for Contract 3A.1) 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. Moreover the Contractor is obliged to follow all the obligations imposed in obtained opinions/permits.

Monitoring measures related to this issue are indicated in Appendix 2 to the EMP for Contract 3A.1– Plan of Monitoring Measures, items in the table: 97,98, 99, 100, 101.

### **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 for Contract 3A.1 – Plan of Monitoring Measures, items in the table: 4, 6, 7, 9, 10, 13, 14, 15, 16, 17, 46, 58, 60, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95.

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

It is not necessary to monitor the environment in case of the subject Contract 3A.1 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

As the obligation to perform full environmental impact assessment was not imposed by the RDOŚ in Cracow for works contracts under Contract 3A.1, there was no need to assure the public participation in the proceedings, according to Article 79 (1) of the EIA Act. At the stage of the procedure of obtaining ED or a decision modifying the ED, the competent issuing authority i.e. the RDOŚ in Cracow, notified all of the parties on the proceedings.

**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.**

#### 8.1.1 Public consultation on the EIA stage for Task 3A.1/1

##### Section 1 and Section 2:

The Regional Director for Environmental Protection in Cracow received an application of Mr. Jarosław Maciaś, representative of Sweco Engineering Sp. z o.o. in Cracow, acting in the name of the Investor, i.e. Małopolskie Board for Amelioration and Water Structures in Cracow, dated 07/22/2016, on the issuance of a decision on environmental conditions. After provision of required explanations and supplements to the application, the formal proceedings for issuance of a decision on environmental conditions were commenced:

- The RDOŚ in Cracow informed all of the parties in notification dated 10/21/2016, ref. no.: OO.4233.4.2016.BM, about the commencement of proceedings for the issuance of ED. Due to the fact that the number of parties exceeds 20, in accordance with Article 74 (3) of 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 (EIA Act), 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: Regional Directorate for Environmental Protection in Cracow from 10/21/2016 to 11/02/2016, City Office of Cracow from 10/24/2016 to 11/08/2016. 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 Environment Information Centre;
- After analysis of the material provided with application on the issuance of Environmental Decision for the subject Works Contract it was assumed that no significant impact on the environment is expected and therefore there is no need for an environmental impact assessment. The Regional Director for Environmental Protection in Cracow stated in the Resolution dated 12/02/2016, ref. no.: OO.4233.4.2016.BM, that there is no need to perform an environmental impact assessment for the subject Works Contract. On the same day the RDOŚ in Cracow informed all of the parties in notification dated 12/02/2016, ref. no.: OO.4233.4.2016.BM, on the resolution issued and on the completion of evidence hearing in case of issuing Environmental Decision as well as on the possibility of

acknowledging and commenting collected documentation. Any of the parties did neither comment nor submitted remarks on the subject Contract. The notification was published through placement on notice boards in the: Regional Directorate for Environmental Protection in Cracow from 12/02/2016 to 12/16/2016; City Office of Cracow from 12/02/2016 to 12/19/2016. Furthermore, information on the completion 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 Environment Information Centre;

- As the obligation to perform the environmental impact assessment was not determined, there was no need to assure the public participation in the proceedings, according to Article 79 (1) of the EIA.

Due to necessary extension of the implementation boundaries and the investment impact range, as results from provision of details and establishments on design solutions for Section 1 and Section 2 under Contract 3A.1/1, the Regional Water Management Authority in Cracow, represented by Mr. Radosław Radoń, applied on 05/07/2018, ref. no.: KR.JRP.081.8.11.2018, for modification of the decision on environmental conditions dated January 27, 2017, ref. no.: OO.4233.4.2016.BM. After provision of relevant clarifications and updates to the application, the proceeding to issue a decision modifying the decision on environmental conditions dated 01/27/2017, ref. no.: OO.4233.4.2016.BM, has been commenced.

- The Regional Director for Environmental Protection in Cracow informed all of the parties in notification dated 07/25/2018, ref. no.: OO.420.4.2.2018.BM, about commencement of the proceedings to issue a decision modifying the ED and about a possibility of acknowledging with the case documents. Due to the fact that the number of proceeding parties exceeded 20, in accordance with Article 74 (3) of the Law of October 3, 2008 on access to information on the environment and its protection, public participation in environmental protection and environmental impact assessments (EIA Act), Article 49 of the Administrative Proceeding Code – stating notification of the parties through a public announcement – was applied. The subject notification was successfully placed on the noticeboard of the Regional Directorate for Environmental Protection in Cracow, as well as on the noticeboard of the City Office of Cracow. Furthermore, information on the commencement of proceedings was included in the Public Information Bulletin at the website of the Regional Directorate for Environmental Protection in Cracow, and also in the publicly accessible data register at the website of the Center on Information on the Environment.
- The Regional Director for Environmental Protection in Cracow, while taking into account opinions of units participating in the proceeding (State District Sanitary Inspector in Cracow and Ministry of Maritime Affairs and Inland Navigation in Warsaw), stated in its resolution dated 01/04/2019, ref. no.: OO.420.4.2.2018.BM, that it is not obligatory to implement an environmental impact assessment for the investment in question. Information on the issued resolution was placed on the noticeboard of the Regional Directorate for Environmental Protection in Cracow, included in the Public Information Bulletin at the website of the Regional Directorate for Environmental Protection in Cracow, and also in the publicly accessible data register at the website of the Center on Information on the Environment.
- In the note dated 01/03/2019, ref. no.: PK/OI/15008/11/2019, the Investor's Proxy applied for deviation from application of Article 10 (1) of the Act of June 14, 1960 Administrative

Procedure Code (OJ of 2018, item 2096, as amended), and justified that fast issuance of modification to the decision on environmental conditions is necessary due to the objective of the subject works contract, i.e. flood protection for citizens of Cracow. Furthermore, delays in performance of actions also remain a realistic threat to the Works Contract 3A.1/1, due to the funding method for the task in question (World Bank), which may cause the loss of funds and stoppage of implementation for the following years. Considering the above and the lack of applications and remarks in the course of proceeding, the Proxy's application dated 01/03/2019, ref. no.: PK/OI/15008/11/2019, was accepted. Notification of the parties in the mode under Article 10 (1) of the APC about completeness of the evidence and the possibility of commenting its contents was omitted. Therefore, in accordance with Article 10 (2) of the APC one has resigned of the rule determined under (1) of that Article, and did not provide the parties with a final notification on the collection of complete evidence, what would be associated with a potential possibility of final discussion of the parties on the collected materials and evidence.

- Based upon an application of the Investor – acting through the Proxy – dated 01/03/2019, ref. no.: PK/OI/15008/12/2019, this decision has been made immediately enforceable based upon the mode under Article 108 (1) of the APC. According to Article 108 (1) of the APC, the decision against which one may appeal, may be made immediately enforceable, if it is necessary due to the protection of human health or life or to the protection of state business against heavy losses or to another social interest or significantly important interest of the party.
- As it was not made obligatory to provide an environmental impact assessment for the assignment, it was not necessary to assure a possibility of social participation in the proceeding, in accordance with Article 79 (1) of the EIA Act.

#### **Construction of the left backwater embankment of the Dłubnia River:**

On 03/31/2017 the Regional Director for Environmental Protection in Cracow received an application of Mr. Michał Węgrzyn, representative of Habitat Selection s.c. Kolecki Mateusz, Węgrzyn Michał, Sławkowice 305, 32-020 Wieliczka, acting in the name of the Investor, i.e. Małopolskie Board for Amelioration and Water Structures in Cracow, on the issuance of a decision on environmental conditions for construction of the left backwater embankment of the River Dłubnia. After provision of required explanations and supplements to the application and after the General Director for Environmental Protection informed on submission of application on the issuance of ED, the formal proceedings were commenced:

- According to Article 61 (4) of the Administrative Procedure Code, the RDOŚ in Cracow informed all of the parties in notification dated 05/31/2017, ref. no.: OO.4233.1.2017.BM, about the commencement of proceedings for the issuance of the decision on environmental conditions for the subject contract. The total number of parties exceeded 20, therefore according to Article 74 (3) of 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 (further: EIA Act), Article 49 of the APC was applied, stating notification of the parties via an announcement. The subject announcement was published through placement for 14 days on notice boards in the Regional Directorate for Environmental Protection in Cracow and in the City Office of Cracow. The announcement was displayed on notice boards in the RDOŚ in Cracow from 06/01/2017 to 06/14/2017,

and in City Office of Cracow from 06/01/2017 to 06/16/2017. 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 Environment Information Centre.

