

GUIDELINES FOR CONTRACT IMPLEMENTATION ON ENVIRONMENTAL AND  
SOCIAL POLICIES OF THE WORLD BANK

CONTRACT 4A.3.2

**Modernization of the PERUN lightning detection and location system**

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## List of basic definitions and abbreviations used in the Document

Name	Description
World Bank (WB)	International Bank for Reconstruction and Development
PCU/OVFMP PCU	Project Coordination Office / Odra-Vistula Flood Management Project Coordination Office
BP	Bank Procedure <sup>1</sup>
Environmental decision (ED)	Decision on environmental conditions
Contractor	OMC Envag Sp. z o.o.
Epidemic	The occurrence in a given area of infections or infectious diseases in numbers markedly greater than in previous periods, or the occurrence of infections or infectious diseases not previously present.
GDEP	General Directorate for Environmental Protection
IMGW-PIB	Institute of Meteorology and Water Management - National Research Institute
SWB	Body of Surface Water
GWB	Body of Groundwater
PIU/ PIU OVFM	Project Implementation Unit OVFM
Project manager	Project Manager, on the part of PIU OVFM from IMGW-PIB
Contract / Supply contract	Contract 4A.3.2 Modernization of PERUN lightning detection and location system
EIA	Environmental Impact Assessment
OP	World Bank Operational Policy <sup>2</sup>
PAD	Project Appraisal Document <sup>3</sup> for OVFM
SHP Plan	The safety and health plan

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<sup>1</sup> The World Bank's Operational Policies and Procedures are presented in the document The World Bank Operational Manual, available at: <https://policies.worldbank.org/sites/PPF3/Pages/Manuals/Operational%20Manual.aspx>.

<sup>2</sup> See footnote for BP (World Bank Procedure).

<sup>3</sup> Document available on the World Bank website, at: <http://documents.worldbank.org/curated/en/320251467986305800/Poland-Odra-Vistula-Flood-Management-Project>.

Name	Description
POM	Project Operations Manual <sup>4</sup> for OVFP
Project/ OVFP/ OVFP Project	Odra and Vistula Flood Management Project
RDEP	Regional Directorate for Environmental Protection
Natural habitats	<p>The concept of natural habitats used in the text refers to the definition of natural habitats and the specification of their types contained in Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ EU L 206, 22.7.1992, as amended).</p> <p>(The Polish nomenclature of natural habitats is defined in the Regulation of the Minister of Environment of 13 April 2010 on natural habitats and species of Community interest, as well as on the criteria for selecting the areas eligible for recognition or designation as Natura 2000 sites (consolidated text J.L. 2014, item 1713), this regulation specifies, inter alia, the types of natural habitats of Community interest that require protection in the form of designation of Natura 2000 sites, with an indication of priority natural habitat types)</p>
State of epidemic	The legal situation introduced in a given area in connection with the occurrence of an epidemic in order to take the anti-epidemic and preventive measures specified in the Act of 5 December 2008 on prevention and control of infections and infectious diseases in humans (consolidated text: J.L. 2019, item 1239 as amended) to minimize the consequences of the epidemic.
State of epidemic emergency	The legal situation introduced in a given area in connection with the risk of an epidemic in order to take the preventive measures specified in the Act of 5 December 2008 on prevention and control of infections and infectious diseases in humans ( J.L. of 2019, item 1239 as amended)
Employer	Institute of Meteorology and Water Management - National Research Institute (IMGW-PIB)

### List of abbreviated names of legal acts used in the Document

The names of legal acts referred to in the text of this Document are given in abbreviated form. The full names of each piece of legislation are given in the list below.

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<sup>4</sup>Document available on the PCU OVFP website, at: <https://odrapcu.pl/projekt-opdow/popdow-dokumenty/>

Name in the text	Full name (including publication address)
Birds Directive/BD	Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds ( J. L 288 z 06.11.2007 as amended).
Habitats Directive/HD	Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora ( J.L EU L 206, 22.07.1992, as amended)
Regulation on occupational safety and health	Regulation of the Minister of Infrastructure of June 23, 2003 on information concerning safety and health protection as well as safety and health protection plan (Journal of Laws 2003 no. 120 item 1126 as amended)
EIA Regulation	Regulation of the Council of Ministers of May 12, 2022. amending the Regulation on undertakings that may significantly affect the environment (Journal of Laws of 2022, item 1071 as amended)
Regulation changing EIA Regulation	Regulation of the Council of Ministers of September 10, 2019. on undertakings that may significantly affect the environment (Journal of Laws of 2019, item 1839 as amended)
Regulation on the verification of permissible levels of electromagnetic fields	Regulation of the Minister of Climate of 17 February 2020 on the ways of verifying compliance with the permissible levels of electromagnetic fields in the environment (Journal of Laws 2020, item 258, as amended)
Regulation on permissible levels of electromagnetic fields	Regulation of the Minister of Health of December 17, 2019 on the permissible levels of electromagnetic fields in the environment (Journal of Laws 2019, item 2448, as amended)
Regulation on the declaration of an epidemic state	Regulation of the Minister of Health of 20 March 2020 on the declaration of an epidemic in the Republic of Poland (Journal of Laws, item 491 as amended)
Public Roads Act	Act of 21 March 1985 on Public Roads (consolidated text Journal of Laws of 2021, item 1376 as amended)
Nature Conservation Act	The Act of 16 April 2004 on Nature Conservation (consolidated text Journal of Laws of 2021, item 1098 as amended)
Waste Act	Act of 14 December 2012 on Waste (consolidated text Journal of Laws 2022 item 699 as amended)
Construction Law	Act of July 7, 1994 Construction Law (consolidated text Journal of Laws of 2021, item 2351, as amended)
Environmental Protection Law	Act of 27 April 2001. Environmental Protection Law (consolidated text Journal of Laws 2021 item 1973 as amended)
Water Law	Act of July 20, 2017. Water Law (consolidated text Journal of Laws 2021 item 2233 as amended)

## 1. INTRODUCTION

The main objective of the OVFM Project is to protect people in floodplains within selected parts of the basins of Poland's two largest rivers, the Vistula and Odra, against threats caused by extreme floods. The OVFM provides for the implementation of the most urgent tasks in the field of flood protection.

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 Kłodzko Basin;
- Component 3 – Flood Protection of the Upper Vistula River;
- **Component 4 – Institutional strengthening and modernisation of the forecasting system;**
- Component 5 – Project Management and development of further studies.

Component 4, under which the Contract 4A.3.2, which is the subject of this Guidelines, is implemented, is divided into the following two Sub-Components:

- **Sub-Component 4A – Extension and modernisation of the monitoring system for flood and drought risks;**
- Sub-Component 4B – Construction of operational centres at RWMA Wrocław and RWMA Cracow.

Detailed information on the Project can be found in the developed Environmental and Social Management Framework Plan, published, among others, on the websites of the World Bank and the Odra-Vistula Flood Management Project Coordination Office<sup>5</sup>. A detailed description of the Project is also included in the PAD and in the Project Operations Manual document.

Due to the extensive scope of the work, their location at remote sites and the long lead time of the Contract, an overall Guidelines for the Contract was developed, where the whole Contract is described in general terms.

With reference to this document, site-specific EMPs are prepared in the form of Checklists, where each individual location will be described in more detail.

