

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.2

FLOOD PROTECTION IN SERAFA VALLEY

Works Contract 3A.2/1

Flood protection in Serafa Valley – Malinówka 1 reservoir

Works Contract 3A.2/2

Flood protection in Serafa Valley – Malinówka 2 reservoir

<i>Issue</i>	<i>Date</i>	<i>Authors</i>	<i>Verified by</i>	<i>Client's approval</i>	<i>Description</i>
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ODRA-VISTULA FLOOD MANAGEMENT PROJECT

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State Budget

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Environmental category B – according to OP 4.01 WB

Project Implementation Unit:

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OVFM PIU

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LIST OF BASIC DEFINITIONS AND ABBREVIATIONS APPLIED IN THIS EMP

Name	Description
BGW	Body of Groundwater
BIOZ Plan	Health and Safety Plan developed based upon Article 21a of the Act of July 7, 1994 – Building Law Act
BOD ₅	Biochemical oxygen demand during 5 days
BSW	Body of Surface Water
CE	Contract Engineer
CEB	Council of Europe Development Bank https://coebank.org/en/
Consultant / Engineer / Consultant Engineer	Company or legal person providing services for the Investor Technical Assistance Consultant for the OVFM Project – AECOM Polska Sp. z o.o.
Contract / Contract 3A.2	Contract 3A.2 <i>FLOOD PROTECTION IN SERAFA VALLEY</i> comprising: Works Contract 3A.2/1 and Works Contract 3A.2/2
Contractor	Company or a legal person implementing the Contract 3A.2 – Works Contract 3A.2/1 and / or Works Contract 3A.2/2
Designer	Company or a legal person drawing up the design documentation
DQAP / SPZJ	Detailed Quality Assurance Plan
EHS Guidelines	World Bank Group Environmental, Health, and Safety Guidelines https://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/Sustainability-At-IFC/Policies-Standards/EHS-Guidelines/
EIA	Environment Impact Assessment
EMP	Environmental Management Plan
Environmental Decision (ED)	Decision on environmental conditions
Epidemic risk state	Legal situation introduced in a given area in connection with the risk of occurrence of an epidemic, in order to undertake anti-epidemic actions as specified in the Act on combating infectious diseases
Epidemic state	Legal situation introduced in a given area in connection with the occurrence of an epidemic, in order to undertake anti-epidemic and preventive actions to minimize the effects of an epidemic as specified in the Act on combating infectious diseases

Name	Description
ES (formerly: ESHS)	The Environmental and Social World Bank Policy – ES, concerning environmental and social issues (i.e. in the scope of the environmental protection, health and safety at work and of the social issues, including gender equality, protection of minors, protection of particularly vulnerable people (including the disabled), sexual harassment, sexual violence, awareness and prevention of HIV/AIDS)
ESMF	Environmental and Social Management Framework http://odrapcu.pl/doc/OVFMP/Environmental_and_Social_Management.pdf
GDOŚ	General Directorate for Environmental Protection
H&S	Health and Safety
IMGW-PIB	Institute of Meteorology and Water Management National Research Institute
KZGW	National Water Management Authority
LA&RAP	Land Acquisition and Resettlement Action Plan
LSDP / MPZP	Local Spatial Development Plan
MGR	Major Groundwater Reservoirs
MZMiUW	Małopolski Board of Amelioration and Hydraulic Structures in Cracow
PAD	Project Appraisal Document for the World Bank approval of a Loan to the Polish Government to implement OVFMP http://documents.worldbank.org/curated/en/320251467986305800/Poland-Odra-Vistula-Flood-Management-Project
PCU / OVFM PCU	Odra-Vistula Flood Management Project Coordination Unit http://odrapcu2019.odrapcu.pl/en/welcome/
PGW WP	State Water Holding Polish Waters
PIO	Project Implementation Office – created within PIU separate organizational unit responsible for the implementation of Works Contract
PIU / OVFM PIU	OVFM 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, represented by the Director of Regional Water Management Authority in Cracow / OVFM Project Implementation Unit

Name	Description
POM	Project Operations Manual prepared by the Odra Vistula Flood Management Project Coordination Unit, Wrocław 2015 http://www.odrapcu.pl/doc/POM_PL.pdf the binding version is the English one: http://www.odrapcu.pl/doc/POM_ENG.pdf
Project / OVFMP / OVFM Project	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
SCDSP / SUIKZP	Study of Conditions and Directions of Spatial Development
Waste MP	Waste Management Plan
WIOŚ	Provincial Inspectorate for Environmental Protection
Works Contract / Works Contract 3A.2/1	Works Contract 3A.2/1 <i>Flood protection in Serafa Valley – Malinówka 1 reservoir</i>
Works Contract / Works Contract 3A.2/2	Works Contract 3A.2/2 <i>Flood protection in Serafa Valley – Malinówka 2 reservoir</i>
World Bank (WB)	International Bank for Reconstruction and Development http://www.worldbank.org/

LIST OF ABBREVIATED TITLES OF LEGAL ACTS APPLIED IN THIS EMP

Titles, publication reference and abbreviated titles of legal acts quoted within contents of this EMP are given in the table below.

Abbreviated title	Full title (with publication reference)
<i>APC</i>	The Act of June 14, 1960 Code of Administrative Procedure (consolidated text: Journal of Laws of 2020, item 256 as amended)
<i>CC</i>	The Act of April 23, 1964 Civil Code (consolidated text: OJ of 2020, item no. 1740)
<i>LC</i>	The Act of June 26, 1974 Labour Code (consolidated text: OJ of 2020, item no. 1320)
<i>PC</i>	The Act of June 6, 1997 Penal Code (consolidated text: OJ of 2020, item no. 1444 as amended)
<i>BIOZ Regulation</i>	Regulation of the Minister of Infrastructure of June 23, 2003 on Information Concerning Safety and Health Protection and Safety and Health Protection Plan (Journal of Laws of 2003, No.120, item 1126)
<i>Noise level Regulation</i>	Regulation of the Minister of Environment of June 14, 2007 on admissible noise levels in the environment (OJ of 2014, item no. 112)
<i>Regulation on the protection of fungi species</i>	Regulation of the Minister of Environment of October 9, 2014 on the protection of fungi species (OJ of 2014, item no. 1408)
<i>Regulation on the protection of plant species</i>	Regulation of the Minister of Environment of October 9, 2014 on the protection of plant species (OJ of 2014, item no. 1409)
<i>Regulation on the protection of animal species</i>	Regulation of the Minister of Environment of December 16, 2016 on the protection of animal species (OJ of 2016, item no. 2183 as amended)
<i>Regulation on works prohibited for juveniles</i>	Regulation of the Council of Ministers of August 24, 2004 on the list of prohibited work for juveniles and the conditions for their employment in some of these works (consolidated text: OJ of 2016, item no. 1509)
<i>EIA Regulation</i>	Regulation of the Council of Ministers of September 10, 2019 on the investment that may significantly affect the environment (consolidated text: OJ of 2019, item no. 1839)
<i>Water MP</i>	Regulation of the Council of Ministers of October 18, 2016 on Water Management Plan for waters within the Vistula River Basin (Journal of Laws 2016, item 1911)
<i>Act on public roads</i>	The Act of March 21, 1985 on the public roads (consolidated text: OJ of 2020, item no. 470 as amended)

Abbreviated title	Full title (with publication reference)
<i>EPI Act</i>	The Act of July 20, 1991 on the Environmental Protection Inspectorate (consolidated text: OJ of 2020, item no. 995 as amended)
<i>Waste Act</i>	The Act of December 14, 2012 on the waste (consolidated text: OJ of 2020, item no. 797 as amended)
<i>EIA Act</i>	Act of October 3, 2008 on access to information on the environment and its protection, public participation in environment protection and environmental impact assessments (consolidated text, Journal of Laws of 2020, item 283, as amended)
<i>NP Act</i>	Act of April 16, 2004 on the nature protection (consolidated text, Journal of Laws of 2020, item 55 as amended)
<i>Act on combating infectious diseases</i>	The Act of December 5, 2008 on preventing and combating infections and infectious diseases in humans (consolidated text: OJ of 2020, item no. 1845)
<i>Act on heritage protection</i>	The Act of July 23, 2003 on the protection of heritage and on the care for heritage (consolidated text: OJ of 2020, item no. 282 as amended)
<i>SLI Act</i>	The Act of April 13, 2007 on the State Labour Inspectorate (consolidated text: OJ of 2019, item no. 1251)
<i>SSI Act</i>	The Act of March 14, 1985 on the State Sanitary Inspectorate (consolidated text: OJ of 2019, item no. 59 as amended)
<i>EPL Act</i>	The Act of April 27, 2001 Environmental Protection Law (consolidated text: OJ of 2020, item no. 1219 as amended)
<i>Building Law Act</i>	Act of July 7, 1994, Construction Law (consolidated text: Journal of Laws of 2020, item 1333)
<i>Water Law Act</i>	The Act of July 20, 2017 Water Law (consolidated text: OJ of 2020, item no. 310 as amended)
<i>Equal Treatment Act</i>	The Act of December 3, 2010 on implementation of some regulation of the European Union in reference to equal treatment (consolidated text: OJ of 2016, item no. 1219 as amended)
<i>Damage Act</i>	The Act of April 13, 2007 on preventing damages to the environment and their removal (consolidated text: OJ of 2019, item no. 1862 as amended)

Summary

This Environmental Management Plan (EMP) refers to two Works Contracts under Contract 3A.2 *Flood Protection in Serafa Valley*¹, i.e.:

- Works Contract 3A.2/1
Flood protection in Serafa Valley – Malinówka 1 reservoir;
- Works Contract 3A.2/2
Flood protection in Serafa Valley – Malinówka 2 reservoir.

Contract 3A.2 remains a part of Subcomponent 3A implemented within *Odra-Vistula Flood Management Project* (OVFMP), co-financed by the International Bank for Reconstruction and Development (World Bank), and by the Council of Europe Development Bank, European Union Cohesion Fund, and by the State Budget.

This EMP includes the following elements:

- Brief description of the OVFM Project (Chapter 1.1);
- Description of Contract 3A.2 and Works Contracts 3A.2/1 and 3A.2/2, to which this EMP refers to (Chapter 2);
- Institutional, legal and administrative conditions for implementation of the aforementioned Works Contracts with specified binding state legal acts on environmental protection, main stages of the EIA procedure, and also the current course of EIA procedure for the aforementioned Works Contract (Chapter 3);
- Description of individual elements of the environment in the area of the aforementioned Works Contracts (Chapter 4);
- Summary of the environmental impact assessment (Chapter 5);
- Description of mitigation measures to eliminate or limit the adverse impact of the aforementioned Works Contracts on the environment (Chapter 6), including a tabulated summary of those measures (Appendix 1 – Plan of mitigation measures);
- Description of environmental monitoring measures for the aforementioned Works Contracts (Chapter 7), including a tabulated summary of those measures (Appendix 2 – Plan of monitoring measures);
- Description of the course of public consultations on particular stages of environmental documentation development for the aforementioned Works Contracts (Chapter 8);
- Description of the organizational structure for implementation of the EMP (Chapter 9);
- Implementation schedule and description of reporting procedures (Chapter 10).

¹ Remaining parts of Contract 3A.2 are as follows:

* Works Contract 3A.2/3

Flood protection in Serafa Valley – Malinówka 3 reservoir;

* Works Contract 3A.2/4

Flood protection in Serafa Valley – Serafa 2 reservoir.

Appendices to this EMP include: a tabulated summary for the plan of mitigation measures (Appendix 1) and for the plan of monitoring measures (Appendix 2), the list of national legal acts related to environmental protection (Appendix 3), copies of decisions, resolutions, permits and / or notes referring to the environmental protection (Appendix 4) and graphical appendices, including: a map presenting the location of the aforementioned Works Contracts (Appendix 5), a map presenting location of the aforementioned Works Contracts in reference to protected areas (Appendix 6), a map presenting location of the aforementioned Works Contracts in reference to environmental habitats and protected species occurrence sites (Appendix 7), and a map with location of the Works Contracts' elements (Appendix 8).

Characteristics of the Works Contracts

Works Contracts 3A.2/1 and 3A.2/2 refer to the development of two small dry flood storage reservoirs Malinówka 1 and Malinówka 2 at the Malinówka Stream, in Małopolskie Province, within the District of the City of Cracow and in the District of Wieliczka, in Municipality of Cracow and in Municipality of Wieliczka.

Those reservoirs shall operate as a part of cascade comprising five small dry flood storage reservoirs in the Serafa river-basin: two at the River Serafa (the existing Biezanów Reservoir and the planned Serafa 2 Reservoir) and three at the Malinówka Stream (planned reservoirs: Malinówka 1, Malinówka 2, and Malinówka 3).

Scope of the Works Contracts

The scope of Works Contract 3A.2/1 comprises the following elements:

- Development of a dry flood storage reservoir Malinówka 1 (with an area of about 6.2 ha), with an earth-fill front dam, earth-fill side dams, spillway and discharge facilities, and a stilling basin;
- Development of crossing and descend roads from the dams' crests;
- Development of band ditches;
- Development of an inflow channel and of a discharge channel to and from the spillway and discharge facilities;
- Removal of a section of the Malinówka Stream and a section of the oxbow lake in the dry reservoir's bowl;
- Development of measurement spots;
- Development of sectional sheet pilings replacing side dams for the dry reservoir;
- Provision of land grading in the dry reservoir's bowl and development of an excavation reaching the oxbow lake;
- Development of an island protecting environmental valuable trees in the dry reservoir's bowl;
- Redevelopment of storm drainage's outlets and of a ditch draining A4 motorway;
- Demolition and construction of sanitary canalization sections;
- Demolition of a water-supply connection and of a surface water-intake;
- Redevelopment of power lines.

The scope of Works Contract 3A.2/2 comprises the following elements:

- Development of a dry flood storage reservoir Malinówka 2 (with an area of about 2.3 ha), with an earth-fill front dam, spillway and discharge facilities, and a stilling basin;
- Development of ditches, including band ditches;
- Development of an inflow channel and of a discharge channel to and from the spillway and discharge facilities;
- Development of a crossing through a ford at the Malinówka Stream;
- Development of service roads and U-turn yards;
- Development of a culvert underneath a service road;
- Development of descend roads to the dry reservoir's bowl;
- Protection of outlets from pipings with non-return valves;
- Provision of land grading in the dry reservoir's bowl;
- Filling a section of the Malinówka Stream and a part of the pond, removal of two sections of ditches;
- Demolition of concrete elements in the dry reservoir's bowl;
- Demolition of an inactive water piping and three surface water-intakes;
- Demolition and construction of sanitary canalization sections;
- Redevelopment of power lines.

Need to implement the Works Contracts

Implementation of Contract 3A.2, including Works Contracts 3A.2/1 and 3A.2/2, results from the necessary improvement of flood protection in the Serafa Valley (including areas of the Złocień Estate and of the Stary Bieżanów Estate in Cracow) and from the limitation of flood damage in those areas.

The works in question have been included on List no. 1 under item "ID 2_177_W" (ordinal number: 1017) in Appendix no. 2 titled "*Investments that do not affect reaching the good status of water adversely or that do not deteriorate the status of water*" to the MasterPlan for the Vistula river-basin (2014)².

Institutional, legal, and administrative conditions

Works Contracts 3A.2/1 and 3A.2/2 are implemented in accordance with relevant state regulations on the environmental protection and in conformity with proper policies of the World Bank, while considering their characteristics, expected potential impact on the environment, and location in reference to the protected sites.

Status of administrative procedures for the EIA

In case of the Works Contracts in question, in the years 2012-2020 the following decision and administrative notes in the scope of environmental protection have been issued, e.g.:

- Decision of the Regional Director for Environmental Protection in Cracow dated October 29, 2012 on environmental conditions (ref. no.: OO.4233.13.2012.BM – Appendix 4a to this EMP);

² See: description in the footnote in Chapter 1.

- Resolution of the Regional Director for Environmental Protection in Cracow dated October 3, 2018 stating that implementation of the planned Contract shall run in stages and that conditions determined in the decision on environmental conditions dated October 29, 2012 have not been modified (ref. no.: OO.4220.5.10.2018.BM – Appendix 4b to this EMP);
- Resolution of the Regional Director for Environmental Protection in Cracow dated September 12, 2019 clarifying doubts to contents of the decision on environmental conditions dated October 29, 2012 (ref. no.: OO.4220.5.28.2019.BM – Appendix 4c to this EMP);
- Resolution of the Regional Director for Environmental Protection in Cracow dated September 16, 2019 clarifying doubts to contents of the decision on environmental conditions dated October 29, 2012 (ref. no.: OO.4220.5.29.2019.BM – Appendix 4d to this EMP);
- Resolution of the Regional Director for Environmental Protection in Cracow dated December 5, 2019 on correction of obvious editorial mistakes in the decision on environmental conditions dated October 29, 2012 (ref. no.: OO.4220.44.2019.BM – Appendix 4e to this EMP);
- Decision of the Regional Director for Environmental Protection in Cracow dated February 07, 2020 allowing for departure from bans binding in reference to plants under protection at the construction site of the Malinówka 2 reservoir (ref. no.: OP.6400.1.2020.KW – Appendix 4f to this EMP);
- Resolution of the Regional Director for Environmental Protection in Cracow dated May 28, 2020 imposing obligation of providing an environmental impact assessment due to modification of design assumptions and necessary amendment to the decision on environmental conditions dated October 29, 2012 in the scope concerning the construction of the Serafa 2 and Malinówka 3 reservoirs (ref. no.: OO.420.4.3.2019.BM – Appendix 4g to this EMP);
- Decision of the Regional Director for Environmental Protection in Cracow dated May 29, 2020 allowing for departure from bans binding in reference to animals under protection at the construction site of the Malinówka 1 reservoir (ref. no.: OP-I.6401.65.2020.PKw – Appendix 4h to this EMP);
- Decision of the Regional Director for Environmental Protection in Cracow dated May 29, 2020 allowing for departure from bans binding in reference to animals under protection at the construction site of the Malinówka 2 reservoir (ref. no.: OP-I.6401.65.2020.PKw.1 – Appendix 4i to this EMP);
- Resolution of the Regional Director for Environmental Protection in Cracow dated August 17, 2020 clarifying doubts to contents of the decision on environmental conditions dated October 29, 2012 (ref. no.: OO.4220.5.27.2020.BM – Appendix 4j to this EMP);

- Decision of the Regional Director for Environmental Protection in Cracow dated September 18, 2020 amending the decision on environmental conditions dated October 29, 2012 in the range referring to the development of reservoirs Serafa 2 and Malinówka 3 (ref. no.: OO.420.4.3.2019.BM – Appendix 4k to this EMP);
- Resolution of the Regional Director for Environmental Protection in Cracow dated November 18, 2020 clarifying doubts to contents of the decision on environmental conditions dated October 29, 2012 (ref. no.: OO.4220.5.39.2020.BM – Appendix 4l to this EMP).

Current condition of the environment surrounding the Works Contracts

As a result of works done to identify values of the natural and cultural environment, it has been identified that the implementation area for Works Contracts 3A.2/1 and 3A.2/2 and its neighborhood are characterized by the following environmental conditions:

- Implementation area for the aforementioned Works Contracts is located within the boundaries of the Body of Surface Water (BSW), i.e. PLRW2000262137749 *Serafa*, and also within the boundaries of the Body of Groundwater (BGW) with a code PLGW2000148;
- Within the implementation area of the Works Contract 3A.2/1 and in its immediate vicinity there are no Natura 2000 sites or other areas and objects under protection based upon the Act on the Nature Protection;
- The implementation area of the Works Contract 3A.2/2 is partially located within the boundaries of protected area – Krzyszkowicki Forest ecological use land;
- Within the impact area of the Works Contract 3A.2/1 no protected natural habitats or protected species of plants and fungi were identified. Among the protected animals presence of 1 protected species of reptiles was identified (sand lizard);
- Within the impact area of the Works Contract 3A.2/2 2 protected environmental habitats (91E0 and 9170) and 1 species of plants under partial protection (red-stemmed feather-moss) were identified. Among the protected animals presence of the following was identified: 2 protected species of insects (buff-tailed bumblebee and red-tailed bumblebee), some protected species of amphibians (frogs of the green frog group, common toad, common frog, moor frog), 1 protected species of reptiles (sand lizard), several dozens of protected birds (including e.g. corn crane, black woodpecker, red-backed shrike), some protected species of bats (common noctule, common pipistrelle, and Brandt's bat/whiskered bat), and 3 protected species of non-flying mammals (Eurasian beaver, hedgehog, and squirrel);
- No heritage protected based upon regulations on the protection of heritage and on the care for heritage is present within the implementation area for the aforementioned Works Contracts. The area of planned development of Malinówka 1 and Malinówka 2 reservoirs is located within archaeological supervision zones.

Summary of the environmental impact assessment

Impact on land surface and landscape

Implementation of the planned Works Contracts is associated with acquisition of land and with local logging of trees and shrubs, but those do not affect land surface and landscape adversely.

Impact on climate

Implementation of the planned Works Contracts does not affect the condition of climate.

Impact on the quality of air

Impact of the planned Works Contracts on the quality of air is limited in time to the construction stage and it is not significant.

Impact on soils and grounds

Implementation of the planned Works Contracts is associated with a permanent transformation of land surface (including soils and grounds) for the development of particular elements of reservoirs and accompanying facilities, as well as with a potential possibility of contamination of the subbase on the construction stage. On the operational stage the small dry flood storage reservoirs shall not affect the condition of soils and grounds. If the conditions determined in Appendix 1 to this EMP would be met properly, the performance would not affect the condition of soils and grounds adversely.

Impact on surface water and groundwater

Construction of the planned small dry flood storage reservoirs shall not affect the morphological continuity of the river, and shall also not affect water's hydromorphological, biological, and physical-chemical elements adversely. The performance is associated with a potential possibility of contaminating surface water and / or groundwater on the construction stage. On the operational stage the small dry flood storage reservoirs shall not affect the condition of surface water and groundwater adversely. If the conditions determined in Appendix 1 to this EMP would be met properly, the performance would not affect the condition of surface water and groundwater adversely.

Impact on acoustic climate

Impact of the planned Works Contracts on the acoustic climate is limited in time to the construction stage, and it is not significant.

Impact on biotic nature

Implementation of the planned Works Contracts is associated with the occurrence of local impacts on vegetation and on fauna in the area. Those impacts – resulting mainly from the necessary acquisition of land, traffic of vehicles and machines in the construction period, and logging of trees and shrubs – shall be partially reduced due to the planned mitigation measures (along with the currently developed replacement tree planting program for the whole Subcomponent 3A of the OVFMP, referred to in Chapter 6.8), and in total they shall not affect the condition of protected habitats and species adversely in a regional scale. Implementation of the planned Works Contract 3A.2/1 does neither affect Natura 2000 sites nor other protected areas and objects. Implementation of the planned Works Contract 3A.2/2 shall partially be done within the boundaries of Krzyszkowicki Forest ecological use land, but – in accordance with the results of the Environmental Impact Assessment and the provisions

of the environmental decision – it shall not result in significant adverse impact on the aforementioned protected area.

Impact on cultural heritage and material goods

Implementation of the planned Works Contracts does neither affect cultural heritage nor material goods adversely.

Impact on health and safety of people

The Works Contracts do not generate significant hazards to health and safety of people. They may emerge only in case of a failure, catastrophes, or other random events (such as e.g. leakage of pollutions, fire, finding of unexploded shells and misfires, flood). The EMP determines relevant conditions for prevention of such events and for mitigation of their potential effects. The operational stage is associated with a positive impact on health and safety of people, by improving the flood safety of areas located in the Serafa River valley downstream of the reservoir.

Other ES hazards

Regardless of the ones listed above, other ES 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) or other infectious diseases (including those caused by coronaviruses, e.g. COVID-19), and others, may occur during implementation of the Works Contracts. This EMP determines relevant conditions to prevent hazards of those types and to efficiently react to the cases of their occurrence.

Mitigation measures and monitoring measures

Chapters 6 and 7 of and Appendixes 1 and 2 to this EMP described and present – in a tabular form – a set of mitigation measures and monitoring measures to eliminate or limit adverse impact of the planned Works Contracts on the environment, and to assure efficient implementation of the EMP's conditions. Those measures contain conditions determined in the binding decision on environmental conditions, as well as additional conditions provided on the stage of works on the EMP.

Public consultations

Chapter 8 of the EMP provides a relation of public consultations held under the EIA procedure for the planned Works Contracts, including the following:

- Public consultations on the document titled *Environmental and Social Management Framework (ESMF)* for the OVFM Project (2015);
- Public consultations held on the stage of issuing the environmental decisions for the Contract 3A.2 (2012 and 2019-2020);
- Public consultations for this Environmental Management Plan (2020).

1 Introduction

This paper presents the Environmental Management Plan (EMP) for two Works Contracts under Contract 3A.2 *Flood Protection in Serafa Valley*³, i.e.:

- Works Contract 3A.2/1
Flood protection in Serafa Valley – Malinówka 1 reservoir;
- Works Contract 3A.2/2
Flood protection in Serafa Valley – Malinówka 2 reservoir.

Contract 3A.2 remains a part of Subcomponent 3A implemented within *Odra-Vistula Flood Management Project* (OVFMP), co-financed by the International Bank for Reconstruction and Development (World Bank), the Council of Europe Development Bank, by the European Union Cohesion Fund, and by the State Budget.

In reference to the environmental screening described in the Environmental and Social Management Framework for the OVFM Project, the works in question have been included on List no. 1 under item “ID 2_177_W” (ordinal number: 1017) in Appendix no. 2 titled “*Investments that do not affect reaching the good status of water adversely or that do not deteriorate the status of water*” to the MasterPlan for the Vistula river-basin (2014)⁴.