- The RDOŚ in Cracow informed all of the parties with the note dated 06/29/2017, ref. no.: OO.4233.1.2017.BM, that it applied to the State Sanitary Inspector in Cracow for the opinion on obligation to perform the environmental impact assessment. The announcement about the commencement of proceedings and about asking PPIS in Cracow for the opinion was displayed on notice boards in the RDOŚ in Cracow from 06/29/2017 to 07/14/2017, and in City Office of Cracow from 06/29/2017 to 07/14/2017. Information on the 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 Environment Information Centre.
- Addressing the sanitary opinion of the State District Sanitary Inspector in Cracow dated 07/17/2017, ref. no.: NZ-PG-420-261/17 ZL/2017/07/75, the Regional Director for Environmental Protection in Cracow stated in the Resolution dated 08/08/2017, ref. no.: OO. 4233.1.2017.BM, that there is no need to perform an environmental impact assessment for the subject Works Contract. on the resolution issued and on the completion of evidence hearing in case of issuing Environmental Decision, as well as on the possibility of acknowledging and commenting collected documentation. The resolution dated 08/08/2017, ref. no.: OO. 4233.1.2017.BM, was published through placement on notice boards in the: RDOŚ in Cracow from 08/08/2017 to 08/22/2017, and City Office of Cracow from 08/09/2017 to 08/24/2017. Furthermore, information on the resolution issued and on the completion of evidence proceeding 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 Environment Information Centre.

### **8.1.2 Public consultation on the EIA stage for Task 3A.1/2**

#### **Section 3:**

The Regional Director for Environmental Protection in Cracow received an application of Mr. Jarosław Maciaś, representative of Sweco Engineering Sp. z o.o. in Cracow, acting in the name of the Investor, i.e. Małopolskie Board for Amelioration and Water Structures in Cracow, dated 07/22/2016, on the issuance of a decision on environmental conditions. After provision of required explanations and supplements to the application, the formal proceedings for issuance of a decision on environmental conditions were commenced:

- The RDOŚ in Cracow informed all of the parties in notification dated 09/27/2016, ref. no.: OO.4233.3.2016.BM, about the commencement of proceedings for the issuance of ED. Due to the fact that the number of parties exceeds 20, in accordance with Article 74 (3) of 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 (EIA Act), 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: Regional Directorate for Environmental Protection in Cracow from 09/29/2016 to 10/14/2016, City Office of Cracow from 10/03/2016 to 10/18/2016, City and



**ENVIRONMENTAL MANAGEMENT PLAN FOR CONTRACT 3A.1:  
WORKS CONTRACT 3A.1/1, WORKS CONTRACT 3A.1/2**

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Commune Office of Wieliczka from 10/03/2016 to 10/18/2016. 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 Environment Information Centre;

- After analysis of the material provided with application on the issuance of Environmental Decision for the subject Works Contract it was assumed that no significant impact on the environment is expected and therefore there is no need for an environmental impact assessment. The Regional Director for Environmental Protection in Cracow stated in the Resolution dated 12/02/2016, ref. no.: OO.4233.3.2016.BM, that there is no need to perform an environmental impact assessment for the subject Works Contract. On the same day the RDOŚ in Cracow informed all of the parties in notification dated 12/02/2016, ref. no.: OO.4233.3.2016.BM, on the resolution issued and on the completion of evidence hearing in case of issuing Environmental Decision as well as on the possibility of acknowledging and commenting collected documentation. Any of the parties did neither comment nor submitted remarks on the subject case. The notification was published through placement on notice boards in the: Regional Directorate for Environmental Protection in Cracow from 12/02/2016 to 12/16/2016; City Office of Cracow from 12/02/2016 to 12/19/2016, City and Commune Office of Wieliczka from 12/05/2016 to 12/19/2016. Furthermore, information on the completion 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 Environment Information Centre;
- As the obligation to perform the environmental impact assessment was not determined, there was no need to assure the public participation in the proceedings, according to Article 79 (1) of the EIA.

Due to provision of details and establishments on design solutions for Contract 3A.1/2 in question, the Regional Water Management Authority in Cracow, represented by Mr. Radosław Radoń, applied on 05/07/2018, ref. no.: KR.JRP.081.8.11.2018, for modification of the decision on environmental conditions dated January 27, 2017, ref. no.: OO.4233.3.2016.BM. After provision of relevant clarifications and updates to the application, the proceeding to issue a decision modifying the decision on environmental conditions dated 01/27/2017, ref. no.: OO.4233.3.2016.BM, has been commenced.

- The Regional Director for Environmental Protection in Cracow informed all of the parties in notification dated 07/25/2018, ref. no.: OO.420.4.1.2018.BM, about commencement of the proceedings to issue a decision modifying the ED and about a possibility of acknowledging with the case documents. Due to the fact that the number of proceeding parties exceeded 20, in accordance with Article 74 (3) of the Law of October 3, 2008 on access to information on the environment and its protection, public participation in environmental protection and environmental impact assessments (EIA Act), Article 49 of the Administrative Proceeding Code – stating notification of the parties through a public announcement – was applied. The subject notification was successfully placed on the noticeboard of the Regional Directorate for Environmental Protection in Cracow, as well as on the noticeboard of the City Office of Cracow. Furthermore, information on the commencement of proceedings was included in the Public Information Bulletin at the website of the Regional Directorate for



Environmental Protection in Cracow, and also in the publicly accessible data register at the website of the Center on Information on the Environment.

- The Regional Director for Environmental Protection in Cracow, while taking into account opinions of units participating in the proceeding (State District Sanitary Inspector in Cracow and Ministry of Maritime Affairs and Inland Navigation in Warsaw), stated in its resolution dated 01/03/2019, ref. no.: OO.420.4.1.2018.BM, that it is not obligatory to implement an environmental impact assessment for the investment in question. Information on the issued resolution was placed on the noticeboard of the Regional Directorate for Environmental Protection in Cracow, included in the Public Information Bulletin at the website of the Regional Directorate for Environmental Protection in Cracow, and also in the publicly accessible data register at the website of the Center on Information on the Environment.
- In the note dated 01/03/2019, ref. no.: PK/OI/15007/13/2019, the Investor's Proxy applied for deviation from application of Article 10 (1) of the Act of June 14, 1960 Administrative Procedure Code (OJ of 2018, item 2096, as amended), and justified that fast issuance of modification to the decision on environmental conditions is necessary due to the objective of the subject Works Contract 3A.1/2, i.e. flood protection for citizens of Cracow. Furthermore, delay in implementation of the measures also remains a realistic threat to the works contract, due to the funding method for Works Contract 3A.1/2 in question (World Bank), which may cause the loss of funds and stoppage of implementation for the following years. Considering the above and the lack of applications and remarks in the course of proceeding, the Proxy's application dated 01/03/2019, ref. no.: PK/OI/15007/13/2019, was accepted. Notification of the parties in the mode under Article 10 (1) of the APC about completeness of the evidence and the possibility of commenting its contents was omitted. Therefore, in accordance with Article 10 (2) of the APC one has resigned of the rule determined under (1) of that Article, and did not provide the parties with a final notification on the collection of complete evidence, what would be associated with a potential possibility of final discussion of the parties on the collected materials and evidence.
- Based upon an application of the Investor – acting through the Proxy – dated 01/03/2019, ref. no.: PK/OI/15007/14/2019, this decision has been made immediately enforceable based upon the mode under Article 108 (1) of the APC. According to Article 108 (1) of the APC, the decision against which one may appeal, may be made immediately enforceable, if it is necessary due to the protection of human health or life or to the protection of state business against heavy losses or to another social interest or significantly important interest of the party.
- As it was not made obligatory to provide an environmental impact assessment for the assignment, it was not necessary to assure a possibility of social participation in the proceeding, in accordance with Article 79 (1) of the EIA Act.

## **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>19, 20</sup>.

### **8.3 Public consultations on EMP (2019)**

The draft of this document is subject to the procedure of public consultations conducted in accordance with the operational policy of the World Bank (OP/PB 4.01).

After preparing the draft EMP and obtaining – upon its basis – the World Bank's acceptance (so-called "OK") for commencing the publication procedure, on February 20, 2020 a digital version of the draft EMP was published at the following publicly accessible websites:

- PGW WP RZGW in Cracow, at: [krakow.wody.gov.pl](http://krakow.wody.gov.pl) (Fig. 1),
- Odra-Vistula Flood Management Project Coordination Unit, at: [www.odrapcu.pl](http://www.odrapcu.pl) (Fig. 2),
- City Office of Cracow, at: [www.bip.krakow.pl](http://www.bip.krakow.pl) (Fig. 3),
- Town and Commune Office of Wieliczka, address: [www.wieliczka.eu](http://www.wieliczka.eu) (Fig.4),

and a hard copy was made available in offices of the following:

- State Water Holding Polish Waters Regional Water Management Authority in Cracow, Project Implementation Office, 22. Piłsudskiego Str., 31-109 Cracow, room no. 208, on working days between 7:00 a.m. and 3:00 p.m.,
- OVFM Project Office, AECOM Polska Sp. z o.o., 1. Pokoju Al. (building K1), 31-548 Cracow, on working days from 7:30 a.m. to 3:30 p.m..

Detailed information on the access to this document and on the possibility of informing conclusions and comments (along with indication of detailed contact data: e-mail address, snail mail addresses, where the draft document was made available, office opening hours) were publicly informed in the Announcement (Fig. 5) available between **02/20/2020** and **03/04/2020** in the following locations:

PGW WP RZGW in Cracow, at: [krakow.wody.gov.pl](http://krakow.wody.gov.pl) (Fig. 1),  
Odra – Vistula Flood Management Project Coordination Unit, at: [www.odrapcu.pl](http://www.odrapcu.pl) (Fig. 2),  
City Office of Cracow, at: [www.bip.krakow.pl](http://www.bip.krakow.pl) (Fig. 3),  
Town and Commune Office of Wieliczka, address: [www.wieliczka.eu](http://www.wieliczka.eu) (Fig.4),  
local press – **Dziennik Polski** (Fig. 6);  
information boards in the following: PGW WP RZGW in Cracow, Town and Commune Office of Wieliczka, Podgórze Culture Center, near the church at Półanki Str., and in locality of Brzegi (Fig. 7-11).

