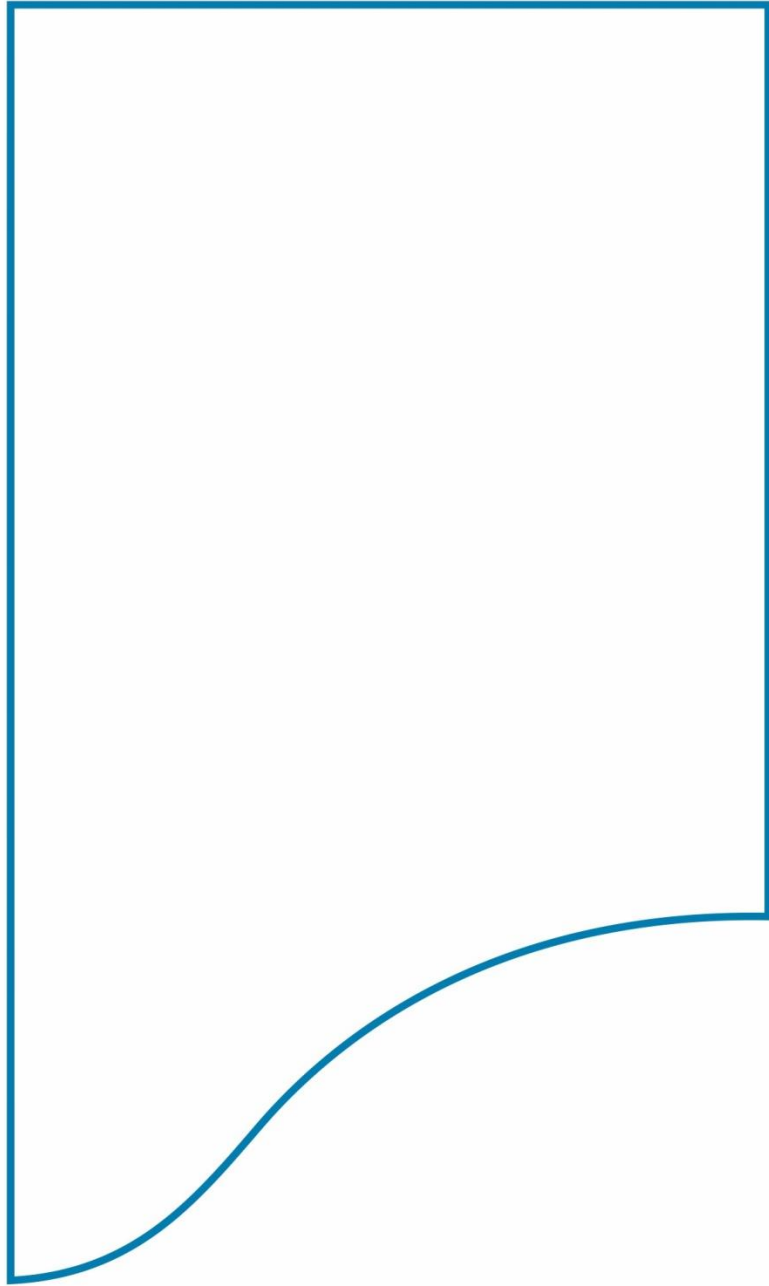




# ENVIRONMENTAL MANAGEMENT PLAN



## ODRA - VISTULA FLOOD MANAGEMENT PROJECT



Projekt Ochrony  
Przeciwpowodziowej  
w Dorzeczu Odry i Wisły



Państwowe  
Gospodarstwo Wodne  
**Wody Polskie**



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# GENERAL ENVIRONMENTAL MANAGEMENT PLAN

## GUIDELINES FOR THE CONTRACTOR

## ODRA-VISTULA FLOOD MANAGEMENT PROJECT

ENVIRONMENTAL CATEGORY B – ACCORDING TO OP 4.01 WB

### COMPONENT 4:

INSTITUTIONAL STRENGTHENING AND MODERNISATION OF THE FORECASTING SYSTEM

### SUB-COMPONENT 4A:

EXTENSION AND MODERNISATION OF THE MONITORING SYSTEM FOR FLOOD AND DROUGHT-RELATED RISKS

### CONTRACT 4A.3.1:

POLRAD Weather Radar Modernization

**EMPLOYER:** Instytut Meteorologii i Gospodarki Wodnej – Państwowy Instytut Badawczy  
[Institute of Meteorology and Water Management - National Research Institute]

Warsaw – November 2021

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**ODRA-VISTULA FLOOD MANAGEMENT PROJECT CO-FINANCED BY:**

World Bank (WB), Loan Agreement No. 8524 PL  
Council of Europe Development Bank (CEB), Loan Framework Agreement No. LD 1866  
European Union Cohesion Fund (OPI & E 2014 - 2020)  
State budget

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## LIST OF BASIC DEFINITIONS AND ABBREVIATIONS USED IN THE EMP

Name	Description
World Bank (WB)	International Bank for Reconstruction and Development <a href="http://www.worldbank.org/">http://www.worldbank.org/</a>
OHS	Occupational Health and Safety
PCU/OVFM PCU	Odra-Vistula Flood Management Project Coordination Unit <a href="http://www.odrapcu.pl">www.odrapcu.pl</a>
CEDB	Council of Europe Development Bank <a href="https://coebank.org/en/">https://coebank.org/en/</a>
Environmental decision (ED)	Decision on environmental conditions
EHS Guidelines	World Bank guidelines on Environment, Health and Safety Policy <a href="https://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/Sustainability-At-IFC/PoliciesStandards/EHS-Guidelines/">https://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/Sustainability-At-IFC/PoliciesStandards/EHS-Guidelines/</a>
ES Policy	World Bank Environmental and Social - ES policy, addressing environmental and social issues (i.e. environmental, occupational health and safety, as well as social issues including gender equality, protection of minors, vulnerable persons (including the disabled), sexual harassment, sexual violence, HIV/AIDS awareness and prevention)
ESMF	Environmental and Social Management Framework <a href="http://www.odrapcu.pl/doc/OVFMP/Ramowy_Plan_Zarzadzania_Srodowiskiem_i_Spolnoczenstwem.pdf">http://www.odrapcu.pl/doc/OVFMP/Ramowy_Plan_Zarzadzania_Srodowiskiem_i_Spolnoczenstwem.pdf</a>
GDEP	General Directorate for Environmental Protection
GZWP	Major Groundwater Reservoir
IMGW-PIB	Institute of Meteorology and Water Management - National Research Institute
SWB	Surface Water Body
GWB	Groundwater Body
PEU	Project Execution Unit - a separate organisational unit established within the PIU responsible for the performance of the Contract
PIU/PIU OVFM	OVFM (Odra-Vistula Flood Management Project) Project Implementation Unit
PIU/Investor/Empolyer/ Contracting Authority	Institute of Meteorology and Water Management - National Research Institute
Contract 4A.3.1 Contract	4A.3.1 Contract <i>POLRAD Weather Radar Modernization</i>
LSDP	Local Spatial Development Plan



EIA	Environmental Impact Assessment
GEMP	General Environmental Management Plan
PAD	Project Appraisal Document prepared for the World Bank in order to grant a loan to the Polish Government for the implementation of OVFMP <a href="http://documents.worldbank.org/curated/en/2015/07/24763021/poland-odra-vistula-flood-management-project">http://documents.worldbank.org/curated/en/2015/07/24763021/poland-odra-vistula-flood-management-project</a>
PGW WP	Państwowe Gospodarstwo Wodne Wody Polskie (Polish Water Management Authority)
SHP Plan	The safety and health protection plan drawn up pursuant to Art. 21a section 4 of the Act of the 7 <sup>th</sup> of 1994 - Construction Law
POLRAD	Polish weather radar network
POM	Project Operational Manual prepared by the Odra-Vistula Flood Management Project Coordination Unit, Wrocław 2015 <a href="http://www.odrapcu.pl/doc/POM_PL.pdf">http://www.odrapcu.pl/doc/POM_PL.pdf</a> the English-language version shall prevail: <a href="http://www.odrapcu.pl/doc/POM_ENG.pdf">http://www.odrapcu.pl/doc/POM_ENG.pdf</a>
Project / OVFMP / OVFM Project	Odra-Vistula Flood Management Project
DEMP	Detailed Environmental Management Plan
RDEP	Regional Directorate for Environmental Protection
RWMA	Regional Water Management Authority
State of the epidemic	The legal situation put introduced in a given area in connection with an outbreak of an epidemic in order to take counter-epidemic and preventive measures to minimise the consequences of the epidemic as defined in the Act on the Control of Communicable Diseases
State of epidemic threat	Legal situation introduced in a given area in connection with the risk of an epidemic, in order to take counter-epidemic measures as defined in the Act on the Control of Communicable Diseases
VIIEP	Voivodship Inspectorate for Environmental Protection
Contractor	Consortium INSTAL WARSZAWA S.A. and Leonardo Germany GmbH
Road manager	An organisational unit which performs the duty of managing public roads within the meaning of the Act on Public Roads, in the case of forest roads - the State Forests

## LIST OF ABBREVIATED NAMES OF LEGAL ACTS USED IN THE EMP

The following table presents the titles, publication references and abbreviations of the legal acts referred to in the text of this EMP.

Abbreviation of the name	Full title (including publication address)
SHP regulation	Regulation of the Minister of Infrastructure of the 23 <sup>rd</sup> of June 2003 on information concerning safety and health protection and the safety and health plan (Journal of Laws 2003, No. 120, item 1126)
EIA Regulation	Regulation of the Council of Ministers of the 10 <sup>th</sup> of September 2019 on projects likely to have a significant impact on the environment (consolidated text: Journal of Laws of 2019, item 1839)
Act on public roads	Act of the 21 <sup>st</sup> of March 1985 on public roads (consolidated text: Journal of Laws of 2021, item 1376 as amended)
EIA Act	The Act of the 3 <sup>rd</sup> of October 2008 on the provision of information on the environment and its protection, public participation in environmental protection and environmental impact assessments (consolidated text: Journal of Laws of 2021, item 247 as amended)
The Act on combating infectious diseases	The Act of the 5 <sup>th</sup> of December 2008 on preventing and combating infections and infectious diseases in humans (consolidated text: Journal of Laws of 2021, item 2069 as amended)
Aviation Law	Act of the 3 <sup>rd</sup> of 2002, Aviation Law (consolidated text: Journal of Laws of 2020, item 1970, of 2021, item 784 as amended)

# 1. INTRODUCTION

## 1.1 Odra-Vistula Flood Management Project

The main objective of the OVFM Project is to improve flood protection for people living in selected areas of the Odra River Basin and Upper Vistula River Basin as well as to strengthen the Borrower's institutional capacity for more effective mitigation of the effects of flood. 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 Valley;
- Component 3 - Flood Protection of the Upper Vistula;
- **Component 4 - Institutional strengthening and modernisation of the forecasting system;**
- Component 5 - Project Management and development of further studies.

Component 4, as part of which the 4A.3.1 Contract being the subject of this GEMP, is performed, is divided into the following two Sub-Components:

- **Sub-component 4A - Development and modernisation of the monitoring system for flood and drought-related risks;**
- Sub-component 4B - Construction of operational centres in RWMA Wrocław and RWMA Kraków.

Detailed information on the Project can be found in the Environmental and Social Management Framework Plan, published, inter alia, on the websites of the World Bank <sup>1</sup> and the Odra-Vistula Flood Management Project Coordination Unit<sup>2</sup>. A detailed description of the Project is also included in the PAD document<sup>3</sup> as well as in the Project Operations Manual<sup>4</sup>.

Due to the extensive scope of the works, their location in remote locations and the long period of project implementation, this document serves as a guideline for the preparation of detailed documents. Detailed Environmental Management Plans, in the form of full documents or, if

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<sup>1</sup> <http://documents.worldbank.org/curated/en/717671468333613779/Poland-Odra-Vistula-Flood-ManagementProject-environmental-and-social-management-framework>

<sup>2</sup> [http://odrapcu2019.odrapcu.pl/popdow\\_o\\_projekcie/](http://odrapcu2019.odrapcu.pl/popdow_o_projekcie/)

<sup>3</sup> <http://documents.worldbank.org/curated/en/320251467986305800/Poland-Odra-Vistula-Flood-Management-Project>

<sup>4</sup> [http://www.odrapcu.pl/doc/POM\\_PL.pdf](http://www.odrapcu.pl/doc/POM_PL.pdf) (the version in English is available at: <http://www.odrapcu.pl/doc/POM/ENG.pdf>)

circumstances indicate, in the form of check-lists, will be prepared for each location as and when an EIA is issued.

### 1.2 4A.3.1. Contact

Due to the extensive scope of work, the fact that the work will be carried out in remote locations and the long lead time, this document is intended as a guide for the preparation of detailed documents.

Detailed Environmental Management Plans, in the form of full documents or, if circumstances indicate, in the form of checklists, will be prepared for each location as and when an EIA is issued.

This document is an implementation study and as such does not consider alternative locations. The locations of towers under construction, i.e. in Użranki, Góra św. Anny and Nowy Gdańsk, were selected at the project planning stage and alternative locations were considered at that time. For obvious reasons, no alternative locations were considered for towers undergoing modernisation.

## 2. DESCRIPTION OF THE 4A.3.1 CONTRACT

The 4A.3.1 Contract is fully complementary with the remaining Contracts and together with them concerns the strengthening of flood protection system in the Odra and Vistula basins. The 4A.3.1 Contract complements the activities undertaken so far by the IMGW-PIB in the field of flood protection.

The objective of the contract is to improve real-time weather situation visualisation and detection of dangerous phenomena such as thunderstorms, hail, torrential downpours etc. sufficiently in advance to issue warnings for endangered regions and, if the situation requires, to activate elements of flood protection. Data obtained from the system, thanks to its high accuracy and resolution, will also improve the accuracy of digital weather simulations for the purposes of short-, medium- and long-term forecasts.

POLRAD system used so far consists of 8 radar towers located in Legionowo, Rzeszów, Brzuchania, Ramża, Pastewnik, Poznań, Świdwiń and Gdańsk. The system uses older generation Meteor radars of various sizes.