1.1 Odra-Vistula Flood Management Project

The main objective of the OVFM Project is to protect people in flood plains within selected parts of river-basins of two of the greatest Polish Rivers – Vistula and Odra – against hazards caused by extreme floods. Implementation of the most urgent flood protection assignments was forecasted within the framework of the OVFMP.

The OVFM Project consists of the following 5 Components:

- Component 1 – Flood Protection of the Middle and Lower Odra;
- Component 2 – Flood Protection of the Nysa Kłodzka Valley;
- Component 3 – Flood Protection of the Upper Vistula;
- Component 4 – Institutional Strengthening and Enhanced Forecasting;
- Component 5 – Project Management and Studies.

³ Remaining parts of Contract 3A.2 are as follows:

* Works Contract 3A.2/3

Flood protection in Serafa Valley – Malinówka 3 reservoir;

* Works Contract 3A.2/4

Flood protection in Serafa Valley – Serafa 2 reservoir.

⁴ The MasterPlans for the Vistula River Basin and for the Odra River Basin remain 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).

Component 3, within the framework of which the Works Contracts in question – remaining a subject of this EMP – shall be implemented, 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.

Detailed information on the Project may also be found in the Environmental and Social Management Framework published at e.g. websites of the World Bank⁵ and of the Odra-Vistula Flood Management Project Coordination Unit⁶. A detailed description of the Project is also given in PAD⁷ and in the Project Operations Manual⁸.

⁵ <http://documents.worldbank.org/curated/en/717671468333613779/Poland-Odra-Vistula-Flood-Management-Project-environmental-and-social-management-framework>

⁶ http://odrapcu2019.odrapcu.pl/en/popdow_about_project/

⁷ <http://documents.worldbank.org/curated/en/320251467986305800/Poland-Odra-Vistula-Flood-Management-Project>

⁸ http://www.odrapcu.pl/doc/POM_PL.pdf

(a binding English version is available at: <http://www.odrapcu.pl/doc/POM/ENG.pdf>)

2 Contract Description

Contract 3A.2 refers to the development of four small dry flood storage reservoirs in the Serafa river-basin, and it is divided into four Works Contracts, and first two remain the subject of this EMP:

- Works Contract 3A.2/1
Flood protection in Serafa Valley – Malinówka 1 reservoir;
- Works Contract 3A.2/2
Flood protection in Serafa Valley – Malinówka 2 reservoir;
- Works Contract 3A.2/3
Flood protection in Serafa Valley – Malinówka 3 reservoir;
- Works Contract 3A.2/4
Flood protection in Serafa Valley – Serafa 2 reservoir.

The aforementioned reservoirs shall operate as a part of cascade comprising five dry flood storage reservoirs in the Serafa river-basin: two at the River Serafa (the existing Bieżańów Reservoir and the planned Serafa 2 Reservoir) and three at the Malinówka Stream (planned reservoirs: Malinówka 1, Malinówka 2, and Malinówka 3).

The objective for construction of particular reservoirs is direct improvement of flood protection for areas downstream of each of the reservoirs, whereas the aim for development of the entire cascade of five reservoirs is improvement of flood protection in the Serafa Valley, including areas of the Złocień Estate and of the Stary Bieżańów Estate in Cracow.

Together with other elements of Subcomponent 3A of the OVFM Project (implemented or planned to be implemented under Contracts 3A.1⁹, 3A.3¹⁰, 3A.4¹¹, 3A.5¹² and 3A.6¹³), the planned projects shall contribute to significant improvement of flood protection of the areas located on the right and left bank of the Vistula in Cracow.

⁹ Works Contract 3A.1 *Modernization of Vistula embankments in Cracow*, concerning the extension of three sections of flood embankments of the Vistula River in Cracow, i.e.:
Section 1 – the left-bank flood embankment of the Vistula River from the Wandy bridge to the Przewóz barrage, together with the backwater embankments of the Dłubnia River;
Section 2 – the left-bank flood embankment of the Vistula River from the Przewóz barrage to Suchy Jar;
Section 3 – the right-bank flood embankment of the Vistula River from the Dąbie barrage to the Przewóz barrage.

¹⁰ Works Contract 3A.3 *Section 4 - Right embankment of the Vistula from the Skawinka estuary to the Kościuszko barrage*, concerning the extension of the right-bank flood embankment of the Vistula River upstream of the Kościuszko barrage.

¹¹ Works Contract 3A.4 *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*, concerning the extension of the flood embankment on the right bank of the Vistula from the Dąbie barrage to the Płaszów port and construction of a flood gate in the Płaszów port.

¹² Works Contract 3A.5 *Development of a flood gate at the left flood embankment in the area of water intakes for the Sendzimira Steel Mill in Cracow*, concerning the construction of a flood gate on the inlet channel to the Kujawy port on the left bank of the Vistula.

¹³ Contract 3A.6 *Construction of a pumping station for mobile pumps to drain the Lesisko complex*, concerning the extension of the mobile pumps station on the left bank of the Vistula.

The Project Implementation Unit (PIU) for the Contract is the State Water Holding Polish Waters, represented by the Director of 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 at least 14 months.

2.1 Location of the Works Contracts

The planned Contract 3A.2 is located in Poland, Małopolskie Province, in the area of the City of Cracow (District of the City of Cracow, Municipality of Cracow) and the City of Wieliczka (District of Wieliczka, Municipality of Wieliczka Miasto). Detailed information on the location of Works Contracts 3A.2/1 and 3A.2/2, forming the subject of this EMP, have been presented below.

Location of the Works Contracts 3A.2/1 and 3A.2/2 has been presented on the drawing presented below (Fig. 1) and in Appendix 5 to this EMP – Map with location of the Contract.

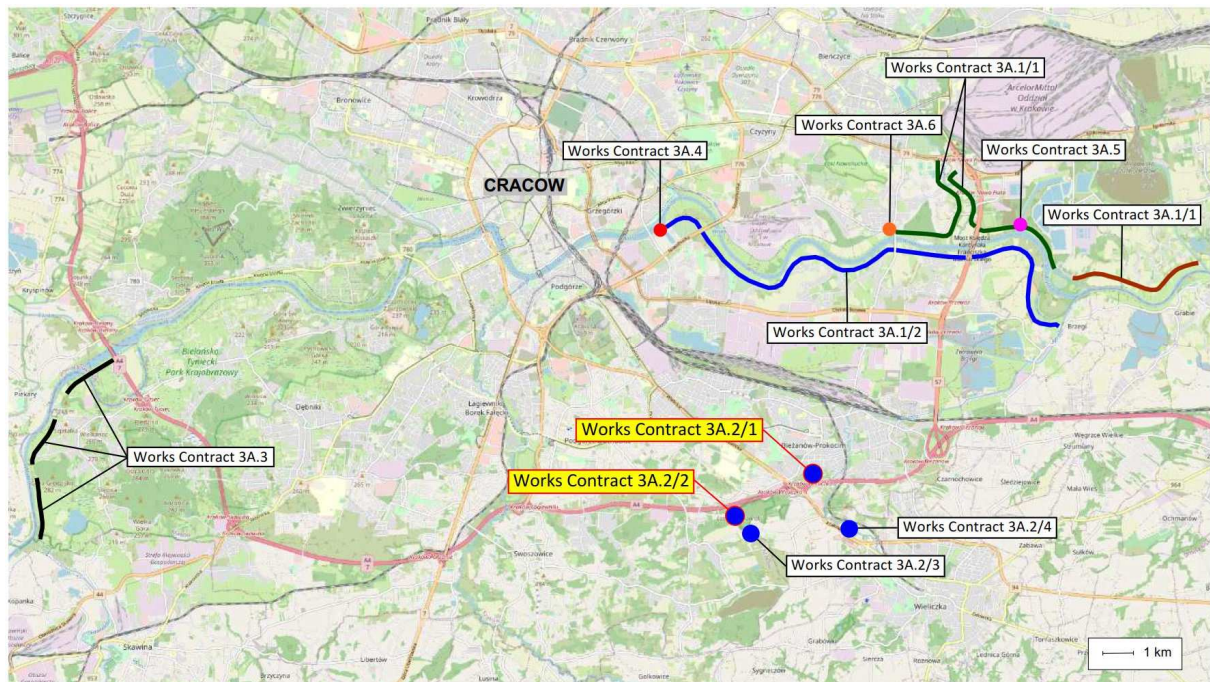


Fig. 1. Location of the Works Contracts 3A.2/1 and 3A.2/2 together with the location of other Works Contracts of Subcomponent 3A of the OVFMP (source: own materials)

2.1.1 Works Contract 3A.2/1 – Malinówka 1 Reservoir

The planned small dry flood storage reservoir Malinówka 1 is located within the City of Cracow, in the area of the following streets: A4 Motorway, Mała Góra, Szastera, and Nad Serafą. On the west it reaches vicinity of Wielicka Street, and on the east – developed areas west of the railway line crossed by the River Serafa with the Malinówka Stream reaching it. The entire area forms a depression in reference to surrounding sites. The Malinówka Stream – within the entire reach of the discussed area – is regulated.

The area of Works Contract 3A.2/1 covers farmland and meadows with field vegetation (shrubs and shrubbed tufts). Currently there (according to extracts from land registers) mainly are the following: permanent meadows (ŁII, ŁIII) and arable land (RIIIb, RIVb), as well as roads (dr) and grounds underneath flowing surface water.

2.1.2 Works Contract 3A.2/2 – Malinówka 2 Reservoir

The planned small dry flood storage reservoir Malinówka 2 is located within the boundaries of the City of Cracow and of the City of Wieliczka. It comprises parts of the Malinówka stream valley on the western side of the Krzyszkowicki Forest, just downstream of the A4 Motorway.

The area of Works Contract 3A.2/2 covers farmland and meadows with field vegetation (shrubs and shrubbed tufts). Currently there (according to extracts from land registers) are the following: permanent pastures (PsIII, PsIV, PsV), afforested and shrubbed grounds (LzIV) and arable lands (RIVb, RV, RVI), permanent meadows (ŁIV, ŁV), roads (dr), ditches (W), waste land (N), and grounds underneath flowing surface water (Wp), industrial areas (Ba), as well as residential areas (B) – at the boundaries.

2.2 Justification of the Contract

Intensive development within the catchment of Serafa River in the area of the City of Cracow and the Town of Wieliczka resulted in raised discharge of surface rainfall water to river-beds and streams (due to transformation of the existing green areas to sealed surfaces – roofs of houses, roads, yards, etc.). Furthermore, location of new development within flood plains provided new areas under flood risk.

Flood hazard occurs especially in the area of the City of Cracow at chainage km 3+469 – 8+100 of the River Serafa, i.e. it covers areas of the Złocień Estate and of the Stary Biezanów Estate. Due to development of Wielicka Strefa Ekonomiczna [Business Zone of Wieliczka], e.g. an industrial area with 2.5 K employees is located within a zone under flood risk. The following sections of the river-bed are under particular risk: area of Rakuś Street, Zamłynie Street, Świeża Street, Korepty Street, and Półłanki Street at Stary Biezanów; and area of Złocieniowa Street, Agatowa Street, Braci Czeczów Street, and Jasieńskiego Street on the northern side of the Cracow-Tarnów railway line. During the flood of 2010 those areas were flooded twice and inundated.

Areas of Stary Biezanów comprise detached houses, whereas in the area of Złocieniowa Street and Jasieńskiego Street there are blocks of flats at the Złocień Estate and industrial sites. Such an engineering and technical infrastructure provides high economic losses in case of flood damage caused by inundation of those areas by flood water of the River Serafa.

Immediate works protecting the areas adjacent to the river-bed against the results of floods (e.g. sectional desilting of the river-bed, development of a dike raising the banks, protection of the river-bed) were undertaken after the flood of 2010.

All those works improved flood protection in case of flood water with occurrence probability of over 10%. However, safe accommodation of 10% water requires additional protection works in some sections of the river-bed – flood embankments and channel regulation. Very dense development in the center of Biezanów unfortunately disables development of flood embankments. Numerous studies – developed after the flood of 2010 – proved that at the current high progress of development only dry flood-storage reservoirs may provide an expected result, i.e. improvement of flood safety. An analysis of site conditions at the Malinówka Stream and at the River Serafa allowed for indicating feasible locations of reservoirs, optimal in reference to land availability and achievement of beneficial capacity of the reservoirs, at simultaneous minimization of the impact on the environment and reduction of development costs. It was indicated that five reservoirs may be developed – three at the Malinówka Stream (Malinówka 1, 2, and 3 reservoirs) and two at the River Serafa (Serafa 2 and Biezanów reservoirs). Until now the biggest of the reservoirs, i.e. the Biezanów Reservoir at the Serafa River just downstream of the estuary of Malinówka, has been developed.

2.3 Specificity of the Works Contracts

The following items presents specificity of Works Contracts 3A.2/1 and 3A.2/2, which remain a subject of this EMP.

2.3.1 Works Contract 3A.2/1 – Malinówka 1 Reservoir

The scope of Works Contract 3A.2/1 comprises the following elements¹⁴:

- Construction of the dry flood storage reservoir Malinówka 1 at chainage km 0+231 of the Malinówka Stream (with an earth-fill front dam, earth-fill side dams, spillway and discharge facilities, and a stilling basin), having the following parameters:
 - hydraulic class of the structure – III
 - damming height – 4.8 m
 - maximum damming elevation (MaxSL) – 216.5 m a.s.l.
 - capacity of the reservoir at MaxSL – 114 000 m³
 - flood area at MaxSL – about 6.2 ha
 - flow $Q_{0.2\%}$ at the inlet to the reservoir – 14.35 m³/s
 - flow $Q_{0.5\%}$ at the inlet to the reservoir – 6.23 m³/s
 - flow $Q_{1\%}$ at the inlet to the reservoir – 4.18 m³/s
 - reduced flow $Q(\text{reduced})_{0.2\%}$ – 8.0 m³/s
 - reduced flow $Q(\text{reduced})_{0.5\%}$ – 2.56 m³/s
 - allowed flow $Q(\text{allowed})_{1\%}$ – 1.93 m³/s
 - dam's crest elevation – 217.2 m a.s.l.
 - crest width of the front dam – 4 m
 - crest width of the side dams – 3 m
 - length of the front dam – about 80 m
 - length of the right dam's crest – about 340 m
 - length of the left dam's crest – about 434 m
 - riverside slope inclination – 1:3
 - landside slope inclination – 1:2.5
 - shutter in the body and in the subbase
 - slopes protected with anti-erosive mat and sown with a mix of grass
 - time of retention – up to 24 hours
- Development of crossing and descend roads from the dam crest into the reservoir's bowl and to the area in vicinity;

¹⁴ The characteristics of the Works Contract provided in this EMP are for reference only and do not replace the design documentation. The Contractor is obliged to perform the works in accordance with the design documentation and with Technical Specifications corresponding with particular branches.

- Development of a band ditch along the side dam on the left bank, over a length of about 487 m;
- Development of a band ditch along the side dam on the right bank, over a length of about 255 m;
- Development of an inflow channel to the spillway and discharge facilities over a length of about 80.0 m at chainage km 0+243-0+323 of the Malinówka Stream;
- Development of a discharge channel from the spillway and discharge facilities over a length of about 34.0 m at chainage km 0+183-0+217 of the Malinówka Stream;
- Removal of a section of the existing Malinówka channel at chainage km 0+183-0+323 of the stream;
- Removal of a section of the oxbow lake in the reservoir's bowl over a length of about 47 m at the place of construction of a side dam;
- Construction of measurement spots on the left bank of the inflow channel at chainage km 0+208 and in vicinity of the backflow from the dry reservoir at chainage km 0+716;
- Development of retaining sheet piling replacing sectionally a side dam on the left bank of the dry reservoir's bowl over a length of about 16.5 m and a side dam on the right bank of the Malinówka Stream over a length of about 16.0 m at chainage km 0+411 and of about 30.0 m at chainage km 0+508;
- Grading of the Malinówka 1 Reservoir's bowl with an area of 4.1 ha with a drop of 0.5% toward the Malinówka Stream and development of an excavation reaching the oxbow lake;
- Development of an island protecting environmentally valuable trees in the dry reservoir's bowl, with a total area of about 0.8 ha, and leaving zones excluded from logging in the dry reservoir's bowl, with a total area 0.23 ha;
- Redevelopment of the existing outlet of storm drainage with a diameter of \varnothing 800 mm, including extension of the existing outlet by about 3.2 m at chainage km 0+189 of the Malinówka Stream;
- Redevelopment of the existing outlet of the ditch draining A4 Motorway, including extension of the existing ditch by about 9.6 m at chainage km 0+202 of the Malinówka Stream;
- Demolition of sanitary canalization in the Malinówka 1 dry reservoir's bowl over a length of about 609.5 m and construction of new sanitary canalization in a reach of about 740.3 m;
- Demolition of a water-piping connection over a length of about 35 m at chainage km 0+505 of the Malinówka Stream and of an individual surface water-intake in a form of concrete rings with a diameter of \varnothing 1000 mm;
- Redevelopment high-voltage (HV) overhead power lines, including:
 - Removal of a section of HV line 110 kV GPZ Bieżanów - GPZ Wieliczka over a total length of about 597 m, running over the Malinówka Stream at chainage km 0+499, and demolition of post in the reservoir's bowl;

- Construction of a section of HV line 110 kV GPZ Biezanów - GPZ Wieliczka over a total length of about 597 m, running over the reservoir's bowl and over the Malinówka Stream at chainage km 0+499, including development of a new HV line post beyond the reservoir's bowl, and replacement of cables on the existing posts;
- Demolition of a section of HV line 110 kV GPZ Piaski Wielkie - GPZ Biezanów over a total length of about 605 m;
- Construction of a section of HV line 110 kV GPZ Piaski Wielkie - GPZ Biezanów over a total length of about 573 m at chainage km 0+135 of the dam, including moving of a HV line post from the reservoir's bowl to its backwater section, construction of a new HV line post in the area of the left side dam, and replacement of cables on the existing posts.

According to the current estimates¹⁵, the volume of soil necessary for implementation of the Works Contract 3A.2/1 is about 39 K m³. The aforementioned soil masses will be mostly obtained within the framework of the planned grading of land within the reservoir's bowl, and the remainder will be purchased and delivered from licensed external sources proposed by the Contractor and accepted by the Engineer (in compliance with the conditions for protection of environment, protection of material goods and protection of health and safety of people set out in Appendix 1 to the EMP).

2.3.2 Works Contract 3A.2/2 – Malinówka 2 Reservoir

The scope of Works Contract 3A.2/2 comprises the following elements¹⁶:

Construction of the dry flood storage reservoir Malinówka 2 at chainage km 2+279 of the Malinówka Stream (with an earth-fill front dam, spillway and discharge facilities, and a stilling basin), having the following parameters:

- | | |
|--|-------------------------|
| ○ hydraulic class of the structure – | III |
| ○ damming height – | 3.8 m |
| ○ maximum damming elevation (MaxSL) – | 229.5 m a.s.l. |
| ○ capacity of the reservoir at MaxSL – | 49 000 m ³ |
| ○ flood area at MaxSL – | about 2.3 ha |
| ○ flow Q _{0.2%} at the inlet to the reservoir – | 14.74 m ³ /s |
| ○ flow Q _{0.5%} at the inlet to the reservoir – | 6.02 m ³ /s |
| ○ flow Q _{1%} at the inlet to the reservoir – | 3.44 m ³ /s |
| ○ reduced flow Q(reduced) _{0.2%} – | 13.27 m ³ /s |
| ○ reduced flow Q(reduced) _{0.5%} – | 3.86 m ³ /s |
| ○ allowed flow Q(allowed) _{1%} – | 2.28 m ³ /s |
| ○ dam's crest elevation – | 230.2 m a.s.l. |
| ○ crest width – | 4 m |
| ○ length of the front dam – | about 105 m |
| ○ riverside slope inclination – | 1:3 |

¹⁵ Based upon the valid Bill of Quantities.

¹⁶ See footnote in chapter 2.3.1.

-
- landside slope inclination – 1:2.5
 - shutter in the body and in the subbase
 - slopes protected with anti-erosive mat and sown with a mix of grass
 - time of retention – up to 24 hours
 - Development of a band ditch no. 1 over a length of about 70 m;
 - Development of a band ditch no. 2 over a length of about 25 m;
 - Development of an inflow channel at chainage km 2+287-2+453 over a length of about 165.5 m;
 - Development of an discharge channel at chainage km 2+230-2+264 over a length of about 33.5 m;
 - Development of a crossing through a ford at chainage km 2+246 of the Malinówka Stream;
 - Development of a ditch R1 over a length of about 60 m along the service road no. 1;
 - Development of a ditch R2 over a length of about 56.5 m in the reservoir's bowl, along with an outlet to the relocated Malinówka channel at chainage km 2+342;
 - Construction of a culver P1 with a diameter \varnothing 500 mm underneath the service road no. 1;
 - Development of a service road no. 1 over a length of about 242 m with a U-turn yard on the left bank of the reservoir;
 - Development of a service road no. 2 over a length of about 115 m;
 - Development of with a U-turn yard at the dam of the reservoir, including a descend road;
 - Development of two descend roads into the reservoir's bowl;
 - Protection of the existing outlet from piping \varnothing 1200 mm with a non-return valve;
 - Protection of the existing outlets from piping \varnothing 300 mm with a non-return valve;
 - Grading of the Malinówka 2 Reservoir's bowl with a drop of 0.5% toward the Malinówka Stream;
 - Filling of a section of the existing Malinówka channel in a reach at chainage about km 2+230-2+330;
 - Removal of a ditch over a length of about 164 m in the dry reservoir's bowl;
 - Removal of a ditch over a length of about 110 m in the dry reservoir's bowl;
 - Filling a part of the pond;
 - Demolition of concrete elements in the dry reservoir's bowl;
 - Demolition of an inactive water piping wD80 over a length of about 115 m along with three individual surface water-intakes;
 - Demolition of a section of sanitary canalization ks400 over a length of about 235 m and construction of new sanitary canalization \varnothing 400 mm on the left bank of the reservoir over a length of about 488 m;
-

- Demolition of a low-voltage (LV) overhead line 0.4 kV over a length of about 210 m in the Malinówka 2 dry reservoir's bowl and construction of a new cable line beyond the reservoir's bowl;
- Demolition of a cable line over a length of about 55 m in the dry reservoir's bowl.

According to the current estimates¹⁷, the volume of soil necessary for implementation of the Works Contract 3A.2/2 is about 5 K m³. The aforementioned soil masses will be mostly obtained within the framework of the planned grading of land within the reservoir's bowl, and the remainder will be purchased and delivered from licensed external sources proposed by the Contractor and accepted by the Engineer (in compliance with the conditions for protection of environment, protection of material goods and protection of health and safety of people set out in Appendix 1 to the EMP).

¹⁷ Based upon the valid Bill of Quantities.

3 Institutional, legal and administrative conditions

3.1 Institutions involved in implementation of the Contract

The investor for the Contract is the State Water Holding Polish Waters in Warsaw, represented by the Director of the Regional Water Management Authority in Cracow (PGW WP RZGW in Cracow).

Additionally, on the stage of performance and of operation, implementation of the Contract may require involvement of public administration units on central, regional, and local levels. An ongoing coordination of the OVFM Project implementation by particular PIUs is the task of the OVFM Project Coordination Unit (see Chapter 9.1).

3.2 Binding Polish law acts with regard to the environment

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

3.3 EIA procedure in Poland

The description of the environmental impact assessment procedure in Polish legislation is included in the *Environmental and Social Management Framework* (ESMF) published on the i.a. web pages of the World Bank (WB)¹⁸ and the Odra-Vistula Flood Management Project Coordination Unit¹⁹. Furthermore, in case of the EIA procedure legal regulations listed in Appendix 3 to this EMP – List of national legal acts related to environmental protection – are in force.

3.4 Guidelines of the World Bank

The Contract in question shall be co-funded by e.g. the International Bank for Reconstruction and Development (World Bank). As a consequence, the conditions for its implementation in the scope of environmental protection shall correspond with Operational Policies and Bank Procedures in the range of environmental protection, including the following policies and procedures, e.g.: *OP/BP 4.01* (on environmental impact assessment), *OP/BP 4.04* (on environmental habitats), and *OP/BP 4.11* (on cultural resources). A description of the aforementioned World Bank Policies is given in the *Environmental and Social Management Framework* (ESMF), as published e.g. at websites of the World Bank¹⁸ and of the Odra-Vistula

¹⁸ At: <http://documents.worldbank.org/curated/en/717671468333613779/Poland-Odra-Vistula-Flood-Management-Project-environmental-and-social-management-framework>

¹⁹ At: http://odrapcu2019.odrapcu.pl/en/popdow_documents/

Flood Management Project Coordination Unit¹⁹. Original contents of the aforementioned policies and procedures may be found at websites of the World Bank²⁰.

3.5 The current condition of EIA procedure for the Works Contracts 3A.2/1 and 3A.2/2

3.5.1 Administrative decisions on environmental protection

The following decisions on environmental protection were issued for this Contract:

- **Decision on environmental conditions**

A decision on environmental conditions has been proceeded jointly for all five small dry flood storage reservoirs covered by Contract 3A.2 (as listed in Chapter 2), including Malinówka 1 and Malinówka 2 reservoirs, planned for development under Works Contracts 3A.2/1 and 3A.2/2.

In accordance with a classification given in the EIA Regulation, the assignment forming the subject of Contract 3A.2 is qualified to group I of assignments, which may always significantly affect the environment (due to technological association of all five dry reservoirs), for which it is required to perform an environmental impact assessment prior to the issuance of decision on environmental conditions.