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,

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<sup>19</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>20</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)

which was planned for **March 5, 2020** (including information on a place, date and time of the meeting).

The publication of the draft EMP, officially launched on **February 20, 2020**, was completed after 10 working days, i.e. on **March 4, 2020**. During the publication period the visits of persons acknowledging the available draft EMP were not observed. Until the completion of works on this report neither additional remarks nor questions were provided in relation to contents of the draft EMP.

After completion of the publication, an opened meeting for interested people, organizations and institutions was held on **March 5, 2020 at 3:00 p.m.** in Hotel Centrum, Centrum E 12 Estate at Jana Pawła II Av., 31-934 Cracow, where a public presentation of and discussion on the draft EMP were organized (Fig. 12-15). 13 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).

The meeting was started by Mrs. Monika Piszczek – PIO Manager. After a short welcoming she presented objectives of the meeting and invited the participants to ask questions after the presentation.

The presentation of the draft EMP for Contract 3A.1 was done by Mr. Artur Adamski – Senior Supporting Expert for Environmental Management in the team of the Engineer/Consultant. The lecturer provided the attendees with basic data on the OVFM Project and discussed the most important assumptions under Component 3 (Flood Protection of the Upper Vistula). Subsequently, main design assumptions for Contract 3A.1 *Modernization of Vistula embankments in Cracow* were presented. After discussing design and technical assumptions, the lecturer presented selected procedural and organizational aspects of that assignment, and informed the most important conclusions drawn from the environmental impact assessment. The second part of the presentation was related to the Environmental Management Plan. Information on the specificity of the EMP were presented, structure of the document was discussed, and contents of particular EMP chapters for Contract 3A.1 were characterized, with special consideration of Appendix 1 and Appendix 2 to the EMP. In the end the lecturer discussed the role of the EMP within the framework of the works contract – both: at the stage of bidding procedures, as well as during the performance – and presented the organizational structure and planned methods of supervision over implementation of the EMP.

After completion of the presentation the lecturer invited the attendees to ask questions. Particular questions are given below, including answers provided:

- 1) *What is the schedule of works? Does the Contractor plan to perform the works within all three sections simultaneously or will they be performed in a sequence (section after section)?*

The works shall be performed in accordance with the Performance Schedule provided by the Contractor, after its selection in the bidding process. Implementation of a bidding procedure is planned for this year. The construction works are planned for the years 2021 – 2022.

For the purpose of optimizing the performance, the construction works may be performed within several sections simultaneously. We expect that the works would be performed simultaneously, while keeping the division into particular sections within a given embankment.

Within the framework of the OVFM Project it is planned – in addition to Contract 3A.1 under this EMP – to close the flood protection system for the City of Cracow through the following: *Extension of a section of the right embankment downstream of the Dąbie Barrage, including development of a flood gate in the area of a repair yard* (Contract 3A.4), and *Development of a flood gate at the left flood embankment in the area of water intakes for the Sędzimir Steel Mill in Cracow* (Contract 3A.5). Both of the Contracts border and are linked with the extension of embankments under Contract 3A.1. It is expected that the works planned within sections of embankments directly neighboring the planned development of the flood gate shall be performed in other time to eliminate potential accumulation of impacts.

**2) *Is it planned to develop bicycle paths on the embankment crest?***

In 2019, due to initiative of the authorities of the City of Cracow, discussions with a representative of the Communal Facilities and Transportation Authorities in Cracow were held to analyze the possibilities of developing an asphalt course for bicycle paths on the crest of embankments to be redeveloped under Contract 3A.1, at co-funding by the City of Cracow.

The OVFM Project shall be financed by resources of e.g. the World Bank, which shall only be used for flood protection; thus, the works not associated with flood protection cannot be funded under the Project.

However, discussions are in progress to conclude an agreement between the City Office of Cracow and the PGW WP RZGW in Cracow to adapt the embankment crest within the framework of Contract 3A.1 to provide a subbase for the bicycle path. Consecutively, after completion of the works associated with the extension of embankment, the Road Authorities for the City of Cracow would develop an asphalt course for the purpose of the bicycle path.

The present structure of the embankment crest's surface guarantees collision-free traffic of bicycles for recreational purposes; however, the case requires making establishments with the Polish Waters in order to establish a discipline policy for technical facilities, overriding objective of which is the flood protection. The policy shall foresee proper marking for the paths, forbidding riding on the slopes and disassembly of geodetic devices placed on the embankment crest. Traffic of quads and motocross bikes shall also be forbidden.

- 3) *How the potential adverse impact of soil mass deliveries on the condition of works in vicinity of the performance site shall be limited? Is the Contractor obliged to repair courses of those roads, which would be damaged due to performance of the construction works?*

Due to technological reasons main deliveries of soil mass shall be done within the embanked area. However, it is possible to provide deliveries on public roads in unavoidable cases.

For the purpose of obtaining the IPIP decision, the Designer applied to the Communal Facilities and Transportation Authorities in Cracow for provision of technical conditions for performance of the works. Those conditions determine e.g. permissible tonnage for particular roads.

Additionally, on the performance stage, the Contractor needs to agree on the entire traffic arrangement with the roads administrator (ZKiT). The Contractor is also obliged to conclude an agreement with roads for financing potentially necessary repairs and for providing a relevant budget for that purpose.

The Contractor shall be obliged – prior to the commencement of the works – to make an inventory of roads condition, including photo documentation, to monitor the condition of roads during the performance on an ongoing basis, to maintain the roads in a condition not posing risk to the neighborhood and to the natural environment (sweeping, sprinkling), to provide periodical inspections for the condition of roads in attendance of the road administrator, and to determine necessary current repairs and measures keeping the proper condition of the roads.

Another issue refers to houses, as not all of the buildings are adapted to such loads. The Contractor shall be obliged to make photos of all of the houses, where tremors may occur, to monitor the condition of building, as well as to react on an ongoing basis to potential failures.

- 4) *On which stage shall those establishments be made? Is it going to be postponed?*

The Contractor shall not have the right to transport the goods via public roads within the city without an agreement with the City Office of Cracow. After announcing the result of the bidding, the Contractor has a month for preparing itself for the commencement of works – meanwhile a construction plan is provided and the site facilities are handed over, and the Contractor needs to make any establishments and conclude agreements required in that time.

Among others, the Contractor is obliged to develop a works organization plan, which needs to be priorly consulted with the road administrator.

Financing the Project by the World Bank is a huge advantage, as it requires provision of an Environmental Management Plan, and the Contractor needs to meet all requirements under the Polish Law and the European Law. Additionally, the Project is strictly monitored in environmental terms, the issue of roads safety and roads cleanliness are closely monitored by the entire team of experts.

- 5) *Is it planned to use the River Vistula as a potential delivery route for soil mass and other materials required for the purpose of construction process?*

Water deliveries are permitted, depending on the source of materials applied for the construction of embankments. A deciding feature is the location of a soil deposit, the quality of material, its utility, and the possibility of developing a temporary reloading yard. In case the Contractor decides about water transportation, the Contractor cannot use the existing havens, piers, which are not adapted to that purpose.

- 6) *Is it planned to re-use all of the soil mass or its part, which currently forms the existing embankments planned for redevelopment?*

Grounds located within the construction site (including soil mass) shall primarily be managed on the construction site. The remaining excess of the ground shall be applied in accordance with design documentation.

The surface fertile layer, i.e. top-soil, is removed and relocated to a site in vicinity of the embankment, so it would not hamper performance of the works at the embankment, and it shall be stock-piled and protected against polluting, passing over, and condensation until its re-use for final shaping of the embankment and the areas in vicinity.

- 7) *Is there a risk that some waste from the construction site (e.g. soil) would be stored in the area beyond the construction site and left there after completion of the works?*

Until the soil mass is placed within the construction site it has a status of soil mass. If it would be removed from the construction site, it would have a status of waste. Currently, very rigorous legal acts referring to waste management are binding in Poland.

In case of Contract 3A.1 it is not possible to store waste beyond the area of construction site. Prior to the commencement of works the Contractor shall develop a *Waste Management Plan*, determining proceeding method for the waste – production of which is expected during the performance of works – and including e.g. conditions for treatment of waste as given in this EMP, and shall present it for the purpose of obtaining the Engineer's acceptance.

- 8) *Why are there several types of embankment redevelopment methods (one of them includes application of PHD foil) with various methods of sealing? Why a different method was applied in case of the Lasówka Fort than in case of other sections?*

The areas where the investment shall be implemented are different to each other; thus, it is necessary to apply different construction materials, various technologies.