Appendix 1 to these Guidelines provides a template of the environmental and social action checklist applicable to the Contractor and the Employer. The checklist was prepared based on a template from the World Bank. Prior to undertaking activities at a particular location of Contract 4A.3.2, the Contractor shall provide the Employer with an environmental and social action checklist tailored to the specifics of the location. The scope of issues to be included in the environmental and social procedures are identified in the checklist. This checklist must be

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<sup>5</sup> <http://odrapcu.pl>

approved by the Employer and Project Implementation Unit (PCU) prior to the start of work at the location.

## 2. INSTITUTIONAL, LEGAL AND ADMINISTRATIVE CONDITIONS

### 2.1. INSTITUTIONS INVOLVED IN THE CONTRACT IMPLEMENTATION

The Investor of the Contract is the Institute of Meteorology and Water Management - National Research Institute, represented by the Director of the Institute of Meteorology and Water Management - National Research Institute (IMGW-PIB), acting on behalf and for the benefit of the State Treasury. Ongoing coordination of implementation is the responsibility of the Odra and Vistula Flood Management Project Coordination Office, which as of 1 January 2020 functions as an organizational unit within the structures of the National Water Management Authority (NWMA), which is an organizational unit of the State Water Management Authority Polish Waters. Additionally, at the stage of implementation and operation, the implementation of the Contract may require involvement of public administration bodies at the central, regional and local level.

### 2.2. WORLD BANK GUIDELINES

The Bank's Operational Policies and Procedures, including, but not limited to, policies and procedures OP/BP 4.01 (on environmental impact assessment), OP/BP 4.04 (on natural habitats) and OP/BP 4.11 (on cultural resources), OP/BP 4.12 (on resettlement), as well as the EHS Guidelines<sup>6</sup> (Environmental, Health and Safety Guidelines) on environmental, health and safety and social issues. Reference texts for these policies and procedures can be found in The World Bank Operational Manual<sup>7</sup> and their descriptions are presented in the Environmental and Social Management Framework (ESMF) and also published in Polish on the OVFM Project website<sup>8</sup>.

**Table 1** Operational policies and their relevance to the Contract 4A.3.2

No.	OP	Description of OP	Relevance to the Contract
1	4.01	<b>Environmental Assessment</b> World Bank policies require an Environmental Assessment (hereafter EIA) to ensure that planned projects do not have adverse environmental impacts or that potential impacts are mitigated through	The entire OVFM Project is classified as Category B - Potential Adverse Project Impacts on People or Environmentally Significant Areas. These impacts are limited to a specific implementation site, with few or no irreversible impacts.

<sup>6</sup> [https://www.ifc.org/wps/wcm/connect/topics\\_ext\\_content/ifc\\_external\\_corporate\\_site/sustainability-at-ifc/policies-standards/ehs-guidelines](https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/ehs-guidelines)

<sup>7</sup> <https://policies.worldbank.org/sites/PPF3/Pages/Manuals/Operational%20Manual.aspx>

<sup>8</sup> <https://odrapcu.pl/projekt-opdow/popdow-dokumenty/>



		<p>appropriate measures. During the EIA, the potential environmental risks of the project and its impact on the area of influence are assessed and alternative investment options are considered.</p> <p>The Bank assigns proposed projects to one of three main categories, depending on the type, location, sensitivity, scale of the project, and nature and magnitude of potential environmental impacts.</p>	<p>Therefore, an EIA is required for each Contract. For Contract 4A.3.2, environmental impacts will be significantly less than other projects in the OVFMP. However, checklists with mitigation and monitoring measures will be developed to minimize environmental impacts.</p>
2	4.04	<p><b>Natural habitats</b></p> <p>Habitat conservation, like other environmental protection and enhancement activities, is essential for long-term sustainable development. The World Bank supports protection, conservation, and restoration of natural habitats and their functions. The Bank supports a precautionary approach to natural resource management to support sustainable development.</p>	<p>The contract will have a significantly positive impact on habitat protection and people due to its function to protect areas from extreme weather events.</p> <p>These policies also require a balanced occupancy of land for proposed facilities and influence site selection.</p>
3	4.11	<p><b>Cultural resources</b></p> <p>Cultural resources are defined as movable or immovable objects, areas, structures, groups of structures, natural features and landscapes of archaeological, paleontological, historical, architectural, religious, aesthetic, etc. significance. The World Bank supports countries in their efforts to avoid or mitigate adverse impacts on cultural resources caused by Bank-financed projects. The Borrower is required to address impacts on cultural resources of projects proposed for Bank financing in the environmental assessment of the investment.</p>	<p>The Contract Checklists will impose work rules that protect cultural resources from adverse effects when located adjacent to cultural resources. Procedures will also be developed in the event cultural resources are found.</p> <p>However, historic sites located near the Contract site are not diagnosed as being at risk.</p>
4	4.12	Operational Policy on resettlement	No relevance to the project due to no resettlement required

### 2.3. CURRENT STATUS OF EIA PROCEDURES FOR THE CONTRACT

Implementation of this Contract is foreseen for 2020-2022, which results from the document *Procurement Plan* (updated on 28.02.2022) *Poland - Europe and Central Asia- Odra-Vistula flood management project*.<sup>9</sup>

National regulations on environmental impact assessment procedures are set out in the *Act of 3 October 2008 on publishing information on the environment and its protection, public participation in environmental protection and environmental impact assessments* (Journal of Laws of 2021, item 2373, as amended - hereinafter: the EIA Act). The aforementioned act is the implementation to the Polish legal order of the provisions of *Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment* ( J. L. 2012 No. 26, p. 1 as amended).

In accordance with Art. 71 par. 2 of the EIA Act, a decision on environmental conditions is required for projects which may always or potentially have a significant impact on the environment. The list of both types of projects and activities is specified in the executive act to the EIA Act, i.e. the *Regulation of the Council of Ministers of 10 September 2019 on projects likely to have a significant impact on the environment*. The scope of designed works under Contract 4A.3.2 includes facilities without permanent service.

Facilities without permanent service will be connected to the Central Unit using the GSM communication module.

Due to the fact that the planned installation will not generate an electromagnetic field in accordance with the *Regulation of the Council of Ministers of September 10, 2019 on projects that may significantly affect the environment*, the individual installations do not qualify as projects to issue an environmental decision. In addition, the ordinance of the Council of Ministers of May 5, 2022, amending the regulation on projects that may have a significant impact on the environment, repealed the item on installations that emit electromagnetic fields. The regulation entered into force on June 4, 2022.

It may happen, however, that it will be necessary for facilities to obtain an environmental decision due to the imposition of such an obligation by a competent authority, for instance in connection with a suspicion of impact on the subjects of protection of Natura 2000 areas. It should be noted that in the case of actions planned in the immediate vicinity of a Natura 2000 area, the authority competent to issue a building permit or accept a notification of construction works, if it decides that the planned actions may potentially have a significant impact on that form of nature protection, may impose an obligation to draw up a project information sheet with attachments and to submit that document to the competent Regional Director for Environmental Protection (RDEP). On the basis of the aforementioned evidence, the RDEP decides by way of

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<sup>9</sup> <http://documents.worldbank.org/curated/en/179281582887203840/Poland-EUROPE-AND-CENTRAL-ASIA-P147460-ODRA-VISTULA-FLOOD-MANAGEMENT-PROJECT-Procurement-Plan>

a decision whether it is necessary to conduct an assessment of the project's impact on the Natura 2000 area.

At this stage, no threats to protected areas that could violate the objectives of their protection, including Natura 2000 areas as well as no threats of significant negative impacts on those areas were diagnosed.