A proceeding on the issuance of decision on environmental conditions, during which an environmental impact assessment was done, has been completed with the issuance of a decision by the Regional Director for Environmental Protection in Cracow dated October 29, 2012 (ref. no.: OO.4233.13.2012.BM – Appendix 4a to this EMP) on environmental conditions for the assignment titled:

1. “Construction of a flood storage reservoir “Biezanów” on the River Serafa at chainage km 7+284 in the City of Cracow”;
2. “Construction of a flood storage reservoir “Serafa - 2” on the River Serafa at chainage km 9+223 in the City of Cracow”;
3. “Construction of a flood storage reservoir “Malinówka - 1” on the Malinówka Stream at chainage km 0+220 in the City of Cracow”;
4. “Construction of a flood storage reservoir “Malinówka - 2” on the Malinówka Stream at chainage km 2+320 in the City of Cracow”;
5. “Construction of a flood storage reservoir “Malinówka - 3” on the Malinówka Stream at chainage km 3+017 in the City of Cracow and in the City of Wieliczka”.

²⁰ At: <https://policies.worldbank.org/sites/PPF3/Pages/Manuals/Operational%20Manual.aspx#S3-2> (in the part titled *Investment Project Financing / Environmental and Social Safeguard Policies*)

- **Resolution on staging of the proceeding**

Resolution of the Regional Director for Environmental Protection in Cracow dated October 3, 2018 (ref. no.: OO.4220.5.10.2018.BM – Appendix 4b to this EMP) states that implementation of the planned contract (comprising development of five dry flood storage reservoirs, one of which – Biezanów – has already been constructed and handed over for use) shall be done in stages and that the conditions determined in the decision of the Regional Director for Environmental Protection in Cracow dated October 29, 2012 (ref. no.: OO.4233.13.2012.BM) have not been changed.

- **Resolutions clarifying doubts to contents and correcting obvious editorial mistakes in the decision on environmental conditions:**

- Resolution of the Regional Director for Environmental Protection in Cracow dated September 12, 2019 (ref. no.: OO.4220.5.28.2019.BM – Appendix 4c to this EMP);
- Resolution of the Regional Director for Environmental Protection in Cracow dated September 16, 2019 (ref. no.: OO.4220.5.29.2019.BM – Appendix 4d to this EMP).
- Resolution of the Regional Director for Environmental Protection in Cracow dated December 5, 2019 (ref. no.: OO.4220.44.2019.BM – Appendix 4e to this EMP);
- Resolution of the Regional Director for Environmental Protection in Cracow dated August 17, 2020 (ref. no.: OO.4220.5.27.2020.BM – Appendix 4j to this EMP).
- Resolution of the Regional Director for Environmental Protection in Cracow dated November 18, 2020 (ref. no.: OO.4220.5.39.2020.BM – Appendix 4l to this EMP).

- **Resolution imposing obligation for providing an environmental impact assessment for the Serafa 2 Reservoir and for the Malinówka 3 Reservoir**

Resolution of the Regional Director for Environmental Protection in Cracow dated May 28, 2020 (ref. no.: OO.420.4.3.2019.BM – Appendix 4g to this EMP) imposing an obligation for providing an environmental impact assessment due to modification of design assumptions for the investment and necessary amendment to the decision on environmental conditions dated October 29, 2012 (in the range referring to the development of the Serafa 2 Reservoir and the Malinówka 3 Reservoir).

- **Decision amending the decision on environmental conditions**

Decision of the Regional Director for Environmental Protection in Cracow dated September 18, 2020 (ref. no.: OO.420.4.3.2019.BM – Appendix 4k to this EMP) amending the decision on environmental conditions dated October 29, 2012 in the range referring to the development of the Serafa 2 Reservoir and the Malinówka 3 Reservoir.

- **Decisions allowing for departure from bans binding in reference to protected species:**
 - Decision of the Regional Director for Environmental Protection in Cracow dated February 07, 2020 allowing for departure from bans binding in reference to plants under protection at the construction site of the Malinówka 2 reservoir (ref. no.: OP.6400.1.2020.KW – Appendix 4f to this EMP);
 - Decision of the Regional Director for Environmental Protection in Cracow dated May 29, 2020 allowing for departure from bans binding in reference to animals under protection at the construction site of the Malinówka 1 reservoir (ref. no.: OP-I.6401.65.2020.PKw – Appendix 4h to this EMP);
 - Decision of the Regional Director for Environmental Protection in Cracow dated May 29, 2020 allowing for departure from bans binding in reference to animals under protection at the construction site of the Malinówka 2 reservoir (ref. no.: OP-I.6401.65.2020.PKw.1 – Appendix 4i to this EMP).

Copies of the documents listed above have been reproduced under Appendix 4 to this EMP – Decision, resolutions, permits, notices.

3.6 Grievance redress mechanisms

All project affected persons (PAPs) will have access to adequate and accessible grievance redress mechanisms. Everyone has the right to file a complaint or motion. Filing complaints or motions is not subject to fees. Furthermore, in accordance with the regulations, the person filing a complaint or request may not be exposed to any damage or allegation on account of such submission.

More information on Grievance redress mechanisms employed for projects co-financed from World Bank funds can be found in the Odra-Vistula Flood Management Project Operations Manual (POM) available on the website of the Project Coordination Unit²¹.

²¹ At: http://odrapcu2019.odrapcu.pl/doc/POM_ENG.pdf.

4 Description of environmental elements

4.1 Land surface and landscape

4.1.1 Works Contract 3A.2/1 – Malinówka 1 Reservoir

According to the physical-geographical regionalization by Kondracki (2001), including following modifications to the aforementioned regionalization, the implementation site for the Works Contract 3A.2/1 is located within Nadwiślańska Lowland and Krakowskie Foothills (Fig. 2):

- megaregion: Carpathian Region;
- province: Western Carpathian Mountains with Western and Northern Podkarpacie;
- subprovince: Northern Podkarpacie;
- macroregion: Sandomierska Valley;
- mezoregion: Nadwiślańska Lowland (northern, western, and north-western parts) and Krakowskie Foothills (southern, eastern, and south-eastern parts).

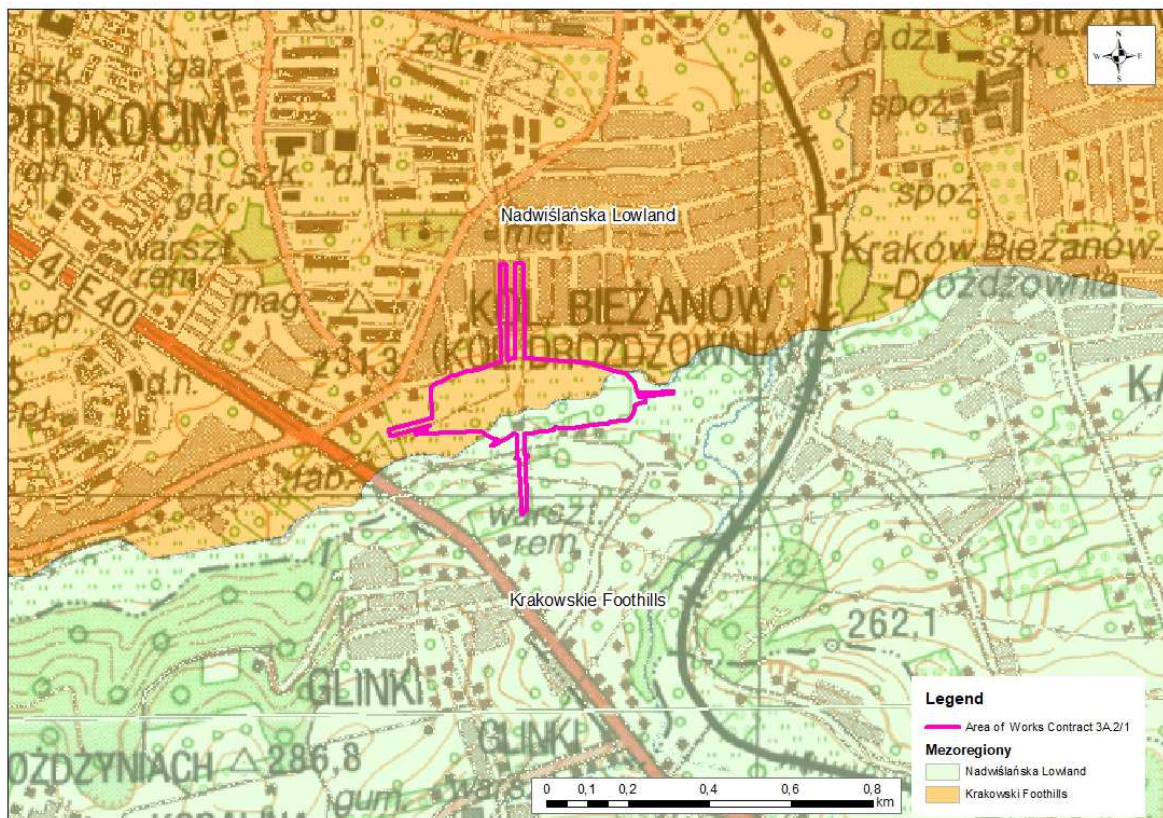


Fig. 2. Location of the Works Contract 3A.2/1 – Malinówka 1 Reservoir in reference to physical-geographical units (source: own materials)

4.1.2 Works Contract 3A.2/2 – Malinówka 2 Reservoir

According to the physical-geographical regionalization by Kondracki (2001), including following modifications to the aforementioned regionalization, the implementation site for the Works Contract 3A.2/2 is entirely located within Krakowskie Foothills (Fig. 3):

- megaregion: Carpathian Region;
- province: Western Carpathian Mountains with Western and Northern Podkarpacie;
- subprovince: Northern Podkarpacie;
- macroregion: Sandomierska Valley;
- mezoregion: Krakowskie Foothills.

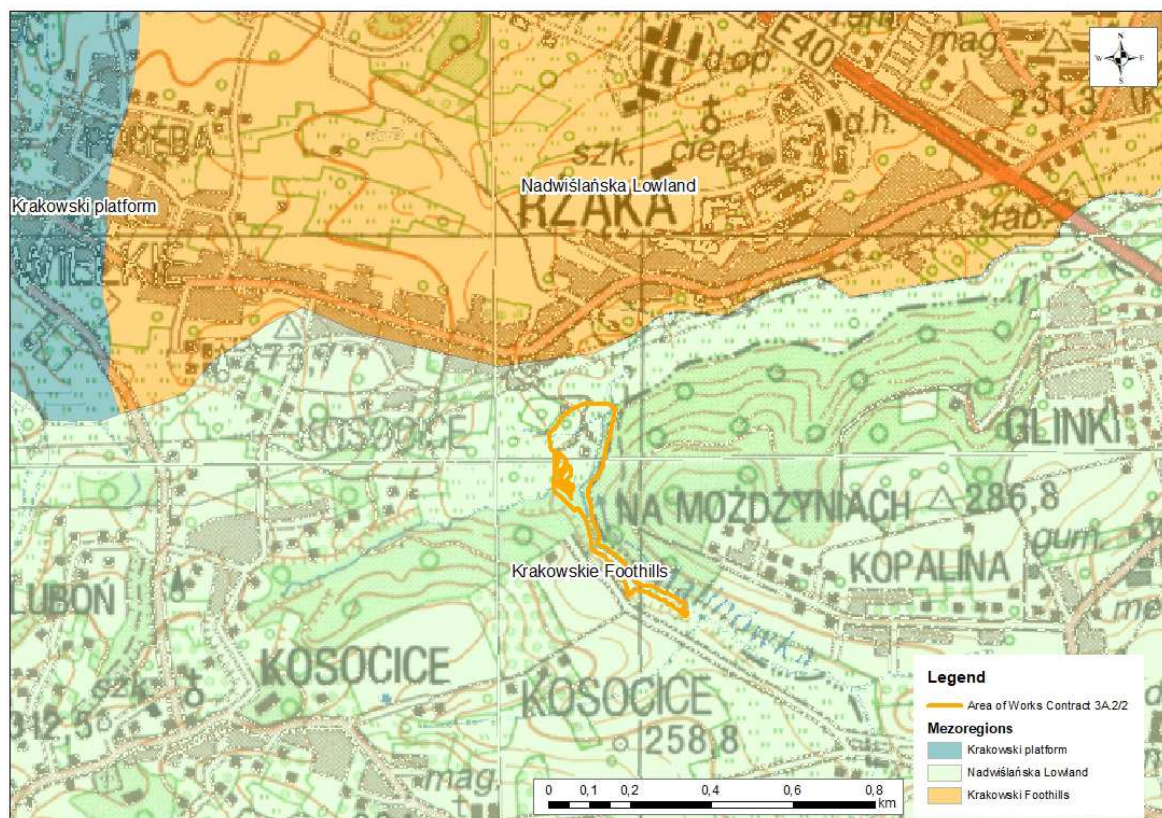


Fig. 3. Location of the Works Contract 3A.2/2 – Malinówka 2 Reservoir in reference to physical-geographical units (source: own materials)

4.2 Climate

The City of Cracow and its closest vicinity is located at the bottom boundary of a moderately warm climatic level of the Carpathian Mountains, which is a variety of valley climate. It is specified by high diversity of weather conditions resulting mainly from the inflow of various air masses to that area – polar-maritime mainly, and – to a lesser extent – warm within the entire year: tropical-maritime or continental, as well as cold and dry arctic air.

Meteorological conditions for the City of Cracow and its vicinity in 2018 (WIOŚ, Cracow 2018):

- Mean annual temperature: 10.6°C,
- Annual long-term precipitation rate in the area was from 500 mm at Małopolska Upland to 1200-1400 mm in the Carpathian Mountains.

4.3 Air quality

The quality of air within the City of Cracow and in its vicinity may be considered as bad. Acceptable levels determined for suspended particulates PM10 and PM2.5 (daily concentration, as well as alarm levels and mean annual rates) and target levels for benzo(a)pyrene (mean annual concentration) are highly exceeded. Those exceedances also refer to the acceptable level for nitrogen dioxide (mean annual concentration).

The main reason for exceedance – in case of suspended particulates PM10 and PM2.5 and benzo(a)pyrene – is low emission, i.e. emission generated by consumption of coal and its derivatives in individual heating sources, and sometimes of waste by household. Transportation, which is the main source of emission in case of nitrogen oxides and has the biggest share in emission of that pollution, has a smaller contribution in exceedance of the aforementioned substances in the air. Spot sources generally have a smaller impact on the quality of air in Cracow, but locally – in areas located in the industrial impact zone – their share may also raise.

4.4 Soils and grounds

4.4.1 Works Contract 3A.2/1 – Malinówka 1 Reservoir

Currently the area of the planned dry reservoir Malinówka 1 (Works Contract 3A.2/1) is mainly formed by waste land with local groups of trees and shrubs.

Ground and water conditions were recognized in the area of the planned reservoir (up to a depth of ~2.0 m in the reservoir's bowl and 4.0 m b.g.l. in the dam area). The top layer with a thickness of ~0.2 to ~0.7 m is formed by soil and made grounds – top-soil sand. Below, up to a depth of from ~1.0 m to over ~2.5 m there are dusty clays, sandy clays, compacted clays and dusty clays with interlays/inter-layers of clay silt, humid low plasticity clays and plastic clays. Dusty sand, fine sand, semi-compacted sand – usually with admixture of dust – are located deeper (Source: Environmental Impact Report – Dry Flood Storage Reservoirs in the Serafa River Basin, Cracow, May 2012).

According to the soil and agricultural map of the Małopolskie Province²² the areas, where construction of a dry reservoir is planned, are qualified to the following soil and agricultural complexes: very good and good green land (on alluvial soil), good rye complex (rye and potatoes) (on leached brown soil and on acid brown soil), and strong grain and fodder complex (on alluvial soil).

The area of the planned dry reservoir Malinówka 1 is formed by farmland and meadows with field plants (shrubs and tree tufts). Currently there (according to extracts from land registers) mainly are the following: permanent meadows (ŁII, ŁIII) and arable land (RIIIb, RIVb), as well as roads (dr) and grounds underneath flowing surface water.

In case of the discussed area, there are the following soil classes underneath arable land:

- II – very good arable soil,
- IIIb – averagely good arable soil,
- IVb – average quality, worse arable soil.

4.4.2 Works Contract 3A.2/2 – Malinówka 2 Reservoir

Currently the area of the planned dry reservoir Malinówka 2 (Works Contract 3A.2/2) is mainly formed by afforested land with local groups of trees and shrubs.

The works done for the purpose of the EIA Report proved that geological composition of the area in question includes Quaternary formations. The top layer with a thickness of ~0.3 m is formed by soil, and further – up to a depth of ~3.0 m – by dusty clays, sandy clays, compacted brown dusty clays – hard plastic and plastic – locally with admixture of organic particles, grey-black soft plastic silt. Medium and fine sands – usually with admixture, interlays of dust and clay – are located deeper. They are brown and grey, and are averagely compacted. Archival materials prove that the older subbase is made by Tertiary formations represented by loam, the top of which is located in a depth of around 15.0 m. (Source: Environmental Impact Report – Dry Flood Storage Reservoirs in the Serafa River Basin, Cracow, May 2012).

According to the soil and agricultural map of the Małopolskie Province²³ the areas, where construction of a dry reservoir is planned, are qualified to the following soil and agricultural complexes: medium green land (on specific brown soil – alluvial sediments and alluvial gleysol), weak and very weak green land (on alluvial gleysol and on podzoluvisol and pseudo-podzoluvisol), weak rye complex (rye and potatoes) on podzoluvisol and pseudo-podzoluvisol, strong grain and fodder complex (on specific brown soil – alluvial sediments), forest land (on podzoluvisol and pseudo-podzoluvisol and on specific brown soil – alluvial sediments), and grounds of the State Forest Unit.

The area of the planned dry reservoir Malinówka 2 is formed by farmland and meadows with field plants (shrubs and tree tufts). Currently there (according to extracts from land registers) mainly are the following: permanent pastures (PsIII, PsIV, PsV), afforested and shrubbed grounds (LzIV) and arable lands (RIVb, RV, RVI), permanent meadows (ŁIV, ŁV), roads (dr), ditches (W), waste land (N), and grounds underneath flowing surface water (Wp), industrial areas (Ba), as well as residential areas (B) – at the boundaries.

²² https://miip.geomalopolska.pl/mapa/glebowo_rolnicza.html

²³ https://miip.geomalopolska.pl/mapa/glebowo_rolnicza.html

In case of the discussed area, there are the following soil classes underneath arable land:

- III – good and averagely good arable soil,
- IV – average quality arable soil (better and worse),
- V – weak arable soil.

4.5 Surface water

4.5.1 Works Contract 3A.2/1 – Malinówka 1 Reservoir

The Works Contract 3A.2/1 is located in the Upper Vistula river basin, and is managed by PGWWP RZGW in Cracow. The River Serafa remains one of its main water-courses within the discussed reach. Main tributary rivers of Serafa are as follows: Krzyszkowicki Stream (left bank), Malinówka Stream (left bank), Drwina Długa Stream (left bank), Zabawka Stream (right bank). The Malinówka Stream has a regulated channel within the entire range of the discussed area. The stream has lots of inflowing courses. Its surface is overgrown by grass plants, with sparse trees and shrubs. The Malinówka Stream's catchment covers areas of sparse semi-detached houses and detached houses and areas of forests, e.g. Krzyszkowicki Forest. The stream accommodates out-of-class waters – both in terms of physical-chemical pollutions, as well as bacteriological contamination, as it discharges surface water from areas of municipal waste storage facilities in Barycz.

The condition of surface water within the boundaries of the body of surface water covering the area of the planned contract is monitored on an ongoing basis within the framework of state environmental monitoring, and its results are cyclically published on websites²⁴ of the Central Environmental Protection Inspectorate.

Hydrological specificity of the River Serafa and of the Malinówka Stream in the area of four reservoirs to be developed under Contract 3A.2 (reservoirs: *Malinówka 1*, *Malinówka 2*, *Malinówka 3*, and *Serafa 2* – see: description in Chapter 2) is given in the table below²⁵:

²⁴ <http://www.gios.gov.pl/pl/stan-srodowiska/monitoring-wod> and
http://www.gios.gov.pl/pl/stan-srodowiska/monitoring-wod#mon_wod_pow

²⁵ Flow values given in the table have been calculated for the current conditions of development at the River Serafa and at the Malinówka Stream. Due to that reason values of flows $Q_{1\%}$, $Q_{0.5\%}$ and $Q_{0.2\%}$ given in the table differ from the values given in characteristics for particular reservoirs in Chapters 2.3.1 and 2.3.2 (those values have been calculated for forecasted conditions of development at the River Serafa and at the Malinówka Stream – flows raised due to sealing of the catchment).

Marking	<u>Malinówka 1 Reservoir</u>	<u>Malinówka 2 Reservoir</u>	<u>Malinówka 3 Reservoir</u>	<u>Serafa 2 Reservoir</u>
Stream/River	Malinówka	Malinówka	Malinówka	Serafa
Chainage of the reservoir's dam	0+222	2+279	2+990	9+223
Catchment area [km ²]	6.73	5.88	5.50	9.84
Characteristic flows[m ³ /s]:				
• average low (SNQ)	0.007	0.006	0.005	0.010
• mean annual (SSQ)	0.055	0.048	0.046	0.081
Probable flows [m ³ /s] for Class III hydraulic structures (at inlet to reservoirs):				
• Q _{1%}	4.9	4.17	6.3	15.7
• Q _{0.5%} (design flow)	7.5	7.27	14.0	23.7
• Q _{0.2%} (control flow)	19.9	20.42	25.4	46.7

Source: Own study based upon hydrological calculations and hydraulic modeling of flow in water-courses.

The planned dry Malinówka 1 Reservoir is located within the Body of Surface Water BSW *Serafa* (PLRW2000262137749). In accordance with the currently binding Water Management Plan for the Vistula River Basin (WMP), approved with a Regulation of the Council of Ministers of October 18, 2016 (OJ of 2016, item no. 1911), specificity of the BSW in the area of the analyzed Works Contract is as follows.

BSW *Serafa* (PLRW2000262137749):

- BSW type: water-courses in valleys of great lowland rivers (26),
- Status: highly modified body of water,
- Is it monitored: yes,
- Assessment of the current condition (2016): bad,
- Assessment of risk of not achieving the environmental objectives: under risk,
- Derogations: yes,
- Deviation type: extension of the time to reach the objective – no technical possibilities,
- Deadline for achieving the good status: 2027,
- Justification for derogation: no technical possibilities. There is a communal pressure within the BSW. The action program planned a measure comprising review of water-law permits for the transfer of wastewater to the water or to the ground by users of the BSW, due to a risk of not achieving the environmental objectives, in accordance with Article 136 (3) of the Water Law Act, which is to provide a detailed recognition and – as a result – to limit that pressure, so it would be possible to achieve parameters corresponding with good

status rates. However, due to the time necessary for implementation of that measure and subsequent particular recovery measures, as well as the time necessary for obtaining results of the implemented measures, good status may be achieved until 2027.

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

Implementation of the Works Contract 3A.2/1 shall not affect the river's morphological continuity, and it also shall not affect its hydromorphological, biological, and physical-chemical elements. The planned works shall not modify the volume and dynamics of flows in the river.

The Works Contract in question shall not form a risk of not achieving the environmental objectives established for the BSW. It shall neither refer to the intake of water nor to the discharge of wastewater to the ground; thus, it shall not affect the quantitative and qualitative status of surface water and groundwater.

Location of the Works Contract in reference to the BSW is given on a figure below (Fig. 4).

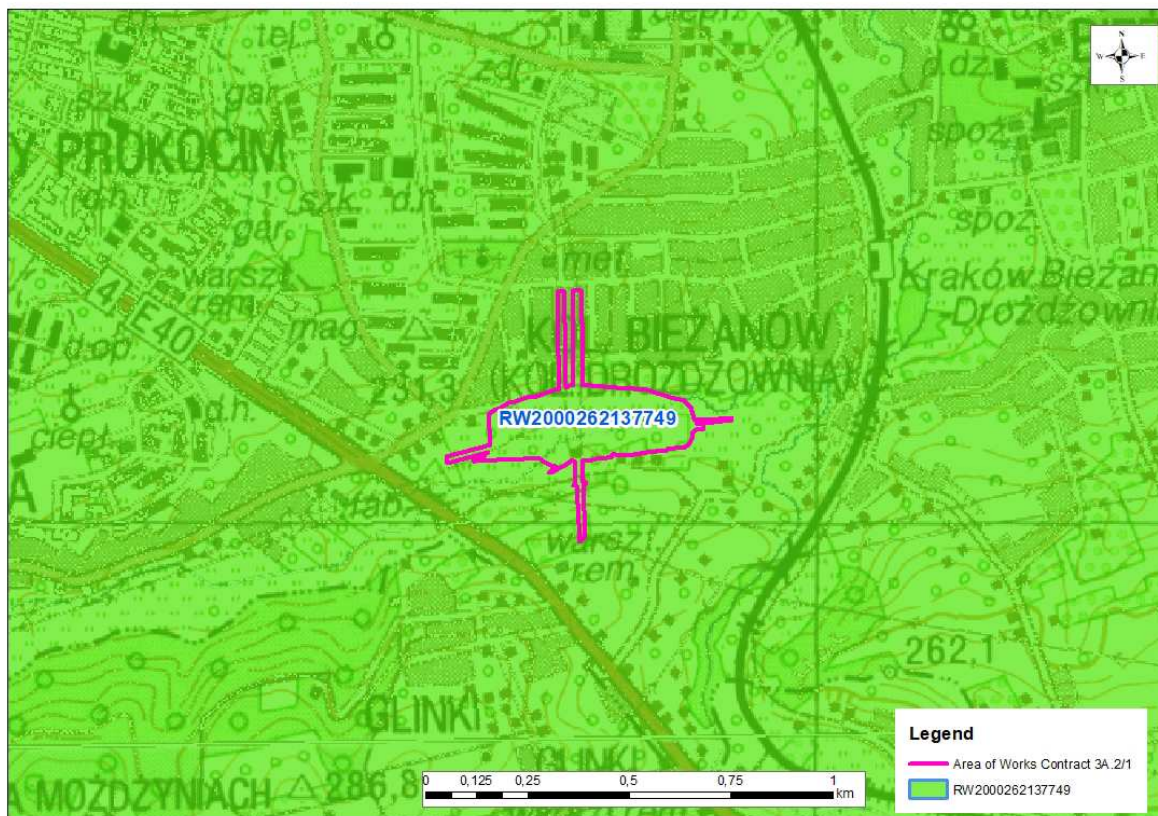


Fig. 4. Location of the Works Contract 3A.2/1 in reference to the BSW
(source: own materials)

4.5.2 Works Contract 3A.2/2 – Malinówka 2 Reservoir

The Works Contract 3A.2/2 is located in the Upper Vistula river basin, and is managed by PGWWP RZGW in Cracow. The River Serafa remain one of its main water-courses within the discussed reach. Main tributary rivers of Serafa are as follows: Krzyszkowicki Stream (left bank), Malinówka Stream (left bank), Drwina Długa Stream (left bank), Zabawka Stream (right bank). The Malinówka Stream has a regulated channel within the entire range of the discussed area. The stream has lots of inflowing courses. Its surface is overgrown by grass plants, with sparse trees and shrubs. The Malinówka Stream's catchment covers areas of sparse semi-detached houses and detached houses and areas of forests, e.g. Krzyszkowicki Forest. The stream accommodates out-of-class waters – both in terms of physical-chemical pollutions, as well as bacteriological contamination, as it discharges surface water from areas of municipal waste storage facilities in Barycz.