The area of the Lasówka Fort is subject to the conservator's protection. For the purpose of obtaining the IPIP decision, the Designer applied to the Heritage Conservator for establishing the performance conditions. In order to protect the area subject to the conservator's protection, the Designer foresaw application of relevant technologies limiting the works only to the crest of the embankment to be redeveloped.

- 9) *Would modification of membranes at sections not result in deterioration of the quality for performed works?*

No. Over the entire length of the embankment tight membranes shall be developed in the body and in the subbase, up to a depth of 6 m. Only a different technology would be applied to include necessary protection of the area subject to the conservator's protection.

*10) Why does chapter 7.1.4 of the draft EMP plans performance of water quality tests for the first water-bearing level even in case of minor (spot) emission of pollutions to the ground and water environment? Such tests are very expensive and time-consuming, and their performance in case of minor-scale leakages seems to be unnecessary.*

Considering the geological specificity of the subbase in the area of the planned assignment (lenticular arrangement of layers of permeable subbase and non-permeable subbase of variable thickness) it would factually be worthy to address purposefulness of testing the water quality for the first water-bearing level in case of potential small-scale and short-range leakages of pollutions (especially spot ones). The Consultant shall once again analyze the aforementioned issue and – depending on the conclusions made – implement relevant changes to the Environmental Management Plan.

After answering all of the questions the meeting was over.

Remarks and motions handed over during the debate were analyzed in terms of necessary corrections to the final version of the document, and subsequently the changes were introduced during the edition of the final version of the EMP. After updating the document with a report on publication procedure and after some corrections to the text and to appendices (correction of mistakes identified in the publication period), the final EMP shall be submitted to the World Bank for the purpose of obtaining the final acceptance clause, so-called “no objection”.

**Figure 1.** Announcement on public consultations for the draft EMP published at the website of the PGW WP RZGW in Cracow



## ENVIRONMENTAL MANAGEMENT PLAN FOR CONTRACT 3A.1: WORKS CONTRACT 3A.1/1, WORKS CONTRACT 3A.1/2

Regionalny Zarząd Gospodarki Wodnej w Krakowie

Zbiornik Świnna Poręba

Kontakt

Układ

Opcje

 Państwowe  
Gospodarstwo Wodne  
Wody Polskie

O Wodach Polskich

Aktualności

Nasze działania

Zamówienia publiczne

Media

Kontakt



Wody Polskie / Aktualności / Obwieszczenie z dnia 19.02.2020r.

### Obwieszczenie z dnia 19.02.2020r.

Stworzone: 19 lutego 2020

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; Podkomponentu 3A Ochrona przed powodzią Krakowa i Wieliczki, Kontraktu 3A.1 Rozbudowa wałów przeciwpowodziowych rzeki Wisły w Krakowie na terenie Miasta Kraków (powiat i gmina Miasto Kraków) oraz miejscowości Brzegi (powiat wielicki, gmina Wieliczka) w województwie małopolskim (nazywany dalej PROJEKTEM PLANU ZARZĄDZANIA ŚRODOWISKIEM).

Każdy zainteresowany może:

**A)** zapoznać się z PROJEKTEM PLANU ZARZĄDZANIA ŚRODOWISKIEM od dnia 20.02.2020r. do dnia 04.03.2020r. (10 dni roboczych), w siedzibie:

- Państwowego Gospodarstwa Wodnego Wody Polskie Regionalnego Zarządu Gospodarki Wodnej w Krakowie, Jednostka Realizująca Projekt, ul. Piłsudskiego 22, 31-109 Kraków, pokój nr 208, w dniach roboczych od godziny 7:00 do 15:00;
- 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 - [krakow.wody.gov.pl](http://krakow.wody.gov.pl), - Urzędu Miasta Krakowa pod adresem - [www.bip.krakow.pl](http://www.bip.krakow.pl), - Urzędu Miasta i Gminy Wieliczka pod adresem - [www.wieliczka.eu](http://www.wieliczka.eu), - Biura Koordynacji Projektu Ochrony Przeciwpowodziowej Dorzecza Odry i Wisły pod adresem - [www.odrapcu.pl](http://www.odrapcu.pl).

**B)** składać uwagi i wnioski o zmianę 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 20.02.2020r. do dnia 04.03.2020r.

Instytucją właściwą do rozpatrzenia uwag i wniosków jest PGW WP RZGW w Krakowie (osoba do kontaktu: Monika Grzywacz, Małgorzata Myrta, tel. +12 62 84 208).

Po ww. okresie udostępnienia dokumentu do wglądu, w dniu 05.03.2020r. o godzinie 15:00, w Hotelu Centrum, os. Centrum E 12 przy al. Jana Pawła II, 31-934 Kraków, 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 ogłoszenie w prasie (Dziennik Polski – czasopismo o zasięgu lokalnym), wywieszenie na tablicach ogłoszeń w PGW WP RZGW w Krakowie, Urzędzie Miasta Krakowa, Urzędzie Miasta i Gminy Wieliczka, jak również na stronach internetowych instytucji wskazanych powyżej.

POLECANE ARTYKUŁY



Rzeka to nie tory przeszkód. Nie pozwólmy na ich rozjeżdżanie!

NASZE JEDNOSTKI




Dokumenty do pobrania



## ENVIRONMENTAL MANAGEMENT PLAN FOR CONTRACT 3A.1: WORKS CONTRACT 3A.1/1, WORKS CONTRACT 3A.1/2

**Figure 2.** Digital version of the draft EMP and announcement on public consultations for the draft EMP published at the website of the OVFM PCU.



Biuro Koordynacji Projektu Ochrony Przeciwpowodziowej Dorzecza Odry i Wisły  
Odra-Vistula Flood Management Project Coordination Unit

[Strona główna](#) [POFOG](#) [POFOGIR](#) [Ogłoszenia](#) [KFOR](#) [Kampanie](#) [Serwis](#) [EN](#)

## OGŁOSZENIA

OGŁOSZENIE

Zgodnie z wymogami Biura Ścisłego (zestawu specyficzne OP 4.3), instytucji współfinansującej, wdrażając Projekt Ochrony Przeciwpowodziowej w Dorzeczu Odry i Wisły, proszę się do publicznej wiadomości, że następuje:

**Publikacja Planu Zarządzania Środowiskiem Wody Polskiej Regionalnego Zarządu Gospodarki Wodnej w Krakowie (PZGW RP A2024 w Krakowie), ukończona do ogólnego przyjęcia przez zainteresowanych osobom i instytucjom PROJEKTU PLANU ZARZĄDZANIA ŚRODOWISKIEM dla Komponentu 3 (Ochrona przed powodzią Śródną Wisły, Podkomponent 3A (Ochrona przed powodzią Krakowa i Włocławek), Komponent 3A.1 (Rozbudowa walów przeciwpowodziowych rzeki Wisły w Krakowie na terenie Miasta Kraków (zestaw) i gmina Miasto Kraków) oraz miejscowości Brzegi (zestaw) wsielisk, gmina Włocławek) w województwie łódzkim (zestaw) w ramach PROJEKTU PLANU ZARZĄDZANIA ŚRODOWISKIEM, który zamierzamy wydać:**

A) do ogólnego przyjęcia PROJEKTU PLANU ZARZĄDZANIA ŚRODOWISKIEM od dnia 20.02.2024r. do dnia 04.03.2024r. (15 dni roboczych), w siedzibie:

- Państwowego Zarządu Gospodarki Wodnej, Wody Polskiej Regionalnego Zarządu Gospodarki Wodnej w Krakowie, Jednostka Realizująca Projekt, ul. Piłsudskiego 22, 31-106 Kraków, pokój nr 208, w dniach roboczych od godziny 7:00 do 15:00;
- Biuro Projektu (POFOG, A2024) Polska Sp. z o.o., Al. Piłsudskiego 1 (budynki RT) 31-548 Kraków, w dniach roboczych od godziny 7:00 do 15:00.

lub poprzez stronę internetową:

- PZGW RP A2024 w Krakowie;
- Urząd Miasta Kraków;
- Urząd Miasta i Gminy Włocławek;
- Projekt Ochrony Przeciwpowodziowej Serwisu Odry i Wisły;

B) składając uwagi i ewentualne zastrzeżenia PROJEKTU PLANU ZARZĄDZANIA ŚRODOWISKIEM w formie pisemnej oraz ustnej do projektanta pod adresem, adresatem lub w formie elektronicznej na adres e-mail [krakow@owfm.gov.pl](mailto:krakow@owfm.gov.pl) w dniach roboczych od 20.02.2024r. do dnia 04.03.2024r.

Po instytucji odpowiedzialnej do rozpatrzenia uwag i ewentualnie po PZGW RP A2024 w Krakowie (zestaw) do korespondencji: Monika Bógwasiak, Właścicielka Wynaj, tel. +12 62 84 200. Po tym okresie udostępnienia dokumentu do ogólnego przyjęcia, w dniu 05.03.2024r. o godzinie 15:00, w Hotelu Centrum, na Centrum E 12 przy ul. Jana Pawła II, 31-034 Kraków, odbędzie się spotkanie otwarte dla wszystkich zainteresowanych, na którym zostaną przedstawione informacje o PROJEKcie PLANU ZARZĄDZANIA ŚRODOWISKIEM oraz możliwości jego publikacji. Dokumenty tego dokumentu, a także uwagi i ewentualne zastrzeżenia do niego, zostaną udostępnione w formie tego spotkania. Odniesienie to zostało podane do wiadomości poprzez ogłoszenie w prasie (Gazeta Polska) – załącznik do naszego listu, opublikowane na łamach ogłoszeń w PZGW RP A2024 w Krakowie, Urząd Miasta Kraków, Urząd Miasta i Gminy Włocławek, jak również na stronach internetowych instytucji wykonujących projekt.