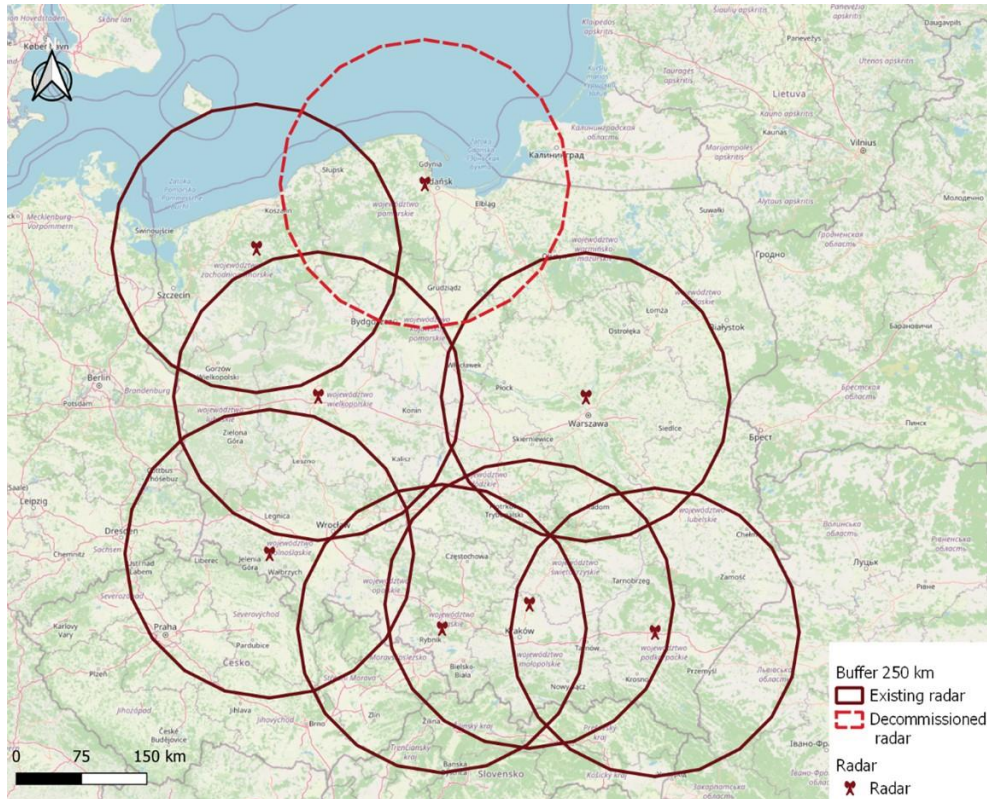


Figure1 POLRAD network - current state

The POLRAD system belongs to the European network of EURAD weather radars. Affiliation to this network increases the amount of data available for the territory of Poland thanks to the use of information from foreign radar stations.

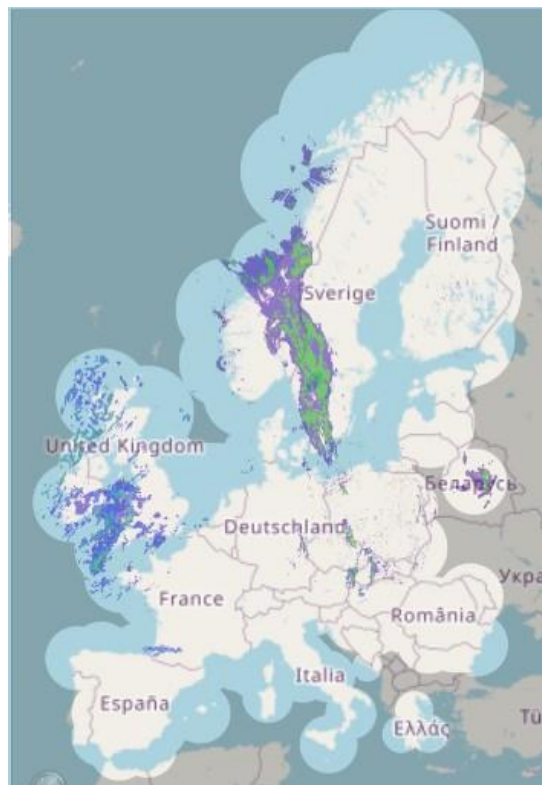


Figure2 European EURAD weather radar network



Obsolete technical equipment, resulting in frequent breakdowns and the need to turn off certain radar stations for the time of repairs, as well as the insufficient resolution of the existing system along with visible climate changes, which cause a significant increase in the frequency of extreme phenomena in the country, make it necessary to modernise and expand the system. To meet the challenges, the IMGW-PIB decided to upgrade the whole system. Within the framework of undertaken works, 6 existing towers will be repaired and modernised, and the operating radars will be replaced with new C-band devices and equipped with the possibility of double polarization measurements. In addition, the current tower in Brzuchania will be demolished and replaced with a new, much higher tower built in reinforced concrete technology. The currently operating tower in Gdańsk will also be demolished and replaced by a new station, which is planned to be built on plot no. 439, Kamień precinct, Szemud commune, Wejherowo powiat, on a land currently owned by the State Forests.

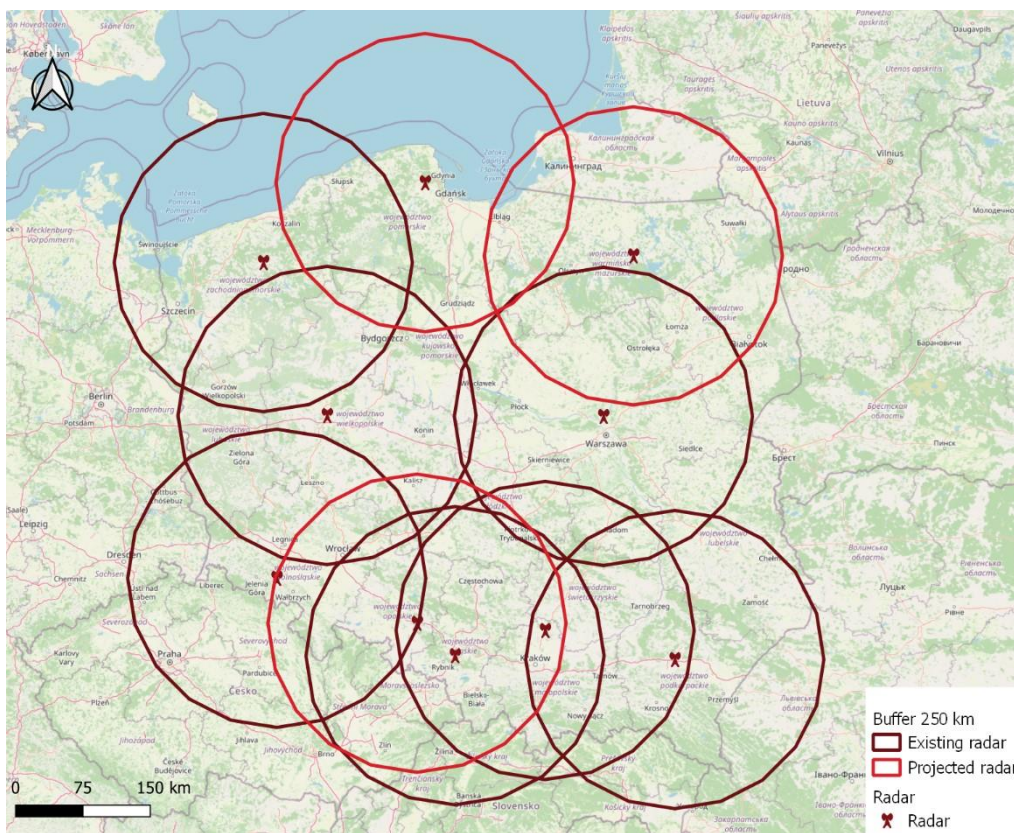


Figure 3 POLRAD network - state after completion of the investment

The radar stations will be uniformly equipped with METEOR 735CDP10 radar equipment manufactured by LEONARDO Germany GmbH with the following technical parameters:

- Frequency tuning range: 5430-5800MHz
- Operating frequency used: 5635 – 5645 MHz
- Duration of the pulse: 0,33 –3,3μs
- Pulse repetition frequency: 250-2000Hz
- Pulse power: 400kW

Average power:	20W
Antenna polarisation:	Dual polarisation
Horizontal beam width:	1°
Vertical beam width:	1°
Directional gain:	45dB

Selected units enable recognition of the type of precipitation that forms in clusters of clouds, i.e. distinction of rain, hail or snow. This possibility is not available in the older generation of radars currently used in POLRAD network.

Radar stations have the form of separate, fenced areas, usually elevated in relation to the surroundings, where the main element of the system is a tower made in reinforced concrete or steel construction technology. Auxiliary installations such as a generator, electrical switchboards and sanitary facilities for service teams carrying out periodic maintenance or repairs are located within the tower or in an adjacent integral building.

If possible, the highest possible terrain point is selected as the location and the height of the tower itself is determined in such a way that the radar radiation of the transmitter does not encounter any terrain or artificial obstacles in the form of other buildings, wind turbines, other towers, etc. The beam of the selected device is characterised by very low dispersion and there are practically no so-called "side lobes", i.e. co-existing radiation beams significantly deviated from the main axis. The above features and the fact that the transmitter is located at a dominant height in relation to the surrounding terrain, with an angular range of the radar operation of  $+0.5^\circ$  to  $+90^\circ$  in relation to the ground surface, cause that the radiation does not affect people or elements of the environment located even at a considerable distance from the source, which is schematically shown in Figure 4.

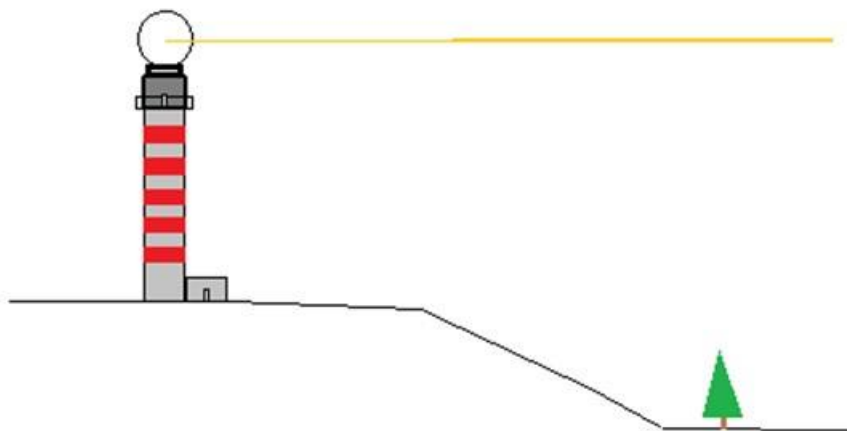


Figure 4 Schematic layout of the radar station

As part of the investment, the Department of Terrestrial Remote Sensing of the IMGW-PIB in Warsaw will be equipped with new computer hardware along with full software for handling data stream transmitted by individual stations. On their basis, the system creates an interactive weather map of Poland in real time. It also makes it possible to generate short-term (a few hours) meteorological forecasts useful in various branches of the economy.

Within the scope of the Contract, on the area of the radar station in Legionowo, a new storage building will also be constructed, which will serve as a place for storing spare parts, conducting ongoing repairs and storing tools and measuring equipment. The existing station infrastructure - the research building and the power building - will also be renovated, along with adjacent manoeuvring areas, internal roads, fencing and the repair of the access road.

The investment will end with an Operational Test lasting 30 days. During the test, the reliability of the entire system, the consistency of the transmitted data, the interoperability of each component, the quality of the generated weather maps will be checked. According to the Contract provisions, the Operational Test is expected to be completed in August 2023.

In accordance with the Investor's requirements, during execution of the works, due to the necessity of continuous weather monitoring, the sequence of deactivation of individual operating radars should be agreed with IMGW-PIB. The Contractor prepared and agreed with the Ordering Party the General Contract Time Schedule, which constitutes Attachment No. 7 to this study. The schedule will be updated in case of any changes, which, however, will not influence the conditions of the GEMP.

A summary of the individual objects with basic information is provided in the table below.

Table 1 List of POLRAD project objects

Name of the object	Geographic coordinates of the IMGW-PIB	Tower foundation height	Antenna centre height	Total tower height	Cadastral data / Notes
		m MASL	m AGL	m AGL	
<b>Weather radar in Legionowo</b>	52°24'19,21'' N 20°57'39,98'' E	93.3	29	32.35	Current location  Plot identification number: 140801_1.0016.1 / 14, Mazowieckie Voivodeship, Legionowo powiat, Legionowo commune, precinct 16, plot number 1/14KWWA1L/00008355/2
<b>Storage hall, energy and research building in Legionowo</b>	52°24'19,21'' N 20°57'39,98'' E	-	-	-	Current location of the research and energy building and construction of a new storage hall  Plot identification number: 140801_1.0016.1 / 14, Mazowieckie Voivodeship, Legionowo powiat, Legionowo commune, precinct 16, plot number 1/14KWWA1L/00008355/2



GENERAL ENVIRONMENTAL MANAGEMENT PLAN – GUIDELINES FOR THE CONTRACTOR

CONTRACT 4A.3.1. POLRAD WEATHER RADAR MODERNIZATION

Name of the object	Geographic coordinates of the IMGW-PIB	Tower foundation height	Antenna centre height	Total tower height	Cadastral data / Notes
		m MASL	m AGL	m AGL	
Weather radar in Rzeszów	50°06'50,63'' N 22°02'13,21'' E	211.1	30	33.35	Current location  Plot identification number: 181613_2.0001.1867/79. Podkarpackie Voivodeship, Rzeszów powiat, Trzebowniko commune, Jasionka precinct, plot number 1867/79
Weather radar in Świdwin	53°47'44,83'' N 15°50'12,58'' E	116.6	30	33.35	Current location  Plot identification number: 321601_1.0003.3/198 Zachodniopomorskie Voivodeship, Świdwin powiat, Świdwin commune, plot number 3/145
Weather radar in Pastewnik	50°53'32,86'' N 16°02'22,17'' E	668.8	23.15	26.5	Current location  Plot identification number: 020704_2.0005.141/2 Dolnośląskie Voivodeship, Kamienna Góra powiat, Marciszów commune, Pastewnik precinct, plot number 141/2
Weather radar in Poznań	52°24'47,71'' N 16°47'49,16'' E	88.3	35	38.35	Current location  Plot identification number: 302117_2.0017.286 / 1 Wielkopolska Voivodeship, Poznań powiat, Tarnowo Podgórne commune, Wysogotowo precinct, plot number 286/1
Weather radar in Ramża	50°09'04,8'' N 18°43'30,35'' E	321	36.1	39.45	Current location  Plot identification number: 241201_5.0001.AR_1.2012 / 11 Śląskie Voivodeship, Rybnik powiat, Czerwionka Leszczyny commune, Bełk precinct, plot number 2012/11
Weather radar in Brzuchania	50°23'39,01'' N 20°04'59,62'' E	383.33	51	54.35	Current location, demolition of the tower and construction of a new one. Elevation of the antenna centre to 51 m.a.s.l.  Plot identification number: 120805_5.0002.63 Małopolska Voivodeship, Miechów powiat, Miechów commune, rural area, Brzuchania precinct, plot number 63
Weather radar in Uźranki	53°51'20,56'' N 21°24'43,7'' E	~202	35	38.35	New location  Plot identification number: 281003_2.0026.330/3 Warmińsko-Mazurskie Voivodeship, Mrągowo powiat, Mrągowo commune, Uźranki, plot number 330/3

Name of the object	Geographic coordinates of the IMGW-PIB	Tower foundation height	Antenna centre height	Total tower height	Cadastral data / Notes
		m MASL	m AGL	m AGL	
Weather radar in Góra Św. Anny	50°27'50,34'' N 18°09'10,77'' E	~386	~47	~50	New location  Plot identification number: 160505_5.0006.AR_5.45 / 1 Opolskie Voivodeship, Krapkowice powiat, Zdieszowice commune - rural area, Żyrowa precinct, plot number 45/1
Weather radar in Nowy Gdańsk	54°30'03,31'' N 18°16'18,58'' E	~226	35	38.35	New location  Plot identification number: 221509_2.0009.439 Pomorskie Voivodeship, Wejherowo powiat, Szemud commune, Kamień precinct, plot number 439 (forest division 253) Forestry: Kamień
Weather radar in Gdańsk Rębiechowo	54°23'03,34'' N 18°27'22,76'' E	138.85		23.40	Current location. Dismantling the station  Plot identification number: 226101_1.0024.2/1 Pomorskie Voivodeship, Gdańsk powiat, Gdańk commune, Rębiechów precinct, plot number 2/1

## 2.1 Legionowo - replacement of the radar, modernisation of the tower systems

The planned task is located on the plot with registration no. 1/14, precinct 16, Legionowo commune, Legionowo powiat, Mazowieckie voivodship. The area under the existing radar tower on the plot no. 1/14, precinct 16 is 0.002 ha and is located near the southern border of the property. The tower is 32.35m high above ground level.