The condition of surface water within the boundaries of the body of surface water covering the area of the planned contract is monitored on an ongoing basis within the framework of state environmental monitoring, and its results are cyclically published on websites²⁶ of the Central Environmental Protection Inspectorate.

Hydrological specificity of the River Serafa and of the Malinówka Stream in the area of four reservoirs to be developed under Contract 3A.2 (reservoirs: *Malinówka 1*, *Malinówka 2*, *Malinówka 3*, and *Serafa 2* – see: description in Chapter 2) is given in the table presented in Chapter 4.5.1.

The planned dry Malinówka 2 Reservoir is located within the Body of Surface Water BSW *Serafa* (PLRW2000262137749). In accordance with the currently binding Water Management Plan for the Vistula River Basin (WMP), approved with a Regulation of the Council of Ministers of October 18, 2016 (OJ of 2016, item no. 1911), specificity of the BSW in the area of the analyzed Works Contract is as follows.

BSW *Serafa* (PLRW2000262137749):

- BSW type: water-courses in valleys of great lowland rivers (26),
- Status: highly modified body of water,
- Is it monitored: yes,
- Assessment of the current condition (2016): bad,
- Assessment of risk of not achieving the environmental objectives: under risk,
- Derogations: yes,
- Deviation type: extension of the time to reach the objective – no technical possibilities,
- Deadline for achieving the good status: 2027,
- Justification for derogation: no technical possibilities. There is a communal pressure within the BSW. The action program planned a measure comprising review of water-law permits for the transfer of wastewater to the water or to the ground by users of the BSW, due to a risk of not achieving the environmental objectives, in accordance with Article 136 (3) of the Water Law Act, which is to provide a detailed recognition and – as a result – to limit

²⁶ <http://www.gios.gov.pl/pl/stan-srodowiska/monitoring-wod> and
http://www.gios.gov.pl/pl/stan-srodowiska/monitoring-wod#mon_wod_pow

that pressure, so it would be possible to achieve parameters corresponding with good status rates. However, due to the time necessary for implementation of that measure and subsequent particular recovery measures, as well as the time necessary for obtaining results of the implemented measures, good status may be achieved until 2027.

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

Implementation of the Works Contract 3A.2/2 shall not affect the river's morphological continuity, and it also shall not affect its hydromorphological, biological, and physical-chemical elements. The planned works shall not modify the volume and dynamics of flows in the river.

The Works Contract in question shall not form a risk of not achieving the environmental objectives established for the BSW. It shall neither refer to the intake of water nor to the discharge of wastewater to the ground; thus, it shall not affect the quantitative and qualitative status of surface water and groundwater.

Location of the Works Contract in reference to the BSW is given on a figure below (Fig. 5).

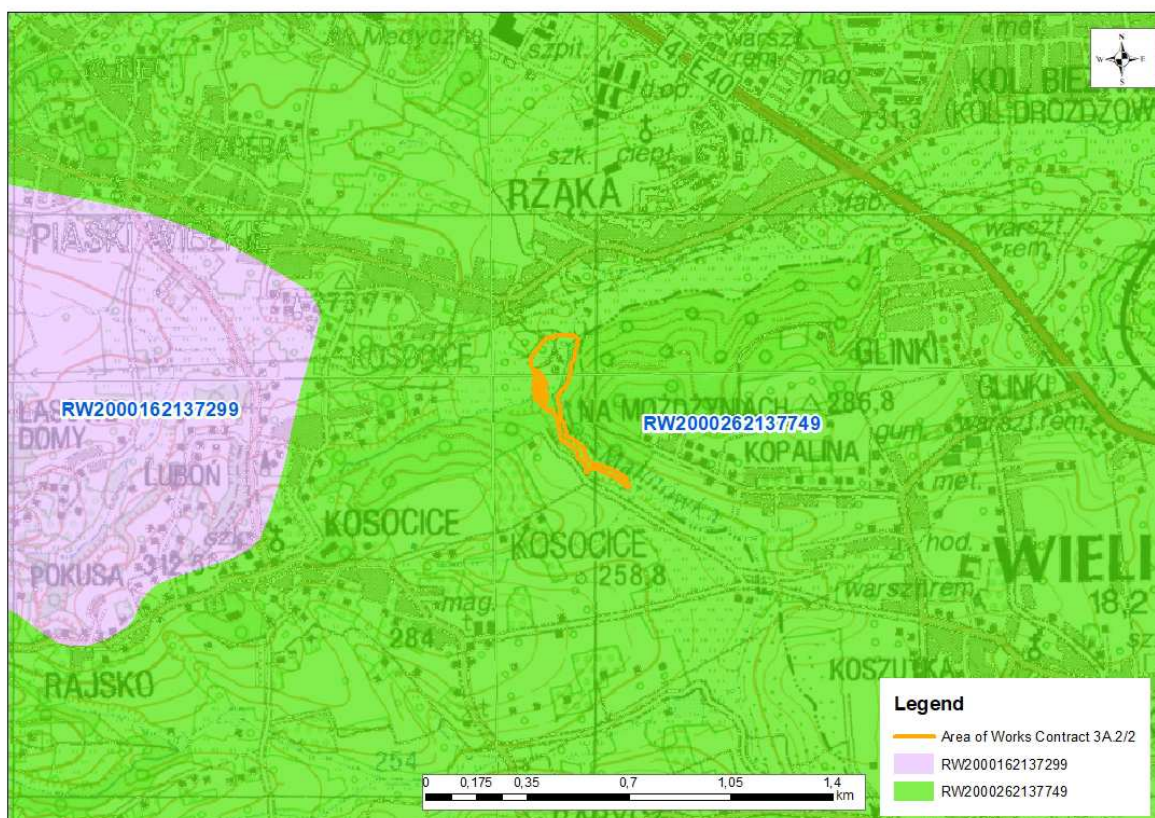


Fig. 5. Location of the Works Contract 3A.2/2 in reference to the BSW
(source: own materials)

4.6 Groundwater

4.6.1 Works Contract 3A.2/1 – Malinówka 1 Reservoir

Geological formation and hydrogeological conditions

In geological terms the implementation area for the Works Contract 3A.2/1 is located within Przedkarpackie Depression – in its western part. The depression is filled with Miocene molassic sediments. Neogene sediments are located in rocks of various age – from Precambrian period to Cretaceous period, and in tectonic units of various age. Thickness of those sediments is diversified and reflects the subbase morphology. Tertiary sediments (Neogene) in the form of Skawa layers made of loam and – locally – with admixture of sand are covered with a layer of Quaternary sediments made of sand and fluvial gravel and alluvial soil (loam, clay, sand).

Ground and water conditions were recognized in the area of the planned reservoir up to a depth of ~2.0 m in the reservoir's bowl and 4.0 m b.g.l. in the dam area. The top layer with a thickness of ~0.2 to ~0.7 m is formed by soil and made grounds – top-soil sand. Below, up to a depth of from ~1.0 m to over ~2.5 m there are dusty clays, sandy clays, compacted clays and dusty clays with interlays/inter-layers of clay silt, humid low plasticity clays and plastic clays. Dusty sand, fine sand, semi-compacted sand – usually with admixture of dust – are located deeper, and they have not been drilled through up to a depth of 4.0 m b.g.l.

Archival materials prove that the aforementioned Quaternary formations are located up to a depth of around 15.0 – 20.0 m b.g.l. The older subbase is made of Tertiary formations represented by Bogucice sands.

The first water-bearing level occurs at Quaternary formations. The water-bearing layer is made of sand. During drilling the level of Surface water has been drilled through and stabilized at a depth of from ~2.6 to 3.0 m b.g.l. The depth of surface water occurrence may temporarily (drought, increased rainfall, spring thaw, floods in the River Serafa and in Malinówka) be changed. The River Serafa and the Malinówka Stream have a draining character at low and average levels, whereas in case of freshets and floods they cause short-term damming of surface water; thus, providing local submerged areas and marshes.

The essential utilitarian level of surface water is associated with Tertiary formations represented by Bogucice sands. Its water-table is tense. In several wells drilled its level is in the range of 60.0 – 200.0 m b.g.l. and its hydrostatic pressure is from ~5.0 to ~40.0 m, and it locally occurs as Artesian aquifer.

The planned dry Malinówka 1 Reservoir is located in the area of Tertiary groundwater reservoir MGR 451. However, due to high depths of Tertiary water occurrence - ~60 – 100m – and presence of non-permeable insulating layers in the subbase, the impact of collected water on the quality of MGR 451 water is not anticipated. The water collected in the dry flood storage reservoir shall be there for too short time to infiltrate into the orogen. Additionally, the planned reservoirs are situated within a low site, where – in case of higher levels in the Malinówka Stream – water floods that area spontaneously.

The quantitative status and the qualitative status of ground water within the body of ground water covering the area of the planned contract is monitored on an ongoing basis within the

framework of state environmental monitoring, and its results are cyclically published on websites²⁷ of the State Institute of Geology and of the State Research Institute.

Bodies of groundwater (BGW)

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 the end of 2016. The analyzed Contract is located within the Body of Ground Water BGW 148 (European code: PLGW2000148).

The Water Management Plan for waters within the Vistula River Basin (Water MP), 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 as good. In terms of risk of not achieving environmental objectives under the Plan, the unit no. 148 was defined as not being at risk.

Environmental objective: good chemical status, and good quantitative status.

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

- Preventing the inflow or limitation of the inflow of pollutions to groundwater,
- Preventing the deterioration of status for all bodies of groundwater (including reservations listed under the Water Framework Directive),
- Assurance of balance between the intake and the supply for groundwater,
- Implementation of measures necessary for reversing significant and constantly 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 maintenance of that status.

The designed dry reservoir shall not result in deterioration of the groundwater status, and infiltration of pollutions to the groundwater is not anticipated.

It has been stated that the development of planned water facilities and the intended use of water services shall not violate provisions of the binding Water Management Plan for the river-basin.

Location of the Contract in reference to the BGW was presented on the drawing given below (Fig. 6).

²⁷ <https://www.pgi.gov.pl/psh/psh-2/monitoring-wod-podziemnych.html> and <http://mjwp.gios.gov.pl/raporty-art/2017.html>

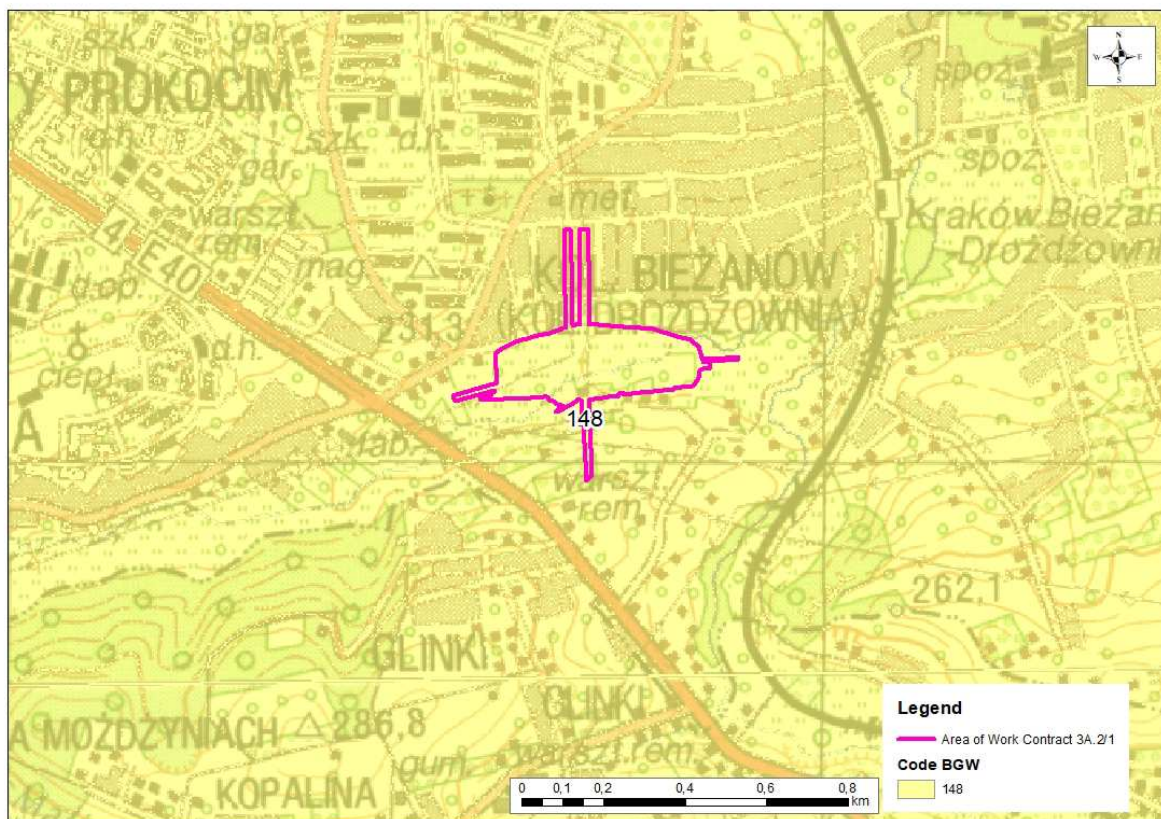


Fig. 6. Location of the Works Contract 3A.2/1 in reference to the BGW
(source: own materials)

4.6.2 Works Contract 3A.2/2 – Malinówka 2 Reservoir

Geological formation and hydrogeological conditions

In geological terms the implementation area for the Works Contract 3A.2/2 is located within Przedkarpackie Depression – in its western part. The depression is filled with Miocene molassic sediments. Neogene sediments are located in rocks of various age – from Precambrian period to Cretaceous period, and in tectonic units of various age. Thickness of those sediments is diversified and reflects the subbase morphology. Tertiary sediments (Neogene) in the form of Skawa layers made of loam and – locally – with admixture of sand are covered with a layer of Quaternary sediments made of sand and fluvial gravel and alluvial soil (loam, clay, sand).

The geological composition of the area in question includes Quaternary formations. The top layer with a thickness of ~0.3 m is formed by soil, and further – up to a depth of ~3.0 m – by dusty clays, sandy clays, compacted brown dusty clays – hard plastic and plastic – locally with admixture of organic particles, grey-black soft plastic silt. Medium and fine sand – usually with admixture, interlays of dust and clay – are located deeper. They are brown and grey, and are averagely compacted. Archival materials prove that the older subbase is made by Tertiary formations represented by loam, the top of which is located in a depth of around 15.0 m.

The first water-bearing level occurs at Quaternary formations. The water-bearing layer is mainly made of sand, silt /capillary suction/. During drilling the level of surface water has

been drilled through and stabilized at a depth of from ~1.0 to 1.5 m b.g.l., i.e. at elevation ~205.9 m a.s.l.

The essential utilitarian level of surface water is associated with Tertiary formations represented by Bogucice sands. Its water-table is tense.

The planned dry Malinówka 2 Reservoir is located in the area of Tertiary groundwater reservoir MGR 451. However, due to high depths of Tertiary water occurrence - ~60 – 100m – and presence of non-permeable insulating layers in the subbase, the impact of collected water on the quality of MGR 451 water is not anticipated. The water collected in the dry flood storage reservoir shall be there for too short time to infiltrate into the orogen. Additionally, the planned reservoirs are situated within a low site, where – in case of higher levels in the Malinówka Stream – water floods that area spontaneously.

The quantitative status and the qualitative status of ground water within the body of ground water covering the area of the planned contract is monitored on an ongoing basis within the framework of state environmental monitoring, and its results are cyclically published on websites²⁸ of the State Institute of Geology and of the State Research Institute.

Bodies of groundwater (BGW)

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 the end of 2016. The analyzed Contract is located within the Body of Ground Water BGW 148 (European code: PLGW2000148).

The Water Management Plan for waters within the Vistula River Basin (Water MP), 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 as good. In terms of risk of not achieving environmental objectives under the Plan, the unit no. 148 was defined as not being at risk.

Environmental objective: good chemical status, and good quantitative status.

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

- Preventing the inflow or limitation of the inflow of pollutions to groundwater,
- Preventing the deterioration of status for all bodies of groundwater (including reservations listed under the Water Framework Directive),
- Assurance of balance between the intake and the supply for groundwater,
- Implementation of measures necessary for reversing significant and constantly 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.

²⁸ <https://www.pgi.gov.pl/psh/psh-2/monitoring-wod-podziemnych.html> and <http://mjwp.gios.gov.pl/raporty-art/2017.html>

The designed dry reservoir shall not result in deterioration of the groundwater status, and infiltration of pollutions to the groundwater is not anticipated.

It has been stated that the development of planned water facilities and the intended use of water services shall not violate provisions of the binding Water Management Plan for the river-basin.

Location of the Contract in reference to BGW was presented on the drawing given below (Fig. 7).

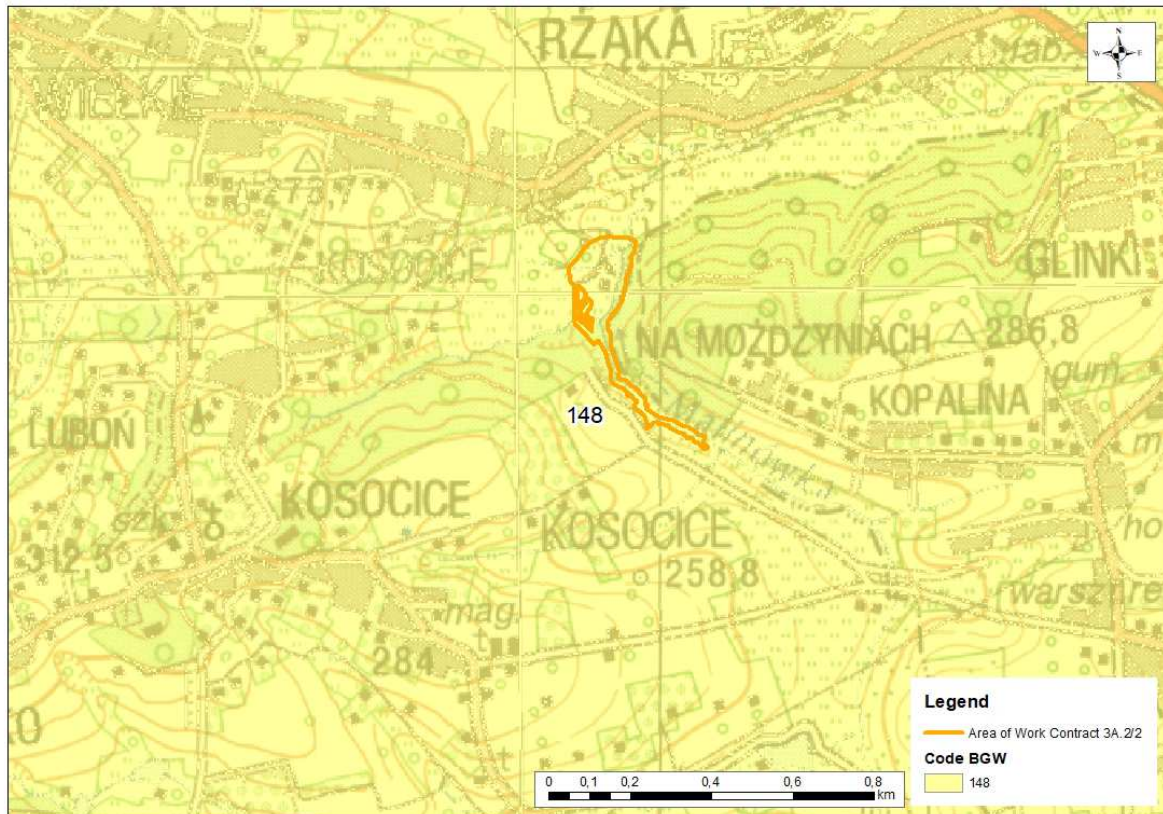


Fig. 7. Location of the Works Contract 3A.2/2 in reference to the BGW
(source: own materials)

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.

Significant impact on the condition of acoustic climate in Małopolskie Province is exerted by traffic noise. The acoustic climate in the area of reservoir in question of mainly generated by the A4 Motorway placed in the neighborhood.

The Works Contracts in question shall be performed in areas without acoustic protection (wasteland), but there are some areas requiring protection of that kind in their vicinity. In case of the Malinówka 1 Reservoir the closest areas requiring acoustic protection are located

on the northern side of that reservoir. Those sites are partially placed in a reach of excessive noise (at night), which is generated by A4 Motorway. Maximum exceedance in that area may reach about 4 dB.

In case of the Malinówka 2 Reservoir the closest areas requiring acoustic protection are located on the western side and on the south-western side of the planned Malinówka 2 Reservoir. Similarly as in the previous case, i.e. Malinówka 1 Reservoir, the acoustic climate in the area in question is shaped by A4 Motorway. Acceptable values in areas requiring acoustic protection in the direct neighborhood of the motorway maximally reach about 19 dB at night (Acoustic Map for the City of Cracow, 2017).

4.8 Nature

4.8.1 Protected Environmental Habitats and Protected Species of Plants, Fungi, and Animals – Works Contract 3A.2/1

Flora

A botanical inventory done at the obtainment of decision on environmental conditions and in May 2018 proved that:

- Protected species of plants and fungi are not present within the Malinówka 1 Reservoir,
- Protected environmental habitats are not present within the Malinówka 1 Reservoir,
- The most valuable elements in the area are old oaks and willows growing along the old channel,
- Such invasive species as Canadian goldenrod and such highly invasive species of trees as box elder and black cherry have been identified within the inspected area.

Fauna

A zoological inventory done at the obtainment of decision on environmental conditions and in May 2018 proved that:

- Protected species of invertebrates were not observed within the Malinówka 1 Reservoir and its buffer,
- Occurrence of fish was not identified within the area of the planned Malinówka 1 Reservoir and its buffer,
- Habitats proper for protected species of amphibians were not identified within the Malinówka 1 Reservoir and its buffer,
- Sand lizard was identified among protected species of reptiles,
- The area of Malinówka 1 Reservoir is not an attractive habitat for ornithofauna, it is only used by single specimens of anthropophobic synanthrope populations. Protected species of birds were not identified in the area, but 6 protected species were observed within the buffer, e.g. white wagtail, bunting bird, common blackbird, and common kestrel.
- During night listening watches within the designed Malinówka 1 Reservoir activity of bats was not identified. An analysis of habitat conditions proved that there are no potential bat habitats within the area in question.
- There are no actual or potential habitats of protected species of non-flying mammals in the area of Malinówka 1 Reservoir.

Location of the Contract in reference to the protected resources of the natural environment was presented on a map reproduced under Appendix 7 to the EMP – Map with location of the Contract in reference to natural habitats and protected species occurrence sites.

4.8.2 Protected Environmental Habitats and Protected Species of Plants, Fungi, and Animals – Works Contract 3A.2/2

Flora

A botanical inventory done at the obtainment of decision on environmental conditions and in May 2018 proved that:

- Occurrence of one protected species of plants – bryophyte under partial protection, i.e. 1 m² of red-stemmed feathermoss *Pleurozium schreberi* – has been identified within the Malinówka 2 Reservoir.
- Protected species of fungi are not present within the Malinówka 2 Reservoir.
- Occurrence of two protected environmental habitats has been identified within the Malinówka 2 Reservoir:
 - 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, *Alnion incanae*, *Salicion albae*)
(1 patch of habitat with an area of 1.2 ha),
 - 9170 Galio-Carpinetum oak-hornbeam forests
(2 patches of habitat with a total area of 1.2 ha).
- Such invasive species as Canadian goldenrod and small balsam, and such highly invasive species of trees as box elder, black locust, and black cherry have been identified within the inspected area.