[Zobaczmy do projektu](#)

## ENVIRONMENTAL MANAGEMENT PLAN FOR CONTRACT 3A.1: WORKS CONTRACT 3A.1/1, WORKS CONTRACT 3A.1/2

**Figure 3.** Announcement on public consultations for the draft EMP published at the website of the City Office of Cracow.

The screenshot shows the official website of the City Office of Cracow (Miasto Kraków). The header includes the city's logo and navigation links. The main content area features a public consultation announcement titled "OBWIESZCZENIE PGW WP RZGW w Krakowie". The text of the announcement is as follows:

**OBWIESZCZENIE PGW WP RZGW w Krakowie**

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), udostępnia do wglądu wszystkim zainteresowanym osobom i instytucjom PROJEKT PLANU ZARZĄDZANIA ŚRODOWISKIEM dla Komponentu 3 Ochrona przed powodzią Górnej Wisły, Podkomponentu 3A Ochrona przed powodzią Krakowa i Wieliczki, Kontraktu 3A.1 Rozbudowa walów przeciwpowodziowych rzeki Wisły w Krakowie na terenie Miasta Kraków (powiat i gmina Miasto Kraków) oraz miejscowości Brzeg (powiat wielicki, gmina Wieliczka) w województwie małopolskim (nazywany dalej PROJEKTEM PLANU ZARZĄDZANIA ŚRODOWISKIEM).

Każdy zainteresowany może:

A) zapoznać się z PROJEKTEM PLANU ZARZĄDZANIA ŚRODOWISKIEM od dnia 20.02.2020r. do dnia 04.03.2020r. (10 dni roboczych), w siedzibie:

Państwowego Gospodarstwa Wodnego Wody Polskie Regionalnego Zarządu Gospodarki Wodnej w Krakowie, Jednostka Realizująca Projekt, ul. Płudskiego 22, 31-109 Kraków, pokój nr 208, w dniach roboczych od godziny 7:00 do 15:00;

Biura 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 - [krakow.wody.gov.pl](http://krakow.wody.gov.pl),
- Urzędu Miasta Krakowa pod adresem - [www.bip.krakow.pl](http://www.bip.krakow.pl),
- Urzędu Miasta i Gminy Wieliczka pod adresem - [www.wieliczka.eu](http://www.wieliczka.eu),
- Biura Koordynacji Projektu Ochrony Przeciwpowodziowej Dorzecza 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 20.02.2020r. do dnia 04.03.2020r.

Instytucja właściwa do rozpatrzenia uwag i wniosków jest PGW WP RZGW w Krakowie (osoba do kontaktu: Monika Grzywacz, Małgorzata Myrta, tel.+12 62 84 208). Po ww. okresie udostępnienia dokumentu do wglądu, w dniu 05.03.2020r. o godzinie 15:00, w Hali Centrum, os. Centrum E 12 przy al. Jana Pawła II, 31-034 Kraków, 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 płynących do niego w szczególności w Krakowie i Wieliczce.

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

**LINK DO DOKUMENTÓW**

Podmiot publikujący:	WYDZIAŁ BEZPIECZEŃSTWA I ZARZĄDZANIA KRYZYSOWEGO
Osoba odpowiedzialna:	BOGDAN KLIMEK - DYREKTOR WYDZIAŁU
Osoba publikująca:	PIOTR RUSOWICZ
Data wytworzenia:	2020-02-20
Data publikacji:	2020-02-20
Data aktualizacji:	2020-02-20

Dziennik zmian dokumentu

**ENVIRONMENTAL MANAGEMENT PLAN FOR CONTRACT 3A.1:  
WORKS CONTRACT 3A.1/1, WORKS CONTRACT 3A.1/2**

**Figure 4.** Announcement on public consultations for the draft EMP published at the website of the Town and Commune Office of Wieliczka.



**ENVIRONMENTAL MANAGEMENT PLAN FOR CONTRACT 3A.1:  
WORKS CONTRACT 3A.1/1, WORKS CONTRACT 3A.1/2**

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**Figure 5.** Announcement on public consultations for the draft EMP 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.1 *Modernization of Vistula embankments in Cracow* in the area of the City of Cracow (District of the City of Cracow, Municipality of Cracow) and the locality of Brzegi (District of Wieliczka, Commune of Wieliczka) 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 **02/20/2020** till **03/04/2020** inclusive (10 working days), in the office of:

- State Water Holding Polish Waters Regional Water Management Authority in Cracow, Project Implementation Office, 22. Piłsudskiego Str., 31-109 Cracow, on working days between 7:00 a.m. and 3:00 p.m.,
- OVFM Project Office, AECOM Polska Sp. z o.o., 1. Pokoju Al. (building K1), 31-548 Cracow, on working days from 7:30 a.m. to 3:30 p.m.;

or via a website:

- PGW WP RZGW in Cracow, at – [krakow.wody.gov.pl](http://krakow.wody.gov.pl),
- City Office of Cracow, at – [www.bip.krakow.pl](http://www.bip.krakow.pl),
- Town and Commune Office of Wieliczka, address – [www.wieliczka.eu](http://www.wieliczka.eu),
- 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), on working days from **02/20/2020** to **03/04/2020**.

State Water Holding Polish Waters Regional Water Management Authority in Cracow is a competent institution to consider the remarks and motions (contact persons: Monika Grzywacz and Małgorzata Myrta, telephone +48 12 62 84 208).

After making the document available for review, there will be a **meeting** on **03/05/2020** at **3:00 p.m.** in Hotel Centrum, Centrum E 12 Estate at Jana Pawła II Av., 31-934 Cracow, **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 remarks and motions submitted to the document, both: prior to the meeting, as well as during the meeting itself, shall be held.

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



# ENVIRONMENTAL MANAGEMENT PLAN FOR CONTRACT 3A.1: WORKS CONTRACT 3A.1/1, WORKS CONTRACT 3A.1/2

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

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**Ogłoszenia drobne**

**OBWIESZCZENIE**

Zgodnie z wymogami Banku Światowego (polityka operacyjna OP-4.01), Instytucji współfinansującej realizację Projektu Ochrony Przeciwpowodziowej w Dorzeczu Odry i Włdy,

**podaje się do publicznej wiadomości, co następuje:**

Państwowe Gospodarstwo Wodne Wody Polskie Regionalny Zarząd Gospodarki Wodnej w Krakowie (PGOW WP RZGW) w Krakowie, udostępni do wglądu wytyczne zamierzonego projektu i Instytucjom PROJEKTU PLANU ZARZĄDZANIA ŚRODOWISKIEM dla Kompendium 3. Ochronę przed powodzią Górną Włdą, Podkomponentu 3A. Ochrona przed powodzią Krakowa i Wieliczki, Kontraktu 3A.1 Budowa i modernizacja obiektów przeciwpowodziowych 1201 Włdy w Krakowie na terenie Miasta Krakowa (powiat i gmina Miasto Kraków) oraz miejscowości Brzegi (powiat wielicki, gmina Wieliczka) w województwie małopolskim (nazywany dalej PROJEKTEM PLANU ZARZĄDZANIA ŚRODOWISKIEM).

Każdy zainteresowany może:

A) zapoznać się z PROJEKTEM PLANU ZARZĄDZANIA ŚRODOWISKIEM od dnia **20.02.2020 r.** do dnia **4.03.2020 r.** (10 dni roboczych) w siedzibie:

- Państwowego Gospodarstwa Wodnego Wody Polskie Regionalnego Zarządu Gospodarki Wodnej w Krakowie, Jednostka Realizująca Projekt, ul. Piłsudskiego 22, 31-109 Kraków, pokój nr 208, w dniach roboczych od godziny 7:30 do 15:00,
- 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 15:00,
- lub poprzez stronę internetową:
- PGOW WP RZGW w Krakowie pod adresem - [krakow.wody.gov.pl](http://krakow.wody.gov.pl),
- Urzędu Miasta Krakowa pod adresem - [www.bip.krakow.pl](http://www.bip.krakow.pl),
- Urzędu Miasta i Gminy Wieliczka pod adresem - [www.wieliczka.eu](http://www.wieliczka.eu),
- Biura Koordynacji Projektu Ochrony Przeciwpowodziowej Dorzecza Odry i Włdy pod adresem - [www.opdow.pl](http://www.opdow.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 **20.02.2020 r.** do dnia **4.03.2020 r.**

Instytucja właściwa do rozpatrzenia uwag i wniosków jest PGOW WP RZGW w Krakowie (osoba do kontaktu: Monika Grzywańska, Małgorzata Myrta, tel. +12 62 84 200).