Figure 5 Location of the radar station in Legionowo



Photography 1 Location of the radar tower - general view

Within the scope of the 4A.3.1 Contract, in Legionowo the Contractor shall, among others, perform the following works:

- dismantle of the existing dome and radar with apparatus;
- installation of a new radar, apparatus, dome along with the necessary adaptation works;
- works outside the radar tower, including:
  - sealing of clearances and openings made in the outer shell of the tower, including openings made for the passage of cables and for the air conditioning,

- painting of the external walls of the radar room and the external walls of the tower core (removal of old paint and corrosion centres by sandblasting, dedusting and degreasing of the cleaned surface, priming with primer, application of two coats of paint),
- repair of the foundation surrounding the steel core of the radar tower,
- modernisation of heating, ventilation and air conditioning systems;
- works inside the radar tower:
  - maintenance of the steel structure of the radar tower staircase,
  - repair of the floor in the dome room
  - repair of floors and ceilings in rooms,
  - construction of the room in the tower made of sandwich panels,
  - delivery of a ladder and segmented stairs,
  - replacement of the external doors of the tower,
  - replacement of electrical and lighting installations;
- replacement of the following systems
  - anti-theft,
  - fire signalling,
  - video monitoring.

## 2.2 Legionowo - construction of a new storage building, renovation of a research and energy building together with land development

The planned construction works will be carried out on the plot with registration no. 1/14, precinct 16, Legionowo commune, Legionowo powiat, Mazowieckie voivodship, together with the radar tower described in point 2.1. The location in relation to the surrounding area is therefore identical to that shown in Figure 5. The investment area on plot no. 1/14, precinct 16 is 0.041 ha and includes an area for a newly constructed storage hall (0.013 ha), relocated carport (0.0014 ha) and upgraded research and energy buildings (0.028 ha) which are located in the fenced area of the radar station near the southern boundary of the property.





*Photography 2 Legionowo - view from the radar tower of the research building and the area under the storage building*

As part of the 4A.3.1 Contract , the Contractor shall carry out, among others, the following works:

- A storage hall with an area of 136.15 m<sup>2</sup> and a height of 4.5 m in steel construction technology with sandwich panels cladding, including lightning protection, roof drainage, electrical, heating, ventilation and pneumatic installations. Access to the storage hall is provided by 2 electrically operated gates with integrated doors for personnel access and evacuation purposes. The modernised boiler room located in the research building will be the source of heat for the heating system. The heat service connection between the storage hall and the boiler house will be made with an underground network using pre-insulated pipe technology;
- Relocation of the carport currently located on the site of the planned construction of a storage hall;
- Felling of three trees (9 trunks) located in the area of the planned construction of the storage hall;
- Renovation of the research and energy building:
  - renovation and reconstruction of rooms (bathrooms, kitchenette, technical rooms) - painting, walls, floors,
  - repair and renovation of the roof and chimneys,
  - the pneumatic installation in the research building,

- renovation and replacement of internal and external door and window joinery in the research and energy building,
- sanitary installations (fire water supply, water and sewage, central heating),
- modernisation of the gas boiler room with replacement of the gas boiler
- thermo-modernisation and new facade,
- replacement of the following systems
  - anti-theft,
  - fire signalling,
  - video monitoring;
- modernisation of the existing external fence;
- demolition and laying of new pavements, paths, bands around buildings and a driveway made of cobblestones;
- repair of the damaged hardened manoeuvring area in front of the entrance gates to the facility;
- reconstruction and modernisation of energy and ICT installations (power supply lines, cabinets and switchboards as well as external and internal installations, external lighting);
- earthing, surge protection and equipotential bonding installations.

## 2.3 Rzeszów

The planned task is located on the plot with registration no. 1867/79, Jasionka precinct, Trzebownisko commune, Rzeszów powiat, Podkarpackie Voivodship. The area under the existing radar tower with infrastructure covers 0.07 ha, the rest of the site will be unpaved area, i.e. approximately 0.03 ha The tower is 33.35 m high above ground level.

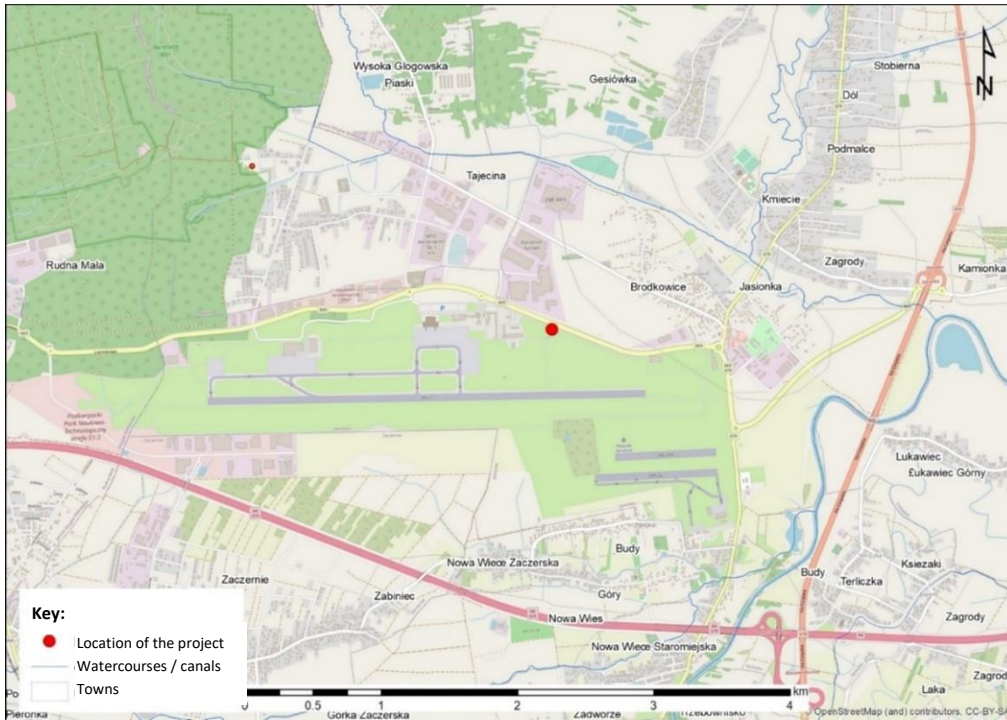


Figure 6 Location of the radar tower in Rzeszów



Photography 3 Location of the radar tower in Rzeszów - general view

As part of the 4A.3.1 Contract , the Contractor shall carry out, among others, the following words:

- dismantle of the existing dome and radar with apparatus;
- installation of a new radar, apparatus, dome along with the necessary adaptation works;
- sealing the roof sheathing of the apparatus room and the balcony area;

- replacement of external doors (entrance to the tower and entrance to the fuel room);
- painting the railings of balconies and galleries;
- replacement of the floor in the apparatus room - installation of an antistatic epoxy floor;
- replacement of the floor in the staircase (base of the tower) - installation of an epoxy floor;
- separation of a utility room in the lower part of the tower;
- modernisation of electrical and ICT installations;
- modernisation of heating, ventilation and air conditioning systems;
- replacement of the following systems:
  - anti-theft,
  - fire signalling,
  - video monitoring.

## 2.4 Świdwin

The planned task is located on the plot with registration no. 3/198, 003 precinct, Świdwin commune, Świdwin powiat, Zachodniopomorskie Voivodship. The site for the radar tower and its infrastructure will cover approximately 0.07 hectares, with the remainder of the site being unpaved. The tower is 33.35 m high above ground level.



Figure 7 Location of the radar station in Świdwin





*Photography 4 Location of the radar tower in Świdwin - general view*

As part of the 4A.3.1 Contract , the Contractor shall carry out, among others, the following words:

- dismantle of the existing dome and radar with apparatus;
- installation of a new radar, apparatus, dome along with the necessary adaptation works;
- sealing the roof sheathing of the apparatus room and the balcony area;
- replacement of external doors (entrance to the tower and entrance to the fuel room);
- painting the railings of balconies and galleries;
- replacement of the floor in the apparatus room - installation of an antistatic epoxy floor;
- replacement of the floor in the staircase (base of the tower) - installation of an epoxy floor;
- building a utility room in the lower part of the tower;
- modernisation of heating, ventilation and air conditioning systems;
- modernisation of electrical and ICT installations;
- replacement of fuel tanks and the connecting installation;
- replacement of the following systems
  - anti-theft,
  - fire signalling,
  - video monitoring.

## 2.5 Pastewnik

The planned task is located on the plot with registration no. 141/2, Pastewnik precinct, Marciszów commune, Kamienna Góra powiat, Dolnośląskie Voivodship. The site for the radar tower and its infrastructure will cover approximately 0.016 ha, with the remainder of the site consisting of an unpaved area of approximately 0.09 ha and paved areas of 0.009 ha. The tower is 26.5 m high above ground level.

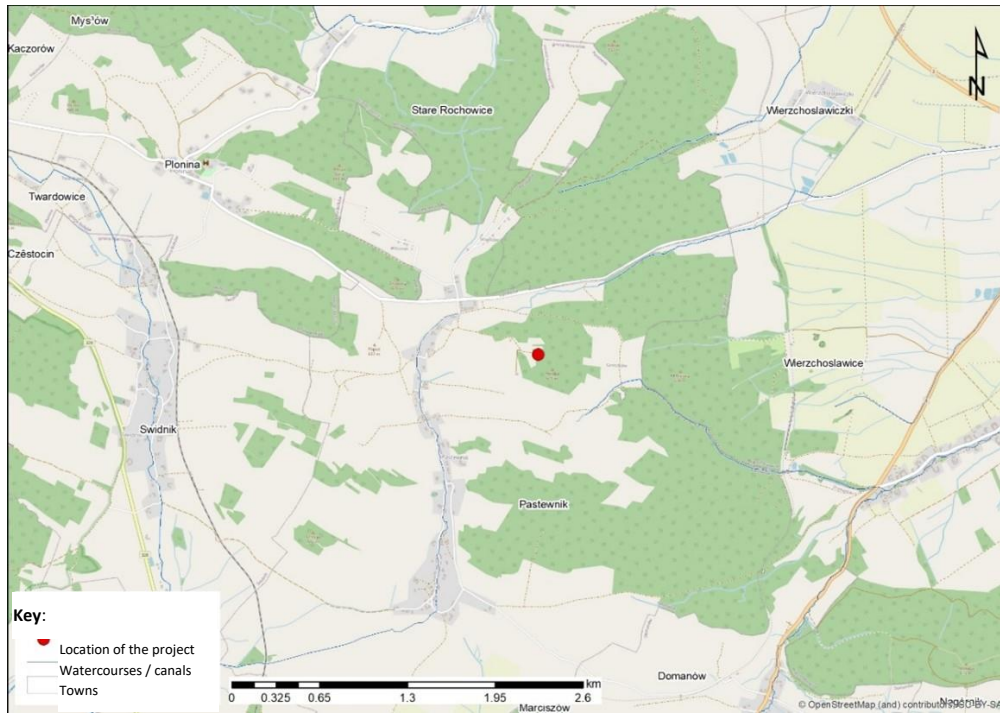


Figure 8 Location of the radar station in Pastewnik



Photography 5 Location of the radar tower in Pastewnik - general view

As part of the 4A.3.1 Contract , the Contractor shall carry out, among others, the following works:

- dismantle of the existing dome and radar with apparatus;
- installation of a new radar, apparatus, dome along with the necessary adaptation works;
- making epoxy flooring in the apparatus room;
- sandwich panels on a polystyrene core for the building at the base of the tower;
- renovation of the roof of the technical building;
- replacement of the fence of the plot;
- replacement of fuel tanks and the connecting installation;
- modernisation of heating, ventilation and air conditioning systems;
- modernisation of electrical and ICT installations;
- replacement of the following systems
  - anti-theft,
  - fire signalling,
  - video monitoring.

## 2.6 Poznań

The planned task is located on the plot with registration no. 286/1, Wysogotowo precinct, Tarnowo Podgórne commune, Poznań powiat, Wielkopolskie Voivodship. The site for the radar tower and its infrastructure will cover approximately 0.07 hectares, with the remainder of the site being unpaved i.e. approximately 0.044 ha. The tower is 38.35 m high above ground level.