Fauna

A zoological inventory done at the obtainment of decision on environmental conditions and in May 2018 proved that:

- Buff-tailed bumblebee *Bombus terrestris* and red-tailed bumblebee *Bombus lapidarius* were observed within the designed Malinówka 2 Reservoir and its buffer. In the forest located within the contract buffer presence of saproxylic beetles is not excluded.
- Occurrence of fish was not identified within the area of the planned Malinówka 2 Reservoir and its buffer.
- Within the area of the Malinówka 2 Reservoir relatively numerous frogs of the green frog group (in the type of pool frog and edible frog) were identified. Furthermore adult specimens and larvae forms of common toad and frogs of the brown frog group (common frog, moor frog) were found. At least two huge reservoirs formed by the beaver dams are present within the analyzed area. Furthermore, there are several smaller reservoirs and water-pits, where development of larvae forms of frogs and toads take place. The area of the planned contract may also be used by some specimens of other species of amphibians not identified during the survey.
- Presence of sand lizard and occurrence of habitats potentially applicable by slowworm, viviparous lizard, grass snake, and common viper (however those species were not identified during the survey) were identified in the area.

- The area of the planned reservoir and its buffer remains a habitat for birds. In the area of the Malinówka 2 Reservoir 29 protected species of birds were identified. Most of them probably nest beyond the area of the planned reservoir, and the area to be applied for the purpose of the reservoir is treated only as a feeding site. However, some of them surely nest within sites, which would be transformed due to the performance. 41 species of protected birds were identified within the buffer, including some worth noticing: corn crake, black woodpecker, red-backed shrike.
- High activity of bats was observed during night listening watches within the area of the designed reservoir. Flights and feeding of common noctule was identified (especially within open sites in the southern part of the planned reservoir). Common pipistrelle and Brandt's bat/whiskered bat were identified among other species. Summer colonies of bats are probably present within the forest area in the buffer.
- Eurasian beaver is present within the area of the planned reservoir. The entire water-course within the analyzed area shall be considered as a habitat for that species. Considering the number of huge beaver dams, it shall be assumed that there are at least 2 family groups. Furthermore, hedgehogs and squirrels were identified within the buffer.

Location of the Contract in reference to the protected resources of the natural environment was presented on a map reproduced under Appendix 7 to the EMP – Map with location of the Contract in reference to natural habitats and protected species occurrence sites.

4.8.3 Protected areas – Works Contract 3A.2/1

In the implementation site of the Works Contract 3A.2/1 (Malinówka 1 Reservoir) and in its closest vicinity (up to 100 m from its boundaries) there are no areas and objects under protection based upon the Act of April 16, 2004 on the nature protection.

In the zone from 100 m to 1.0 km from the boundaries of the implementation site for the Works Contract 3A.2/1 there are the following areas under protection:

- 2 specimens of old trees under protection as environmental monuments
(in a distance of about 170 m east and about 1.0 km north-east from boundaries of the reservoir),
- Krzyszkowski Forest ecological use land
(in a distance of about 540 m south-west from boundaries of the reservoir, on the opposite side of A4 motorway).

The closest nature reserve (Groty Kryształowe) is located in a distance of about 4.4 km south-east, and the closest Natura 2000 site (Łąki Nowohuckie [PLH120069]) – in a distance of about 6.2 km north from boundaries of implementation zone for the Works Contract.

Location of the Contract in reference to the closest protected areas was presented on a map in Appendix 6 to the EMP – Map with location of the Contract in reference to protected areas and to NATURA 2000 sites.

4.8.4 Protected areas – Works Contract 3A.2/2

In the implementation site of the Works Contract 3A.2/2 (Malinówka 2 Reservoir) and in its closest vicinity (up to 100 m from its boundaries) there is 1 area under protection based upon the Act of April 16, 2004 on the nature protection:

- Krzyszkowicki Forest ecological use land (with an area of about 34 ha)
(a part of eastern edge of the Works Contract implementation site with an area of about 0.5 ha is located within the ecological use land
[i.e. about 15% of the area of Works Contract implementation site and about 1.5% of the ecological use land's area]).

In the zone from 100 m to 1.0 km from the boundaries of the implementation site for the Works Contract 3A.2/2 there are the following areas under protection:

- Krzyszkowicki Forest ecological use land
(remaining part of the area of the ecological use land located east from the Works Contract implementation site).

The closest nature reserve (Bonarka) is located in a distance of about 4.3 km north-west, and the closest Natura 2000 site (Łąki Nowohuckie [PLH120069]) – in a distance of about 7.3 km north from the boundaries of the Works Contract implementation site.

Location of the Contract in reference to the closest protected areas was presented on a map in Appendix 6 to the EMP – Map with location of the Contract in reference to protected areas and to NATURA 2000 sites.

4.9 Cultural landscape and monuments

Data given in the study of conditions and directions for spatial management of the City of Cracow (Appendix no. 4 to the Resolution of the City Council of Cracow dated July 9, 2014, ref. no.: CXII/1700/14) proves that both: the Malinówka 1 Reservoir, as well as the Malinówka 2 Reservoir are located within archaeological supervision zones.

There are no historic objects included in a heritage register or on a heritage list, including heritage protected based upon the regulation on the protection of heritage and on the care for heritage, within the area of dry Malinówka 1 and Malinówka 2 reservoirs and in their direct impact range.

4.10 Population

The planned Works Contracts 3A.2/1 and 3A.2/2 are investments located within the District of the City of Cracow.

The dry Malinówka 1 Reservoir shall be developed in the area of the District of the City of Cracow, within district XII Bieżanów-Prokocim. The dry Malinówka 2 Reservoir shall be developed in the area of the District of the City of Cracow, within district X Swoszowice and within the Municipality of Wieliczka.

According to data valid for December 31, 2018²⁹ the City of Cracow is inhabited by 771069 people, and the population density is 2355 people/km². PIB data for the City of Cracow state that the area of district XII Bieżanów-Prokocim is inhabited by 62 830 citizens (the population density is 3401.01 people/km²), whereas district X Swoszowice is inhabited by 27493 citizens (the population density is 1073.05 people/km²).

According to data valid for December 31, 2018³⁰ the City of Wieliczka is inhabited by 23395 people, and the population density is 1745 people/km².

After the construction of a cascade of dry reservoirs in the Serafa River basin, the estimated number of people covered by improvements to flood safety downstream of the Bieżanów reservoir, in an area directly at risk of flooding with a probability of occurring once every 100 years (Q1%), taking into account the perspective development of the area until 2022 – in accordance with current Spatial Development Plans – is 2,400 people.

Issues associated with the social context of the planned Contract 3A.2 is described in details in the *Land Acquisition and Resettlement Action Plan (LA&RAP)* for the Contract in question.

4.11 Remaining ES issues

ES 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 access to information on the environment and its protection, public participation in environment protection and environmental impact assessments, the Act of April 16, 2004 on the nature protection, 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 December 5, 2008 on preventing and combating infections and infectious diseases in humans, 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 Regulation of the Council of Ministers of August 24, 2004 on the list of prohibited work for juveniles and the conditions for their employment in some of these work, the Act of December 3, 2010 on implementation of some provisions of the European

²⁹ CSO – Demography Base: Results of Current Studies: Status and Structure of Population: Population: 2018: Status on 06/30: Population according to sex and cities: Małopolskie.

³⁰ CSO – Demography Base: Results of Current Studies: Status and Structure of Population: Population: 2018: Status on 06/30: Population according to sex and cities: Małopolskie.

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;
- 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 ES 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 Summary of the Environmental Impact Assessment

5.1 Land surface and landscape

Impact on the landscape and on the land surface at performance of particular work stages requiring application of construction equipment. Adverse impact on surface of land shall be associated with relocation of soil; thus, with transformation of land within the framework of the planned development of dry reservoirs and accompanying facilities. Acquisition of land has been detailed in the *Land Acquisition and Resettlement Action Plan* (LA&RAP) for the Contract in question. The aforementioned impacts shall be temporary and reversable, and their scale depends on the good organization of the site facilities. Adverse impact on the performance stage shall not be significant, while assuming the absence of emergency situations – temporary and reversable.

Changes resulting from the removal of selected trees and shrubs from the performance area shall be permanent (the scope of planned logging was presented in Chapters 5.8.1 and 5.8.2). For the purpose of keeping a natural character of the landscape at the Malinówka 1 Reservoir, it is planned e.g. to leave an island with trees over an area of about 0.8 ha and additional zones excluded from logging in the dry reservoir's bowl, with a total area 0.23 ha.

In case of the Malinówka 1 Reservoir (Works Contract 3A.2/1) an area of no more than about 6.2 ha shall be transformed, whereas in case of the Malinówka 2 Reservoir (Works Contract 3A.2/2) – no more than 2.3 ha. Impact of the works on the landscape structure shall be local. After completing the construction works the area of earthworks and the adjacent transformed area – e.g. due to the traffic of machines and means of transportation, etc. – shall be ordered and restored to the condition prior to the commencement of works.

On the use stage the planned small dry flood storage reservoir shall not generate new adverse impacts. Operation of the reservoirs shall improve flood protection for areas in the Serafa River Valley. Impact on the surface of land may however be associated with emergency situations (damages to the reservoir or to the dam) or with the occurrence of water levels causing catastrophic floods. While adopting “regular” operations of the reservoirs, in accordance with the assumed objectives, impact on the surface of land shall not occur.

Mitigation measures planned to limit the Works Contracts' implementation impact on the surface of land and on the landscape were tabulated in Appendix 1 to this EMP – Plan of mitigation measures – and described in Chapter 6.1.

5.2 Climate

Modification of climatic conditions

The designed reservoirs shall be a dry reservoirs filled-in with water only for a short time at a flood risk. Due to the short time of filling the reservoir in with water, they shall not affect any climatic events on the operational stage, and microclimate in their area shall not be changed. Construction of the reservoirs is not linked to the emergence of factors which could have a significant impact on the modification of climate conditions, either on a regional or local scale (project implementation does not cause significant changes in the terrain, water conditions, or the current manner of using of a larger part of the areas in question).

Emission of greenhouse gases

Due to combustion of fuel by vehicles and construction machines on the performance stage combustion gases shall be emitted, including carbon dioxide accounted as a greenhouse gas. Furthermore, there shall be a need for electric power due to the use of site facilities, operations of machines and devices and provision of lighting for the construction site (the use of electric power is connected with the emission of greenhouse gases during its production in power plants). In view of the scale of construction works planned to be carried out under Contract 3A.2, as well as the periodic and transient nature of emissions during the construction phase, the above-mentioned impacts can be considered to be insignificant in terms of their impact on climate change.

On the operational stage the need for electric power shall be associated with provision of lighting for the dams and with the use of an outbuilding mainly.

Adaptation of the Contract to adverse phenomena associated with climate change

The planned dry reservoirs have been designed in accordance with binding hydraulic regulations, which include extreme events occurring in the environment due to the changes of climate (it is regulated by relevant regulations on designing, construction, and use of flood storage reservoirs). On the other hand, construction of new dry flood storage reservoirs shall improve flood protection for developed areas located in Cracow and in its vicinity; thus, it would contribute to the reduction of effects of adverse phenomena accompanying the changes of climate.

5.3 Air quality

The impact of the planned project on the sanitary condition of the atmospheric air will take place mainly at the construction stage, as a result of non-organized emission of gases (exhaust gases from engines of construction vehicles and machines) and dust (dustiness connected with carrying out earthworks and during transport of construction materials) accompanying the construction works. Due to the planned actions limiting the risk and effects of the above-mentioned emissions, the execution of construction works within the scope of the Contract will not cause a significant negative impact on the sanitary condition of air.

On the operational stage, due to an automatic operation system for the reservoirs, the traffic and nuisance associated with the impact of truck deliveries (emission of pollutions to the air) shall be limited only to the time of drives of vehicles transporting technical supervision services to inspect the dam. One shall deem that the construction stage shall not provide permanent adverse changes to the air.

Mitigation measures planned to limit the Works Contracts' implementation impact on the quality of air were tabulated in Appendix 1 to this EMP – Plan of mitigation measures – and described in Chapter 6.3.

5.4 Soil and grounds

Impact on soils on the construction stage shall mainly be associated with direct transformations of the land surface (excavations), permanent exclusion of some grounds from the previous use method, modification of soil structure at temporarily acquired land (technological roads, construction sites), as well as with the potential possibility of polluting the soil due to a leakage of diesel derivatives. Those impacts may be local.

After completing the construction works and after the properly done ground reinstatement one shall expect significant changes to soil and water conditions and to soil productivity within temporary acquisition sites.

Except for the listed impact forms there shall be no interference in the soil layer.

At keeping the environmental protection and H&S standards there shall be no significant impact on and deterioration of the quality of soil in connection with the performance of construction works under the Contract.

Mitigation measures planned to limit the Works Contracts' implementation impact on the quality of soils and grounds were tabulated in Appendix 1 to this EMP – Plan of mitigation measures – and described in Chapter 6.4. Information on the amount of ground masses necessary for the Contract implementation and on the planned sources of their origin is given in Chapter 2.3.

5.5 Surface water

Construction of the planned dry flood storage reservoirs Malinówka 1 and Malinówka 2 shall not affect the morphological continuity of the river, and shall also not affect hydromorphological, biological, and physical-chemical elements of the river. Only the excess of water, which would not be accommodated in the Malinówka channel, shall be stored within the reservoirs, and that storage would be periodical and temporary. The planned reservoirs shall not change the volume and dynamics of flows in the river. The Works Contracts in question shall not pose hazard to the achievement of environmental objectives determined for the BSW within the catchment they would be implemented. Implementation of the Works Contracts shall not be associated with the intake of water and with the discharge of waste to the ground; thus, it shall not affect the quantitative status and the qualitative status of surface water and shall not pose risk for achieving the BSW's environmental objectives.

Impact on the water environment during the performance may occur due to interfering in the ground subbase and to the earthworks done with heavy equipment, including diesel machines and vehicles. Works of that type may be related to a risk of disturbing the water relations at the surface water-bearing layers and to a risk of harmful substances' leakage to the environment, i.e. increase of suspension in outflows, spillage of wastewater, fuel or other substances applied during the construction works. The occurrence of a flood wave during the performance may also cause washing-out / destruction of the objects to be developed (dams of the reservoir) and deterioration of the surface water quality. For the purpose of limiting the

risk of the aforementioned events and to reduce their potential effects, this EMP plans relevant mitigation measures – described in Chapters 6.11 and 6.12.

For the purpose of limiting a risk of events that may result in adverse impact on the environment on the operational stage it is planned to provide regular inspection and technical conditions assessments for the reservoir, and – if necessary – also maintenance actions (e.g. removal of sediments from the reservoir bottom after accommodation of a flood wave). The use of the reservoirs shall not modify the quality of surface water.

Mitigation measures planned to limit the Works Contracts' implementation impact on the quality of surface water were tabulated in Appendix 1 to this EMP – Plan of mitigation measures – and described in Chapter 6.6.

5.6 Groundwater

Implementation of the subject Works Contracts shall not relate to the intake of water or to the discharge of wastewater to the soil; thus, it shall neither affect the quantitative and the qualitative status of groundwater nor form a hazard for achieving the BGW's environmental objectives.

It is expected that in case of a flood wave causing necessary water storage in dry reservoirs, the storage time shall not exceed 24 hours. Such a short time excludes the possibility of infiltration by huge volume of flood water into the ground within the reservoir, and therefore the contract shall not affect the water relations and the quality of shallow water of water-bearing layers, especially of Neogene level, where – in case of the contract – the main use level occurs.

The use of reservoirs shall not result in modification of the groundwater's quality.

Mitigation measures planned to limit the Works Contracts' implementation impact on the quality of groundwater were tabulated in Appendix 1 to this EMP – Plan of mitigation measures – and described in Chapter 6.6.

5.7 Acoustic climate

The execution of the planned Works Contracts is connected with periodical noise emission during the performance of construction works. The sources of noise will be the work of individual construction machines and vehicle traffic (including, among others, trucks). The acoustic nuisance resulting from the operation of construction machines and vehicles will be limited, both in time (only the period of works) and space (the area of works with its surroundings and access roads to the area of works). The Contract implementation area is located in vicinity of areas under acoustic protection (in case of the Malinówka 1 Reservoir the closest areas requiring acoustic protection are located on the northern side of the reservoir in question; in case of the Malinówka 2 Reservoir the closest areas requiring acoustic protection are located on the western and on the south-western side of the planned reservoir). On the performance stage periodic nuisances connected with noise emission may occur within those areas. The reduction of such impacts will be facilitated by limiting the performance of works to the daytime hours and by the Contractor's care for the technical condition of machines and equipment working on the site.

After the completion of the construction stage, the operation of the constructed reservoir does not involve significant noise emissions.

Mitigation measures planned to limit the Works Contracts' implementation impact on the acoustic climate were tabulated in Appendix 1 to this EMP – Plan of mitigation measures – and described in Chapter 6.7.

5.8 Nature

Implementation of the planned Works Contracts is associated with impact on vegetation and fauna of the site. A method adopted for the performance minimizes that impact, and limits it to the impact on vegetation colliding directly with the works. Herbaceous plants shall be destroyed, and trees colliding with the planned works directly and in the area of temporary acquisition shall be logged.

The impact of works on fauna shall mainly result from the increased level of noise, which may affect soil fauna through interference in the soil structure during the performance; however, those shall be reversible and temporary impacts. Furthermore, reinstating a natural soil cover in that area shall in future lead to reinstatement of previous plant groups and fauna groups due to natural succession.

Any adverse impact on plants and animals shall cease to a high extent on the use stage. It is related to the expected restoration of the work site to its original conditions, while keeping the previous land use.

Further sub-clauses discuss in details the impact of the planned development of dry reservoirs Malinówka 1 and Malinówka 2 on the condition of particular protected elements of the natural environment. Mitigation measures planned to limit the Works Contracts' implementation impact on the condition of abiotic nature were tabulated in Appendix 1 to this EMP – Plan of mitigation measures – and described in Chapter 6.8.

5.8.1 Impact on the protected environmental habitats and on the protected species of plants, fungi, and animals – Works Contract 3A.2/1

Impact of the Works Contract 3A.2/1 on the environment shall be related to:

- Removal of about 1,200 trees colliding directly with the planned construction of the Malinówka 1 Reservoir³¹.
- Scaring of the protected species of reptile – sand lizard,
- Scaring of 6 species of protected birds.

The above mentioned impacts – resulting mainly from the necessary acquisition of land, traffic of vehicles and machines in the construction period, and logging of trees and shrubs – shall be partially reduced due to the planned mitigation measures (including e.g. replacement planting of trees and shrubs) and in total they shall not have a significant negative impact on the state of resources of protected habitats and species in a supra-local scale. At the opera-

³¹ The scope of logging has been determined based upon the valid status of design documentation. The most of the trees to be logged is young, and their diameter does not exceed 15 cm (see also information on the planned replacement tree planting program, in Chapter 6.8).

tional stage, the planned project does not have any negative impact on the protected resources of the natural environment (among others, it does not affect the conditions of migration of aquatic organisms – the reservoir shall dam the water only during high flood flows, until the bankful discharge ends only).

In accordance with the binding provisions, removal of habitats and disturbance of protected species may require a prior obtainment of additional administrative decisions allowing for exceptions from bans related to the protected species (according to conditions described under item no. 37 of Appendix 1 to the EMP).

5.8.2 Impact on the protected environmental habitats and on the protected species of plants, fungi, and animals – Works Contract 3A.2/2

Impact of the Works Contract 3A.2/2 on the environment shall be related to:

- Removal of about 800 trees colliding directly with the planned construction of the Malinówka 2 Reservoir³².
- Damaging bryophyte under partial protection, i.e. 1 m² of red-stemmed feathermoss *Pleurozium schreberi* – damaging such a small area of commonly present bryophyte shall not be significant. Population of red-stemmed feathermoss shall neither be significantly reduced in a scale of the region nor locally.
- Development of the planned dry Malinówka 2 Reservoir shall affect 2 types of environmental habitats in the area of the designed reservoir. Those are:
 - 91E0 Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, *Alnion incanae*, *Salicion albae*)
(1 patch of habitat with an area of 1.2 ha),
 - 9170 Galio-Carpinetum oak-hornbeam forests
(2 patches of habitat with a total area of 1.2 ha).

The impact shall be permanent (removed fragments of patches of habitats would not be reinstated on site after completion of the works).

- Habitat of 2 invertebrates shall be destroyed in the area of the planned dry Malinówka 2 Reservoir: buff-tailed bumblebee *Bombus terrestris* and red-tailed bumblebee *Bombus lapidarius*.
- Destroying habitats of amphibians – frogs of the green frog group in the type of green frog, and frogs of the brown frog group (common frog and moor frog).
- Scaring of the protected species of reptile – sand lizard,
- 41 species of protected birds, which would be disturbed during the construction works, were identified within Malinówka 2 Reservoir and its buffer. The Works Contract implementation site is mainly a feeding site and – in some cases – a nesting site.

³² The scope of logging has been determined based upon the valid status of design documentation. The most of the trees to be logged is young, and their diameter does not exceed 15 cm (see also information on the planned replacement tree planting program, in Chapter 6.8).

- The area of Malinówka 2 Reservoir is a feeding site and a place of flights of bats (common noctule, common pipistrelle, and Brandt's bat/whiskered bat). It is possible to disturb preying specimens and ones flying-by on the construction stage.
- Habitats of Eurasian beaver, hedgehog, and squirrel shall be destroyed in the area of the designed Malinówka 2 Reservoir. Considering the number of huge beaver dams, it shall be assumed that there are at least 2 family groups of that species.

The above mentioned impacts – resulting mainly from the necessary acquisition of land, traffic of vehicles and machines in the construction period, and logging of trees and shrubs – shall be partially reduced due to the planned mitigation measures (including e.g. replacement planting of trees and shrubs) and in total they shall not have a significant negative impact on the state of resources of protected habitats and species in a supra-local scale. At the operational stage, the planned project does not have any negative impact on the protected resources of the natural environment (among others, it does not affect the conditions of migration of aquatic organisms – the reservoir shall dam the water only during high flood flows, until the bankful discharge ends only).

In accordance with the binding provisions, removal of habitats and disturbance of protected species and damaging their habitats may require a prior obtainment of additional administrative decisions allowing for exceptions from bans related to the protected species (according to conditions described under item no. 37 of Appendix 1 to the EMP).

5.8.3 Impact on protected areas – Works Contract 3A.2/1

Implementation of the planned Works Contract 3A.2/1 – both: on the performance stage, as well as on the use stage – shall not cause adverse impact on protected areas and objects located in its wide neighborhood. The closest protected object (old oak in the southern part of the Bieżanów Estate, under protection as an environmental monument) is located in a distance of about 170 m east from boundaries of the Works Contract implementation site, beyond the zone of its potential impact. The closest protected area is located in a distance of about 540 m south-west from the Works Contract boundaries, and it is separated from it by e.g. a wide belt of A4 motorway.

5.8.4 Impact on protected areas – Works Contract 3A.2/2

Implementation of the planned Works Contract 3A.2/2 – both: on the performance stage, as well as on the use stage – shall not cause significant adverse impact on protected areas and objects located in its wide neighborhood. The northern part of the eastern edge of the reservoir (with an area of about 0.5 ha, including e.g. the eastern end of the front dam and the eastern edge of the planned land grading) is located within the western boundaries of the Krzyszkowicki Forest ecological use land (with an area of about 34 ha), but – according to the results of the Environmental Impact Assessment given in the environmental decision – implementation of the Works Contract shall not affect the aforementioned area significantly and adversely (logging of trees within the ecological use land has been limited only to trees colliding with performance sites directly – in the area not greater than about 0.5 ha). Except for the area discussed above, the closest protected object is a group of old trees (environmental monuments) at Podedworze Street in Cracow – located in a distance of about 1.5 km north-west from boundaries of the planned reservoir.

5.9 Cultural landscape and monuments

Construction sites for both of the planned small dry flood storage reservoirs Malinówka 1 and Malinówka 2 are located within archaeological supervision zones (see description in Chapter 4.9). The expected earthworks may potentially result in discovering new archaeological heritage; however, for now no archaeological sites were identified within the area in question. As a consequence, there is no basis at the moment to forecast adverse impact of the planned works on the cultural landscape and on monuments.

Mitigation measures planned to limit the potential impact of Works Contracts' implementation on the cultural environment were tabulated in Appendix 1 to this EMP – Plan of mitigation measures – and described in Chapter 6.9.

5.10 Material goods

In terms of protecting the material goods the development of small dry flood storage reservoir – included in Contract 3A.2 – shall improve flood safety for developed areas in vicinity of the River Serafa, including the areas of e.g. Złocień Estate and Stary Bieżanów Estate in Cracow. Occurrence of impact on structures located in vicinity is possible in the neighborhood of construction yards and delivery routes. The occurrence of adverse impact on the material goods has not been identified.

Issues associated with the social context of the Contract 3A.2, including expropriation of properties, restriction of the previous use method, or access to properties, are described in details in the *Land Acquisition and Resettlement Action Plan (LA&RAP)* for the Contract in question.

5.11 Health and safety of people

The designed construction works performed under Contract 3A.2 may temporarily deteriorate the inhabitants' quality and standard of life, but that impact shall be small, temporary and reversible. Due to the performance there will be increased emission of noise in vicinity of the works and dusting shall increase locally, and – due to the increased traffic of trucks – emission of combustion gases shall raise. However it shall be emphasized that those impacts would be temporary and limited, and they would cease at the completion.

The operational stage is associated with a positive impact on the people and their properties. The main objective of the Contract is to protect people and their material goods against flooding by the Malinówka Stream and by the Serafa River during periods of high water, e.g. as a result of heavy rainfall. Operations of the developed small dry flood storage reservoir shall increase the feeling of safety among people living in the areas located in the River Serafa Valley.