In the case of location of installations carried out under the Contract in the immediate vicinity of a protected area, in particular a Natura 2000 area or a nature reserve, the Contractor should analyze the impact of the works on the given form of nature protection and, if the possibility of impact on this form is identified, the plan of works implementation should be submitted to the body supervising the protected area in order to determine the need to obtain additional opinions, arrangements and decisions required by law, including the environmental decision. In this case, it may be necessary for the Contractor to carry out a detailed analysis of possible environmental impacts prior to commencing the works and to make appropriate arrangements with the authorities responsible for the management of individual forms of nature conservation. These agreements may include specific conditions imposed by the relevant authority for the execution of the works.

The Contractor is obliged to verify the classification of the activities with respect to the obligation to obtain an environmental decision and to obtain any relevant permits and decisions.

The Contractor shall report the planned works to the relevant authority. If the authority deems it applicable, it will issue, among other things, conditions and rules for environmental protection based on separate regulations. The Contractor shall keep the Employer updated on activities undertaken in the scope of obtaining administrative decisions and ongoing arrangements with environmental and nature protection authorities regarding activities carried out under the Contract.

No cutting of trees and bushes is planned. However, if such a need arises, the Contractor shall obtain an administrative decision and cover the costs of tree cutting and all other costs related to the implementation of the said decision.

In the case of conflict between the planned works and protected species sites, it may also be necessary for the Contractor to obtain derogation decisions, exempting from prohibitions applicable to protected plant, fungi and animal species. Such decisions are issued by the territorially competent RDEP or GDEP on the basis of an appropriate application. This type of permit may concern e.g. disturbance of protected bird species nesting on the site covered by the works. In the case of collision of works with stands of valuable bird species, which are the subjects of protection of the Natura 2000 area, it may be necessary to adapt the schedule of works to the needs of protection of these bird species, e.g. for bird species requiring the establishment of protection zones in accordance with the Regulation of the Minister of Environment of 16 December 2016 on the protection of animal species (Journal of Laws, item 2183), works within the protection zone, will be allowed to be carried out only in the period from 1 September to the end of February. At this stage, it was concluded that there should be no collisions of the planned works with the positions of protected species.

## **Permissible levels of electromagnetic fields**

The sensor antenna assembly will consist of an antenna to measure electromagnetic signals in the LF band, two loops to measure the magnetic field, and an antenna to receive the GPS signal. Its system will be passive i.e. it will not emit electromagnetic field.

Therefore, as a result of the implementation of the Contract, the permissible levels of electromagnetic fields in the environment for areas intended for residential development and places accessible to the public, as specified in the Regulation of the Minister of Health of 17 December 2019 on the permissible levels of electromagnetic fields in the environment (Journal of Laws 2019, item 2448), will not be exceeded.

### **2.4. COMPLAINTS AND REQUESTS MECHANISMS**

All persons affected by the execution of the Contract 4A.3.2 will be provided with access to appropriate and accessible complaint and grievance mechanisms. Everyone has the right to submit a complaint and a request. There is no charge for submitting complaints and requests. In addition, according to the provisions, the complainant or requester must not be subjected to any prejudice or accusation by reason of making the complaint or request.

Complaints, requests and opinions on non-compliance, by the Project Implementation Units of the World Bank Operational Policies, principles described in the Project documents (Environmental Management Plans, Property Acquisition and Resettlement Plans, Project Operational Manual, etc.), environmental procedures, laws, regulations, safety principles, conditions of conducted construction works and other matters, can be addressed to the OVFM PCU at the address indicated below:

Project Director

Odra -Vistula Flood Management Project Coordination Office

8 Karkonoska St., Building BF (II floor)

53-015 Wrocław

Polska/Poland

or by e-mail to: [pcu@odrapcu.pl](mailto:pcu@odrapcu.pl)

For more information on the complaint and request mechanisms applicable to the Contracts co-financed with World Bank funds, please refer to the OVFM Project Operational Manual (POM), available on the Project Coordination Office website. In addition, a complaint and request form is available on the OVFM Project website <sup>10</sup>.

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<sup>10</sup> At: <https://odrapcu.pl/kontakt/>

## **2.5. PUBLIC CONSULTATIONS**

Due to the fact that the 4A.3.2. Contact is divided into 6 different locations throughout Poland and the works are not carried out in one period, the public consultation will be subject to checklists. In the case of locations where a checklist will apply, the local community will be notified in the usual way about the works and the nuisance.

This Guidelines is an operational document of a general nature for the Contractor, who will describe the details of social and environmental nuisances in the checklists, which will be prepared individually for each site. This document only tells how and what elements will be included in the checklist.

The rationale for such a solution is the fact that the local community would be less interested in a nationwide project than one that concerns only their neighbourhood. In addition, it is highly likely that due to the diversity of design work at each site, it would be difficult to clearly relate the comments received to the document. This Guidelines will therefore not be subject to the usual public consultation, as this is not justified in this case. It will be published on the websites of the IMGW-PIB and the Odra-Vistula Flood Management Project.

However, public participation in investment processes is an important social issue. The society is informed about planned investments in accordance with Polish law, e.g. construction law. In addition, individual checklists will be made publicly available on the IMGW-PIB and PCU websites.

In cases justified by the small scope of works with minimal environmental impact or by the specificity of activities that do not require the ED (environmental decision), a checklist will be prepared. In cases where the Environmental Management Plan will take the form of a checklist, the document will not be subject to public consultation.

## **3. CONTRACT 4A.3.2**

Contact 4A.3.2 includes the modernization of the PERUN lightning detection system. The PERUN system not only detects and reports the location of lightning discharges, but is also capable of determining the type of discharge (earth or cloud) and the most important electrical parameters of the discharge, such as e.g. current in the discharge channel, discharge polarity (positive or negative) and other parameters related to the characteristics of the recorded lightning signal.

The PERUN lightning detection and location system consists of 12 detection stations distributed throughout our country, including:

- eight detection stations of TLS 200 type (Total Lightning Sensor) located in: Koźienice, Legnica, Legionowo, Chojnice, Olsztyn, Białystok, Włodawa and Sandomierz;
- four Safir 3000 type detection stations located in: Toruń, Częstochowa, Kalisz and Gorzów Wielkopolski;

and TLP System Central Unit version 1.1.8 (Total Lightning Processor),

and visualization software LTS 2005 version 5.0.0.0 (Lightning Tracking Software).

There are still four old type sensors (Safir3000) operating within the network, which have inferior data quality and are no longer supported by the manufacturer. Their replacement is necessary to ensure high data quality and operational reliability (by using sensors with technology supported by the manufacturer).

Contract 4A.3.2 includes delivery of hardware and software, among others sensors and Central Unit. Construction works are also planned in 6 locations where new detection stations will be installed. Location maps for each station are included in Attachment 2.

Each location will be described in more detail in the checklists. The following descriptions are intended to give an overview of the work planned during Contract 4A.3.2.

### **3.1. LOCATION INSTEAD OF CZĘSTOCHOWA: DOBRYSZYCE**

The planned investment will be located on the land plot no 2241/4, Dobryrzyce precinct, Dobryrzyce commune, powiat radomszczański, łódzkie voivodeship. The area of the investment on the plot will be 1 m<sup>2</sup> and will include the area under the newly built 10 m folding mast (LS7002). The mast will be located on a fenced area of the 4th grade climatological station, on RIVa land - arable land.