Po ww. okresie udostępnienia dokumentu do wglądu w dniu **5.03.2020 r.** o godzinie 15:00, w Hotelu Centrum, os. Centrum E 12 przy al. Jana Pawła II, 31-494 Kraków, 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 ogłoszenie w prasie (*Dziennik Polski*) - czasopiśmie o zasięgu lokalnym; wywieszenie na tablicach ogłoszeń w PGOW WP RZGW w Krakowie, Urzędzie Miasta Krakowa, Urzędzie Miasta i Gminy Wieliczka, jak również na stronach internetowych Instytucji wskazanych powyżej.

**INFORMATOR MEDYCZNY**

Jeżeli chcecie Państwo umieścić ogłoszenie:  
Zadzwońcie: 12 688-64-40  
Wysyłajcie maila: [reklama.krakow@polskapress.pl](mailto:reklama.krakow@polskapress.pl)

**Zakład Rentgena i USG WYROBEK**

**DIAGNOSTYKA OBRAZOWA**

**REZONANS MAGNETYCZNY**  
KRAKÓW, ul. Prydyka 39-41, tel. 12 626 32 30  
ul. Teofila Stronczyńskiego 12, tel. 12 421 05 23  
ul. Dąbrowskiego 1, tel. 12 387 02 13  
BYSTRZYCA, ul. Dąbrowskiego 3, tel. 12 312 75 40

**TOMOGRAFIA KOMPUTEROWA**  
KRAKÓW, ul. F. Komarowa 12/13a, tel. 12 426 32 00  
ul. Brodzińskiego 25, tel. 12 642 32 28  
WIELICZKA, ul. Leptakowa 2, tel. 12 273 03 13  
PROSZOWICE, ul. Kopernika 13, tel. 12 388 53 59  
SAKARYNA, ul. Tyńska 15, tel. 12 446 65 98

**RENTGEN-USG**  
KRAKÓW, ul. Świdnicka 25a/2, tel. 12 433 90 43  
ul. F. Komarowa 12/13a, tel. 12 426 32 00  
ul. Komarowa 25, tel. 12 642 32 28  
**MAMMOGRAFIA**  
ul. Świdnicka 25a/2, tel. 12 422 90 43

**GABINET ORTOPEDYCZNO-URAZOWY**  
dr med. Antoni Widawski

**KONSULTACJE I ZABIEGI OPERACYJNE**

Poniedziałek 9.00-18.00  
czwartek 14.00-18.00

Kraków, ul. Krowoderska 17  
Rehabilitacja

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Kraków, ul. Kazimierza Wielkiego 110  
Rehabilitacja (tel. 11-16)  
512 630 64 22

**MEDICINA**

Specjalistyczne Centrum Diagnostyczne Zabiegów

**SZEROKI ZAKRES BADAŃ I KONSULTACJI SPECJALISTYCZNYCH**

**ZABIEGI OPERACYJNE Z POBYTEM W WARUNKACH SZPITALNYCH**

**ENDOSKOPIA PRZEWODU POKARMOWEGO**

**MAMMOGRAFIA, RTG, USG**

**MEDYCYNA PRACY**

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12 266 96 65  
12 266 50 62

ul. GRZEGÓRZECKA 67C  
12 345 70 01 do 05  
800 900 400

ul. ROGÓŻSKIEGO 5  
12 417 35 44  
12 417 33 11

**STOMATOLOGIA**

**GABINET ORTOPEDYCZNO-URAZOWY**  
prof. dr hab. n. med. Daniel Zarzycki

rodzi 17.00-19.00  
Kraków, ul. Masarika 7/II  
Rehabilitacja  
tel. 12 422 69 43  
12 411 54 88

**Samodzielna**

z odwołaniem, praca dodatkowa  
zobowiązanie 76, 51809809

**STOLARZ** - praca od zaraz/NIEMCY - tel. 77401561 Cert. 9875

**SLUSZARZ** - praca od zaraz/NIEMCY - tel. 77401561 Cert. 9875

**Zdrowie**

**GYNKOLOGIA**

**GINEKOLOG**, tel. 601-702-068

**STOMATOLOGIA**

**Akryl, protezy, wyklejki, szkielety, mosty os. Bole, Wierzbica 1, 12/459333**

**EXPRESOWE** - wzmocnienie protezy dentystyczne, naprawy, 600260221

**INNE SPECJALIZACJE**

**REUMATOLOGIA-REHABILITACJA** Dr Wójcik 12/6552428, 503343942

**ZABIEGI**

**MASAŻ, LECZNICZE**, rehabilitacja - doradzi, długi wyjazd dom 12/4141137

**Usługi**

**AGD RTV FOTO**

ANTEN I RTV dom, 515-412-346

**ANTEN I RTV** napr. mont. 506114163

ANTEN I TELEWIZORA 12-440-06-42

ANTEN I telewizora w klienta w domu gwarancja 12/6458546, 607461028

PRALKA 12/657-47-22, 608-374-349

**BUDOWLANO-REMONTOWE**

**HYDRAULIK-TANIO**, 500-001-101

**BUDOWY** i remonty: 512-649-073

**ODCIĘPIENIA**, drenaż 512-649-073

**TRACHTY** poddasza kominy 512649073

**OGRODZENIA** drenaż 512649073

**TREMONTY**, wykłoczenia 512649073

**BRUKARSKA** firma tanio 509 753 280

**BRUKARSTWO** solidnie, 517-653-473

**BRUKARSTWO** tanio 782 190 740

**CYKLINOWANIA** 502-069-155

**CYKLINOWANIE**, okładanie, sprzedaż [www.krakowpark.pl](http://www.krakowpark.pl) ul. Korbońskiego 148, tel. 12/656-35-29, 601-444-960

**CYKLINOWE**, układam 603-399-522

**DACHY** Remonty 511-334-410

**FLIZOWANIE** tanio 604-451-619

**GLAZ**, malowanie, remont 505847507

**HYDRAULIK** Anariz 796-389-280

**HYDRAULIK** Anariz K-ba 699717161

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**FOTOWOLTAIKA-TANIO** 515663956

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**BRAMY** napędy 517-156-744

**DASZKI** zabudowania 507-366-374

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**DOMOFON** 12645-29-58, 600-452-958

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**OGRODOWE** czyszczenie 608-037-524

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**WYWOZ** wszystko tanio 608037524