Mitigation measures planned to limit the Works Contracts' implementation impact on the health and safety of people were tabulated in Appendix 1 to this EMP – Plan of mitigation measures – and described in Chapter 6.11.

5.12 Exceptional hazards to the environment

Implementation of the planned Works Contracts is associated with a possibility of occurrence of the following crisis or emergency situations, which may cause exceptional hazard to the environment:

- Uncontrolled emission (leakage) of diesel substances

There may be an emergency situation on the performance stage, what would result in a leakage of diesel derivatives from vehicles, construction machines, tanks, etc., polluting surface water of land surface (including soil). Limitation of the risk and effects of such events takes place based upon proper organization of the site facilities and care for the proper technical conditions of vehicles, and machines and equipment applied on site, and – in case of their occurrence – based upon application of procedures referring to crisis and emergence situations described in the EMP.

- Fire or explosion of flammable substances

There may be an emergency situation on the performance stage associated with fire (e.g. due to equipment failure, negligence by the personnel, explosion of flammable substances, lightning strike, etc.). Limitation of the risk and effects of such events takes place based upon strict observance of H&S rules, proper organization of the site facilities and care for the proper technical conditions of vehicles, and machines and equipment applied on site, and – in case of their occurrence – based upon application of procedures referring to crisis and emergence situations described in the EMP.

- Identification of unexploded shells or ordnance

Dangerous military materials, e.g. unexploded shells and ordnance, may be found on the performance stage. Limitation of a potential hazard associated with such events takes place based upon provision of an ongoing sapper supervision over the works, and – in case of identifying such materials – upon strict observance of procedures referring to cases of identifying presence of unexploded shells and ordnance described in the EMP.

- Immediate water raise, flood

Water level may raise immediately in water-courses within the construction site or a flood may occur on the performance stage, what would pose risk to health and life of the personnel and cause material damage on site. In order to minimize potential effects of such events the Contractor shall consider flood threat at organizing the site facilities and the remaining part of the construction site, and shall develop a *Flood Protection Plan for the Construction Site* and shall strictly apply conditions contained therein.

- Possible failure of the reservoir on the use stage

Use of the dry flood storage reservoir is associated with a potential risk of spilling water over the dam crest or with a dam failure, due to the occurrence of e.g.: long-term storm rainfall, failure of discharge facilities, and others. Limitation of risk in case of such events takes place based upon particular design and technical solutions applied for the planned reservoirs, in accordance with the guidelines binding for designing of hydraulic objects (e.g. particular dimensions of discharge facilities and of reservoirs' embankments, proper selection of materials to construct embankments, application of required membranes, works technology including necessary sufficient compaction of embankments, provision of reservoirs with control and measurement apparatus, etc.). Considering that protection

and the fact that the reservoirs have been designed including hydrological data defining the scale of flows in water-courses within the discussed area in computational periods, it may be stated that the discussed hazard is highly potential and the probability of its occurrence is minor. On the operational stage the subject reservoirs shall be applied in accordance with the use manual, including any formal and legal requirements on both: environmental and technical aspects, as well as safety of the structure.

Mitigation measures planned to limit the effects of potential crisis situations, which may emerge due to or in the time of Works Contracts implementation were tabulated in Appendix 1 to this EMP – Plan of mitigation measures – and described in Chapter 6.12.

5.13 Other hazards related to ES

Implementation of the Contract may relate to numerous impacts related to ES 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 the Contract, e.g.:

- Accidents and near misses, including participation of people associated with implementation of the Contract and/or of third parties;
- Cases of such unacceptable behavior on work sites as sexual harassment or mobbing;
- Cases of intentional or unintentional violation of labour law's provisions, including the ones associated with social conditions and labour conditions, and with payment to the personnel;
- Cases of infections with sexually transmitted diseases (including HIV/AIDS) or other infectious diseases (including those caused by coronaviruses, e.g. COVID-19), resulting from the lack of knowledge or from non-compliance with applicable rules 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 events occur, and to assure proper implementation of any provisions of national legislation in that scope (see e.g.: Chapter 6.13).

5.14 Cumulative impact

Development of two small dry flood storage reservoirs Malinówka 1 and Malinówka 2, being subjects of this EMP, shall be done in a relatively small distance from the planned development sites for the other two dry reservoirs under Contract 3A.2 (i.e. Malinówka 3 Reservoir and Serafa 2 Reservoir), and in vicinity of the recently constructed Bieżanów (see e.g.: description in Chapter 2). As informed in e.g. Environmental Management Plans under development for Works Contracts 3A.2/3 and 3A.2/4, and in the environmental decision issued for the aforementioned assignment (see: description in Chapter 3.5), development of any of those reservoir is associated with the occurrence of significant emission or other significant impact on the environment, scale of which would cause the possibility of significant impact on the abiotic environment or on the biotic environment, even in case of simultaneous performance at four reservoirs under Contract 3A.2. Analysis of mitigation measures described in EMPs for the aforementioned Works Contracts concludes with a statement that in case of performing the construction works in conformity with the conditions contained therein there is no risk of significant adverse cumulative impact, even in case of developing four small dry flood storage reservoirs in the planned locations simultaneously. Similarly, in case of the operational stage for the developed cascade of small dry flood storage reservoirs in the Serafa River Basin it is not expected to face adverse impact on the environment due to potential accumulation of potential impact of each of the reservoirs.

6 Description of mitigation measures

In order to limit potential adverse impact of the planned Contract onto particular elements of the environment, Appendix 1 to this EMP provides a list of mitigation measures binding for the Contractor of Works Contracts 3A.2/1 and 3A.2/2. The measures have been developed based upon the conditions included in the binding decision on environmental conditions, including a supplementation with additional conditions determined at the development of the EMP. A summary of main mitigation measures' categories has been presented in the following parts of this chapter, with a breakdown into particular components of the environment discussed in Chapters 4 and 5 of the EMP.

Notwithstanding the above (in accordance with the condition in item no. 91 in Appendix 1 to the EMP), the Contractor shall be obliged to apply and observe all ES policies' requirements and conditions (i.e. the ones related to environmental, social and health and safety issues) as determined in the Contract documents, in the Operational Policies and Procedures of the World Bank³³ concerning protection of health and environment, as well as safeguard policies, in the WBG's Environmental, Health and Safety (EHS) Guidelines³⁴, in the ES Code of Conduct (developed on the stage of filing a bid³⁵), in documents of the Contractor listed in Chapter 6.14 and in item no. 72 in Appendix 1 to the EMP, and as results from the legislation valid in Poland (including the Labour Code, the Construction Law, and others).

Temporary and permanent land acquisitions in connection with the implementation of the Contract will take place according to the rules specified in the Land Acquisition and Resettlement Action Plan (LA&RAP).

6.1 Land surface and landscape

Basic forms of the potential adverse impact of the planned implementation of Works Contract 3A.2/1 and 3A.2/2 on the surface of land and on the landscape were provided in Chapter 5.1.

In order to limit those impacts Appendix 1 to the EMP implements mitigation measures to e.g.:

- Limit the impact on the condition of land surface and landscape associated with land acquisition (e.g. items no. 5, 6, 9, 13, 14, 15, 24, 25, 34, 41, 43, 45, 46, 48);
- Limit the damage to landscape values associated with the removal of or damages to trees and shrubs (e.g. items no. 16, 18, 19, 20, 21, 22, 23, 43).

³³ Available on e.g. a website:
<https://policies.worldbank.org/sites/PPF3/Pages/Manuals/Operational%20Manual.aspx#S3-2>
(in part titled *Investment Project Financing / Environmental and Social Safeguard Policies*).

³⁴ 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/ and
<https://www.ifc.org/wps/wcm/connect/29f5137d-6e17-4660-b1f9-02bf561935e5/Final%2B-%2BGeneral%2BEHS%2BGuidelines.pdf?MOD=AJPERES&CVID=jOWim3p>

³⁵ In accordance with conditions given in the bidding documents.

6.2 Climate

Due to the absence of adverse impact on the climate (see: description under Chapter 5.2), it was not stated necessary to implement mitigation measures for that environmental component. Some mitigation measures – listed in Chapter 6.3 – are indirectly connected to the protection of climate, and they refer to the protection of air against contamination with combustion gas.

6.3 Air quality

Basic forms of potential adverse impact of the planned Works Contracts 3A.2/1 and 3A.2/2 on the air were presented in Chapter 5.3.

For the purpose of limiting those impacts Appendix 1 to the EMP implements mitigation measures to e.g.:

- Limit the contamination of air with combustion gas (e.g. items no. 51, 60);
- Limit the contamination of air due to emission of dust (e.g. items no. 61, 62, 68).

6.4 Soils and grounds

Basic forms of potential adverse impact of the planned Works Contracts 3A.2/1 and 3A.2/2 on soils and grounds were presented in Chapter 5.4.

For the purpose of limiting those impacts Appendix 1 to the EMP implements mitigation measures to e.g.:

- Limit the damage to soil due to land acquisition (e.g. items no. 5, 6, 13, 14, 15, 24, 25, 34, 41);
- Limit the loss of top-soil layer (e.g. items no. 42, 43, 44, 45, 46);
- Limit the risk of polluting the ground on the performance stage (e.g. items no. 49, 50, 51, 53, 54, 55, 56, 57, 58, 59, 67, 68, 69, 70, 71).

6.5 Surface water

Basic forms of potential adverse impact of the planned Works Contracts 3A.2/1 and 3A.2/2 on surface water were presented in Chapter 5.5.

For the purpose of limiting those impacts Appendix 1 to the EMP implements mitigation measures to e.g.:

- Limit the risk of polluting the water on the performance stage (e.g. items no. 5, 6, 13, 14, 15, 24, 25, 34, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 67, 68, 69, 70, 71);
- Limit the risk of polluting the water on the operational stage (e.g. items no. 47, 48, 50);
- Limit the risk of adverse impact on biological elements of the water quality (e.g. items no. 34, 35, 36, 52, 85).

6.6 Groundwater

Due to the fact that the potential implementation impact of Works Contracts 3A.2/1 and 3A.2/2 on groundwater (as described in Chapter 5.6) essentially overlaps impacts on the ground environment and on the surface water (described in Chapters 5.4 and 5.5), it was not stated necessary to implement additional mitigating measures in that scope, i.e. other than mitigation measures for the ground environment (see: description in Chapter 6.4) and mitigation measures for the surface water (see: description in Chapter 6.5).

6.7 Acoustic climate

Basic forms of potential adverse impact of the planned Works Contracts 3A.2/1 and 3A.2/2 on the acoustic climate were presented in Chapter 5.7.

For the purpose of limiting those impacts Appendix 1 to the EMP implements mitigation measures to e.g.:

- Limit noise generated on the performance stage and to limit the impact of that noise on acoustically protected sites (e.g. items no. 14, 15, 60, 63, 64, 65, 66).

6.8 Nature

Basic forms of potential adverse impact of the planned Works Contracts 3A.2/1 and 3A.2/2 on the abiotic nature's resources were presented in Chapter 5.8.

For the purpose of limiting those impacts Appendix 1 to the EMP implements mitigation measures to e.g.:

- Limit losses in environmental resources associated with land acquisition, including acquisition of environmental habitats and habitats of plants and animals (e.g. items no. 5, 6, 13, 14, 15, 25, 26, 34, 36, 42, 43, 44, 45, 46, 85);
- Limit losses in environmental resources associated with logging of or damages to trees and shrubs (e.g. items no. 16, 17, 18, 19, 20, 21, 22, 23, 33, 36, 37, 38, 40, 43, 85);
- Eliminate or limit losses in environmental resources associated with accidental mortality of specimens of protected species on site (e.g. items no. 17, 24, 25, 26, 28, 29, 30, 31, 32, 33, 34, 36, 38, 40, 42, 85);
- Eliminate or limit the performance impact on the results of breeding and migration of protected animal species (e.g. items no. 24, 25, 26, 29, 32, 34, 35, 36, 37, 38, 40, 49, 50, 52, 63, 85);
- Eliminate or limit the performance impact on the spread of invasive plant species of foreign origin (e.g. items no. 27, 36, 85);
- Limit a risk of adverse impact on biological elements of the water quality (e.g. items no. 34, 35, 36, 52, 85).

Notwithstanding the abovementioned mitigation measures introduced in Appendix 1 to the EMP (resulting i.a. from the conditions set out in the applicable environmental decision), in order to limit the impact of the implementation of all the Works Contracts included in Subcomponent 3A of the OVFMP on the state of woody greenness resources within and around the city of Krakow, in spring 2020 PGW WP RZGW in Cracow started work to develop

an additional replacement tree planting program for the whole subcomponent. The program, planned to implementation in cooperation with local authorities, would compensate for the loss of tree resources caused by the necessary felling of trees carried out under the aforementioned contracts within and around the city of Cracow. Currently (as of the fourth quarter of 2020), consultations and working meetings of the Directorate PGW WP RZGW in Cracow with representatives of the Cracow City Council and representatives of local ecological organizations are held to establish the detailed assumptions and rules for the implementation of the planned replacement tree planting program.

6.9 Cultural landscape and monuments

In accordance with a description given in Chapter 5.9, the planned implementation of Works Contract 3A.2/1 and 3A.2/2 does not provide adverse impact on known cultural assets. In order to eliminate the potential adverse impact on yet undiscovered cultural objects, Appendix 1 to the EMP implements mitigation measures to assure the performance of works under current archaeological supervision and the implementation of relevant procedures in case of discovering mobile heritage or archaeological sites on the performance stage (items no. 82, 83, 86).

6.10 Material goods

In accordance with a description given in Chapter 5.10, the planned implementation of Works Contracts 3A.2/1 and 3A.2/2 does not provide significant adverse impact on the condition of material goods. In order to eliminate the potential adverse impact of the works on material goods, Appendix 1 to the EMP implements mitigation measures to provide protection for buildings, roads, and other infrastructural elements against unfavorable impact of the works and / or transportation associated with implementation of the Contract (items no. 5, 6, 7, 8, 9, 11, 12, 74). Some mitigation measures listed under Chapter 6.1, as well as measures listed under items no. 3 and 4 in Appendix 1 to the EMP – in reference to the purchase and to the compensation due to implementation of the Contract, are indirectly associated with the protection of material goods, and those are to limit the impact of land acquisition during the works (according to the rules specified in the Land Acquisition and Resettlement Action Plan).

6.11 Health and safety of people

Basic forms of potential adverse impact of the planned Works Contracts 3A.2/1 and 3A.2/2 on the health and safety of people were presented in Chapter 5.11.

For the purpose of limiting those impacts Appendix 1 to the EMP implements mitigation measures to e.g.:

- Limit the impact of the planned works on the sanitary condition of air (listed under Chapter 6.3);
- Limit the impact of the planned works on the acoustic climate (listed under Chapter 6.7);
- Eliminate or limit the risk of chemical contamination of water and ground on the performance stage (listed under Chapters 6.4, 6.5, and 6.6);

- Secure safety on site and in its vicinity
(items no. 7, 8, 10, 11, 12, 49, 50, 72, 73, 74, 75, 76, 77, 78, 87, 91, 99, 100, 101);
- Assure proper reaction in case of exceptional hazards
(items no. 79, 80, 81, 99).

6.12 Extraordinary hazards to the environment

Basic types of exceptional hazards (crisis situations), which may potentially occur due to the implementation of Works Contracts 3A.2/1 and 3A.2/2 were presented in Chapter 5.12.

In order to limit potential effects of crisis situations Appendix 1 to the EMP implements mitigation measures to e.g.:

- Eliminate or limit the risk of chemical contamination of water and ground on the performance stage (listed under Chapters 6.4, 6.5, and 6.6);
- Secure safety in case of fire (e.g. item no. 72);
- Secure safety in case of identifying unexploded shells and ordnance (e.g. items no. 72, 73, 81, 87);
- Secure safety in case of flood
(e.g. items no. 79);
- Assure proper reaction in case of exceptional hazards
(items no. 79, 80, 81, 99).

6.13 Other ES hazards

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

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

- prevent accidents and near misses on work site and in other places related to the implementation of the Contract (e.g. items no. 91, 92, 93, 94, 99 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. 95, 96, 99);
- 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. 97, 98, 99);
- assure proper procedures for ongoing information provision on issues and hazards associated with the aforementioned subject (e.g. item no. 99);
- reduce the risk of spreading infectious diseases, especially sexually transmitted diseases (including HIV/AIDS) and diseases caused by coronaviruses (e.g. COVID-19) (e.g. item no. 100, 101).

6.14 Requirements for implementation of action plans in the construction phase

For the purpose of providing proper performance organization, as well as for the proper implementation of conditions determined under Appendices 1 and 2 to the Environmental Management Plan, the Contractor is obliged to develop and obtain the Engineer's acceptance for the following documents, which shall subsequently be implemented (see also item no. 72 in Appendix 1 to the EMP):

- Construction site organization plan, which should contain such elements as e.g.:
 - location of the site facilities,
 - development of the site facilities,
 - protection of the site facilities,
 - service roads,
 - environmental protection on the site facilities, technological roads, and yards.
- Waste management plan, which should contain such elements as e.g.:
 - encountered and predicted types and volumes of waste,
 - means of preventing adverse impact of waste on the environment,
 - means of waste management considering collection, transportation, recovery and treatment of waste,
 - type of generated waste and method for its storage.
- Quality assurance plans (general one and detailed ones), 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,
 - methods for controlling the level of noise emissions as well as air, soil and water pollution (to the extent relevant to the type of works),
 - laboratory tests.
- Flood protection plan for the site for the performance time, which shall contain the following:
 - 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.

- Health and safety plan (BIOZ Plan), which should contain such elements as e.g.:
 - indication of plot or land development elements, which may create a risk to safety and health of people,
 - information concerning expected hazards that could occur during the performance, defining the scale and types of hazards and the place and time of occurrence, including reference to the natural environment,
 - information on designation and marking for construction work sites, according to the type of hazard,
 - information on the method of training for the employees prior to the commencement of particularly hazardous works,
 - determining the method of storing and transport of hazardous materials, goods, substances and preparations at the construction site,
 - indication of technical and organizational means of safeguarding against hazards connected with the construction works in increased health risk zones, or in their immediate vicinity, including means of safe and efficient communication allowing for quick evacuation in the case of fire, failure, and other hazards,
 - indication of the storage location for construction site's documentation and documents necessary for proper operation of machines and other technical devices,
 - information related to the current rules of conduct in case of an epidemic state or an epidemic risk state being announced (including conditions given in item no. 101 in Appendix 1 to the EMP).

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, the appropriate Operational Policies and Procedures of the World Bank³⁶ concerning protection of health and environment, as well as safeguard policies, the WBG's Environmental, Health and Safety (EHS) Guidelines³⁷, the ES Code of Conduct (developed on the stage of filing a bid³⁸) and binding provisions of the state law (including the Labour Code, the Construction Law, and others).

³⁶ Available on e.g. a website:
<https://policies.worldbank.org/sites/PPF3/Pages/Manuals/Operational%20Manual.aspx#S3-2>
(in part titled *Investment Project Financing / Environmental and Social Safeguard Policies*).

³⁷ 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/ and
<https://www.ifc.org/wps/wcm/connect/29f5137d-6e17-4660-b1f9-02bf561935e5/Final%2B-%2BGeneral%2BEHS%2BGuidelines.pdf?MOD=AJPERES&CVID=jOWim3p>

³⁸ In accordance with conditions given in the bidding documents.

7 Description of measures related to environmental monitoring

Appendix 2 to this EMP provides a summary of monitoring measures binding for the Contractor for the Works Contracts 3A.2/1 and 3A.2/2. Those measures have been developed based upon the conditions included in the valid decision on environmental conditions, along with additional conditions established on the stage of EMP development.

Monitoring measures listed in Appendix 2 to the EMP belong to one category:

- Monitoring for implementation of mitigation measures from Appendix 1 to the EMP (items no. 1-101 of Appendix 2 to the EMP).

8 Public consultations

8.1 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^{39,40}.

8.2 Public consultations on the EIA stage (2012 and 2019-2020)

In accordance with the Polish EIA procedure, on the stage of issuing a decision on environmental decision the Works Contracts forming Contract 3A.2 (including planned development of small dry flood storage reservoirs Malinówka 1 and Malinówka 2) shall be subject to obligatory public consultations. On the EIA procedure stage the consultations with the public were done by the unit issuing the ED, i.e. RDOŚ in Cracow. The description of individual stages of the EIA proceedings conducted at the stage of issuing the decision dated October 29, 2012 on environmental conditions and at the stage of issuing the decision dated September 18, 2020 amending the aforementioned decision on environmental conditions, together with the description of public consultations conducted by RDOŚ in Cracow within the framework of the aforementioned proceedings, is presented in the text of the decision of the Regional Director for Environmental Protection in Cracow dated October 29, 2012 on environmental conditions (ref. no.: OO.4233.13.2012.BM – Appendix 4a to this EMP) and in the text of the decision of the Regional Director for Environmental Protection in Cracow dated September 18, 2020 amending the aforementioned decision on environmental conditions (ref. no.: OO.420.4.3.2019.BM – Appendix 4k to this EMP).

³⁹ http://www.odrapcu.pl/doc/OVFMP/RPZSiS_Zalacznik_08_Raporty_z_procedury_upublicznienia_projektu_EMAF.pdf

⁴⁰ http://www.odrapcu.pl/doc/OVFMP/RPZSiS_Zalacznik_09_Raporty_z_konsultacji_spoecznych_RAF.pdf

8.3 Public consultations on EMP (2020)

The draft EMP was subject to the procedure of public consultations conducted in accordance with the operational policies of the World Bank (OP 4.01). Due to the current situation associated with coronavirus epidemic causing COVID-19 disease, the action plan related to publication of the Environmental Management Plan considers guidelines under the Technical Note of the World Bank *“Public Consultation and Stakeholder Engagement in World Bank Supported Activities, in the event of restrictions on public meeting”*⁴¹.

After preparing the draft EMP and obtaining – upon its basis – the World Bank’s acceptance (so-called “OK”) for commencing the publication procedure, on July 01, 2020 a digital version of the draft EMP was published at the following publicly accessible websites: on the website of PGW WP RZGW in Cracow – <http://krakow.wody.gov.pl> (Fig. 8), OVFM Project Coordination Unit – www.odrapcu2019.odrapcu.pl (Fig. 9), City Office of Cracow – www.bip.krakow.pl (Fig. 10), and Town and Municipality Office of Wieliczka – www.wieliczka.eu (Fig. 11).

Detailed information on the access to that document and on the possibility of informing conclusions and comments (along with indication of detailed contact data: snail mail addresses, e-mail address, telephone number) were publicly informed in the Announcement (Fig. 12) available between 07/02/2020 and 07/22/2020 in the following locations:

- website of PGW WP RZGW in Cracow – <http://krakow.wody.gov.pl> (Fig. 8),
- website of OVFM Project Coordination Unit – www.odrapcu2019.odrapcu.pl (Fig. 9),
- website of City Office of Cracow – www.bip.krakow.pl (Fig. 10),
- and website of Town and Municipality of Wieliczka – www.wieliczka.eu (Fig. 11);
- notice boards in offices of the institutions mentioned above;
- local press – in *Dziennik Polski* (Fig. 13).

The aforementioned announcement also included information on the possibility of taking part in a publicly accessible teleconference (webinar), which was planned for July 22, 2020 (including information on date and time of the teleconference), and information on a link allowing for downloading “Step by step manual” and a link allowing for accessing the teleconference.

Information on the commenced publication procedure for the draft EMP and on the possibility of notifying motions and remarks has also been e-mailed to the following persons, institutions, and organizations:

- Mayor of Cracow,
- City Council of Cracow,
- Environmental Development Department in Cracow,
- Environmental Development Committee at the City Council of Cracow,
- Mayor of Wieliczka,

⁴¹ In case of procedures applied prior to the occurrence of coronavirus pandemic, one has resigned of providing a hard copy of the draft EMP for review in offices and in public offices, the publication period has been extended (up to 15 working days), and an open public debate in the end of the publication period for the draft EMP was cancelled. Instead of the aforementioned debate, a teleconference (webinar) was organized on the last day of consultations, and it consisted of a presentation of the draft EMP and a Q&A session.

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- Town Council of Wieliczka,
 - Department of Communal Management and Environmental Protection in Wieliczka,
 - Akcja Ratunkowa dla Krakowa [Emergency for Cracow],
 - Fundacja Ekorozwoju [Eco-development Foundation],
 - Koalicja Ratujmy Rzeki [Save the Rivers Coalition],
 - Siostry Rzeki [Sisters of the River],
 - Stowarzyszenie Kraków dla Mieszkańców [Cracow for Citizens Association],
 - Strajk dla Ziemi Kraków [Strike for Earth Cracow],
 - Towarzystwo na Rzecz Ochrony Przyrody [Society for Protection of Nature],
 - Towarzystwo na rzecz Ziemi [Society for Earth].

The publication of the draft EMP, officially launched on July 02, 2020, was completed after 15 working days, i.e. on July 22, 2020.

On the last day of the publication period – July 22, 2020, from 5:00 pm to 7:00 pm – the publicly accessible teleconference (webinar) was organized for interested people, organizations, and institutions, and it consisted of a presentation on the draft EMP for the Works Contracts 3A.2/1 and 3A.2/2, and of a Q&A session. (Fig. 14 and 15). At least 17 people attended the teleconference (according to anonymous data available from Microsoft Teams software).