Within the scope of Contract Task 4A.3.2, the Contractor shall:

- Obtain the necessary official decisions for the execution of the works;
- Plot development design;
- Technical design;
- Power connection;  
The Contractor shall design and construct the power connection and install all necessary cables, between the access point indicated and provided by the Employer. The LV terminals are to be brought out in a dedicated control cabinet suitable for outdoor installation. This cabinet must ensure environmental requirements for the operation of all auxiliary equipment;
- Grounding, overvoltage protection and equalizing connections;
- Mast installation;
- In the event that the mast folding mechanism will interfere with the existing fence, it is required to modernize the fence to allow for the folding of the mast, e.g. a removable fence span;
- Installation of a detection station (passive antenna and power/management system);
- Installation of a surveillance camera;
- Installation and configuration of a communication module providing communication between the station and the PERUN Central Unit.

At the operational stage, the discharge detection station is an unmanned device, connected to the Central Unit by a GSM communication module, from which it is operated remotely.

The antenna is passive. It does not emit any radiation, only receives lightning signals. In case of failure, the station will require the arrival of a service team.



**Figure 1** Location of the Dobryczyce station

### **3.2. LOCATION INSTEAD OF TORUŃ: GRUDZIĄDZ**

The planned investment will be located on a plot of land 1/14, precinct 136, Grudziądz commune, Grudziądz powiat, Kujawsko-Pomorskie voivodship. The plot area is 0.0254 ha, and the investment area on the plot will be 1 m<sup>2</sup> and will cover the area under the newly built 10 m folding mast (TLS200). The mast will be located within the fenced area of the 3rd grade climatology station.

Within the scope of Contract Task 4A.3.2, the Contractor shall:

- Obtain the necessary official decisions for the execution of the works;
- Land development design;
- Technical design;
- Power connection;

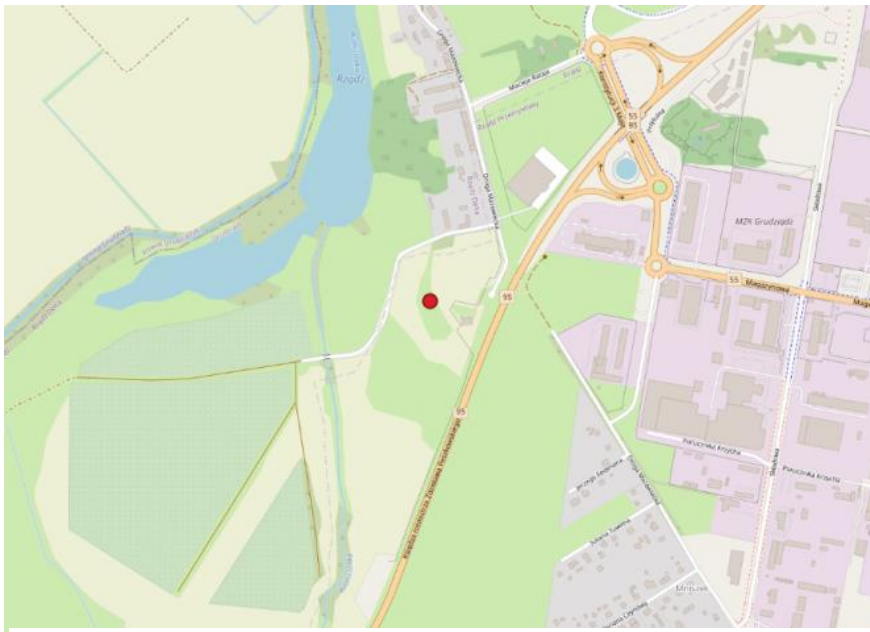
The Contractor shall design and construct the power connection and install all necessary cables, between the access point indicated and provided by the Employer. The LV terminals are to be brought out in a dedicated control cabinet suitable for outdoor installation. This cabinet must ensure environmental requirements for the operation of all auxiliary equipment;

- Grounding, overvoltage protection and equalizing connections;
- Mast installation;
- In the event that the mast folding mechanism interferes with the existing fence, a modernization of the fence is required to allow for the folding of the mast, such as a removable fence span;

- Installation of the TLS200 detection station removed from the Legnica site (passive antenna and power/management system);
- Installation of surveillance camera;
- Installation and configuration of a communication module ensuring communication between the station and the PERUN Central Unit.

At the operational stage, the discharge detection station is an unmanned device, connected to the Central Unit by a GSM communication module, from which it is operated remotely.

The antenna is passive. It does not emit any radiation, only receives lightning signals. In case of failure, the station will require the arrival of a service team.



**Figure 2** Location of the Grudziądz station

### **3.3. LOCATION INSTEAD OF GORZÓW WIELKOPOLSKI: PRZELEWICE**

The planned investment will be located on plot of land No. 9/19, precinct Przelewice, Przelewice commune, pyrzycki powiat, zachodniopomorskie voivodeship. The area of the investment on the plot will be 1 m<sup>2</sup> and will include the area under the newly built 10 m folding mast (LS7002). The mast will be located on a fenced area of the 4th grade climatological station, located in a dendrological garden, on RIIIa land.

Within the scope of Contract Task 4A.3.2, the Contractor shall:

- Obtain the necessary official decisions for the execution of the works;
- Plot development design;
- Technical design;
- Power connection;

The Contractor shall design and construct the power connection and install all necessary cables, between the access point indicated and provided by the Employer. The LV

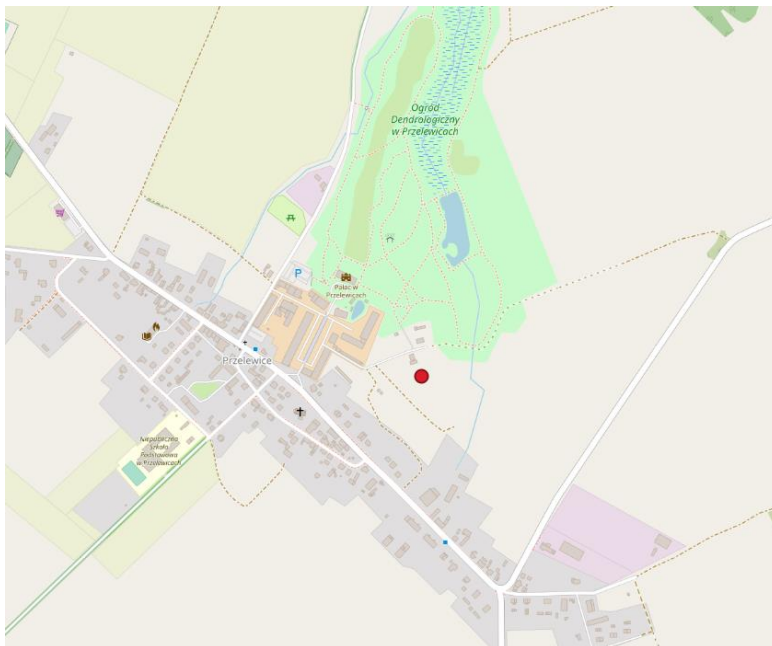


terminals are to be brought out in a dedicated control cabinet suitable for outdoor installation. This cabinet must ensure environmental requirements for the operation of all auxiliary equipment;

- Grounding, overvoltage protection and equalizing connections;
- Mast installation;
- In the event that the mast folding mechanism interferes with the existing fence, modernization of the fence is required to allow for the folding of the mast, such as a removable fence span;
- Installation of LS7002 detection station (passive antenna and power/management system);
- Installation of surveillance camera;
- Installation and configuration of communication module providing communication between the station and the PERUN Central Unit.