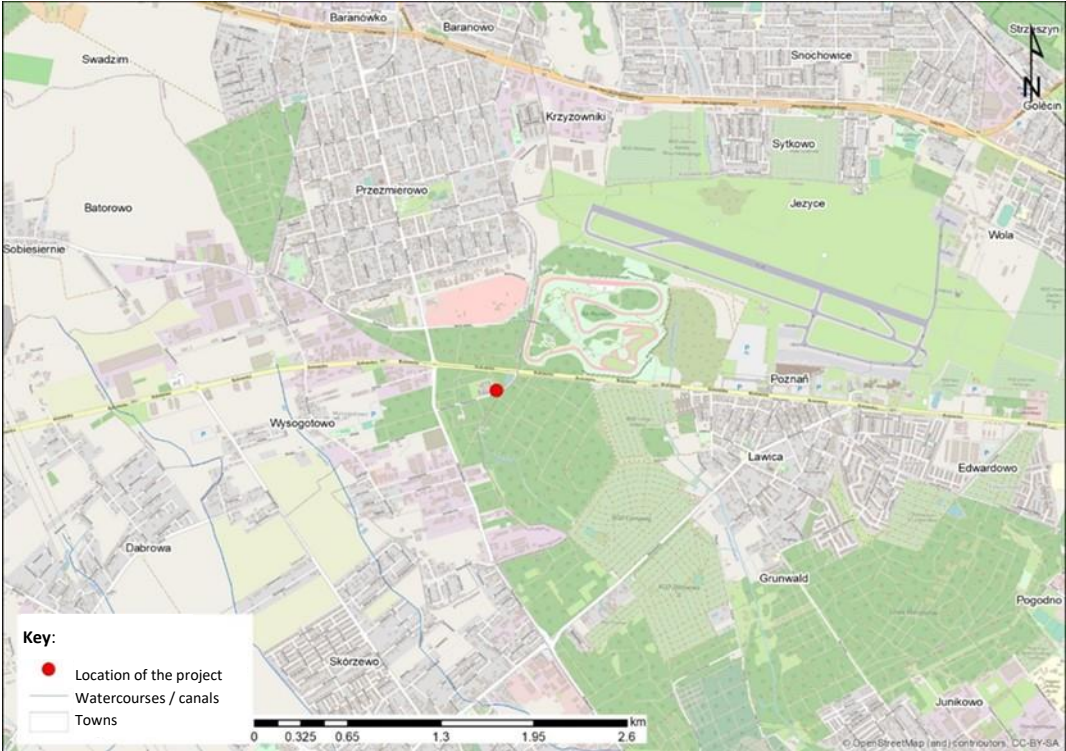


Figure 9 Location of the radar station in Poznań



Photography 6 Location of the radar tower in Poznań - general view

As part of the 4A.3.1 Contract , the Contractor shall carry out, among others, the following works:

- dismantle of the existing dome and radar with apparatus;
- installation of a new radar, apparatus, dome along with the necessary adaptation works;
- sealing the roof sheathing of the apparatus room and the balcony area;
- replacement of external doors (entrance to the tower and entrance to the fuel room);
- painting the railings of balconies and galleries;
- replacement of the floor in the apparatus room - installation of an antistatic epoxy floor;
- replacement of the floor in the staircase (base of the tower) - installation of an epoxy floor;
- building a utility room in the lower part of the tower;
- modernisation of the heating, ventilation and air conditioning system;
- modernisation of electrical and ICT installations;
- replacement of fuel tanks and the connecting installation;
- replacement of the following systems
  - anti-theft,
  - fire signalling,
  - video monitoring.

## 2.7 Ramża

The planned task is located on the plot with registration no. 2012/11, Bełk precinct, Czerwionka-Leszczyny commune, Rybnik powiat, Śląskie Voivodship. The site for the radar tower and its infrastructure will cover approximately 0.058 ha, with the remainder of the site being unpaved area, i.e. approximately 0.1814 ha. The tower is 39.45 meters above ground level.

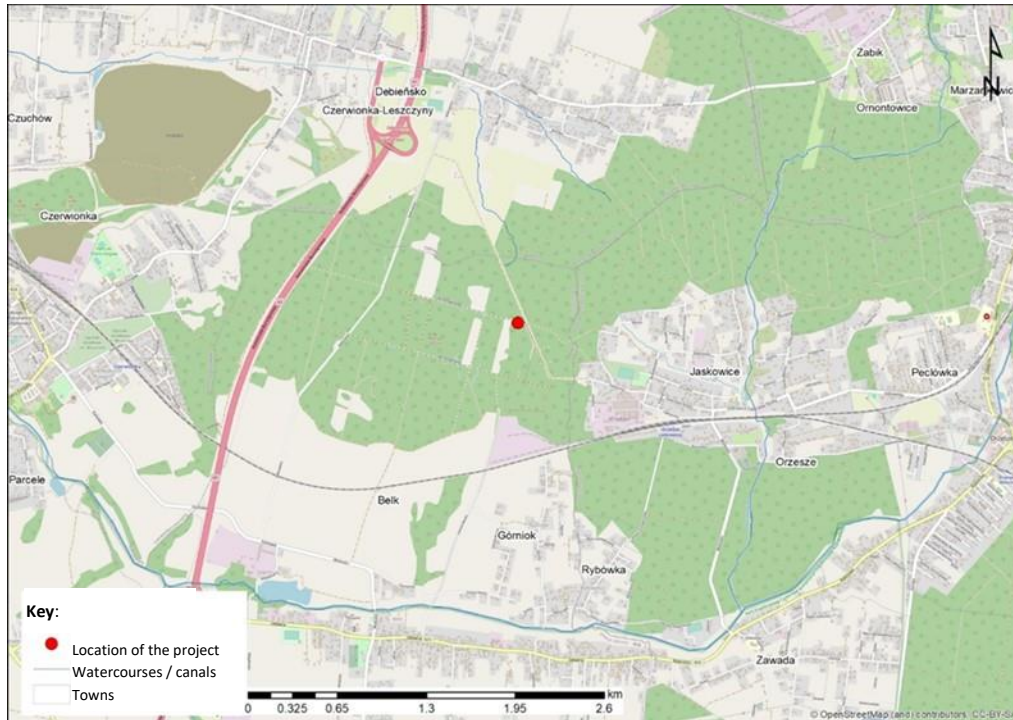


Figure 10 Location of the radar station in Ramża



Photography 7 Location of the radar tower in Ramża - general view

As part of the 4A.3.1 Contract , the Contractor shall carry put, among others, the following works:

- dismantle of the existing dome and radar with apparatus;
- installation of a new radar, apparatus, dome along with the necessary adaptation works;
- renovation work on the apparatus room - painting, flooring;
- painting of gallery railings and balcony;



- sealing the roof sheathing of the apparatus room and the balcony area;
- painting the walls and ceiling of the staircase;
- painting of the steel structure of the staircase (stairs, handrail, brackets and other fixtures);
- painting of entrance door and grille;
- washing, cleaning, touching up and painting the radar tower facade;
- modernisation of the heating, ventilation and air conditioning system;
- modernisation of electrical and ICT installations;
- replacement of the following systems
  - anti-theft,
  - fire signalling,
  - video monitoring.

## 2.8 Brzuchania - demolition of the existing tower, dismantling of the existing radar, construction of the new radar tower

The planned task is located on the plot with registration no. 63, Brzuchania precinct, Miechów commune, Miechów powiat, Małopolskie Voivodship. The site for the radar tower and its infrastructure will cover approximately 0.052 ha, with the remainder of the site being unpaved area, i.e. approximately 0.039 ha. Ultimately, the tower will reach a height of 54.35 m above ground level.

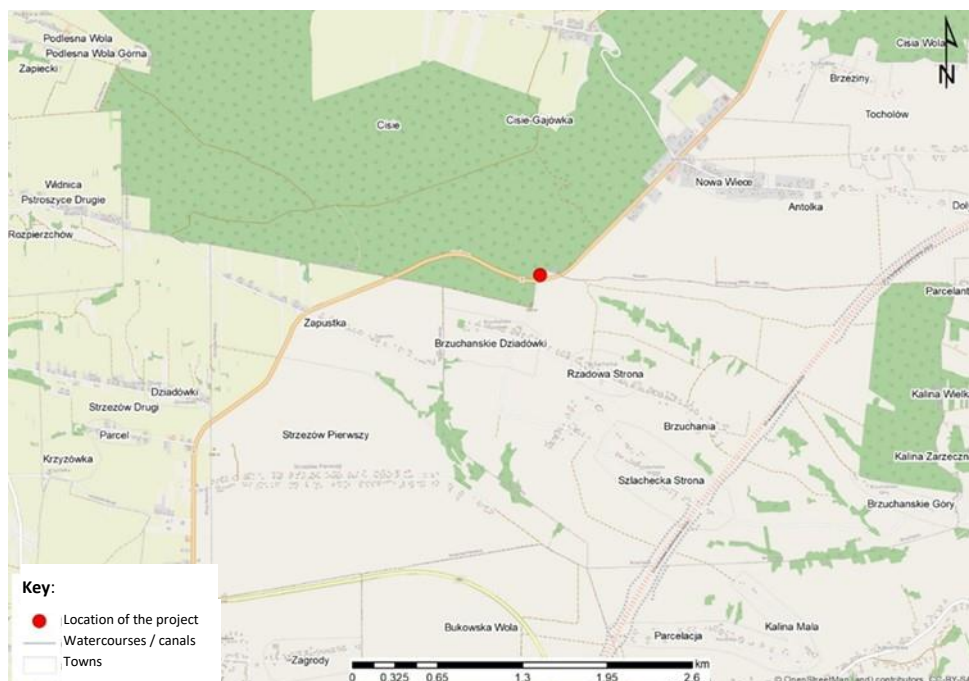


Figure 11 Location of the radar station in Brzuchania



*Photography 8 Location of the radar tower in Brzuchania - general view*

As part of the 4A.3.1 Contract , the Contractor shall carry out, among others, the following works:

- disassembly and demolition of the existing radar station, design and construction of a new radar station, with a complete set of technical and ancillary infrastructure and development of the entire radar station site;
- execution of the reinforced concrete structure of the tower with its foundation;
- construction of internal stairs;
- supply and installation of an internal lift;
- construction of the ground floor building integrated with the body of the tower, including a UPS room, a generator room, a storage room, a utility room, a toilet;
- execution of finishing works in the tower and ground floor with the supply of woodwork, floor and wall finishes;
- execution of internal electrical and lighting installation;
- execution of tele-technical installation;
- delivery and commissioning of a new UPS emergency power supply device;
- delivery and assembly of heating and air conditioning systems;
- installation of a new radar, apparatus, dome;
- construction of a hardened access road and internal manoeuvring area;
- drilling a well for water supply;
- installation of a drainless septic tank;
- erecting a new fence around the station area;
- execution of external electrical installation and external lighting;
- implementation of systems
  - anti-theft,



- fire signalling,
- video monitoring.

## 2.9 Uźranki - construction of the new radar station

The planned task is located on the plot with registration no. 330/3, Uźranki precinct, Mrągowo commune, Mrągowo powiat, Warmińsko-Mazurskie Voivodship. The site for the radar tower and its infrastructure will cover approximately 0.03 ha, with the remainder of the site being unpaved area, i.e. approximately 0.27 ha. Ultimately, the tower will reach a height of 38.35 m above ground level.

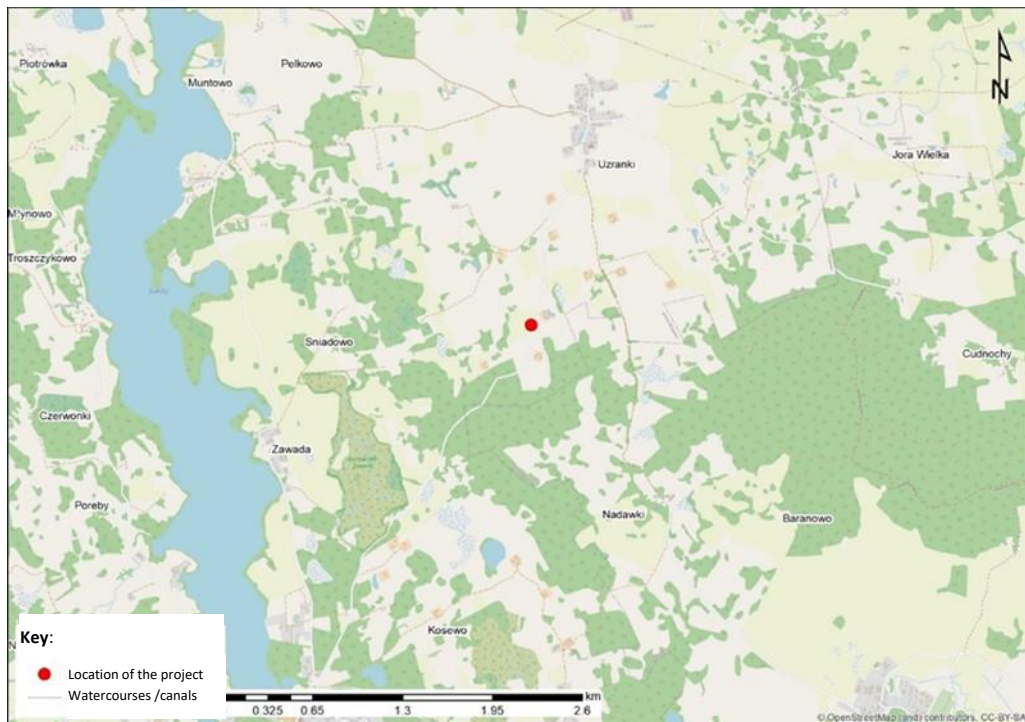


Figure 12 Location of the planned radar station in Uźranki



*Photography 9 Location of the planned radar tower in Užranki - general view*

As part of the 4A.3.1 Contract , the Contractor shall carry out, among others, the following works:

- execution of the steel structure of the tower, including foundations;
- cladding the tower with sandwich panels;
- construction of internal stairs;
- construction of the ground floor building, which is part of the tower, including, among others, a UPS room, a generator room, a storage room, a utility room, a toilet;
- execution of finishing works in the tower and ground floor with the supply of woodwork, floor and wall finishes;
- execution of internal electrical and lighting installation;
- execution of teletechnical installation;
- delivery and commissioning of a new power generator;
- delivery and commissioning of a new UPS emergency power supply device;
- delivery and assembly of heating and air conditioning systems;
- installation of a new radar, apparatus, dome;
- construction of a hardened access road and internal manoeuvring area;
- making a water connection to the existing water supply system;
- installation of a drainless septic tank;
- erecting a new fence around the station area;
- execution of external electrical installation and external lighting;
- implementation of systems
  - anti-theft,
  - fire signalling,

- video monitoring.

## 2.10 Góra Świętej Anny - construction of the new radar station

The planned task is located on the plot with registration no. 45/1, Żyrowa precinct, Zdzieszowice commune, Krapkowice powiat, Opolskie Voivodship. The site for the radar tower and its infrastructure will cover approximately 0.51 ha, with the remainder of the site being unpaved area, i.e. approximately 2.4 ha. Ultimately, the tower will reach a height of 50.0 m above ground level.



Figure 13 Location of the planned radar station in Góra Świętej Anny





*Photography 10 Location of the planned radar tower in Góra Świętej Anny - general view*

As part of the 4A.3.1 Contract , the Contractor shall carry out, among others, the following works:

- execution of the reinforced concrete structure of the tower with its foundation;
- construction of internal stairs;
- supply and installation of an internal lift;
- incorporation of the ground floor building into the tower, containing, among other things, a UPS room, a generator room, a storage room, a utility room, a toilet;
- execution of finishing works in the tower and ground floor with the supply of woodwork, floor and wall finishes;
- execution of internal electrical and lighting installation;
- execution of teletechnical installation;
- delivery and commissioning of a new power generator;
- delivery and commissioning of a new UPS emergency power supply device;
- delivery and assembly of heating and air conditioning systems;
- installation of a new radar, apparatus, dome;
- construction of a hardened access road and internal manoeuvring area;
- hardening of the existing dirt road leading to the radar station;
- drilling a well for water supply;
- installation of a drainless septic tank;
- erecting a new fence around the station area;
- execution of external electrical installation and external lighting;
- implementation of systems
  - anti-theft,

- fire signalling,
- video monitoring.