Participants of the teleconference have been e.g. familiarized with questions and requests, which have been notified within the public consultation period for the draft EMP (until July 22, 2020). Particular questions and requests, along with answers provided, are given below⁴²:

- 1) *Shall Brzegi (located at the estuary section of the River Serafa in Community of Wieliczka) be affected by the Works Contracts 3A.2/1 and 3A.2/2?*

As an answer it has been informed that on the performance stage impacts that may reach beyond the direct neighborhood of the implementation area for both of the Works Contracts are not anticipated. On the use stage for dry flood protection reservoirs Malinówka 1 and Malinówka 2 Brzegi shall be affected positively through limitation of the flood hazard resulting from bankful discharge in the River Serafa.

- 2) *Is a possibility of renaturalization expected under the Works Contracts 3A.2/1 and 3A.2/2 for the Malinówka Stream?*

As an answer it has been informed that the range of interference in the Malinówka Stream has been limited to relatively short sections directly neighboring the spillway-discharge facilities for both of the reservoirs in the binding design documentation for both of the Works Contracts. In case of other sections of the Malinówka Stream, the construction works shall not be performed, and it is also not expected to provide measures associated with renaturalization there (such measures do neither refer to the planned function of both of the reservoirs nor to their development purposes). On the other hand, implementation of the Works Contracts 3A.2/1 and 3A.2/2 does not exclude the possibility of

⁴² Particular questions and requests notified during the public consultations (prior to commencing the teleconference), as well as answers to them provided by phone or e-mail, have been quoted by the speaker in the first part of the Q&A session.

designing and implementing renaturalization measures in the future within more sections of the Malinówka Stream at the reservoirs, provided that safety would be assured for spillway-discharge structures and dams of both of the reservoirs.

- 3) *Was it possible to keep most of the elements of the natural environment within the boundaries of planned reservoirs within the implementation framework for Works Contracts 3A.2/1 and 3A.2/2?*

As an answer it was clarified that the planned scope of interference in resources of the natural environment results from necessary land acquisition for construction purposes and for future operations of the designed reservoirs. As results from e.g. graphical appendices reproduced in the EMP, sites have been set out within the implementation boundaries for each of the reservoirs, where there shall be no interference in the existing vegetation, and within the most of remaining areas in bowls of the reservoirs it shall be possible to reinstate environmental resources during the use.

- 4) *Is it expected to allow for the access to areas in bowls of the planned reservoirs – after their development – to inhabitants living in the neighborhood?*

As an answer it has been informed that the Investor does not plan significant restrictions in the access for people to area in bowls of the dry reservoirs beyond flood periods, except for selected locations requiring protection against the access of third parties (e.g. a yard with container for provision of services to the reservoir, etc.).

- 5) *Why are the public consultations related to two reservoir only (Malinówka 1 and 2), when will the materials for the development of Malinówka 3 reservoir be available?*

As an answer it was clarified that the EMP being a subject of the public consultations refers only to Works Contracts 3A.2/1 and 3A.2/2 (i.e. development of Malinówka 1 and Malinówka 2 reservoirs). Public consultations for the EMP referring to the Works Contract 3A.2/3 (development of Malinówka 3 reservoir) are planned for the third or for the fourth quarter of 2020, after completion of the works on the draft EMP and after obtaining consent for commencement of public consultations for that document.

- 6) *What is the time for implementation of Contracts 3A.2/1 and 3A.2/2 – when will the construction works take place and what would be the schedule for those works?*

As an answer it was informed that the construction works for Works Contracts 3A.2/1 and 3A.2/2 are currently planned for the period from June 2021 to June 2022. A detailed schedule of works shall be developed by the Contractor and presented for the Contract Engineer's acceptance in initial phases of Works Contract implementation.

- 7) *Shall the development of reservoirs at the Malinówka Stream affect the quality of living for neighboring inhabitants (e.g. Secesja Estate in Wieliczka and other buildings in vicinity of the planned reservoirs)? Which access roads shall be applied during the works?*

As an answer it was informed that in case of developing two reservoirs under the currently consulted EMP, i.e. Malinówka 1 and Malinówka 2 reservoirs, the construction works should not affect the quality of living for inhabitants during the works. Developed sites discussed in the enquiry are located in the neighborhood of the southern part of flooding zone for the Malinówka 2 reservoir, where – in accordance with data presented on a map in Appendix 8 to the consulted EMP – huge construction works (except for protection with a non-return valve for the existing outlets from pipes) are not planned. Access to the construction site for that reservoir is planned in the north, i.e. from

Blacharska Street in Cracow, and further on through a service road along the motorway, in a distance from the aforementioned estates. In case of the Malinówka 3 reservoir (Works Contract 3A.2/3), located in vicinity of the estates located along Modrzewiowa Street, including the Secesja Estate, it is possible during the works that impacts associated with e.g. temporary emission of noise during the performance would occur. Detailed data on effects of developing the Malinówka 3 reservoir and the planned mitigation measures shall be presented in another EMP, consultation of which is planned for the third or for the fourth quarter of 2020.

- 8) *Where is the document titled Land Acquisition and Resettlement Action Plan discussed under the EMP available?*

As an answer it was clarified that the document titled Land Acquisition and Resettlement Action Plan for Works Contracts 3A.2/1 and 3A.2/2, as discussed e.g. in chapters 4.10, 5.1, and 5.10 of the consulted EMP for the aforementioned Works Contracts, gained the World Bank's consent for commencing the public consultations, which were commenced in the second half of July 2020. During the public consultations the document shall be available for downloading from e.g. websites of PGWWP RZGW in Cracow and of the OVFM Project Coordination Unit.

- 9) *It is suggested to apply valid maps for visualizations, as they show distances between the planned reservoirs and the areas inhabited by people (Secesja Estate and Modrzewiowa Street in Wieliczka, as well as houses at A. Hoborskiego Street and at Koszutki Street in Cracow).*

As an answer it was clarified that validity of maps (topographic maps and orthophoto maps) provided in the text and within appendices to the EMP each time depend on the validity of cartographic materials available to the authors of EMP. In case of topographic maps applied for the currently consulted EMP, they factually present a state from before developing the estates listed in the remark. However, the main aim of the graphical appendices in the EMP is to present data actively applied to particular appendices (e.g. boundaries of the reservoirs, placement of protected sites, stands of protected species, location of investment elements, etc.) by the authors of EMP, and the maps themselves are used to orientate towards the general location of the aforementioned objects.

- 10) *Will the webinar related to the draft EMP be available later?*

As an answer it was informed that recordings from webinars organized within the framework of public consultations on the EMP for Subcomponent 3A of the OVFM Project are not made available after completion of the public consultations period. However, the final versions of EMP documents – developed after completing the public consultations and made available in the internet (websites of PGWWP RZGW in Cracow and of OVFM Project Coordination Unit) – each time contain a report on public consultations, including questions asked and answers provided during the public consultations and during the webinar.

- 11) *Was the investment impact on the Secesja Estate in Wieliczka examined on the designing stage?*

As an answer it was clarified that the impact of developing dry flood protection reservoirs Malinówka 1 and Malinówka 2 at the Malinówka Stream on the environment remained a subject of tests done prior to the issuance of the currently binding decision on environmental conditions. Those tests were done before 2014, i.e. before completing the devel-

opment of the Secesja Estate. Considering the location of the aforementioned estate in the view of both of the reservoirs under the consulted EMP, as well as minor scope of works planned in the upper (southern) part of that reservoir (protection with a non-return valve for outlets of pipes only – see: map in Appendix 8 of the consulted EMP), the construction works shall not be nuisance to inhabitants of that estate. Access to the construction site for that reservoir is planned on the northern side, i.e. from Blacharska Street in Cracow, and further on through a service road along the motorway, in a distance from the aforementioned estate.

12) What would be the route of access road to the investment site? Would a private estate road be applied?

As an answer it was informed that the access road to the construction site for the Malinówka 2 reservoir shall be set out from Blacharska Street in Cracow and further on through a service road along the motorway. Blacharska Street is a part of the road located on private plots. There are detached houses – not the estate development along Blacharska Street.

13) In which location it is planned to join technical roads of the reservoir with the existing roads?

As an answer it was informed that the technical roads of the Malinówka 2 reservoir shall be joined with a public road on plot 256/1 adjacent to the service road of A4 motorway.

14) Where shall a crossing/passage through the Malinówka Stream be developed?

As an answer it was clarified that the crossing through the Malinówka Stream at the Malinówka 2 reservoir shall be developed between the dam (25 m downstream of the dam) and the bridge over the Malinówka Stream (about 30 m upstream of the bridge).

15) Is it planned to plant new trees to replace 2,500 trees to be logged?

As an answer it was informed that in accordance with data given in chapter 6.8 of the consulted EMP, for the purpose of limiting the impact of implementation for all of the Works Contracts under Subcomponent 3A of the OVFM Project on the conditions of trees and shrubs within the City of Cracow and its neighborhood, PGWWP RZGW in Cracow undertook actions in spring 2020 to develop a programme of replacement planting, which is planned to be implemented in cooperation with the local authorities. Currently consultations and working meetings between the Directorate of PGWWP RZGW in Cracow and representatives of the local authorities and ecological organizations are in progress to establish detailed assumptions and rules for implementation of the planned planting programme. Meanwhile it was noted that during further designing works done at development of the current version of the EMP the number of trees to be logged under the Works Contracts 3A.2/1 and 3A.2/2 has additionally been limited. In case of the Malinówka 1 reservoir it is currently (July 2020) planned to log 1,261 trees (the consulted EMP dated June 2020 informed 1,500 trees), and in case of the Malinówka 2 reservoir – 935 trees (2,432 trees in the consulted EMP)⁴³.

⁴³ In the course of further designing works done after completion of the public consultations for the draft EMP (in August, September, and October 2020) the number of trees to be logged under the Works Contract 3A.2/1 was reduced to 1,176 pcs, and in case of the Works Contract 3A.2/2 – to 794 pcs (it is therefore currently planned to log 1,970 trees under both of the Contracts).

16) How often would service/maintenance works be done after developing the reservoir and how loud would they be?

As an answer it was informed that the maintenance works – comprising mowing of dam slopes and the area adjacent to the dam – shall be done 2-3 times a year. Those shall be the only service works associated with noise emission.

17) Is it planned to clean or to manage the Malinówka Stream south from the Malinówka 2 reservoir?

As an answer it was clarified that within the framework of Works Contracts under the EMP in question, actions of that type are not planned at the Malinówka Stream south from the Malinówka 2 reservoir.

Furthermore, during the teleconference the participants asked additional ten questions (using an on-line form made available to all of the people participating in the webinar). Particular questions, along with answers provided, are given below:

1) What frequency and time of flooding for the reservoirs do you expect?

As an answer it was informed that according to the valid analyses done for the present status of development in the Serafa river-basin the areas located in bowls of the planned dry flood protection reservoirs shall be flooded once per 5-10 years. In case of increasing the development within the river-basin (according to provisions under local spatial development plans) the frequency of flooding at rivers and streams within bowls of the reservoirs shall raise to the level of once per 2-5 years. According to data given in the EMP, the assumed time for water retention in both of the planned reservoirs in the range of Works Contracts 3A.2/1 and 3A.2/2 is up to 24 hours.

2) For the purpose of developing the reservoir at Malinówka one needs to log 4 K trees and few hectares of shrubs. It is shocking while considering surroundings of such a city as Cracow, as it is considered as one of the most polluted ones in Poland. What are particular benefits we plan to obtain through the logging?

As an answer it was informed that the designed range of logging of trees and shrubs results from the necessary scope of land acquisition – needed for development and safe operations of the planned dry flood protection reservoirs. While being aware of various environmental functions of trees and shrubs, including a role played by them in the cleaning process for the air, the designers undertook and are still undertaking measures to limit the spatial range and the quantity of logging to the absolute minimum. It shall be stated that on the stage of further designing works – done in June and July 2020 (i.e. after the development of the currently consulted version of the EMP – the range of planned logging was reduced from about 4 K to about 2.2 K trees⁴⁴. What is more, in accordance with data given in the first part of the Q&A session (see: answer to question no. 15 above), in the framework of compensation for trees and shrubs logged due to implementation of Subcomponent 3A of the OVFMP it is planned to implement a wide programme of replacement planting, as developed in cooperation with the local authorities and with public participants.

⁴⁴ In the course of further designing works carried out in the period from August to October 2020, the total number of trees to be logged under Works Contracts 3A.2/1 and 3A.2/2 was reduced to 1,970 trees (status for the beginning of November 2020).

3) *What is the length of regulation for the Malinówka Stream within the reservoir's bowl?*

As an answer it was informed that in case of the Malinówka 1 reservoir, the Malinówka Stream within the bowl of the planned reservoir has entirely been regulated during development of A4 motorway (running in vicinity of the planned southern side dam of the reservoir). Within the framework of Contract 3A.2/1 it is not planned to provide additional measures associated with regulation of the stream-bed, except for relocation of a section of the existing stream (over a length of about 100 m) in order to join it with the spillway and discharge facilities of the reservoir. In case of the Malinówka 2 reservoir, the existing stream-bed is mostly close to a natural one. Just as in case of the first of discussed reservoirs, also in situation of the Malinówka 2 reservoir it is not planned to regulate the Malinówka Stream, except for relocation of a section of the existing stream (over a length of about 200 m) in order to join it with the spillway and discharge facilities of the reservoir.

4) *Shall the planned reservoirs be fenced and protected against the access to their area (the existing Bieżanów dry flood reservoir in the downstream section of the River Serafa is fenced)?*

Just as in case of answer to question no. 4 presented in the first part of the Q&A session (above), it was confirmed that the Investor does not plan significant limitation in access to areas in bowls of dry reservoirs Malinówka 1 and Malinówka 2 to people, except for flood periods and selected locations requiring protection against access of third parties.

5) *It has been stated that it is not a stage for implementation of renaturalization elements for the reservoir. When did consultations on design assumptions – referring to renaturalization – take place? What social proposals may be in reference to this Environmental Management Plan then?*

As an answer it was clarified that the consultations on basic design assumptions for the planned flood protection reservoirs, and especially in reference to their potential impact on the environment, were held on the stage of issuing the currently binding decision on environmental conditions, as well as – additionally – on the stage of public consultations for the Draft Environmental and Social Management Framework (ESMF) for the OVFMP. During the aforementioned public consultations no requests for updating the design with renaturalization elements for the reservoirs or for renaturalization of the rivers and streams within the reservoirs were informed. Except for general doubts on the possibility of extending the planned flood protection assignments by additional elements not associated with objectives of the investment, it shall be stated that at the current progress of designing and administrative establishments for the planned assignments it is no longer possible to apply such an extensive modification without reference to established flood protection project objectives. On the other hand, as it has been already informed in answer to question no. 2 in the first part of Q&A session, implementation of the Works Contracts 3A.2/1 and 3A.2/2 does not exclude the possibility of designing and implementing renaturalization measures in the future at more sections of the Malinówka Stream within the reservoirs, provided that safety would be assured for the spillway-discharge facilities and for dams of both of the reservoirs. While referring to the enquiry related to the range of public proposals on the consulted Environmental Management Plan, it was clarified that the public consultations for the EMP are mainly to precise the range and the method for implementation of planned mitigation measures and monitoring measures, as determined under the EMP for the stages of implementation and use. Although possible, pos-

tulated modifications to design solutions notified on the stage of public consultations for the EMP need to include the present progress of design documentation for the Works Contract and the current progress of administrative procedures required by law, which significantly limit the scope of design changes that may be addressed on that stage of preparation for commencing the Contract implementation.

6) *What will happen to groups of trees shown on orthophoto map at the Malinówka 1 Reservoir?*

As an answer it was informed that groups of older trees marked with green outline on the map in Appendix 8 to the EMP (sheet referring to the Malinówka 1 reservoir) are to be left. Those trees shall be kept on raised parts of land in the reservoir's bowl, without construction works or site grading.

7) *Were other methods of risk limitation considered while developing a concept for flood risk limitation to the River Serafa, e.g. reinstatement of natural retention? According to data of Corine Land Cover the river-basin loses about 1% of biologically absorbent area a year. It means that the flood risk is strongly supported by human. Maybe it would be worth to reinstate the natural retention for the river-basin instead of developing the reservoirs?*

As an answer it was clarified that in case of the investment under Contract 3A.2 of the OVFMP (construction of dry small retention reservoirs in the Serafa river-basin), the planned investment tasks do not remain an alternative for the measures preventing the loss of absorbent area and for reinstatement of a natural retention for the river-basin, but they need to be treated as an efficient measure to directly limit the flood risk, without exclusion of possible or needed implementation of other types of flood protection measures. The Investor (PGWWP RZGW in Cracow), which is obliged to undertake flood protection measures, has a very limited impact on the possibility of preventing development in the river-basin and limiting the biologically active areas within sites administered by other units. While not negating the sense of postulated care for keeping the natural retention and for protecting the biologically active areas, it shall be admitted that in the range of measures limiting the flood risk – as available to the Investor – the main role is played by technical measures, and the development of dry flood storage reservoirs belongs to the category of relatively least nuisance ones to the environment, and it is supported by a significant part of ecological organizations dealing with conservation of nature within river valleys.

8) *Is it possible to introduce a possibility of public environmental supervision?*

As an answer it was informed that – while considering safety reasons within the construction site – it is not expected to provide public environmental supervision on the performance stage. On the other hand, it shall be emphasized that in accordance with the conditions determined in the EMP, the Contractor is obliged to assure the environmental supervision (by a team of several expert naturalists) throughout the Contract implementation period, and the correctness of the actions shall be controlled by e.g. environmental experts hired by the Engineer, the PIO, and the PCU.

9) *Would self-sown trees occurring after the performance – in the use period – be removed?*

As an answer it was informed that land management in the reservoir's bowl will be done with consideration of necessary provision of safety to the spillway-discharge facilities at the reservoir. Depending on the location, in some areas of bowls of the reservoirs it will be possible to leave a spontaneous succession of trees, but in case of some sites the self-sown trees would need to be removed due to safety reasons.

10) *Replacement planting in the area of Krzemieniecka Street (i.e. vicinity of Malinówka) was presented to the public as compensation for logging at the Vistula embankments, and not for logging at Malinówka. Please correct that.*

As an answer it was clarified that discussions done by the Investor with the public (including ecological organizations) in the range of replacement planting and commenced due to the planned logging of trees under Contract 3A.1 (modernization of flood embankments on the left bank and on the right bank of Vistula in Cracow in a reach from the Dąbie Barrage to Suchy Jar) currently refer to compensation for the entire range of logging planned under Subcomponent 3A of the OVFMP (the planned replacement planting includes planting required in conformity with contents of the environmental decision for Works Contracts 3A.2/3, 3A.2/4 and 3A.6, as well as replacement planting resulting from the range of logging for remaining Works Contracts under Subcomponent 3A).

After answering all of the questions the teleconference was over.

On the day following the teleconference (i.e. July 23, 2020) the Consultant received information from the PIO that on July 22, 2020 at 4:26 pm (i.e. after opening hours of the PIO and about half an hour before commencing the teleconference) the PIO received an e-mail with a note signed by representatives of seven non-governmental organizations, containing a set of detailed remarks and requests referring to the draft EMP. Due to the time of submission, information about the note did not reach the teleconference organizers prior to its commencement; thus, the speaker was not able to read out the remarks and requests included in the aforementioned note and to provide related answers during the teleconference. None of the persons asking the questions during the teleconference has mentioned about existence of the aforementioned note, or – in any way – referred to questions and requests given in it.

After reviewing contents of the aforementioned e-mail and the attached note of seven non-governmental organizations it was decided that a meeting with signatories of the note shall be organized to discuss/clarify the remarks and requests, in order to agree on contents of answers to remarks and requests given in the note, and to include those answers in the Public Consultations Report to the Draft EMP.

In accordance with a request given in the summary of non-governmental organizations' note, a site visit in the area of planned reservoirs Malinówka 1 and Malinówka 2 was organized, in attendance of representatives of the RZGW in Cracow, the Consultant, and signatories of the note and experts appointed by them. Due to the necessity of prior detailed verification of remarks and requests of the public by the designers and the PIO, the site visit was scheduled for August 11, 2020.

During the site visit of August 11, 2020 remarks and requests of the public were discussed in detail, objectively existing technical conditions and formal-administrative conditions for the

planned investments were presented, and possible directions of changes to the design documentation – in order to include postulates of the public in the feasible scope – were determined. In conformity with establishments during the site visit, initial proposals of design changes discussed during the site visit shall be analyzed by the design team of the Consultant, and conclusions coming from those analyses shall be presented on the following meeting of site visit's attendees, which is schedule for the second half of August 2020.

The meeting mentioned above has been held on August 26, 2020 in the office of RZGW in Cracow. During the meeting representatives of the RZGW in Cracow and of the Consultant discussed the results of works done due to remarks of the note's signatories, and a discussion of presented design solutions was held afterwards. In the end of the meeting the conclusions resulting from both meetings with the public were summarized, while formulating initial provisions for the final meeting memo. The works on the final version of establishments made with the public were completed in September 2020 (representative of the public signed the final version of the meeting memo).

After completing the public consultations period and after making the establishments with the public (in August and September 2020), as described above, the Consultant developed the Publication Procedure Report for the draft EMP and the final EMP for the Works Contracts 3A.2./1 and 3A.2/2. After completing the aforementioned works, the final EMP shall be submitted to the World Bank for the purpose of obtaining the final acceptance clause, so-called "no objection".

Environmental Management Plan for the OVFMP – Subcomponent 3A – Contract 3A.2:
Flood Protection in Serafa Valley
Works Contracts no. 3A.2/1 and 3A.2/2

Regionalny Zarząd Gospodarki Wodnej w Krakowie

Zbiornik Świnna Poręba

Kontrast

Układ

Czcionka

Państwowe Gospodarstwo Wodne Wody Polskie

O Wodach Polskich Aktualności Nasze działania Zamówienia publiczne Media Kontakt

Unia Europejska

Wody Polskie / Aktualności / Konsultacje społeczne Planu Zarządzania Środowiskiem

Konsultacje społeczne Planu Zarządzania Środowiskiem

Utworzono: 21 lipca 2020

POLECANE ARTYKUŁY

Państwowe Gospodarstwo Wodne Wody Polskie

Zmiana numeru telefonu Zarządu Zlewni w Sandomierzu

NASZE JEDNOSTKI

Wody Polskie

Ta mapa została utworzona

OBWIESZCZENIE

Podaje się do publicznej wiadomości, co następuje:

Państwowe Gospodarstwo Wodne Wody Polskie Regionalny Zarząd Gospodarki Wodnej w Krakowie (PGW WP RZGW w Krakowie), Jednostka Realizująca Projekt Ochrony Przeciwpowodziowej w Dorzeczu Odry i Wisły (JRP OPDOW) udostępniła zainteresowanym osobom i instytucjom PROJEKT PLANU ZARZĄDZANIA ŚRODOWISKIEM dla Kontraktu 3A.2 Zwiększenie zabezpieczenia powodziowego w dolinie rzeki Serafy – Kontrakt na Roboty 3A.2/1 Zwiększenie zabezpieczenia powodziowego w dolinie rzeki Serafy – Zbiornik Malinówka 1, Kontrakt na Roboty 3A.2/2 Zwiększenie zabezpieczenia powodziowego w dolinie rzeki Serafy – Zbiornik Malinówka 2 (nazywany dalej PROJEKTEM PLANU ZARZĄDZANIA ŚRODOWISKIEM) sporządzony w ramach Komponentu 3 Projektu OPDOW – Ochrona przed powodzią Górnej Wisły, Podkomponentu 3A – Ochrona przed powodzią Krakowa i Wieliczki.

Z uwagi na stan zagrożenia epidemicznego w Polsce i w trosce o Państwa bezpieczeństwo zdrowotne zmianie ulega forma prowadzenia konsultacji publicznych projektu dokumentu PZŚ. W związku z zaistniałą sytuacją przedmiotowe konsultacje przeprowadzone zostaną w formie elektronicznej przy wykorzystaniu dostępnych (bezpłatnych) kanałów komunikacji elektronicznej.

Każdy zainteresowany może:

A) zapoznać się z PROJEKTEM PLANU ZARZĄDZANIA ŚRODOWISKIEM od dnia 2 lipca 2020 r. do dnia 22 lipca 2020 r. włącznie (15 dni roboczych) poprzez strony Internetowe:

- Państwowego Gospodarstwa Wodnego Wody Polskie Regionalnego Zarządu Gospodarki Wodnej w Krakowie, pod adresem – <http://krakow.wody.gov.pl>;
- Biura Koordynacji Projektu Ochrony Przeciwpowodziowej Dorzecza Odry i Wisły, pod adresem – www.odrapcu2019.odrapcu.pl;
- Urzędu Miasta Krakowa, pod adresem – www.bip.krakow.pl;
- Urzędu Miasta i Gminy Wieliczka, pod adresem – www.wieliczka.eu.

B) składać uwagi i wnioski odnośnie PROJEKTU PLANU ZARZĄDZANIA ŚRODOWISKIEM:

- w formie pisemnej na adres Państwowego Gospodarstwa Wodnego Wody Polskie Regionalny Zarząd Gospodarki Wodnej w Krakowie, ul. Marsz. J. Piłsudskiego 22, 31-109 Kraków;
- w formie elektronicznej na adres e-mail: jrp.krakow@wody.gov.pl;
- telefonicznie każdego dnia roboczego trwania upublicznienia pod nr telefonu 664 084 039 w godzinach 9.00-17.00;

w dniach od dnia 2 lipca 2020 r. do dnia 22 lipca 2020 r. włącznie.

Instytucją właściwą do rozpatrzenia uwag i wniosków jest PGW WP RZGW w Krakowie (adres e-mail: jrp.krakow@wody.gov.pl).