At the operational stage, the discharge detection station is an unmanned device, connected to the Central Unit by a GSM communication module, from which it is operated remotely.

The antenna is passive. It does not emit any radiation, only receives lightning signals. In case of failure, the station will require the arrival of a service team.



**Figure 3** Location of the Przelevice station

### **3.4. LOCATION INSTEAD OF KALISZ: AEROKLUB MICHALKÓW**

The planned investment will be located on a plot of land 55/2, Lewków precinct, Ostrów Wielkopolski commune, ostrowski powiat, Wielkopolskie voivodeship. The plot has an area of

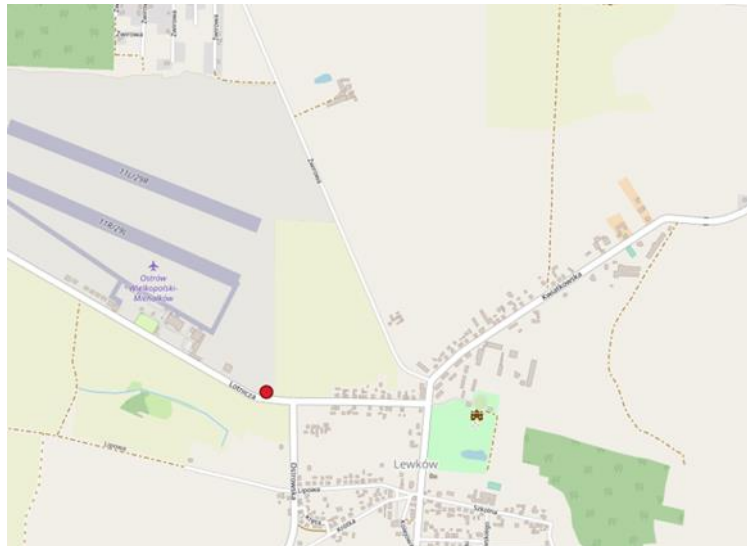
75.53 ha, and the investment area on the plot will be 25 m<sup>2</sup> of land, which will be fenced and paved, of which 1 m<sup>2</sup> will cover the area under the newly built 2 m mast (LS7002). The mast will be located on the fenced area of the newly built station on the premises of Aero Club Michałków.

Within the scope of Contract Task 4A.3.2, the Contractor shall:

- Obtain the necessary official decisions for the execution of the works;
- Plot development design;
- Technical design;
- Power connection;  
The Contractor shall design and construct the power connection and install all necessary cables, between the access point indicated and made available by the Aeroclub Administration. The low voltage terminals are to be brought out in a dedicated control cabinet suitable for outdoor installation. The cabinet has to ensure environmental requirements for the operation of all auxiliary equipment;
- Grounding installation, overvoltage protection and equalizing connections;
- Design and construction of a security fence;
- Lining the fenced station area with 30x30x5 cm paving slabs;
- Mast installation;
- Installation of LS7002 detection station (passive antenna and power/management system);
- Installation and configuration of the communication module ensuring communication between the station and the PERUN Central Unit.

At the operational stage, the discharge detection station is an unmanned device, connected to the Central Unit by a GSM communication module, from which it is operated remotely.

The antenna is passive. It does not emit any radiation, only receives lightning signals. In case of failure, the station will require the arrival of a service team.



**Figure 4** Location of the Aeroklub Michałków station

### **3.5. LOCATION: LESKO**

The planned investment will be located on a parcel of land 1097/2, Lesko commune, Leski powiat, podkarpackie voivodship, with an area of 0.1511 ha. The investment area on the plot will be 1 m<sup>2</sup> and will cover the area of the currently existing solar measurement tower, where the antenna mast (LS7002) will be mounted on the existing infrastructure. The mast will be located in the fenced area of the hydrological and meteorological station, on Bi land (other building land).

As part of Contract Task 4A.3.2, the Contractor shall:

- Obtain the necessary official decisions for the execution of the works;
- Plot development design;
- Technical design;
- Power connection;

The Contractor shall design and construct the power connection and install all necessary cables between the main building of the synoptic station (main power switchboard) and the location of the measurement sensor. A tele-technical cable connector, e.g. ZK-a type, is to be located and installed at a distance of maximum 2 meters from the sensor mast;

- Communication connection;
- Grounding, overvoltage protection and equipotential bonding installation;
- Installation of detection station LS7002 on the existing solar measurement tower (passive antenna and power/management system).

At the operational stage, the discharge detection station is an unmanned device, connected to the Central Unit by a GSM communication module, from which it is operated remotely.

The antenna is passive. It does not emit any radiation, only receives lightning signals. In case of failure, the station will require the arrival of a service team



**Figure 5** Location of the Lesko station

### **3.6. LOCATION: LEGNICA**

The planned investment will be located on a plot of land No. 318, Piekary Śląskie precinct, Legnica commune, Legnica powiat, dolnośląskie voivodeship. The area of the plot is 0.81 ha, and the area of the investment on the plot will be 1 m<sup>2</sup> and will cover the area under the newly built 10 m collapsible mast (LS7002) on the existing foundation. The mast will be located in the fenced area of the hydrological and meteorological station.

Within the scope of Contract Task 4A.3.2, the Contractor shall:

- Obtain the necessary official decisions to perform the work;
- Land development design;
- Technical design;
- Dismantling of the TLS200 station equipment;
- The dismantled station is to be secured, transported and installed in a new location (Grudziądz);
- Disassembly of the mast;
- The secured mast is to be assembled at the Legnica station at a location indicated by the Employer. The current foundation is to be used to install the new detection station at the same location;
- Mast installation;



## 4. THE ENVIROMENT AROUND THE CONTRACT

The general characteristics of the environment of the Odra and Vistula drainage basins within which the activities covered by Contract 4A.3.2 will be implemented have been presented in the Environmental and Social Management Framework Plan (ESMF) published, inter alia, on the websites of OVFMP<sup>11</sup> and the World Bank<sup>12</sup>.

Taking into account the fact that the main environmental determinants for the implementation of works included in Contract 4A.3.2 is the presence of protected areas, a list of protected areas in the vicinity of which the planned works will be implemented is presented below. Appendix 3 contains maps showing each location against a background of protected areas.

### 4.1. NATURA 2000 AREAS

The list of Natura 2000 sites in the vicinity of which (up to 5 km) works under Contract 4A.3.2 are planned is presented below:

Grudziądz:

- Dolina Dolnej Wisły (PLB40003) – 1,16 km;

Przelewice:

- Jezioro Miedwie i okolice (PLB320005) – 2,53 km,
- Dolina Płoni i Jezioro Miedwie (PLH320006) – 2,53 km;

Lesko:

- Góry Słonne (PLB180003) – 2,38 km,
- Góry Słonne (PLH180013) – 0,51 km,
- Dorzecze Górnego Sanu (PLH180021) – 0,74 km.

As indicated in Section 1.3, in the event that the installations performed under the Contract are located within or in the immediate vicinity of a protected area, the Contractor shall agree their works with the authority supervising the protected area. However, none of the detection stations to be installed are located within a protected area, and due to their scale, will not affect adjacent protected areas.