## 2.11 Gdańsk- construction of the new radar station

The planned task is located on the plot with registration no. 439, Kamień precinct, Szemud commune, Wejherowo powiat, Pomorskie Voivodship. The site for the radar tower and its infrastructure will cover approximately 0.13 ha, with the remainder of the site being unpaved area, i.e. approximately 0.31 ha. The tower will reach a target height of 38.35 m above ground level.

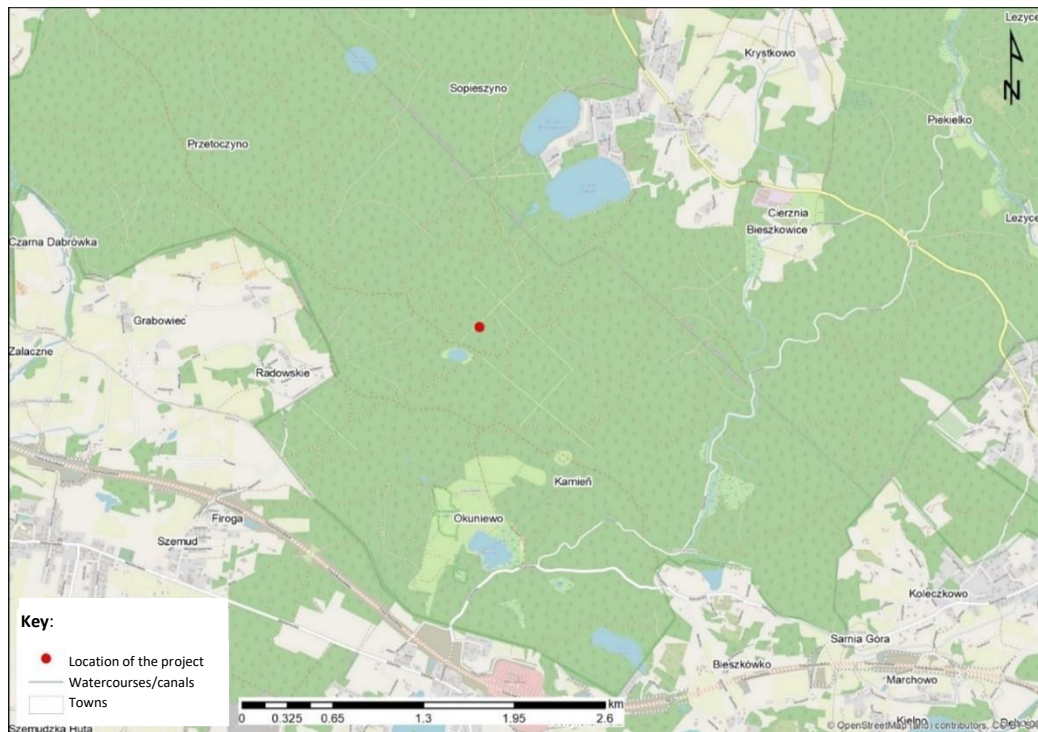


Figure 14 Location of the planned radar station in Gdańsk



*Photography 11 Location of the planned radar tower in Gdańsk - general view*

As part of the 4A.3.1 Contract , the Contractor shall carry out, among others, the following works:

- acquisition of land from the State Forests;
- agreeing with the State Forests and carrying out the felling of existing trees in the area of the planned station;
- execution of the steel structure of the tower, including foundations;
- construction of internal stairs;
- construction of a ground-floor building integrated into the body of the tower, including a UPS room, a generator room, a storage room, a utility room, a toilet;
- execution of finishing works in the tower and the ground floor with the supply of woodwork, floor and wall finishes;
- execution of internal electrical and lighting installation;
- execution of teletechnical installation;
- delivery and commissioning of a new UPS emergency power supply device;
- delivery and assembly of heating and air conditioning systems;
- installation of a new radar, apparatus, dome;
- construction of a hardened access road and internal manoeuvring area;
- construction of a road connecting the station area with the existing fire road in the forest;
- drilling a well for water supply;
- installation of a drainless septic tank;
- erecting a new fence around the station area;



- execution of external electrical installation and external lighting;
- implementation of systems
  - anti-theft,
  - fire signalling,
  - video monitoring.

## 2.12 Gdańsk Rębiechowo - demolition of the existing radar tower, dismantling of the radar

The Gdańsk Rębiechów weather radar, which is currently in operation, is located in the vicinity of the Lech Wałęsa Airport, on the plot number 2/1, Bysewo precinct, Gdańsk powiat, Pomorskie Voivodship. This radar station, once the radar at the Nowy Gdańsk site is operational, will be dismantled when the Nowy Gdańsk radar station, which is to replace this radar, is launched. Installations and equipment will be disposed of in accordance with Polish law, and the land will be recultivated and tidied up.



Figure 15 Location of the radar station in Gdańsk Rębiechowo



Photography 12 Location of the radar tower in Gdańsk Rębiechowo - general view

## 2.13 Materials and technologies Used

The table below gives the estimated quantities of basic materials used for newly constructed facilities. In the case of modernized facilities, the quantities of materials for repair or modernization work will be negligibly small.

Table 2 Major materials planned for use in new construction

Scope	Description of major materials	Estimated quantity
<b>Legionowo warehouse</b>		
Main structure	Structural steel	4 t
Foundations	Concrete	22 m <sup>3</sup>
	Reinforcing steel	2 t
Enclosure	PUR sandwich panels	228 m <sup>2</sup>
Roof	PUR sandwich panels	140 m <sup>2</sup>
Roads	Road paving blocks	20 m <sup>2</sup>
<b>Góra Św. Anny</b>		
Main tower structure	Concrete	212 m <sup>3</sup>
	Reinforcing steel	20 t
Tower foundations	Concrete	146 m <sup>3</sup>



Scope	Description of major materials	Estimated quantity
	Reinforcing steel	15 t
<i>Staircase</i>	Structural steel	9 t
<i>Platform</i>	Structural steel	5 t
<i>Elevator shaft</i>	Structural steel	9 t
	PUR sandwich panels	330 m <sup>2</sup>
<i>Tower ceiling</i>	Concrete	19,5 m <sup>3</sup>
	Reinforcing steel	7 t
	Styrofoam	61 m <sup>2</sup>
	Roofing felt	61 m <sup>2</sup>
<i>Main structure of the ground floor building</i>	Ceramic hollow blocks	174 m <sup>2</sup>
<i>Ground floor building foundations</i>	Concrete blocks	6 m <sup>3</sup>
<i>Ground floor building ceiling</i>	Structural steel	2 t
	Trapezoidal sheeting	57 m <sup>2</sup>
	Mineral wool	9 m <sup>3</sup>
	Roofing felt	57 m <sup>2</sup>
<i>Road system</i>	Jomb slabs	388 m <sup>2</sup>
	Broken aggregate	660 m <sup>3</sup>
<i>Access road</i>	Jomb slabs	1750 m <sup>2</sup>
	Broken aggregate	700 m <sup>3</sup>
<b>Brzuchania</b>		
<i>Main tower structure</i>	Concrete	236 m <sup>3</sup>
	Reinforcing steel	23 t
<i>Tower foundations</i>	Concrete	146 m <sup>3</sup>
	Reinforcing steel	15 t
<i>Staircase</i>	Structural steel	10 t
<i>Platform</i>	Structural steel	5 t
<i>Elevator shaft</i>	Structural steel	10 t
	PUR sandwich panels	355 m <sup>2</sup>
<i>Tower ceiling</i>	Concrete	19,5 m <sup>3</sup>
	Reinforcing steel	7 t
	Styrofoam	61 m <sup>2</sup>
	Roofing felt	61 m <sup>2</sup>

Scope	Description of major materials	Estimated quantity
<i>Main structure of the ground floor building</i>	Ceramic hollow blocks	174 m <sup>2</sup>
<i>Ground floor building foundations</i>	Concrete blocks	6 m <sup>3</sup>
<i>Ground floor building ceiling</i>	Structural steel	2 t
	Trapezoidal sheeting	57 m <sup>2</sup>
	Mineral wool	9 m <sup>3</sup>
	Roofing felt	57 m <sup>2</sup>
<i>Road system</i>	Jomb slabs	388 m <sup>2</sup>
	Broken aggregate	116 m <sup>3</sup>
<b>Uźranki</b>		
<i>Main tower structure</i>	Structural steel	40 t
<i>External covering</i>	PUR sandwich panels	1100 m <sup>2</sup>
<i>Tower foundations</i>	Concrete	98 m <sup>2</sup>
	Reinforcing steel	10 t
<i>Staircase</i>	Structural steel	7 t
<i>Platform</i>	Structural steel	5 t
<i>Tower ceiling</i>	Trapezoidal sheeting	40 m <sup>2</sup>
	PUR sandwich panels	40 m <sup>2</sup>
	Roofing membrane	40 m <sup>2</sup>
<i>Ground floor partition walls</i>	Cellular concrete	70 m <sup>2</sup>
<i>Road system</i>	Paving stones	430 m <sup>2</sup>
	Broken aggregate	130 m <sup>3</sup>
<b>Nowy Gdańsk</b>		
<i>Main tower structure</i>	Structural steel	40 t
<i>External covering</i>	PUR sandwich panels	1100 m <sup>2</sup>
<i>Tower foundations</i>	Concrete	98 m <sup>2</sup>
	Reinforcing steel	10 t
<i>Staircase</i>	Structural steel	7 t
<i>Platform</i>	Structural steel	5 t
<i>Tower ceiling</i>	Trapezoidal sheeting	40 m <sup>2</sup>
	PUR sandwich panels	40 m <sup>2</sup>
	Roofing membrane	40 m <sup>2</sup>
<i>Ground floor partition walls</i>	Cellular concrete	70 m <sup>2</sup>

Scope	Description of major materials	Estimated quantity
<i>Road system</i>	Paving stones	430 m <sup>2</sup>
	Broken aggregate	130 m <sup>3</sup>
<i>Access road</i>	Broken aggregate	300 m <sup>3</sup>

The technologies expected to be used during the project do not generate hazardous waste. Therefore, there will be no need to determine their storage areas and develop plans for their management.

No asbestos was found during the inventory of existing facilities. Therefore, there was no need to develop procedures for demolition and disposal of this hazardous waste. A spill procedure will be developed for each construction site in the event of an oil spill.

A Waste Management Plan will be prepared for each site, subject to the approval of the Employer, which will describe the types of waste that will be generated, how they will be disposed of and the segregation rules.

As a result of the demolition works carried out in Brzuchania and Gdańsk Rębiechowo a large amount of steel scrap will be generated - respectively about 40 tonnes for Brzuchania and 25 tonnes for Gdańsk, as well as concrete rubble - about 150 m<sup>3</sup> for each of these locations. These wastes will be disposed of in accordance with the Waste Act of 14 December 2012 by authorized entities, and the steel is very likely to be recycled.

### 3. INSTITUTIONAL, LEGAL, ADMINISTRATIVE CONDITIONS

#### 3.1 Institutions involved in the performance of the Contract

The Investor of the Task 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.

Additionally, at the stage of construction and operation, the implementation of the Task may require the involvement of public administration bodies at the central, regional and local level. For the day-to-day coordination of the Project's implementation by the PIU, an organisational unit called the Odra-Vistula Flood Management Project Coordination Unit was established.

## 3.2 Existing national legislation on environmental protection

According to the Polish law, the investment process in the field of environmental protection is regulated by at least several dozen laws and regulations, which are related to or result from the provisions of the European law. A list of selected basic national and European legal acts related to the above thematic scope and binding in the period when the EMP was developed was presented in Annex 3 to this GEMP - List of legal acts related to environmental protection.

The number and content of the legal acts listed there may change along with changes in the environmental protection regulations in force in Poland. The Contractor is obliged, in addition to applying the principles set out in this GEMP, to comply with all current legal regulations in the field of environmental protection.

## 3.3 EIA procedure in Poland

A description of the environmental impact assessment procedure applicable in Polish legislation is included in the Environmental and Social Management Framework (ESMF), published, inter alia, on the websites of the World Bank (WB)<sup>5</sup> and the Odra-Vistula Flood Management Project Coordination Unit<sup>6</sup>. In addition, the legal provisions listed in Annex 3 to this GEMP - List of legal acts related to environmental protection are applicable to the EIA procedure.

## 3.4 Guidelines of the World Bank

The Contract in question will be co-financed among others by the International Bank for Reconstruction and Development (World Bank). Therefore, the environmental conditionality of its performance must be consistent with the Bank's Operational Policies and Procedures on environmental protection, 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). A description of the above-mentioned World Bank policies can be found in the developed Environmental and Social Management Framework, published, inter alia, on the websites of the World Bank <sup>7</sup> and the Odra-Vistula Flood Management Project Coordination Unit<sup>8</sup>. The source texts of the above policies and procedures can be found on the World Bank's website<sup>7</sup>.

<sup>5</sup> On the website: <http://documents.worldbank.org/curated/en/717671468333613779/Poland-Odra-Vistula-FloodManagement-Project-environmental-and-social-management-framework>

<sup>6</sup> On the website: [http://odrapcu2019.odrapcu.pl/popdow\\_dokumenty/](http://odrapcu2019.odrapcu.pl/popdow_dokumenty/)

<sup>7</sup> On the website: <https://policies.worldbank.org/sites/PPF3/Pages/Manuals/Operational%20Manual.aspx#S3-2> (w części pt. Investment Project Financing / Environmental and Social Safeguard Policies).

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

### 3.5 The current status of administrative procedures for the 4A.3.1 Contract

Due to the fact that, according to the definition of the Decree of the Council of Ministers of the 10<sup>th</sup> of September 2019 on projects likely to have a significant impact on the environment, the averaged equivalent isotropic radiated power exceeds the limit value, all activities of the Contract related to the installation of new radars are classified as projects likely to always have a significant impact on the environment. For this reason, they require the preparation of Environmental Impact Assessment reports and obtainment of a Decision on Environmental Conditions - a permit to implement the project issued by the Regional Directorate for Environmental Protection appropriate for the location of the project. Appropriate environmental reports have been prepared by the Contractor and submitted to the relevant RDEP. As of the date of publication of this GEMP, proceedings initiated by individual RDEP are ongoing. Ultimately, administrative decisions authorising the commencement of work and the commissioning of radar installations will be obtained pursuant to the Act of the 8<sup>th</sup> of July 2010 on special rules for the preparation of investments in the field of flood protection structures. The investment permit is issued in this case by the relevant Voivod. The exception is the replacement of the radar and modernization of the tower in Legionowo, where the ED will be issued by the Legionowo City Council, followed by a construction permit issued by the District Governor under the Construction Law. Detailed information on the status of the administrative procedures (e.g. competent authorities, administrative decisions to be obtained and dates) is provided in Annex 4 to the GEMP.