W 15 dniu roboczym udostępnienia dokumentu, tj. w dniu 22 lipca 2020 r., w godz. od 17.00 do 19.00 odbędzie się elektroniczne spotkanie konsultacyjne w formie webinarium, otwarte dla wszystkich zainteresowanych, na którym przedstawione zostaną informacje o PROJEKcie PLANU ZARZĄDZANIA ŚRODOWISKIEM, umożliwione zostanie również zadawanie pytań i składanie wniosków.

Aby wziąć udział w ww. webinarium, należy wejść na stronę <https://krakow.wody.gov.pl/aktualnosci> gdzie we wpisie poświęconym spotkaniu konsultacyjnemu projektu Planu Zarządzania Środowiskiem dla Kontraktu 3A.2 Kontraktu na roboty 3A.2/1 oraz Kontraktu na roboty 3A.2/2 zamieszczony będzie bezpośredni link do webinarium. Zostanie ono przeprowadzone w oparciu o program Microsoft Teams. Link oraz instrukcja „Krok po kroku” zostaną umieszczone na stronie internetowej co najmniej 10 dni przed planowanym elektronicznym spotkaniem konsultacyjnym.

Obwieszczenie to zostało podane do wiadomości poprzez ogłoszenie w lokalnej prasie (Dziennik Polski), wywieszenie na tablicy ogłoszeń Urzędu Miasta i Gminy Wieliczka, PGW WP RZGW w Krakowie, a także na stronach internetowych instytucji wskazanych powyżej.

Poniżej zamieszczono linki do instrukcji „krok po kroku” dołączenia do webinarium oraz link do webinarium:

Instrukcja „krok po kroku” dołączenia do webinarium – LINK [\[otwórz dokument\]](#)

Webinarium – LINK [\[LINK\]](#)

Dokumenty do pobrania

Fig. 8. Announcement on public consultations for the draft EMP with a link for downloading the documents and to a webinar, as published at the website of the PGW WP RZGW in Cracow

Projekt PZŚ dla Kontraktu 3A.2 Zwiększenie zabezpieczenia powodziowego w dolinie rzeki Serafy – Kontrakt na Roboty 3A.2/1 Zwiększenie zabezpieczenia powodziowego w dolinie rzeki Serafy – Zbiornik Malinówka 1, Kontrakt na Roboty 3A.2/2 Zwiększenie zabezpieczenia powodziowego w dolinie rzeki Serafy – Zbiornik Malinówka 2

- ✓ Projekt Planu Zarządzania Środowiskiem dla Kontraktu 3A.2 Zwiększenie zabezpieczenia powodziowego w dolinie rzeki Serafy – Kontrakt na Roboty 3A.2/1 Zwiększenie zabezpieczenia powodziowego w dolinie rzeki Serafy – Zbiornik Malinówka 1, Kontrakt na Roboty 3A.2/2 Zwiększenie zabezpieczenia powodziowego w dolinie rzeki Serafy – Zbiornik Malinówka 2

- ▶ Załącznik 1 - Plan działań łagodzących
- ▶ Załącznik 2 - Plan działań monitoringowych
- ▶ Załącznik 3 - Zestawienie krajowych aktów prawnych związanych z ochroną środowiska
- ▶ Załącznik 4a - Decyzja RDOŚ w Krakowie, 29.10.2012 r.
- ▶ Załącznik 4b - Postanowienie RDOŚ w Krakowie, 03.10.2018 r.
- ▶ Załącznik 4c - Postanowienie RDOŚ w Krakowie, 12.09.2019 r.
- ▶ Załącznik 4d - Postanowienie RDOŚ w Krakowie, 16.09.2019 r.
- ▶ Załącznik 5 - Mapa lokalizacji Kontraktu
- ▶ Załącznik 6 - Mapa z lokalizacją Kontraktu na tle obszarów chronionych
- ▶ Załącznik 7 - Mapa z lokalizacją Kontraktu na tle siedlisk przyrodniczych oraz miejsc występowania gatunków chronionych
- ▶ Załącznik 8 - Mapa z lokalizacją elementów Kontraktu

- ☒ Pobierz komplet dokumentów (ZIP)

- ▶ Obwieszczenie

Fig. 9. Digital version of the draft EMP and announcement on public consultations for the draft EMP published at the website of the OVFM PCU

 biuletyn informacji publicznej

Miasto Kraków

[wersja beta bip.krakow.pl](#) czcionka: A A A kontrast: A A A

Szukaj w bip...

MAPA STRONY ZALOGUJ



 WŁADZE I MIASTO URZĄD MIASTA KRAKOWA JEDNOSTKI MIEJSKIE FINANSE I MIENIE STRATEGIE, POLITYKI, PROGRAMY E-URZĄD

GODZINY PRACY UMK

KONTAKT

OGŁOSZENIA I KOMUNIKATY

PRACA W UMK

USŁUGI - PROCEDURY

ZAMÓWIENIA PUBLICZNE

POWSZECHNY SPIS ROLNY 2020

ALERT EPIDEMICZNY

 Strona Główna

0:00 / 0:00

OBWIESZCZENIE PGW Wody Polskie RZGW w Krakowie

Treść obwieszczenia

METKA:

Podmiot publikujący: WYDZIAŁ BEZPIECZEŃSTWA I ZARZĄDZANIA KRYZYSOWEGO
Osoba odpowiedzialna: BOGDAN KLIMEK - DYREKTOR WYDZIAŁU -

Fig. 10. Announcement on public consultations for the draft EMP with a link for downloading the documents, as published at the website of the City Office of Cracow



Fig. 11. Announcement on public consultations for the draft EMP with a link for downloading the documents, as published at the website of the Town and Municipality of Wieliczka

ANNOUNCEMENT

it is hereby made known to the public that:

State Water Holding Polish Waters, Regional Water Management Authority in Cracow (PGW WP RZGW in Cracow), Project Implementation Unit for the Odra-Vistula Flood Management Project (PIU) have made it available for the interested individuals and institutions **THE DRAFT TO THE ENVIRONMENTAL MANAGEMENT PLAN** for 3A.2 Contract *Flood protection in Serafa Valley* - Works Contract 3A.2/1 *Flood protection in Serafa Valley – Malinówka 1 reservoir*, Works Contract 3A.2/2 *Flood protection in Serafa Valley – Malinówka 2 reservoir* (hereinafter referred to as the DRAFT ENVIRONMENTAL MANAGEMENT PLAN) implemented within Component 3 of the OVFMP - Flood Protection of the Upper Vistula, Sub-component 3A – Flood Protection of Upper Vistula Towns and Cracow.

Owing to the state of epidemic threat in Poland, bearing in mind your health safety, the form of conducting the public consultations within the EMP document has been changed. In connection with the situation, the consultations will be conducted in electronic form, taking advantage of the available (safe) electronic communication channels.

Everyone interested in it can:

- A) get to know the DRAFT ENVIRONMENTAL MANAGEMENT PLAN, starting from **July 2nd 2020** until **July 22nd 2020** (15 business days, in total) through the following websites:
- State Water Holding Polish Waters, Regional Water Management Authority in Cracow at <http://krakow.wody.gov.pl>;
 - Odra – Vistula Flood Management Project Coordination Unit, at www.odrapcu2019.odrapcu.pl;
 - City Office of Cracow, at www.bip.krakow.pl;
 - Town and Commune Office of Wieliczka, at www.wieliczka.eu.
- B) remarks and conclusions concerning the DRAFT ENVIRONMENTAL MANAGEMENT PLAN can be submitted:
- in writing, addressed to: State Water Holding Polish Waters, Regional Water Management Authority in Cracow, 22. Piłsudskiego Str., 30-110 Cracow;
 - in electronic form to the e-mail address: jrp.krakow@wody.gov.pl;
 - by calling, each business day when the document is available to the public, at the telephone no **664 084 039**, between **9.00 and 17.00**;
- from **June 2nd 2020** to **July 22nd 2020**, inclusive.

The institution competent to consider the remarks and applications is State Water Holding Polish Waters, Regional Water Management Authority in Cracow. E-mail address: jrp.krakow@wody.gov.pl.

On the 15th day when the document is available to the public, i.e. **July 22nd 2020, from 17.00 to 19.00**, an electronic consultation meeting will be held in a form of a webinar - open to all the interested parties, during which information about the DRAFT ENVIRONMENTAL MANAGEMENT PLAN will be presented and it will also be possible to ask questions and submit motions.

To participate in the webinar, please enter the website <https://krakow.wody.gov.pl/aktualnosci> and, in the part devoted to the consultation meeting for DRAFT ENVIRONMENTAL MANAGEMENT PLAN for 3A.2 Contract, Works contract 3A.2/1 and Works contract 3A.2/2, a link to the webinar will be published. It will be held based on Microsoft Teams software. The link and "step by step" instructions will be published on the website at least 10 days before the planned electronic consultation meeting. The digitally recorded version of the webinar will be published at the website of State Water Holding Polish Waters, Regional Water Management Authority in Cracow and the website of the Project Coordination Unit.

The announcement has been made available to the public by being published in the local press (newspaper Dziennik Polski), announced in the information board of the City Office of Cracow, Town and Commune Office of Wieliczka, PGW WP RZGW in Cracow, as well as the websites of the institutions listed hereinabove.



Fig. 12. Announcement on public consultations for the draft EMP submitted to the local press and published on the web sites and on the notice boards

18
Ogłoszenia drobne
Dziennik Polski
Środa, 1.07.2020

Drobne

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OBWIESZCZENIE
podaje się do publicznej wiadomości, co następuje:

Pakietowe Gospodarstwo Wodne Wody Polskie Regionalny Zarząd Gospodarki Wodnej w Krakowie (PGW Wody Polskie RZGW w Krakowie), jednostka realizująca Projekt Ochrony Przeciwpowodziowej w Dorzeczu Odry i Wiśle (PROPODOW) udostępnia zainteresowanym osobom i instytucjom **PROJEKT PLANU ZARZĄDZANIA ŚRODOWISKIEM** dla Kontraktu 3A.2. Zwiększenie bezpieczeństwa powodziowego w dolinie rzeki Serafa – Kontrakt na Roboty 3A.2/1. Zwiększenie bezpieczeństwa powodziowego w dolinie rzeki Serafa – Zbiornik Malinówka 1, Kontrakt na Roboty 3A.2/2. Zwiększenie bezpieczeństwa powodziowego w dolinie rzeki Serafa – Zbiornik Malinówka 2 (nazywany dalej PROJEKTEM PLANU ZARZĄDZANIA ŚRODOWISKIEM) sporządzony w ramach Komponentu 3 Projektu OPDOW – Ochrona przed powodzią Górnej Wiśły, Podkomponentu 3A – Ochrona przed powodzią Krakowa i Wieliczki.

Z uwagi na stan zagrożenia epidemicznego w Polsce i w trosce o Państwa bezpieczeństwo zdrowotne zmianie ulega forma prowadzenia konsultacji publicznych projektu dokumentu PZS. W związku z zainicjowaną sytuacją przedmiotowe konsultacje przeprowadzone zostaną w formie elektronicznej przy wykorzystaniu dostępnych (bezpiecznych) kanałów komunikacji elektronicznej.

Każdy zainteresowany może:

A) zapoznać się z PROJEKTEM PLANU ZARZĄDZANIA ŚRODOWISKIEM od dnia 2 lipca 2020 r. do dnia 22 lipca 2020 r., włącznie (15 dni roboczych) poprzez strony internetowe:

- Państwowego Gospodarstwa Wodnego Wody Polskie Regionalnego Zarządu Gospodarki Wodnej w Krakowie, pod adresem – <https://kaskras.wody.gov.pl>
- Biura Koordynacji Projektu Ochrony Przeciwpowodziowej Dorzecza Odry i Wiśły, pod adresem – www.opdow.pl/2019/08/08/ogloszenie
- Urzędu Miasta Krakowa, pod adresem – www.bim.krakow.pl
- Urzędu Miasta i Gminy Wieliczka, pod adresem – www.umgwieliczka.pl

B) składać uwagi i wnioski odnośnie PROJEKTU PLANU ZARZĄDZANIA ŚRODOWISKIEM:

- w formie pisemnej na adres Państwowego Gospodarstwa Wodnego Wody Polskie Regionalny Zarząd Gospodarki Wodnej w Krakowie, ul. Marz. J. Piłsudskiego 22, 31-109 Kraków;
- w formie elektronicznej na adres e-mail: pgw.krakow@wody.gov.pl;
- telefonicznie każdego dnia roboczego trwania upublicznienia pod nr telefonu 664 984 039 w godzinach 9.00-17.00;


W dniach od dnia 2 lipca 2020 r. do dnia 22 lipca 2020 r., włącznie.

Instytucją właściwą do rozpatrzenia uwag i wniosków jest PGW Wody Polskie RZGW w Krakowie. Adres e-mail: pgw.krakow@wody.gov.pl.

W 15 dniu roboczym udostępnienia dokumentu, tj. w dniu 22 lipca 2020 r., w godz. od 17.00 do 19.00 odbędzie się elektroniczne spotkanie konsultacyjne w formie webinarium, otwarte dla wszystkich zainteresowanych, na którym przedstawione zostaną informacje o PROJEKcie PLANU ZARZĄDZANIA ŚRODOWISKIEM, umożliwiające zostanie również zadawanie pytań i składanie wniosków.

Aby wziąć udział w ww. webinarium, należy wejść na stronę <https://krakow.wody.gov.pl/aktualnosci> gdzie we wpisie poświęconym spotkaniu konsultacyjnemu projektu Planu Zarządzania Środowiskiem dla Kontraktu 3A.2 Kontraktu na roboty 3A.2/1 oraz Kontraktu na roboty 3A.2/2 zamieszczony będzie bezpośredni link do webinarium. Zostanie ono przeprowadzone w oparciu o program Microsoft Teams. Link oraz instrukcja „Krok po kroku” zostaną umieszczone na ww. stronie co najmniej 10 dni przed planowanym elektronicznym spotkaniem konsultacyjnym.

Obwieszczenie to zostało do wiadomości poprzez ogłoszenie w lokalnej prasie („Dziennik Polski”), wywieszenie na tablicy ogłoszeń Urzędu Miasta w Krakowie, Urzędu Miasta i Gminy Wieliczka, PGW WP RZGW w Krakowie, a także na stronach internetowych instytucji wskazanych powyżej.




Fig. 13. Announcement on public consultations for the draft EMP published in the local press (Dziennik Polski – printed version)



Fig. 14. Presentation on the draft EMP for the Works Contracts 3A.2/1 and 3A.2/2 presented during the teleconference (webinar) of July 22, 2020 – first slide



Fig. 15. Presentation on the draft EMP for the Works Contracts 3A.2/1 and 3A.2/2 presented during the teleconference (webinar) of July 22, 2020 – penultimate slide

9 Organizational structure of EMP implementation

Contract 3A.2 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 overall coordination of the implementation of the individual EMPs within the Project is the responsibility of the Project Coordination Unit (PCU), which functions as an organisational unit within the structures of the National Water Management Authority (KZGW), which is an organisational unit of the State Water Holding Polish Waters (PGW WP).

The PCU assignments are as follows:

- management of tasks of Project Implementation Units (PIU/JRP) and Project Implementation Units (PIU/JWP), within the scope of tasks included in the Project;
- technical assistance and support to the PIU/JRP and PIU/JWP in the implementation of the tasks of the Project, including the application of World Bank procedures on procurement, environmental protection and social issues;
- preparation of annual work programmes for the Project and evaluation of their progress;
- supervise the work of the Project and evaluate their progress;
- ongoing control and monitoring of funds allocated for the implementation of the Project and participation in the management of funds of the Project;
- reporting, including preparation and submission of quarterly reports on the implementation of the Project to the World Bank, the CEB and the Steering Committee.

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 assignments:

- monitoring of the EMP implementation progress;
- financial management and bookkeeping;
- preparation of required reports for the needs of EMP implementation monitoring and co-ordination 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 implementation⁴⁵ is as follows:

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

9.3 Engineer - Consultant

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

The Consultant/Engineer shall be selected using QCBS method (quality and cost based selection), in accordance with the "Guidelines: Selection and Employment of Consultants by World Bank Borrowers".

In accordance with the scope specified in the Contract Engineer Agreement, the Engineer/Consultant shall be obliged to perform e.g. the supervision over EMP implementation⁴⁶, comprising the following:

- monitoring of EMP implementation, as done by the Contractor;
- monitoring of the Contractor's activities;
- checking the quality of construction works performed by the Contractor and built-in construction products, and especially preventing the usage of building materials which are defective and not accepted for use in the construction industry;
- representing the Investor on site by performing the control of the compliance of the construction process with the design and with the construction permit/investment project implementation permit, and with regulations related to the environmental protection and technical know-how;
- supervision over all issues related to the environmental protection by specialists experienced in the field of environmental protection (including a key environmental management expert) and by other Engineer's personnel;
- constant monitoring over proper implementation of measures mitigating the adverse environmental impact;

⁴⁵ That supervision is done by e.g. an Environmental Specialist of the PIO team.

⁴⁶ That supervision is done by e.g. the following: Key Environmental Management Expert, H&S Expert, Supervising Inspectors, and Resident Engineer.

- 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 accepting construction works being covered or of concealed works, participation in tests and technical commissioning of technical installations and devices, as well as preparation of and participation in performing the commissioning activities for finished engineering objects and handing them over for use;
- confirmation of the works factually completed and of the removal of defects, as well as, at the request of the Investor, verification of site's settlements.

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;
- designation of the EMP Coordinator, discussed under item no 84 of Appendix 1 to the EMP;
- assurance of permanent environmental supervision (including environmental experts listed in item no. 85 of Appendix 1 to the EMP), sapper supervision (according to item no. 87 of Appendix 1 to the EMP), and archaeological supervision (according to item no. 86 of Appendix 1 to the EMP);
- ensuring the permanent H&S supervision, discussed under item no. 93 of Appendix 1 to the EMP;
- assurance of the Sexual Harassment and Mobbing Prevention Specialist, discussed under items no. 95 and 96 of Appendix 1 to the EMP;
- implementation of the Engineer's recommendations (including environmental supervising experts and the Investor's supervising inspector) concerning implementation of the EMP;
- ensuring – prior to the commencement of works – the preparation of: BIOZ Plan, Waste Management Plan, Quality Assurance Plan/Plans, Flood Protection Plan for the site for the performance time, and Construction Site Organization Plan;
- if it will be necessary, the Contractor's environmental team would develop necessary materials and applications for the obtainment of permits/decisions for departures from bans to protect species of plants, fungi or animals based upon the rules of and in the mode specified by the NP Act (of April 16, 2004). The above-mentioned decisions issued by RDOŚ/GDOŚ are to be requested for by the Contractor. The Contractor's duty is to implement the provisions of obtained decisions for departure from the protection of species of plants, fungi or animals;
- keeping the construction site records;

- drafting the reports (e.g. monthly report and final report, report to the RDOŚ and/or to the GDOŚ [the latter only in the scope resulting from decisions obtained from those authorities on the implementation stage, if the Contract would need to obtain such decisions]);
- preparing memos and reports concerning the environmental protection;
- applying to the Investor for modification of design solutions, if it is justified by a necessity of increasing safety for performance of the construction works or improving the construction process related to implementation of the EMP;
- repairing the potential faults/defects, which would be notified by the Engineer and/or by the Investor (in case the notification period for defects, guarantee, and warranty would be supported by the Engineer) during the works and during the defects, guarantee, and warranty notification period. The Contractor is obliged to report any actions implemented to remove the faults/defects. The report shall be filed to the Engineer/Investor.

10 EMP implementation schedule and reporting procedures

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

- identifying 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;
- rectifying adverse consequences of the works conducted during the implementation to the benefit of the environment and financial results;
- determining the aims and measures performed within the adopted environmental policy, covered by the EMP, which require expenditures and bring tangible effects;
- identifying and eliminating 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;
- using the natural resources reasonably, with minimum environmental loss and optimum generation of costs.

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

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

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

- prior to the selection of the Contractor, the Employer shall submit a draft of this EMP to the World Bank in order to obtain its opinion;
- after obtaining a positive opinion of the World Bank, the draft EMP shall be consecutively subject to public consultations;
- after the public consultations (and supplementing the document with the consultations report), the EMP shall be updated and submitted in its final version for the approval by the World Bank;
- upon the approval of EMP by the World Bank, the final document shall be attached to the Bidding Documents for selection of the Contractor;
- all activities of the Contractor shall be systematically reported (once a month), in Polish and, if required, in English, in paper and in electronic versions, with reference 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 Appendix 2 to this EMP (Plan of mitigation measures, Plan of monitoring measures).

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

The progress reporting system under the Project 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 and quarterly reports or as a separate document.

The PIU shall supply the PCU with quarterly reports in the part referring to measures implemented by them. They shall contain a required set of information and descriptions allowing for the preparation of the Project's quarterly report by the PCU. Furthermore, especially in the case of problems with the Works Contract implementation, the PCU shall expect the PIU to submit summaries and data in the monthly periods.

The following reporting procedures were established:

1. Reporting:

- a) Reports (monthly, quarterly, ad-hoc, final) shall be developed by the Contractor,
- b) Report review by the Engineer,
- c) Submission of the report to the Employer (for information),
- d) Provision of a report to RDOŚ and / or GDOŚ (only in a range resulting from administrative decisions issued on the performance stage, if they would require reporting of measures in question),
- e) Submission of a PIU's quarterly report to the PCU,
- f) Final report on implementation of the EMP prepared by the Engineer (after verification by the PIU and by the PCU, submitted to the World Bank not later than 3 months after the completion of works).

2. Filing system:

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

3. Evaluation:

- a) ongoing assessment of the outcomes of the planned measures 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 implementation of the measures limiting the adverse impact on the environment, and recommendations arising from environmental decisions;
- d) development and provision of quarterly reports to the World Bank by the PCU.

The following is planned:

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

11 Source materials

1. Environmental Impact Report – dry flood storage reservoir in the Serafa River Basin, Cracow, Mat 2012.
2. Decision on environmental conditions dated October 29, 2012 (ref. no.: OO.4233.13.2012.BM.) for the planned development of five small dry flood storage reservoirs in the Serafa River Basin (Biezanów, Serafa 2, Malinówka 1, Malinówka 2, and Malinówka 3 reservoirs), including two reservoir referring to this EMP.
3. MasterPlan for the Vistula River Basin. National Water Management Authority, Warsaw 2014.
4. Architectural-construction design for Contract 3A.2 Flood Protection in Serafa Valley:
 - 3A.2 Flood Protection in Serafa Valley, Water-Law Study – Malinówka 1 Reservoir, Cracow 2019;
 - 3A.2 Flood Protection in Serafa Valley, Water-Law Study – Malinówka 2 Reservoir, Cracow 2019;
5. Report on the environment for Małopolskie Province in 2017, Provincial Inspectorate for Environmental Protection in Cracow, Cracow 2018.
6. Environmental Protection Program and Waste Management Plan for the City of Cracow remaining its element – plan for the years 2005-2007, including tasks done in 2004 and perspective for the years 2008-2011 – Volume I Environmental Protection Program.
7. World Bank Operational Policy OP 4.01 – Environmental Impact Assessment (<https://policies.worldbank.org/sites/PPF3/Pages/Manuals/Operational%20Manual.aspx#S3-2> [in the part titled *Investment Project Financing / Environmental and Social Safeguard Policies*]).
8. Environmental and Social Management Framework, final document, April 2015 (http://odrapcu2019.odrapcu.pl/en/popdow_documents/).
9. 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>).
10. Odra-Vistula Flood Management Project – Project Operations Manual, Wrocław 2015 (http://www.odrapcu.pl/doc/POM_PL.pdf)
11. Website: http://odrapcu2019.odrapcu.pl/en/popdow_documents/
12. Website: www.isok.gov.pl/
13. Acoustic maps for the City of Cracow (https://www.krakow.pl/encyklopedia_krakowa/13140.artykul.mapa_akustyczna_miasta_krakowa.html)
14. Geo-service GDOŚ <http://geoserwis.gdos.gov.pl/mapy/>

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13 Appendices

Appendix 1. Plan of mitigation measures;

Appendix 2. Plan of monitoring measures;

Appendix 3. List of national legal acts related to environmental protection;

Appendix 4. Decisions, resolutions, permits, notices

Appendix 4a. Decision of the RDOŚ in Cracow dated October 29, 2012
on environmental conditions

Appendix 4b. Resolution of the RDOŚ in Cracow dated October 3, 2018

Appendix 4c. Resolution of the RDOŚ in Cracow dated September 12, 2019

Appendix 4d. Resolution of the RDOŚ in Cracow dated September 16, 2019

Appendix 4e. Resolution of the RDOŚ in Cracow dated December 05, 2019

Appendix 4f. Decision of the RDOŚ in Cracow dated February 07, 2020
allowing for departure from bans binding in reference to protected species

Appendix 4g. Resolution of the RDOŚ in Cracow dated May 28, 2020

Appendix 4h. Decision of the RDOŚ in Cracow dated May 29, 2020
allowing for departure from bans binding in reference to protected species

Appendix 4i. Decision of the RDOŚ in Cracow dated May 29, 2020
allowing for departure from bans binding in reference to protected species

Appendix 4j. Resolution of the RDOŚ in Cracow dated August 17, 2020

Appendix 4k. Decision of the RDOŚ in Cracow dated September 19, 2020
amending the decision on environmental conditions

Appendix 4l. Resolution of the RDOŚ in Cracow dated November 17, 2020

Appendix 5. Map with location of the Contract

Appendix 6. Map with location of the Contract in reference to protected areas

Appendix 7. Map with location of the Contract in reference to natural habitats and protected
species occurrence sites

Appendix 8. Map with location of the Contract's elements