**WYWOZ** wszystko tanio 517510580

**Turystyka**

**KOLOBRZEGI** Wielkanoc, wczasy, zabieg, Tania, 94/354-36-65

**Zwierzęta**

**OWCZARKI** niem labradory 504031935

**Różne**

**OBIAŁOWE** domowe smaczne - i zdrowe z dostawą szklank. Tel. 12/425-26-38, 601-51-99-21

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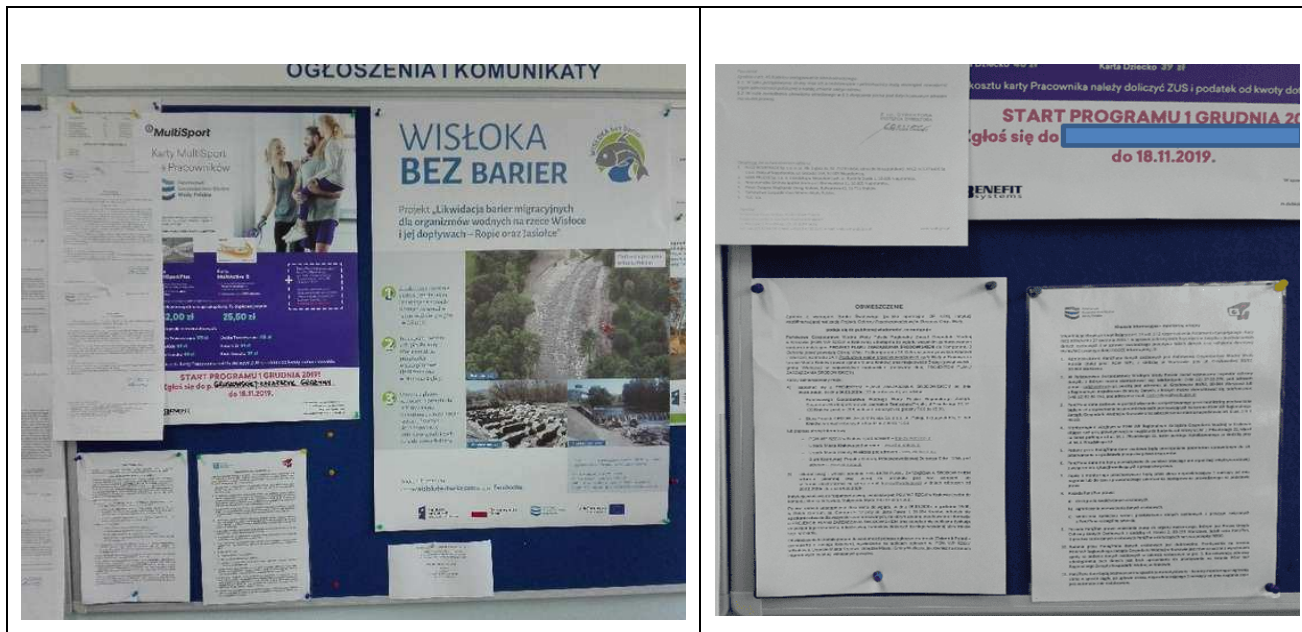
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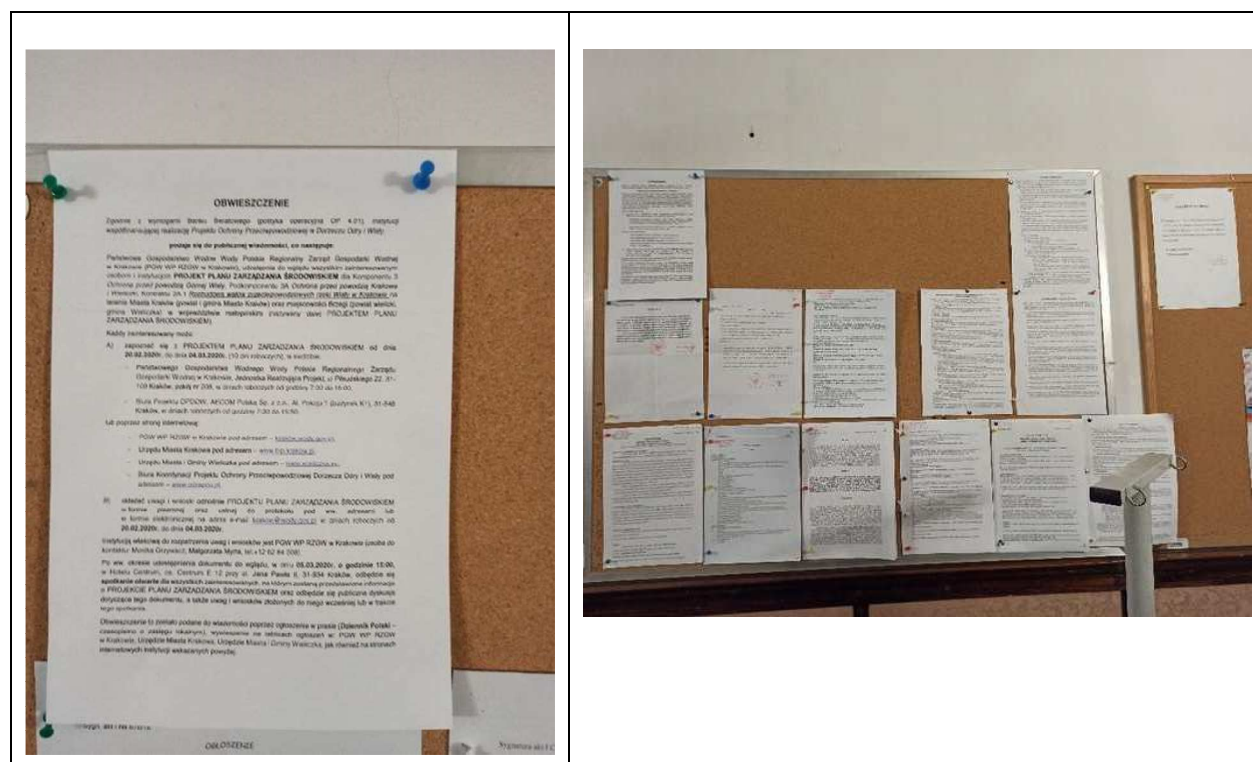
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# ENVIRONMENTAL MANAGEMENT PLAN FOR CONTRACT 3A.1: WORKS CONTRACT 3A.1/1, WORKS CONTRACT 3A.1/2

**Figure 7.** Announcement on public consultations for the draft EMP placed on a notice board in the PGW WP RZGW in Cracow.



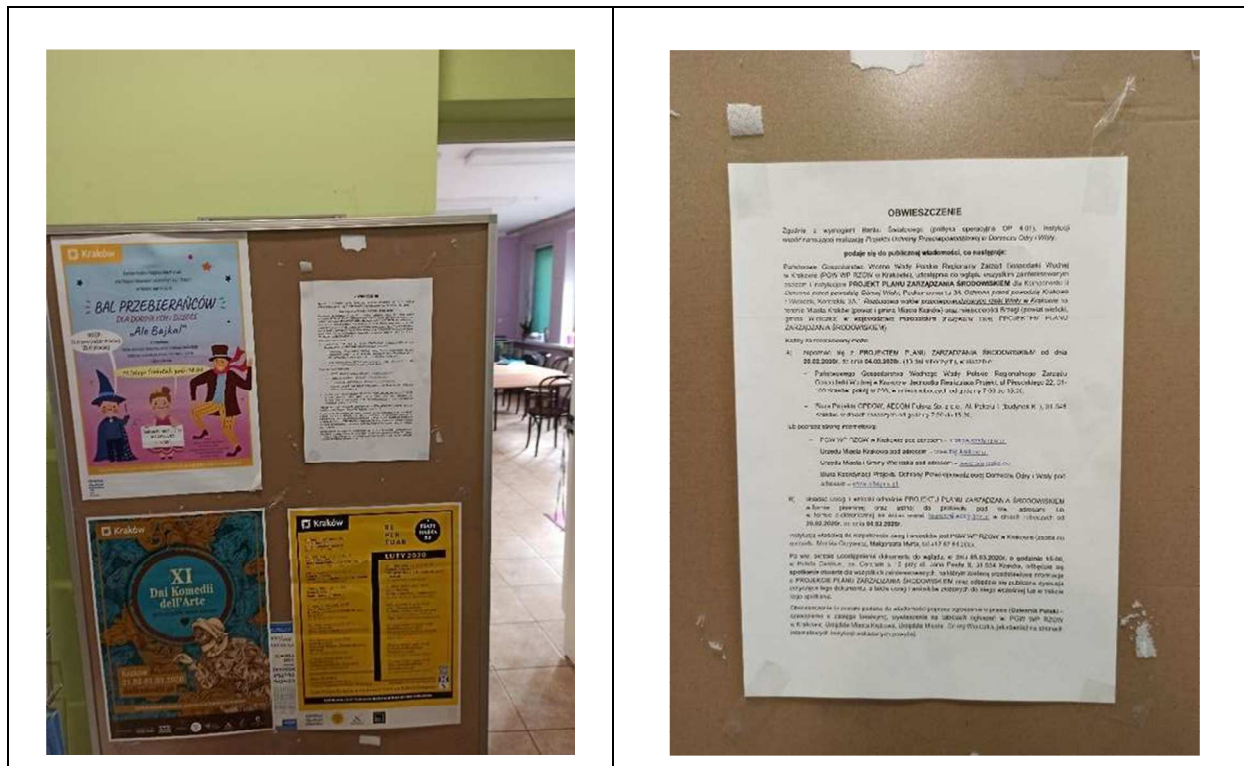
**Figure 8.** Announcement on public consultations for the draft EMP placed on a notice board in the Town and Commune Office of Wieliczka





## ENVIRONMENTAL MANAGEMENT PLAN FOR CONTRACT 3A.1: WORKS CONTRACT 3A.1/1, WORKS CONTRACT 3A.1/2

**Figure 9.** Announcement on public consultations for the draft EMP placed on a notice board in the Podgórze Cultural Center.



**Figure 10.** Announcement on public consultations for the draft EMP placed on a notice board near the church at Półnaki Str



**ENVIRONMENTAL MANAGEMENT PLAN FOR CONTRACT 3A.1:  
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**Figure 11.** Announcement on public consultations for the draft EMP placed on a notice board in locality of Brzegi.





**Figure 12.** Public consultations for the draft EMP held in Hotel Centrum, Cracow, March 5, 2020



**Figure 13.** Public consultations for the draft EMP held in Hotel Centrum, Cracow, March 5, 2020



**Figure 14.** Public consultations for the draft EMP held in Hotel Centrum, Cracow, March 5, 2020



**Figure 15.** Public consultations for the draft EMP held in Hotel Centrum, Cracow, March 5, 2020

## 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) is responsible for the total coordination of implementation of individual EMPs under the OVFMP.

The PCU tasks are as follows:

- 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 OVFM 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 tasks:

- monitoring of the EMP implementation progress;
- financial management and bookkeeping;
- preparing required reports for the needs of EMP implementation monitoring and coordination of its execution by all services engaged 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;
- direct supervision over the correct task 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 Construction Law, Works Contract, the environmental protection law, and others.

### **9.3 Engineer - Consultant**

The role of the Engineer is to support the PIU (PGWWP, 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 of applied construction products, and especially preventing the usage of construction 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 (including a key environmental management expert) and by other staff of the Engineer;
- 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 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.

## **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 this Contract;
- ensuring the permanent environmental, sapper, and archeological supervision (including a team of expert naturalists listed under Appendix 1 to the EMP);
- ensuring the permanent H&S supervision;
- implementation of the Engineer's recommendations (including the recommendations of Engineer's environmental expert 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, Construction site organization plan and Contractor's Environmental and Social Management Plan (C-ESMP) – see also: Chapter 6.15;
- if 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 the 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 (monthly reports, quarterly reports, final report, reports to the RDOŚ/GDOŚ (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 the performance safety for the construction works or of 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 defects notification period, 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.