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<sup>11</sup> <https://odrapcu.pl/projekt-opdow/popdow-dokumenty/>

<sup>12</sup> <http://documents.worldbank.org/curated/en/717671468333613779/Poland-Odra-Vistula-Flood-Management-Project-environmental-and-social-management-framework>

#### 4.2. ANOTHER PROTECTED AREAS

Below is a list of forms of nature conservation<sup>13</sup> other than Natura 2000 areas, in the vicinity (up to 5km) of which the implementation of measures under Contract 4A.3.2 is planned:

Dobryszyce:

- Dolina Widawki Protected Landscape Area (2,01 km),
- Ecological ground - swamp (3,47 km),
- Bełchatów-Radomsko Ecological Corridor (0,7 km);

Grudziądz:

- Nadwiślański Landscape Park (1,51 km),
- Chełmiński Landscape Park (2,91 km),
- Protected Landscape Area of Krawędziowa Dolina Wisły (1,31 km),
- 21 ecological grounds (from 2,46 km to 4,43 km from station in Grudziądz);

Lesko:

- Wschodniobeskidzki Protected Landscape Area (0,87 km),
- Góry Słonne Landscape Park (2,39 km),
- Documentation site on Oszczacz (3,47 km),
- Nature reserve Bobry in Uhercach (3,87 km),
- Nature reserve Grąd in Średnia Wieś (4,07 km),
- Ecological corridor Solina (0,8 km),
- Ecological corridor Góry Słonne (2,5 km);

Legnica:

- Nature reserve Lake Koskowickie with lagging (3,03 km);
- Gniewomierskie Wetlands Nature and Landscape Complex (3,35 km);
- 5 ecological grounds (from 2,34 km to 4,82 km from station in Legnica).

As indicated in Section 1.3, in the case where the installations performed under the Contract will be located within or in the immediate vicinity of a protected area, the Contractor shall agree the execution of the works with the authority supervising the protected area. However, none of the detection stations to be installed are located within a protected area, and due to their scale, will not affect adjacent protected areas during the operation stage as well as construction stage. Noise emitted during construction works may be a nuisance up to a distance of 100 m from working machinery, vehicles and equipment. None of the listed forms of nature conservation are within this distance or less from the planned investments.

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<sup>13</sup> Area forms of nature protection were taken into account: ecological grounds, natural and landscape complexes, protected landscape areas, landscape parks, nature reserves, national parks, documentation sites. Moreover, ecological corridors were taken into account.

### **4.3. MONUMENTS**

Based on the spatial data of the National Heritage Institute (<https://mapy.zabytek.gov.pl/nid/>) it was determined that there are objects recognized as monuments or zones of archaeological protection in the vicinity of 4 stations:

Dobryczyce:

- Agricultural School Complex built between 1924-1927;

Grudziądz:

- infantry shelter of the outer system of the Grudziądz Fortress,
- remnants of World War II – Tobruk,
- OW archaeological protection zone of the cemetery of the Oxywska culture (in the area);

Przelewice:

- dendrological garden in Przelewice together with a complex of buildings related to the park,
- grave and family cemetery of the von Prillwitz family with a burial chapel;

Aeroklub Michałków:

- archaeological site of the Przeworsk culture settlement (280 m).

### **4.4. POPULATION AND MATERIAL ASSETS**

Implementation of the Contract will not have a negative impact on the population and material assets. The Contract will have a positive impact on material assets of the population within the Odra and Vistula catchment areas and Vistula as a result of expansion and modernization of the lightning detection and location system.

Noise emitted during construction works may be a nuisance up to a distance of 100 m from working machinery, vehicles and equipment.

Analyses of noise emissions, air pollutants, and impacts to adjacent areas will be included in checklists where site-specific situations will be analyzed. The scale of the planned investment will be very small. It will require the work of two persons and therefore vehicle traffic will be limited to the delivery of the installation and the equipment necessary for its assembly, as well as to a small number of working equipment.

Therefore, no negative impact on residents and surroundings during construction works is diagnosed. No negative impact is also diagnosed during operation due to unattended nature of the investment.

During the works phase, there will be no need to carry out works outside the station areas. The area intended for the stations is owned by IMGW-PIB or leased by the Employer. Therefore, there will be no need for additional land acquisition for the purposes of the Contract.



Detailed conditions related to acquiring land for the needs of Contract implementation are provided in chapter 5.11.

## **5. THE POTENTIAL ENVIRONMENTAL IMPACT OF THE CONTRACT**

The generalized environmental impacts of the entire Contract 4A.3.2 are provided below.

A detailed description of the impacts at each station will be described in individual checklists.

### **5.1. LAND SURFACE AND LANDSCAPE**

#### **Construction phase**

Periodically, the landscape value and arrangement in the vicinity of the facilities may be deteriorated due to the location of construction backup facilities and ground works (e.g. related to the assembly and erection of masts). These impacts will be of short-term duration and will disappear with the completion of works on individual facilities. After the work is completed and the works are covered, their impact on the landscape will disappear.

There will be no permanent impact on the landscape during construction activities. The construction site, equipment and machinery will be visible, but the impact will be negligible.

#### **Operation phase**

There will be no impact on the ground surface during operation.

The installation and seating of masts will have a negligible impact on the landscape. Most masts will be installed at currently developed stations. Their construction is "light", and located in the surroundings of existing technical infrastructure, in a fenced area. The exception is the newly built station on the grounds of the Michalkow Aeroclub, which will be a new structure in the landscape, but in an area of a technical nature (airport grounds). For aviation safety reasons, the mast will be 2 m high, i.e. relatively low. The highest masts will be about 10 m high. They will be visible structures in the surroundings.

Due to construction in technically developed areas, "light construction" and small number of masts, no significant negative impact on the landscape is diagnosed.

### **5.2. CLIMATE**

Due to the nature of the Contract, it is not expected that the investment will have a negative impact on climate conditions in the vicinity of locations where particular works are performed, both at the stage of execution of works as well as at the stage of operation.

#### ***Greenhouse gas emissions***

At the construction stage, as a result of fuel combustion by construction machinery, equipment and vehicles, exhaust gases will be emitted, including carbon dioxide, which is classified as a greenhouse gas.

These impacts will be negligible and will cease after the work is completed. The equipment used to carry out the works will be mostly small in size; therefore, emissions to air will be small and quickly dispersed and will not affect climatic conditions on a larger scale.

At the stage of operation of the Contract, the emission of greenhouse gases is not expected to be higher than currently. These emissions are due to maintenance and servicing of the facilities. The station itself does not cause any emissions.

### ***Making the Contract more resilient to adverse events associated with climate change***

Implementation of Contract 4A.3.2 indirectly contributes to reducing the negative effects of phenomena accompanying climate change, helping to analyze, locate and identify lightning strikes that occur. Installations and facilities implemented under the Contract will not be subject to impacts associated with weather events resulting from climate change.

## **5.3. SANITARY CONDITION OF THE AIR**

### **Construction phase**

The air sanitation will be affected by the emission of pollutants associated with the operation of machinery, vehicles and equipment, and the transport of fine dust fractions from unpaved soils at the stage of works. It is predicted that the impact will be local, short-term and of minor intensity.

### **Operation phase**

As a result of the implementation of the Contract, there will be no electromagnetic impact. The planned detection stations of the PERUN system are passive i.e. they receive a signal and do not themselves emit electromagnetic waves, chemical emissions, etc. Therefore, it is not necessary to perform measurements of electromagnetic fields, because such do not arise.

There will be no impact on the sanitary condition of the air during operation.

## **5.4. SOILS AND GROUNDS**

### **Construction phase**

Impacts to soils and land may result from local degradation of soil cover during earthworks. Impacts will be point and minor in intensity. Impacts will mainly refer to temporary occupation of land for the location of construction sites and trenches for foundations of masts or cables. This impact is on a small spatial scale and will disappear with the completion of works and liquidation of temporary occupation sites.