The Contract also includes the tasks that do not require the obtainment of environmental decisions, but require the application of the conditions resulting from environmental protection regulations, such as:

- Construction of a storage hall and renovation of the research and energy building together with modernisation of the outdoor area in Legionowo;
- Demolition of the existing radar tower in Brzuchania;
- Demolition of the existing radar tower in Gdańsk;

Due to the large diversity of tasks to be performed at the radar station in Legionowo, the Contractor decided that, in addition to the procedure for obtaining a building permit for the the replacement of the radar and the modernisation of the radar tower, separate applications will be submitted in accordance with the Act of the 7<sup>th</sup> July 1994 - Construction Law as amended, concerning:

- Permits for the construction of a storage hall with land development around the building;
- Notification of refurbishment works to the research building together with the energy building and the rest of the station landscaping;
- Notification of anti-corrosion work on the radar tower.



### 3.6 Mechanisms of complaints and requests

All persons affected by the 4A.3.1 Contract shall be provided with access to appropriate and accessible complaint and request mechanisms. The right to make a complaint and request is available to anyone. There is no fee for submitting complaints and requests. Moreover, pursuant to the regulations, the person submitting a complaint or request may not be subjected to any prejudice or allegation by reason of making the complaint or request.

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

Project Director  
Odra-Vistula Flood Management Project Coordination Unit  
al. Jaworowa 9-11  
53-123 Wrocław  
Poland  
or by e-mail to: [pcu@odrapcu.pl](mailto:pcu@odrapcu.pl)

For more information on the mechanisms of complaints and requests applicable to the Contracts co-financed with the World Bank's funds, please refer to the OVFМ Project Operational Manual (POM), available on the Project Coordination Unit website<sup>8</sup>. In addition, a complaint and request form is available on the OVFМ Project website<sup>9</sup>.

## 4. DESCRIPTION OF ENVIRONMENTAL ELEMENTS

For each location where a new radar station will be built and where radar equipment and radar station facilities will be upgraded, an environmental impact report has been prepared in accordance with the provisions of the Act of the 3<sup>rd</sup> of October 2008 on the provision of information on the environment and its protection, public participation in environmental protection and environmental impact assessments and other applicable regulations.

The description of the environmental elements for each of the locations, together with the conclusions of the relevant RDEP contained in the decision on environmental conditions, will be either included in the check-lists, or in the DEMP for the individual locations of those tasks, where the RDEP decisions will be issued and will be necessary. The following sections provide a general description of the environmental elements.

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<sup>9</sup> On the website: <https://odrapcu.pl/kontakt/>

The data used to describe the environmental elements were obtained from local offices, government office portals, Central Statistical Office and scientific studies. Data availability is good, they are up-to-date and have a sufficient level of detail.

#### 4.1 Elements of the environment protected under the Act of 16th April 2004 on Nature Protection

The following table shows the forms of nature protection that are located within 5 km of the project. Some of the projects are located in protected areas and these are New Gdańsk, Góra św. Anny, Użranki, Brzuchania and Pastewnik. No protected animal habitats were observed in the station areas, signs of foraging and movement of animal species were observed in the station area and surrounding plots for the purposes of the EIA reports and this will be detailed in the DEMP or checklists. During the inventory stage for the EIA reports, no valuable plant species or habitats were identified that would be threatened by the construction works. Prior to the start of works, a new, more detailed vegetation inventory will be conducted to, among other things, designate flora to be preserved. These nature forms, inventoried plant and animal species, and biodiversity will be described in detail in the DEMP or checklists.

Table 3 Forms of nature protection in the vicinity of the Contact implementation sites

Location of the task under the Contract	Protected areas within the investment site	Protected areas within 2 km from the investment site	Protected areas within 5 km from the investment site
Legionowo	-	Warszawski Obszar Chronionego Krajobrazu [ <i>Warsaw Protected Landscape Area</i> ]  3 nature monuments	Natura 2000 Special Area of Conservation - Kampinos Valley of the Vistula River [ <i>Kampinoska Dolina Wisły</i> ] PLH140029  Natura 2000 Special Bird Protection Area - Middle Vistula Valley [ <i>Dolina Środkowej Wisły</i> ] PLB140004  Buffer zone of the Kampinos National Park  Nature reserves: - Bukowiec Jabłonowski - Ławice Kiełpińskie  97 nature monuments
Rzeszów	-	-	Natura 2000 Special Bird Protection Area - Mrowle Łąki PLH180043  Nature reserve: Coniferous forest with its buffer zone  12 nature monuments
Świdwin	-	Natura 2000 Special Bird Protection Area - PLH320049 Rega river basin	Natura 2000 Special Bird Protection Area – Bystrzyno PLH320061  Ecological site  7 nature monuments

Location of the task under the Contract	Protected areas within the investment site	Protected areas within 2 km from the investment site	Protected areas within 5 km from the investment site
<b>Pastewnik</b>	Natura 2000 Special Bird Protection Area - Kaczawskie Mountains and Foothills [ <i>Góry i Pogórze Kaczawskie</i> ] PLH020037	-	Natura 2000 Special Bird Protection Area - Rudawy Janowickie PLH020011  Rudawy Landscape Park with its buffer zone  Nature reserve: Buki Sądeckie  2 nature monuments
<b>Poznań</b>	-	-	Natura 2000 Special Bird Protection Area - Fortifications in Poznań PLH300005  31 nature monuments  Ecological sites: Bogdanka I, Bogdanka II, Strzeszyn
<b>Ramża</b>	-	1 natural monument	Landscape Park of the Cistercian Landscape Compositions of Rudy Wielkie [ <i>Park Krajobrazowy Cysterskie Kompozycje Krajobrazowe Rud Wielkich</i> ]  Protected Landscape Area of Potok Leśny [ <i>Obszar Chronionego Krajobrazu Potoku Leśnego</i> ], including its tributaries  Protected Landscape Area Potok Ornontowicki [ <i>Obszar Chronionego Krajobrazu Potoku Ornontowickiego</i> ], including its tributaries  Protected Landscape Area of Potok Łąkowy [ <i>Obszar Chronionego Krajobrazu Potoku Łąkowego</i> ], including its tributaries  116 natural monuments, including Dęby Ornontowickie oak avenue
<b>Brzuchania</b>	The Protected Landscape Area of the Miechowska Upland [ <i>Obszar Chronionego Krajobrazu Wyżyny Miechowskiej</i> ]	-	Natura 2000 Special Bird Protection Area – Widnica PLH120076  Natura 2000 Special Bird Protection Area - Kalina Mała PLH120054  Natura 2000 Special Bird Protection Area – Pstroszyce PLH120073
<b>Uźranki</b>	Natura 2000 Special Bird Protection Area - Mazurska Ostoja Żółwia Baranowo PLH280055  The protected landscape area of the Legińsko-Mrażowo Lakes	Ecological site: Rozlewisko Zawady	Natura 2000 Special bird protection area - Puszcza Piska PLB280008  Natura 2000 Special Bird Protection Area - Ostoja Piska PLH280048  Mazury Landscape Park with its buffer zone  Protected Landscape Area of the Mazury Landscape Park Buffer Zone (West)  Protected Landscape Area of the Mazury Great Lakes Region  2 nature monuments
<b>Góra Świętej Anny</b>	Natura 2000 Special Bird Protection Area - Góra Świętej Anny PLH160002	Nature reserves:  - Lesisko  - Biesiec	Nature reserve: Ligota Dolna  31 nature monuments

Location of the task under the Contract	Protected areas within the investment site	Protected areas within 2 km from the investment site	Protected areas within 5 km from the investment site
	Góra Świętej Anny Landscape Park	- Góra św. Anny 3 nature monuments	
<b>Nowy Gdańsk</b>	Tri-city Landscape Park	Natura 2000 Special Bird Protection Area – Pełcznica PLH220020 Ecological sites: Okuniewskie Łąki, Okoniewo 6 nature monuments	Nature reserve: Pełcznica Ecological sites: Łąka nad Zagórską Strugą, Borowe Oczko 13 nature monuments
<b>Gdańsk Rębiechowo</b>	-	Buffer zone of the Tri-City Landscape Park	Nature reserves: - Źródłiska w Dolinie Ewy - Strzyża Valley with its buffer zone Tri-City Landscape Park Otomiński Obszar Chronionego Krajobrazu [ <i>Otomin Protected Landscape Area</i> ] The natural and landscape complex of Strzyża Stream valley and Jasień Ecological lands: Salwinia in Owczarnia, Dolina Czystej Wody 460 nature monuments

## 4.2 Physico-geographical division and geology

There are no significant rock formations or resource extraction within any station area. The physico-geographical subdivision and descriptions of the geology pertaining to each site will be described in the DEMP or checklists.

## 4.3 Soil conditions

The modernized stations are mostly biologically active areas covered with grass mixtures and partially hardened with materials enabling infiltration of rainwater, e.g. jomb slabs, openwork panels. The areas for newly built towers are in Użranki - arable land RIVa and pastures PsIV, in Góra Świętej Anny - arable land RIIIa, and in Nowy Gdańsk - forests and forest grounds Ls. Descriptions of the soil conditions for each location will be provided in the DEMP or checklists.

## 4.4 Surface waters

No station is located in a flood hazard area or has any flowing or standing surface water on its site. Surface water descriptions for each location will be included in the DEMP or checklists.

## 4.5 Groundwaters

There are no areas of shallow groundwater or wetlands at any station site. Groundwater descriptions for each location will be included in the DEMP or checklists.

## 4.6 Climate conditions

Poland is located in a temperate climate zone with transitional features. The climate in different regions of Poland differs from one another, so descriptions of the particular climates of the relevant regions will be included in the SOPs or checklists.

The climate of Poland is characterized by the following climatic elements:

- average annual air temperature: 6°C - 8.5°C;
- coldest month: January: -8°C - 0°C;
- warmest month: July: +14 °C - 19°C;
- duration of snow cover: 40 - 60 days;
- number of days of total sunshine: 30 - 50 days;
- number of cloudy days: 120 - 160 days;
- annual precipitation: 450 - 1250 mm (average: 600 mm);
- maximum precipitation occurs in the summer months (May-July);
- minimum during winter months (December - January);
- vegetation period: 180 to 220 days;
- prevailing winds: western, south-western and north-western.

## 4.7 Monuments and cultural landscape

The planned realization of tasks in all locations will not be located within the conservation protection zones, and there are no identified objects of cultural value in the investment area. In the case of the warehouse construction in Legionowo, which is located in the vicinity of an archaeological protection zone, the Mazowiecki Voivodeship Conservator of Monuments does not require archaeological supervision because it is outside the archaeological zone.

Inquiries about the conditions for carrying out the works were sent to the appropriate Voivodeship Historical Monument Conservator. The conditions specified in the answers, as well as a description of the cultural landscape and historical monuments, will be included in the checklists or DEMP prepared for each location.



## 4.8 Landscape

Landscape descriptions for each location will be described in the DEMP or checklists.

## 4.9 Electromagnetic field

The radar is equipped with an antenna that rotates continuously around its vertical axis. The radar antenna (hidden under a non-conductive shield protecting the antenna from the effects of precipitation - a characteristic sphere) is characterised by a very strong concentration of electromagnetic energy. As a result, the space around the antenna is swept by the very narrow signal emitted from the radar antenna. Due to the extremely directional characteristics of the radar antenna, the signal at the ground level and at heights, even quite significantly close to the height of the antenna installation, is very small, and at the ground level it is practically unmeasurable by instruments with sensitivity adapted to environmental regulations. The field from the radar antenna, on the other hand, would be enormous if one were to analyse a point lying in the direction of the antenna's maximum emission. However, it follows from the nature and purpose of such radar that it must never radiate towards any (conductive) obstacle, i.e. buildings, but also trees or, even more so, places accessible to people, as it would be absurd to design radar in this way. Therefore, the antennas are mounted at a significant height above existing and expected terrain obstacles. Due to the physical principle of weather radar, the antenna does not emit electromagnetic energy continuously, but it is a pulsed signal. Consequently, the signal has a certain average energy which is much lower than that of a single pulse. In the signal emitted from the antenna, there are many more no-emission moments than emission moments (in weather radar installations, the ratio of emission to no-emission time varies within 1: 250 ... 1 : 2000). The latter ratio means that during operation, the antenna emits electromagnetic field energy for one unit of time, and for the next 1999 same time instants the emission does not occur. This shows the degree of "dilution" of the field energy emission. This also justifies the use of averages rather than maximum values for energy and power. Similarly, it follows from the principle of radar operation that the antenna rotates around the horizon. Therefore the emission in the chosen (any) direction occurs only for a short moment, after which the antenna continues its rotation and stops "illuminating" this point. This is an example of a non-stationary field emission. The regulations prescribe that the impact resulting from a very short time of impact must be corrected in a manner based on physical phenomena. It is understandable that the time for an object (e.g. a person) to be "illuminated" by a field beam from an antenna is dependent on the degree of focus (width) of that energy beam. The mentioned coefficients take into account precisely these directional characteristics of the antenna.

The large diameter of the reflector in combination with a very high frequency of the signal (5 GHz - C band) causes that the concentration of electromagnetic energy is enormous; the generated beam has a very strong convergence, and after deviating from the axis of maximum radiation already by half a degree, the amount of energy drops to half of the maximum. With

further deflection, the amount of energy perceived in this direction decreases very quickly. As a result of such an action of a parabolic antenna, a stream of energy is created, which can be compared to a needle with an opening angle of about  $1^\circ$ . No other type of antenna commonly encountered has the ability to focus and direct electromagnetic energy so strongly.

The schematic distribution of the field and its relative position in relation to areas accessible to people in the case of the classical construction of weather radar towers is shown in Figure 4 included in Chapter 2 of this study.

According to the definition of the Regulation of the Council of Ministers of the 10<sup>th</sup> of September 2019 on projects that may have a significant impact on the environment, radar devices with an equivalent isotropic radiated power greater than 20kW are classified as projects that can always have a significant impact on the environment. In the case of METEOR 735CDP10 radars selected for the Contract, the value of this indicator is 436.5kW, therefore the implementation of each radar installation under the Contract will require obtaining a Decision on Environmental Conditions preceded by the preparation of an Environmental Impact Assessment report.

#### 4.10 Acoustic climate

The radar station areas are not acoustically sensitive areas. People do not stay here permanently, technical crews usually come once a month for less than 8 hours.

The existing radar towers are located and designed in acoustically endangered areas - at airports: Świdwin, Rzeszów and Gdańsk Rębiechowo (to be demolished) and by expressways and highways: Brzuchania, Góra Świętej Anny. Moreover, the station in Poznań is located near the airport, but outside its protection zone. The remaining towers - Pastewnik, Legionowo, Nowy Gdańsk, Ramża, Uźranki are located in areas not endangered acoustically - by small roads in forest and agricultural areas.