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

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



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- 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 tasks 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 performance 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 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), both in Polish and in English, in paper and electronic versions, with reference 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: Chapter 3.5) and given in Appendix 1 and in Appendix 2 to the EMP for Contract 3A.1 (Plan of Mitigation Measures, Plan of Monitoring Measures).

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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 the 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 a part of monthly reports or as a separate document.

The PIU shall supply the PCU with quarterly reports in the part referring to tasks 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 (monthly, quarterly, ad-hoc, final) shall be developed by the Contractor and/or Engineer,
- b) Report review by the Engineer,
- c) Submission of the report to the Employer (for information),
- d) Submission to the RDOŚ/GDOŚ (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 Contract completion,
- b) the Engineer: 1 copy of each report in an electronic version for 5 years from the date of the Contract completion,
- c) the Employer: 1 copy of each report in an electronic version for 5 years from the date of the Contract completion.

3) Evaluation:

- 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



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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 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 with supplement titled: "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 1 - the left embankment of the Vistula from the Wandy bridge to the Przewóz barrage, together with the backwater embankments of the Dłubnia River; Section 2 - the left embankment of the Vistula from the Przewóz barrage to Suchy Jar". SWECO, September 2016;
2. Works Contract Information Sheet related to modification of the decision – Materials for application on modification of the decision on environmental conditions for implementation of the Contract titled: "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 1 - the left embankment of the Vistula from the Wandy bridge to the Przewóz barrage, together with the backwater embankments of the Dłubnia River; Section 2 - the left embankment of the Vistula from the Przewóz barrage to Suchy Jar". SWECO, April 2018;
3. Works Contract Information Sheet with supplement titled: "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 3 - the right embankment of the Vistula from the Dąbie barrage to the Przewóz barrage". SWECO, June 2016;
4. Works Contract Information Sheet related to modification of the decision – Materials for application on modification of the decision on environmental conditions for implementation of the Contract titled: "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 3 - the right embankment of the Vistula from the Dąbie barrage to the Przewóz barrage". SWECO, April 2018;
5. Works Contract Information Sheet titled: "Construction of the left backwater embankment of the Dłubnia River in Cracow City". Habitat Selection S.C. Kolečki M, Michał Węgrzyn, March 2017;
6. Decision of the Regional Director for Environmental Protection in Cracow dated January 27, 2017 on environmental conditions for the contract titled: "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 1 – the left embankment of the Vistula from the Wandy bridge to the Przewóz barrage, together with the backwater embankments of the Dłubnia River; Section 2 - the left embankment of the Vistula from the Przewóz barrage to Suchy Jar", ref. no.: OO.4233.4.2016.BM;
7. Decision of the Regional Director for Environmental Protection in Cracow dated February 1, 2019, ref. no.: OO.420.4.2.2018.BM, modifying the decision on environmental conditions dated 01/27/2017 for the contract titled: "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 1 – the left embankment of the Vistula from the Wandy bridge to the Przewóz barrage, together with the backwater embankments of the Dłubnia River; Section 2 - the left embankment of the Vistula from the Przewóz barrage to Suchy Jar", ref. no.: OO.4233.4.2016.BM;

8. Decision of the Regional Director for Environmental Protection in Cracow dated January 27, 2017 on environmental conditions for the contract titled: "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 3 – the right embankment of the Vistula from the Dąbie barrage to the Przewóz barrage", ref. no.: OO.4233.3.2016.BM;
9. Decision of the Regional Director for Environmental Protection in Cracow dated January 24, 2019, ref. no.: OO.420.4.1.2018.BM, modifying the decision on environmental conditions dated 01/27/2017 for the contract titled: "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 3 – the right embankment of the Vistula from the Dąbie barrage to the Przewóz barrage", ref. no.: OO.4233.3.2016.BM;
10. Decision of the Regional Director for Environmental Protection in Cracow dated September 4, 2017 on environmental conditions for the contract titled: "Construction of the left backwater embankment of the Dłubnia River in Cracow", ref. no.: OO.4233.1.2017.BM;
11. MasterPlan for the Vistula River Basin. National Water Management Authority, Warsaw 2014;
12. FEASIBILITY STUDY for "Completion of the rehabilitation of the flood embankments of the Vistula River in Cracow: section 1 - the left embankment of the River Vistula from the Wandy Bridge to the Przewóz Barrage, together with backwater embankments of the River Dłubnia; section 2- the left embankment of the River Vistula from the Wandy Bridge to the Przewóz Barrage, together with backwater embankments of the River Dłubnia", SWECO 2018;
13. FEASIBILITY STUDY for "Completion of the rehabilitation of the flood embankments of the Vistula River in Cracow: section 3 - the right embankment of the River Vistula from the Dąbie Barrage to the Przewóz Barrage", SWECO 2018;
14. Architectural and construction design for the assignment titled "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 1 - the left embankment of the Vistula from the Wandy bridge to the Przewóz barrage, together with the backwater embankments of the Dłubnia River; Section 2 - the left embankment of the Vistula from the Przewóz barrage to Suchy Jar";
15. Architectural and construction design for the assignment titled "Completion of the rehabilitation of the flood embankments of the Vistula River in Kraków: Section 3 - the right embankment of the Vistula from the Dąbie barrage to the Przewóz barrage";
16. Architectural and construction design for the assignment titled "Construction of the left backwater embankment of the Dłubnia River in Cracow City";
17. Regional Geography of Poland, Jerzy Kondracki, Wydawnictwo Naukowe PWN, Warsaw 2001;
18. Annual Assessment of Air Quality in Małopolskie Voivodship. Provincial Report for 2018. Provincial Inspectorate for Environmental Protection in Cracow, Cracow 2019;

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19. 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 tasks implemented in 2004 and perspective for the years 2008 – 2011 – Volume I Environmental Protection Programme;
20. World Bank Operational Policy OP 4.01 – Environmental Impact Assessment (<http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTOPM ANAL/0,,contentMDK:20064724~pagePK:64141683~piPK:64141620~theSitePK:502184~isCURL:Y~isCURL:Y~isCURL:Y~isCURL:Y~isCURL:Y,00.html>);
21. Environmental and Social Management Framework, final document, April 2015 ([http://www.odrapcu.pl/doc/OVFMP/Ramowy\\_Plan\\_Zarz%C4%85dzania\\_Srodowiskiem\\_i\\_Spo%C5%82eczenstwem.pdf](http://www.odrapcu.pl/doc/OVFMP/Ramowy_Plan_Zarz%C4%85dzania_Srodowiskiem_i_Spo%C5%82eczenstwem.pdf));
22. Poland – Odra-Vistula Flood Management Project: Environmental and Social Management Framework (<http://documents.worldbank.org/curated/en/2015/04/24502899/poland-odra-vistula-flood-management-project-environmental-social-management-framework>);
23. Odra-Vistula Flood Management Project – Project Operations Manual, Wrocław 2015 ([http://www.odrapcu.pl/doc/POM\\_PL.pdf](http://www.odrapcu.pl/doc/POM_PL.pdf));
24. Website: [http://www.odrapcu.pl/popdow\\_dokumenty.html](http://www.odrapcu.pl/popdow_dokumenty.html);
25. Website: [www.isok.gov.pl/](http://www.isok.gov.pl/);
26. Acoustic maps for the City of Cracow: [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);
27. Geo-service GDOS: <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. ED Sections 1, 2 dated January 27, 2017;
  - Appendix 4b. Clarification ED Sections\_1, 2 dated May 26, 2017;
  - Appendix 4c. Decision of the RDOŚ correcting an editorial mistake (Sections 1, 2) dated January 17, 2018;
  - Appendix 4d. ED Section 3 dated January 27, 2017;
  - Appendix 4e. ED Dłubnia dated September 4, 2017;
  - Appendix 4f. Water-law permit - Sections 1, 2;
  - Appendix 4g. Water-law permit - Dłubnia;
  - Appendix 4h. Municipal Heritage Conservator – opinion dated November 22, 2016;
  - Appendix 4i. CP Podgórze 11/29/2016 – Resolution on relocation of a shrine dated November 29, 2016;
  - Appendix 4j. Municipal Heritage Conservator – archaeological supervision zone, note dated April 21, 2017;
  - Appendix 4k. Municipal Heritage Conservator – establishments on relocation of a shrine dated November 19, 2017;
  - Appendix 4l. Municipal Heritage Conservator – permit for removal of trees dated October 31, 2017;
  - Appendix 4l. Resolution of the RDOŚ correcting editorial mistakes (Dłubnia) dated October 11, 2018;
  - Appendix 4m. Decision modifying the ED Section 3 dated January 24, 2019;
  - Appendix 4n. Decision modifying the ED Sections 1, 2 dated February 1, 2019;
  - Appendix 4o. Resolution of the RDOŚ clarifying doubts related to contents of the ED Dłubnia dated February 8, 2019;
- Appendix 5. Map with location of the Contract;
- Appendix 6. Map with location of the Contract in reference to protected areas and to NATURA 2000 sites;
- Appendix 7. Map with location of the Contract in reference to areas of potential flood hazard;

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- Appendix 8. Map with location of the Contract in reference to areas excluded from land of potential flood hazard;
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- Appendix 10. Map with location of the Contract's elements.

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