### **Operation phase**

There will be no impact on the soils and grounds during operation.

## **5.5. SURFACE WATERS**

Construction phase

### ***Biological water quality elements***

No direct impacts to biological water quality assessment elements are anticipated as a result of activities under Contract 4A.3.2.

Biological elements may be exposed to uncontrolled leakage of petroleum substances from working and garaging machinery. In order to protect the water, machines and vehicles will be garaged in a designated yard isolated from the ground. Therefore, it can be considered that the probability of their contamination is very low.

### ***Hydromorphological and physicochemical water quality elements***

Surface waters may be exposed to uncontrolled leakage of petroleum substances from operating and garaged machinery. However, the risk is low due to the application of minimisation measures described above.

As all the above mentioned impacts will be local and of short-term character, transient after the implementation phase, no impact on the status of water bodies and the risk of failure to achieve the set environmental objectives is expected.

Operation phase

No impact to surface water is anticipated during station operations. A potential threat could be a spill of petroleum-based substance from the service crew vehicle. However, it is unlikely due to the good technical condition of the Investor's vehicles.

## **5.6. GROUND WATERS**

Construction phase

During the construction phase, narrow cable trenches and, in some locations, foundation trenches of small area and depth may be excavated. Therefore, there is a very low probability of standing water in the excavation as well as lowering of the groundwater level. As the technologies applied (e.g., shallow excavation, erecting finished structures, minor construction work) will be the least intrusive to aquifer structures, no impact on the quantitative status of the entire water bodies is expected.

At the construction stage, groundwater may be polluted with petroleum substances leaking from construction machinery as a result of its failure. Since measures will be taken to minimize the risk of this hazard, the probability of groundwater contamination is minimal.

Operation phase

After the completion of the works, at the exploitation stage, no impacts on the chemical status of Groundwater Body (GWB) are expected. A potential threat could be a spill of petroleum-based substance from the service crew vehicle. However, it is unlikely due to the good technical condition of the Investor's vehicles.

## **5.7. ANIMATED NATURE**

### **5.7.1. PROTECTED NATURAL HABITATS AND SPECIES**

Construction phase

#### ***Natural Habitats***

No impact on natural habitats is predicted that will adversely affect the status of habitats in the biogeographical region defined according to the provisions of the Habitats Directive, and no impact on Natura 2000 sites where these habitats are protected areas. Implementation of the Contract will not affect protected natural habitats. Works will be performed on already developed terrain. The exception is the new station at Aeroklub Michałków, where several dozen square meters of grassy areas will be occupied. A detailed description of the impacts at each station will be described in individual checklists.

#### ***Protected plant species and dendroflora***

No impact on protected plant species and dendroflora is anticipated. There are no trees conflicting with the works, i.e., no tree or shrub cutting is anticipated. Disturbance or damage to plant species or habitats for the purposes of construction facilities may occur. However, these are common species and therefore damage to them will not represent a significant loss to the environment. Impacts will be local in nature.

Work should be carried out in such a way as not to disturb existing trees. Trees located in the immediate vicinity of the station and likely to be damaged should be protected.

#### ***Protected animal species***

The possibility of negative impacts on animal species is anticipated. These may be related primarily to disturbance of species occurring in the vicinity of the station and disturbance of animal species, including birds nesting within the existing infrastructure. Impacts will be of short-term duration.

Operation phase

The station is not expected to impact the environment or any forms of conservation during operation. The stations are passive, maintenance-free, and the infrequent arrival of service crews will not have a negative impact either.

### **5.7.2. PROTECTED AREAS**

In case of location of elements of the Contract within a protected area, the Contractor shall submit its intention to execute the Contract to the authority supervising the protected area in order to determine the need to obtain additional legally required opinions, arrangements and decisions, including the environmental decision as indicated in section 1.3. However, none of the station locations are located within protected areas.

It is not anticipated that the project will have any impact on nature conservation forms during either the construction or operational phase.

## **5.8. ACOUSTIC CLIMATE**

### Construction phase

Noise emission is expected at the stage of works implementation. Noise may be generated by the operation of construction equipment and vehicle traffic associated with maintenance and supply of worksites. No additional sources of noise emissions are anticipated at the operation stage. These impacts will be local, short-term, and of low intensity. Emissions at the operation stage will be negligible, associated with maintenance and servicing of the facilities.

Site-specific noise analysis (including residential development, distance at which noise will be a nuisance, etc.) will be described in checklists.

### Operation phase

No impact on the acoustic climate during operation is anticipated. The stations do not emit noise.

## **5.9. MONUMENTS**

### Construction phase

Due to the fact that some of the works will be carried out in the vicinity of objects/areas under conservation protection, the works shall be carried out with due caution. If deemed necessary, the relevant authority shall submit the notification of works to be agreed with the relevant provincial conservators.

Obtain all necessary agreements and permits related to the execution of works within the objects protected under the *Act on the protection of historical monuments* ( Journal of Laws 2020. pos. 282, 782) shall be the responsibility of the Contractor.

Monuments in Przelewice, Dobryczyce and Grudziądz are at such a distance that they are not expected to be affected by construction works.

Archaeological sites in Grudziądz and Aeroklub Michałków should also not be at risk, however, the possibility of finding historical objects during ground works cannot be ruled out.

Proceedings at individual stations will be described in checklists for the above locations.

### Operation phase

No impact on the monuments during operation is anticipated.

## **5.10. MATERIAL ASSETS**

In terms of the protection of material assets, the implementation of the Contract will improve the safety of the Odra and Vistula drainage basin areas. Small scope of works should not adversely affect the technical infrastructure.

No property acquisition is anticipated for this Contract. The areas covered by the Contract are currently owned or leased by IMGW-PIB.

No impact on the material assets during operation is anticipated.

## **5.11. PROPERTY ACQUISITION**

As there is no need for the Contractor to acquire real property for the Contract, it is not required to prepare a Real Property Acquisition Procedure for the Contract. Details of the property acquisition policy for the OVFM are set forth in the Project Operations Manual available on the OVFM project website and in the Real Property Resettlement and Acquisition Framework document, the Environmental and Social Management Framework Plan, and it is required that all work performed under the Contract be in accordance with these documents.

## **5.12. HUMAN HEALTH AND SAFETY**

Construction phase

Impacts on human health and safety during the Contract may be associated with, but are not limited to, the following:

- increased noise emission,
- contamination with petroleum substances,
- entry of unauthorized persons into the area of construction work or operation of machinery such as a crane or aerial lift.

Prior to commencing the works, the Contractor shall determine whether a safety and health plan is required for the Contract in accordance with the Regulation of the Minister of Infrastructure of June 23, 2003 on information concerning safety and health protection as well as safety and health plan ( Journal of Laws 2003 no. 120 item 1126). If necessary, the Contractor shall prepare a safety and health plan and submit it for acceptance by the Employer.

Equipment, machinery or tools that do not guarantee compliance with the quality requirements of the Works, safety and health regulations and Biosafety regulations (if required) and may cause damage to the existing infrastructure and elements of the development and land use will not be permitted by the Employer for technical support.

Standards for electromagnetic fields will not be exceeded (due to lack of emissions), which excludes the negative impact on human health and life.