The noise level of trucks, construction equipment, machinery, etc. ranges from 80 - 100 dB. Therefore, the construction is acoustically burdensome. Radar stations, due to their function, are not located in the immediate vicinity of residential areas. Projects in the vicinity of residential areas are: Legionowo (behind the forest line single-family buildings at a distance of 120 m and a multi-family building behind the forest line at a distance of 260 m), Uźranki (at a distance of 100 m and 260 m homestead buildings) and Pastewnik (single-family building at a distance of 230 m and behind the forest line single-family building at a distance of 200 m). In the remaining locations the buildings are at a considerable distance from the construction site. The exception is the Poznań site where the Polish Air Navigation Regional Centre is located at a distance of 40 m but this is not an acoustically protected object. According to the Regulation of the Minister of Environment of 14 June 2007 on permissible noise levels in the environment, the permissible noise level for single-family residential areas is 50dB during daytime and 40dB at night, and for multi-family and farmstead residential areas 55dB during daytime and 45dB at night.

A description of the acoustic climate for specific locations will be included in the DEMP or checklists.

#### 4.11 Material assets

Due to the variety of radar tower station locations, material assets in the vicinity also vary greatly in value and type. Roads of various grades, infrastructure, and buildings are present adjacent to the towers. Material asset descriptions for each location will be described in the DEMP or checklists.

The planned investment is located on plots where no agricultural or forestry production is currently taking place (with the exception of the Nowy Gdańsk radar station, which is taken over from PGL LP under a special law as a public purpose investment).

The POLRAD radar network is registered as Air Ground Equipment and as such their work is protected in accordance with Art. 88 sec. 3. of the Aviation Law. It should be borne in mind that aerial ground facilities are objects:

- the construction and operation of which is a public purpose within the meaning of Art. 6 point 1b of the Act of the 21<sup>st</sup> of August, 1997 on real estate management (Journal of Laws of 2010, No 102, item 651, as amended);
- which are provided with appropriate security measures to protect them from damage or interference in accordance with Annex Va, Part A - Physical characteristics, infrastructure and equipment, point 3.d of Regulation (EC) No 1108/2009 of the European Parliament and of the Council of the 21<sup>st</sup> of October 2009 amending Regulation (EC) No 216/2008 in the field of aerodromes, air traffic management and air navigation services and repealing Directive 2006/23/EC (Journal of Laws No. 309 p. 51 of 24.11.2009);
- which cannot be disturbed and the performance of which cannot be adversely affected by radioactive sources or by the presence of fixed or movable objects according to Annex Va, Part A - Physical characteristics, infrastructure and equipment, point 3(e) of the above-mentioned Regulation (EC) No 1108/2009 of the 21<sup>st</sup> of October 2009.

Therefore, protection zones are designated around the weather radars. They are published on the website of the Civil Aviation Authority<sup>10</sup>. Depending on the topography of the terrain around a given radar, protection zones differ, among other things, in terms of the permissible heights of objects to be agreed. It should be noted that the protection zones do not imply a ban on construction, but only the need to agree on the objects listed in the table below.

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<sup>10</sup> Register of Aerial Ground Installations (RLUN) and their Building Restriction Areas (BRA) <https://caa-pl.maps.arcgis.com/apps/webappviewer/index.html?id=a1a678f73a2f40b89c54f8cba453f071>

The restriction applies to sites at least part of which are above the development limitation area. Development restriction zone ranges shall be designated for different types of buildings, indicated by the radii (distances from the device) of the zone ranges, expressed in kilometres.

Table 4 Development restriction zones

Zone number	Coverage	Description of the objects to which the restrictions apply
1	from 0 km to 0.6 km	applies to: - all facilities
2	from 0.6 km to 1.6 km	applies to: - wind turbines - other buildings if their height exceeds 15 m above sea level, with the exception of buildings whose tops are not above the existing buildings in their immediate vicinity [above sea level].
3	from 1.6 km to 6 km	applies to: - wind turbines - other objects, if their height exceeds 15 m above sea level, except for: a) buildings whose tops are not above the existing buildings in their immediate vicinity [above sea level] b) fixed, tall objects, the plan view of the main structure of which is within a circle with a radius of 5 m, e.g. GSM masts
4	from 6 km to 30 km	applies to: - wind turbines

## 5. SUMMARY OF ENVIRONMENTAL IMPACT ASSESSMENTS

### 5.1 Nature

During the environmental inventories for the EIA reports, no naturally valuable habitats and plant species were found that would be endangered by the construction works, nor were animals or fungi found in any of the locations, thus no negative impact on valuable habitats and species of plants, animals and fungi is expected. No removal or destruction of valuable natural habitats is expected in connection with construction, repair, maintenance or modernization works.

For the majority of towers being modernized, i.e. Legionowo, Ramża, Rzeszów, Świdwin, Poznań, and the disassembled Gdańsk Rębiechowo no impact on protected areas or other forms of nature conservation is expected. In the case of towers that are located within nature conservation areas, i.e. Użranki, Góra Świętej Anny, Pastewnik, Brzuchania, Nowy Gdańsk, the impact on these areas will be analysed in detail in the EIAs and checklists. However, it is anticipated to be negligible or non-existent.

The performance of the planned 4A.3.1 Contract in most locations does not involve cutting down trees and shrubs that, according to the Polish law, require notification to the relevant authority, except for the following locations:

1. Legionowo - the felling of three trees (9 trunks) interfering with the location of the storage building. The relevant felling consent has already been obtained by the Contractor;
2. Nowy Gdańsk - the felling of trees from the site of the radar station (approx. 0.3 ha) will be carried out in accordance with Art. 28 par. 1 of the Act of the 8<sup>th</sup> of July 2010 on special rules for the preparation of investments in the scope of flood protection structures.

The transportation of equipment, supplies, and materials and the operation of machinery used for construction activities will have a very limited and short-term impact on animals (primarily birds) that occasionally use the area of the current and future radar stations as a feeding area, primarily scavenging. However, this will be a short-term, reversible, and limited impact, and ongoing mitigation measures will significantly minimize this impact.

During operation, none of the radar towers will affect habitats or species of plants, animals, and fungi, or other forms of nature conservation. No habitat destruction is anticipated. Newly constructed towers may affect landscape conservation forms, both during construction and operation. In addition, compensatory measures are anticipated, varying according to location, environmental impact, and scope of work, which will be described in the DEMP or checklists, to minimize environmental impacts during the operational phase. A limited and long-term impact on fauna is possible for newly constructed towers, which will have to get used to the new facility in the environment.

## 5.2 Land surface and landscape

The performance of the planned 4A.3.1 Contract in most locations does not involve the occupation of land that has a long-term, reversible impact, except:

1. Uźranki - occupation of a small piece of land. According to the current Simplified Extract from the Land Register: permanent pastures - Ps IV - 0.0548 ha and arable land - R IVa - 0.2454 ha. According to the facts, the pasture was used by the previous owner with the consent of the Investor (the current owner of the plot no. Uźranki 330/3);
2. Góra Świętej Anny- occupation of a small piece of land. According to the current Simplified Extract from the Land Register: arable land - R IIIa - 0,3001 ha. According to the facts, cultivation of rape by the previous owner with the consent of the Investor (the current owner of plot no. Żyrowa 45/1);
3. Nowy Gdańsk - occupation of a small piece of land used as a commercial forest. According to the current Simplified Extract from the Land Register: forests and forest land Ls - the entire plot no. Kamień 439 - 28.65 ha. An area of approx. 0.3 ha will be



separated for the construction of the radar station from plot no. 439 on the basis of the Act of the 8<sup>th</sup> of July 2010 on special principles of preparation of investments in the scope of flood protection structures;

4. Legionowo - occupation of a small piece of land located on the site of the current radar station in Legionowo, according to the Land and Building Register: other developed areas Bi - occupation of 0.013 ha for the construction of a storage hall and 0.0014 ha for relocation of a carport.

During the construction phase, there will be temporary, reversible, and short-term occupation of a small fragment of land for construction facilities at each location.

There will be an impact on the landscape at the locations of Uźranki, Góra Świętej Anny and Nowy Gdańsk due to the construction of new radar stations, as well as at the location of Brzuchania, where a taller tower will be built on the current site. It is related to the construction of new, high technical facilities. The newly built towers will range from 43 m AGL to 52 m AGL. Consequently, the impact on the landscape will be permanent and negative. Depending on the surroundings and the circumstances of the construction of each of the newly built towers, the scale of the impact will be different. The impact on the landscape will be described in detail in the DEMP for individual locations. In addition to the negative impact associated with the presence of new technical structures in the landscape, towers can also have positive functions, such as being a landmark in the area. Their impact will be similar for the existing 8 weather radar towers and will not introduce significant disturbance to the surrounding landscape.

At the operation stage, some of the impacts described above will occur, i.e. permanent occupation of the area and impact on the landscape of the newly-built facilities. For upgraded facilities, there will be no impact on the ground surface at the operation stage.

### 5.3 Soil and land

Due to the nature of the project and its point source nature in all locations, no significant impact of the project on soil is predicted.

Impacts to soil and land may result from local degradation of soil cover during earthworks for the construction of new towers and a storage building in Legionowo. Impacts will be local and of low intensity, also short-term and reversible. Impacts will mainly relate to the temporary occupation of land for back-up facilities. This impact occurs on a small spatial scale and will disappear with the completion of the works and decommissioning of the temporary occupation sites.

After the eventual end of radar use, the site will be put to another use, impossible to be determined today. In the case of radars on agricultural or forest land, probably to the primary use.

Additionally, at this stage, works related to land reclamation and leaving it in a condition not worse than before the start of the investment will be carried out. These works will be carried out in accordance with the regulations that will be in force at the time of the decommissioning of weather radars and with the use of machines and devices that will allow for the achievement of the intended effect.

There will be no impact to soils and grounds during operation.

## 5.4 Surface waters

It is planned to modernise and build weather radars, i.e. facilities that do not require a permanent water supply, either for technological or social purposes. There will be no permanent staff working in the facilities. Implementation of the project at all locations will not have an adverse impact on water levels.

No potential surface water pollution is diagnosed at the stage of construction, demolition, reconstruction, renovation, maintenance or modernisation due to the proper technical condition of construction machinery and equipment.

The locations of the planned investments do not and will not collide with surface waters.

At the stage of decommissioning the project, the most important will be the proper demolition of the radar towers and the proper disassembly of the radar devices. It is also important to properly organise work on the demolition site and to properly store dismantling and demolition materials so as to avoid contaminating the surface of the site.

Bearing in mind the above data:

- technological waste water will not be generated during the implementation of the investment;
- domestic sewage generated will be discharged into the existing sewage system, collected in sealed containers and disposed of by authorised entities or collected in portable toilets to be serviced and emptied by authorised entities;
- the project does not envisage any transformation of watercourse beds or water reservoirs, nor any changes to the flow of watercourses or surface water quality;
- rainwater from the investment areas in all locations will freely infiltrate into the soil.

Operation of any of the weather radars will not affect surface waters. The estimated water consumption for one radar station, in accordance with the Regulation of the Minister of Infrastructure of the 14<sup>th</sup> of January 2002 on the definition of average norms of water consumption, is set at 50 dm<sup>3</sup> / inhabitant x day, but it should be noted that it will be used only by service teams, whose presence is estimated at 1 day per month in each location.

No pesticides or mineral fertilizers will be applied during use of the fenced area of the radar tower lots. No environmental pollutants are emitted during weather radar operation.

## 5.5 Groundwater

The performance of the 4A.3.1 Contract will not affect the status of quantitative and qualitative parameters of groundwater at all locations.

For the operation of new radar stations: Nowy Gdańsk, Góra św. Anny, Brzuchania, a borehole is planned for the intake of water for sanitary purposes. In Uźranki, the radar station will be connected to the water supply network.

No potential contamination of shallow circulation groundwater is diagnosed at the stage of construction, demolition, reconstruction, renovation, maintenance or modernisation due to proper technical condition of construction machinery and equipment. At the stage of implementation, pollution of groundwater with petroleum-derived substances leaking from the construction machinery as a result of their failure may occur. Since measures will be taken to minimise the risk of this hazard, the probability of groundwater contamination is minimal.

Operation of weather radar will have negligible impact on groundwater. Permanent groundwater monitoring is not required for this project. The operation of weather radars will have negligible impact on groundwater. The areas of the radar stations will be equipped with watertight, no-outflow containers. The technologies used and the very low water consumption, i.e. only by service staff, mean that the investment does not have a negative impact on groundwater.

## 5.6 Climate

Due to the nature of the Contract, it is not expected that the investment will have a negative impact on climatic conditions in the vicinity of the sites of particular activities, both at the stage of execution of works as well as at the stage of exploitation.

The Contract will not significantly affect the emission of greenhouse gas quantities nor contribute to increasing climate change.

The implementation of Contract 4A.3.1 indirectly contributes to limiting the negative effects of phenomena accompanying climate change by radically improving the ability of early detection of extreme weather events, and thus the timely implementation of preventive measures and mitigation of their effects.

The applied technological solutions will ensure resistance to climatic conditions at the stage of operation, including extreme conditions such as strong and gusty winds. Appropriate protection and dome will prevent their destruction during precipitation (including hail and snow), lightning protection installations will ensure safety during storms and lightning discharges, and appropriate insulation will ensure safety during possible flooding.

## 5.7 Cultural landscape and monuments

Implementation under Contract 4A.3.1, construction, demolition, reconstruction, renovation, maintenance, or modernization, may affect this environmental feature only through increased motor vehicle traffic while work is being performed, but this will be a short-term impact, vehicles will be moving along traffic routes at certain times, which may cause increased noise, exhaust emissions, and induce vibration, but will not cause a significant adverse impact. The impact will be local, short-term, and reversible. A detailed description of impacts to the cultural landscape and historic sites will be described in the DEMP or checklists.

Due to the distance of the Project from the nearest cultural and architectural heritage sites and the specifics of radar operation described in Chapter 2, the weather radar stations will not have a negative impact on this element of the environment during their operational period.

## 5.8 Electromagnetic field

Protection of the environment against electromagnetic fields consists in the obligation to ensure that there are no fields, the values of which would exceed the limit values, in any place accessible to the public. The ordinance of the Minister of Climate of the 17<sup>th</sup> of February 2020 on the methods of checking compliance with the permissible levels of electromagnetic fields in the environment specifies the details of the environmental compliance test. The Ordinance of the Minister of Health of the 17<sup>th</sup> of December 2019 on permissible levels of electromagnetic fields in the environment of values specifies a power density of 10 W/m<sup>2</sup> as the limit for humans. For the needs of the preparation of the Environmental Impact Assessment reports for the individual locations of the Contract, computational analyses were carried out in order to determine the hazardous area for humans. Calculations show that the radius of the danger zone closes in the distance of 59m around the axis of the antenna, but due to the high convergence of the radar beam this area does not exceed the zone of several centimetres at the height of the centre of the radar antenna, i.e. in the case of the objects of the Contract, this height varies in the range of 29-50 m above the ground level, thus high above the zone accessible to humans. The locations of the radar towers have been chosen in such a way that the likelihood of high construction in close proximity to the radars is excluded. Taking into account the results of the calculations and the above-mentioned conditions related to the construction method, it can be concluded that the electromagnetic radiation generated by the radars of the POLRAD system does not adversely affect humans, and its environmental impact is negligible. Due to the large mutual distance between radar stations and the difference in absolute mounting ordinates of particular radar devices resulting in the lack of overlapping of radiation impact planes, there is no cumulative effect of electromagnetic impact coming from weather radars being the subject of the Contract.