During implementation of Contract 4A.3.2 it is necessary to fulfill a number of requirements in the field of ES (environmental, social, occupational health and safety aspects), which are regulated by national regulations governing environmental protection, occupational health and safety, and labor law. Their compliance is supervised by state institutions and authorities. In particular, in terms of compliance with occupational health and safety regulations and labor law, the state sanitary inspection authorities and state labor inspection authorities are authorized to control the activities of entrepreneurs, in this area, including on construction sites. In addition, the terms of the contracts subsidized by the World Bank loan impose obligations to ensure implementation of applicable regulations. Special attention is given to issues such as:

- Protection of juveniles employed on the Contract,
- Eliminating inappropriate forms of behavior of persons employed in the implementation of the Contract (including sexual harassment and mobbing),
- Ensuring safety and health protection of persons employed on the implementation of the Contract, including the provision of legally required health and safety services,

- Ensure appropriate social and employment conditions for employees working on the Contract (including fair labor conditions).

It should be emphasized that the Contractor is obliged to apply and comply with all provisions of the Labour Law and shall act in accordance with the ES Code of Conduct.

An authorized employee of the Contractor shall prepare an ES Code of Conduct and ensure that all employees follow it during construction activities.

A health and safety procedure should be drawn up for work connected with the construction of the masts because of the possibility of working at heights with an increased risk to human health and safety. The work will be carried out from the ground, but it may be necessary to use a crane or an aerial lift.

The Contractor shall be obliged to report all accident incidents involving workers and bystanders as well as incidents relevant to ES requirements. In the event of an incident, the Contractor shall take all actions required under applicable laws, including but not limited to Construction Law and Labor Law.

The Contractor will hire appropriate professionals responsible for implementing ESHS issues. The structure of this team may be as follows:

- Environmental Specialist,
- Health and Safety Specialist,
- Social Specialist.

Due to the very small scope of work in the Contractor's team, there may also be one member of staff, the EMP Coordinator, who will be responsible for coordinating the above mentioned environmental and social issues, and health and safety issues will be the responsibility of the site manager.

With the application of the above procedures and assumptions, there should be no negative impact on human health and safety, however, accidental situations cannot be excluded. In that case, the above procedures should minimize negative situations.

#### Operation phase

Due to the fact that the Investor complies with Polish labor law, unmanned operation of the station, no negative impact is assumed.

### **5.13. EXTRAORDINARY THREATS TO THE ENVIRONMENT**

The most significant current extraordinary threat is the epidemiological state. In the event of an epidemic, there may be threats both to the health and life of the Contractor's employees and the Employer's personnel, as well as to the Contract implementation process. By virtue of the Regulation of the Minister of Health of 20 March 2020 *on declaring a state of epidemics in the area of the Republic of Poland* (Journal of Laws, item 491, as amended), in the period from 20 March 2020 until further notice, a state of epidemics has been declared in the area of the Republic of Poland in connection with SARS-CoV-2 infections.

Another type of extraordinary hazard is leakage of petroleum substances into water or soil. However, there are preventive measures in place relating to the proper organization of

construction sites and facilities and constant monitoring of the construction equipment used. The contractor must also have the necessary knowledge and be supplied with equipment to prevent the spread of pollution and its elimination.

Another type of extraordinary threat to the environment, as well as to human health and safety is the possibility of encountering unexploded ordnance. During the course of earthworks hazardous materials of military origin, such as unexploded ordnance and misfired ordnance (including but not limited to detonators, missiles, aerial bombs, artillery and rifle cartridges, armor-piercing devices, grenades, all types of mines, charges of explosives, scrap metal containing remnants of explosives, etc.) may be found. The Contract shall be implemented so as to eliminate the risk of any hazard to the Contractor's personnel and nearby residents. Prior the start of the work, the Contractor shall develop and submit to the Employer's approval, procedures for dealing with unexploded ordnance, including immediate stoppage of work and evacuation of personnel, and notification of the Employer / PIU, police and bomb disposal unit. In the event that unexploded ordnance is found, the Contractor and the PIU shall immediately follow the procedures applicable to the Contract.

Potentially dangerous phenomena for the conditions of conducting the works, and thus for human health and safety as well as for the environment is the occurrence of extreme weather phenomena such as windstorms and hurricanes. Some works will be carried out in the direct vicinity of high greenery.

It is essential that workers are provided with appropriate equipment to ensure the protection of their health and lives while performing the works (e.g. adequate safety equipment) and that appropriate safety procedures are developed and implemented when performing the works. These procedures will be subject to approval by the Employer/PIU prior to commencement of work. The Contractor shall provide appropriate work safety conditions and necessary personal protective equipment adequate to the type of works (particular attention should be paid to the possibility of working at heights and near water in case of selected facilities).

#### **5.14. CUMULATIVE AND TRANSBOUNDARY IMPACTS**

Taking into account a small scale and range of impacts, works within the already existing stations (except for the Michałków Aero Club location) and spatial separation of works for individual facilities, as well as short-term nature of impacts only at the stage of works, no cumulative impact with other projects will occur.

As contract 4A.3.2. is related to contract 4A.3.1. (POLRAD Weather Radar Modernization) it is expected that both of the modernized systems should increase possibility of monitoring severe weather phenomena and possibility of forecasting the phenomena and especially floods. Thunderstorm data are complementary to precipitation data and facilitate deeper insight into real development of severe weather. Consequently reliability of the diagnosis and forecasts will benefit as synergy of the two components.

However, the facilities of both Contract 4A.3.1 and 4A.3.2 are not located close enough to each other to result in any cumulative impacts regarding noise or other emissions during construction. During the operations phase, the PERUN facilities are passive. They do not emit noise, pollution or electromagnetic fields. The POLRAD system facilities are meteorological radars, which do not emit noise or other pollutants. They emit electromagnetic field, which is



above permissible standards, at the height of the antenna center (from approx. 25 - 51 m.a.s.l. depending on the tower) and within a radius of 59 m around the radar. This means that there is no possibility of cumulative impact of electromagnetic field, noise, or other emissions.

None of the projects is located close enough to the border for cross-border impact to occur.

Therefore, cumulative impacts are not anticipated during both construction and operation.

## **6. GENERIC MITIGATION MEASURES**

In order to mitigate potential negative impacts of the planned project on particular environmental components, the general mitigation action plan applicable to the Contractor under the 4A.3.2 Contract for particular environmental components is presented in Part 3: Mitigation measures in the Appendix 1. These measures were developed on the basis of knowledge, experience and good practices in this area. A check-list will be prepared for each site where construction, maintenance and upgrading works will be carried out, where mitigation measures will be included taking into account the characteristics of individual projects.

Notwithstanding the foregoing, the Contractor shall apply and comply with all the ES policy requirements and conditions (relating to environmental, social, and occupational health and safety issues) as set out in the Contract Documents, the World Bank's Environmental and Social Operating Policies and Procedures, the World Bank's Environmental, Health and Safety Guidelines (EHS Guidelines), the ES Code of Conduct (developed at the bidding stage), as well as those arising from applicable Polish legislation (including Labour Code, Construction Law, and others).

## **7. GENERIC MONITORING ACTIONS**

After the preparation of checklists for individual locations and Appendix 1 for this document, a set of monitoring activities applicable to the Contractor of the 4A.3.2 Contract will be prepared for each location.

These activities will be developed on the basis of conducted site inventory, analysis of contract documents, planned works and requirements of Polish law.

For general monitoring activities for Contract 4A.3.2, refer to Part 4: Monitoring Plan of Appendix 1 to this document.

## **8. LIST OF APPENDICES**

- 1) Appendix 1 Checklist for environmental and social measures.
- 2) Appendix 2 Location maps
- 3) Appendix 3 Location maps against protected areas