During the construction of new facilities, electromagnetic radiation from radars occurs only in the final phase of construction and is associated with the commissioning and testing of the installed equipment.

In the case of radars undergoing renovation, due to the necessity of providing weather situation monitoring for as long as possible, the operation of existing radars will last until the moment justified by the technology of the works performed. Existing radars will be deactivated, dismantled and replaced with new units, the commissioning and testing of which is expected to be identical as in the case of new towers.

Electromagnetic impact of radars is reversible, long-lasting and local.

### 5.9 Sanitary condition of the air

The sanitary condition of the air will be influenced by the emission of pollutants connected with the operation of machinery, vehicles and equipment as well as by the lifting of fine dust fractions from unpaved ground at the stage of construction, renovation, modernisation or demolition. In addition, there will be emissions of pollutants at the stage of renovation works, e.g. cleaning of tower surfaces, painting of tower surfaces and accompanying buildings. Due to the different scope of works for individual locations, these works and their impact will be described in check-lists or in the DEMP for individual locations. The impact is expected to be local, short-term, reversible and of minor intensity.

At the stage of exploitation, the impact on the condition of atmospheric air will be limited to occasional emissions resulting from servicing and maintenance of the weather radar and the use of an emergency generator in the event of a power outage.

As a result of the performance of the Contract, electromagnetic impact will occur. It is described in sub-section 5.8 Electromagnetic field.

### 5.10 Acoustic climate

Sources of noise from implementation of Contract 4A.3.1 will include construction machinery operation and vehicle traffic (including, but not limited to, trucks) during construction, demolition, reconstruction, renovation, maintenance, or modernization. This impact will be short-term and reversible, as well as local (limited to the vicinity of the radar and roads used for transport). A detailed description of the acoustic climate will be included in the DEMP or checklists.



## 5.11 Material assets

The impact on the technical infrastructure, especially roads, as well as buildings and structures located in the immediate vicinity of certain investments, due to the mitigating measures taken, will be negligible or will not occur for individual investments.

The analysis carried out for the project in question shows that if the conditions set out in the documentation prepared for the purpose of the proceedings are adhered to, the environmental quality standards will be met both within and outside the project area.

This means that the investments in question in all locations will in no way introduce restrictions on the use of neighbouring properties in connection with the construction works in progress.

Due to the scale of the planned project and its location, the impact on property at the stage of operation will be negligible. Due to the location of existing and newly built radar stations, there are no grounds for a decrease in land value in their vicinity. The vicinity of the radar towers introduces restrictions on the height of structures built in their vicinity, especially wind turbines, however, the locations were selected in such a way that the probability of real impact of this restriction on the development of the adjacent plots is very low.

## 5.12 Human health and safety

Work carried out under the 4A.3.1 Contract at the following locations: Legionowo and Uźranki, may contribute to a temporary deterioration in the quality and standard of living of the inhabitants, however, this impact will be short-term, local, indirect and reversible. It should be noted that these impacts will be temporary and limited and will cease with the completion of the construction phase. Mitigation measures will be provided as appropriate to minimise this impact. In the remaining locations, the execution of construction, demolition, renovation, maintenance and modernisation works will not affect the quality and standard of living of the residents.

Incorrect organisation of works and failure to comply with the relevant standards could lead to contamination of soil and water with petroleum-derived substances during construction, demolition, renovation, maintenance and modernisation works, which could result in a direct or indirect threat to the health of the Contractor's personnel or neighbouring residents. Issues related to the possibility of an accident or disaster are discussed in Chapter 5.13.

In order to minimise the occurrence of health and safety risks in the surroundings and on the construction site, it is required to draw up a Health and Safety Plan and to comply with the principles of occupational health and safety and the Labour Code. During work on the tower, the radar will be turned off, so there will be no electromagnetic impact.

During radar operation there will be no negative impact on the health and safety of local residents. The negative impact of electromagnetic fields occurs at the height of antenna

centre in the zone of approximately 59 m. Appropriate procedures and safeguards of the IMGW-PIB prevent Institute's employees from staying in this zone when the antenna is working. The area around the radar is fenced and is a restricted zone, i.e. it is impossible for outsiders to enter the area. Moreover, even if an outsider were to enter the fenced area around the radar, the radiation at ground level is immeasurably low, i.e. practically zero.

### 5.13 Extraordinary threats to the environment

#### Crisis situation

In the event of a crisis situation, the competent services should be notified in the first instance:

Service	Phone number
Mobile phone emergency number	112
Police	997
Fire brigade	998
Emergency medical services	999

The Contractor's obligation is to counteract threats in the first place, and if they occur, to mitigate their effects. The basic threats are characterised below, but the list of the given threats is open and does not exhaust the risk of other threats, not mentioned in the GEMP.

In the event of any emergency situation, the Contractor shall immediately notify the relevant services as well as the Contracting Authority and the OVFM Project Coordination Unit.

#### Wind storms and hurricanes

The Contractor is responsible for ensuring safety in the area of the Contract performance. The procedure to be followed in the event of extreme weather phenomena, such as storms and hurricanes, but also heavy rainfall, hailstorms and other extreme phenomena, will be included in the SHP Plan prepared by the Contractor.

#### Spill of petroleum-derived substances

Another type of emergency is a spill of petroleum-derived substances into water or soil. In order to limit the risk of environmental pollution, appropriate preventive measures will be implemented relating to, among other things, appropriate organisation and equipment of the construction sites and back-up facilities, equipping the places of possible leakages with adequate sorbents and current control of the condition of the construction equipment used.

In the event of a possible spill of petroleum-derived substances, measures should be taken to limit the spread of contamination, and also immediately removed.

If contaminated layers of soil are present, they must be managed in accordance with current legislation.

### **Finding unexploded ordnance**

The Contracting Authority did not control the construction site for the presence of unexploded ordnance. In connection with the above, the Contractor is obliged to ensure, during the execution of earthworks, explosive ordnance disposal team (Contractor's explosive ordnance disposal team) consisting in current inspection (first of all before the commencement of works) and clearing the area of dangerous objects of military origin together with their disposal.

In the event that unexploded ordnance is found during the works, the Contractor shall immediately cease work and evacuate the personnel and notify the bomb disposal authorities, the police and the Contracting Authority.

It is strictly forbidden, before the arrival of the Contractor's explosive ordnance disposal team or a military demining patrol, to pick up, dig up, bury, carry, throw into fire or water, etc. objects of potentially dangerous military origin that have been found.

### **Fire**

During the construction phase, a fire-related emergency may occur (e.g. due to equipment failure, negligence of personnel, explosion of flammable substances, lightning strike, etc.). The occurrence of such a situation poses a threat to both the Contractor's staff and the environment.

Fire protection in the area of the 4A.3.1 Contract is the responsibility of the Contractor. A detailed procedure in the event of a fire will be included in the SHP Plan prepared by the Contractor.

In the case of the construction of a radar tower in Gdańsk, a detailed procedure for dealing with forest fires must be included in the SHP plan.

### **Epidemiological threat**

Should a state of epidemiological emergency or a state of epidemic threat be in effect during the execution of the works, the Contractor shall be obliged to proceed in compliance with the legal requirements, in particular with the Act of the 5<sup>th</sup> of December 2008 on preventing and combating infections and infectious diseases in humans (consolidated text: Journal of Laws of 2020, item 1845, as amended), all obligations arising from the declaration of a state of epidemic emergency or a state of epidemic threat, and the relevant World Bank guidelines. The Contractor's activities shall reduce the risk of spreading infection to the Contractor's personnel as well as to the Contracting Authority and the local community.

Notwithstanding the above, the Contractor will implement an awareness-raising program in the field of spreading infectious diseases (e.g. HIV-AIDS, COVID 19).

## 5.14 Other ES risks

The performance of the 4A.3.1 Contract in all locations may involve a number of impacts related to ES issues (i.e. environmental, social and occupational health and safety aspects). In addition to the issues discussed earlier in chapters 5.1-5.13, the performance of the 4A.3.1 Contract may include, inter alia, the following additional problems or risks related to the above-mentioned subject:

- accidents and near misses involving persons connected with the performance of the Contract and/or third parties;
- cases of unacceptable behaviour in the workplace, such as sexual harassment or bullying;
- cases of intentional or negligent breaches of labour law, including those relating to social conditions and staff working and pay conditions;
- cases of infections with sexually transmitted diseases (including HIV/AIDS) and other infectious diseases (including those caused by coronaviruses, e.g. COVID-19), resulting from lack of knowledge or failure to comply with existing rules on the prevention and control of such infections.

Due to the significant social impact of the above-mentioned hazards, a number of specific conditions have been and will be included in the Check-lists, DEMP and other documents of the 4A.3.1 Contract in order to counteract and effectively respond to the occurrence of such events and to ensure the proper implementation of all national laws applicable to the above (see, inter alia, Chapter 6.1).

## 5.15 Cumulative impact

The analysis of the impact on the surroundings during the implementation and subsequent operational work of the facilities being the subject of the Contract has shown that two factors can be identified that may be cumulative due to the impact from external sources. These are electromagnetic field and noise.

### 1. Electromagnetic field

According to the electromagnetic field analyses performed at the environmental impact assessment stage, as shown in Chapter 2, the negative impact of each radar is limited to a zone with a radius of approx. 59 m at the antenna center height. No external sources of electromagnetic radiation likely to have a cumulative impact on the environment were identified for any location.

### 2. Noise

Cumulative noise impact is considered in a situation where two criteria are met simultaneously:

- The facility has a noise impact on an area listed in the Regulation of the Minister of Environment of 14 June 2007 on permissible levels of noise in the environment,
- There is another noise source in the vicinity of the object, simultaneously affecting the area specified in the aforementioned ordinance.

None of the objects being the subject of the Contract meets both criteria simultaneously, both in the implementation phase and the operational phase, so there is no cumulative noise impact.



## 5.16 Summary

The matrices summarizing the generalized impact of Contact 4A.3.1. modernization of the POLRAD meteorological radar network on the environment during both construction and operation phases are presented below. The impact of individual investments will vary slightly due to location, as well as differences in the scope of work. Despite that, the tables below give a measurable picture of the situation. The operational work of the radar stations does not differ, only the impact of individual stations on the landscape differs.

Table 5 Environmental impact of Contact 4A.3.1. during construction phase

Costruction activities	Physical aspects							Ecological aspects		Social aspects			
	Erosion/land stability	Agricultural soil	Air quality	Noise levels	Surface water quality	Groundwater quality	Landscape value	Protected/endangered species	Protected areas	Local employment	Health and safety of workers	Health and safety of local residents	Road safety
1. Site preparation	0	-1	0	-1	0	0	0	0	0	+1	0	0	0
2. Tower demolition	0	-1	0	-2	0	0	0	-1	0	+1	-1	0	0
3. Foundation demolition	0	-1	-1	-2	-1	-1	0	0	0	+1	-1	0	0
4. Road and parkong surface demolition	0	0	-1	-2	0	0	0	0	0	+1	0	0	0
5. Foundation excavation	0	-1	0	-1	0	-1	0	0	0	+1	-1	0	0
6. Foundations - concrete works	0	-1	0	-1	0	-1	0	0	0	+1	-1	0	0
7. Construction of reinforced concrete walls of the tower	0	-1	0	-1	0	0	-1	0	0	+1	-1	0	0
8. Construction of tower steel structure	0	0	0	-1	0	0	-1	0	0	+1	-1	0	0
9. Execution of the object housing	0	0	0	-1	0	0	-1	0	0	+1	-1	0	0
10. Execution of the light-wet facade	0	0	0	-1	0	0	-1	0	0	+1	-1	0	0

**GENERAL ENVIRONMENTAL MANAGEMENT PLAN – GUIDELINES FOR THE CONTRACTOR** -----

CONTRACT 4A.3.1. POLRAD WEATHER RADAR MODERNIZATION

Costruction activities	Physical aspects							Ecological apsects		Social apsects			
	Erosion/land stability	Agricultural soil	Air quality	Noise levels	Surface water quality	Groundwater quality	Landscape value	Protected/endangered species	Protected areas	Local employment	Health and safety of workers	Health and safety of local residents	Road safety
11. Execution of the ground level building foundations.	0	-1	0	0	0	0	0	0	0	+1	-1	0	0
12. Execution of the ground level building walls.	0	0	0	0	0	0	-1	0	0	+1	0	0	0
13. Execution of the tower stair caser – steel structure.	0	0	0	0	0	0	0	0	0	+1	-1	0	0
14. Construction of the elevator shaft.	0	0	0	0	0	0	0	0	0	+1	-1	0	0
15. Elevator installation	0	0	0	0	0	0	0	0	0	0	-1	0	0
16. Execution of the tower roof cladding	0	0	0	0	0	0	-1	0	0	0	-1	0	0
17. Execution of the ground level building roof cladding	0	0	0	0	0	0	-1	0	0	+1	-1	0	0
18. Well drilling	0	0	0	0	-1	-1	0	0	0	0	0	0	0
19. Execution of road works	0	-1	-1	-1	0	0	-1	-1	-1	+1	-1	0	0
20. Execution of the fence	0	0	0	0	0	0	-1	-1	-1	+1	-1	0	0
21. Radar and radome installation	0	0	0	-1	0	0	-1	0	0	+1	-1	0	0
22. Decomissioning of the site infrastructure	0	0	0	-1	0	0	0	0	0	0	-1	0	0

**Legend:** 0 = no impact; -1= minor negative impact; -2= significant negative impact; +1= minor positive impact; +2= significant positive impact

**GENERAL ENVIRONMENTAL MANAGEMENT PLAN – GUIDELINES FOR THE CONTRACTOR** -----

CONTRACT 4A.3.1. POLRAD WEATHER RADAR MODERNIZATION

*Table 6 Impact of Contract 4A.3.1. on the environment during the operation phase*

Operation activities	Physical aspects							Ecological aspects		Social aspects			
	Erosion/land stability	Agricultural soil	Air quality	Noise levels	Surface water quality	Groundwater quality	Landscape value	Protected/endangered species	Protected areas	Local employment	Health and safety of workers	Health and safety of local residents	Road safety
1. Unmanned operation	0	0	0	0	0	0	-1	0	0	0	0	0	0
2. Periodic test of generator	0	0	0	-1	0	0	0	0	0	0	0	0	0
3. Service activities	0	0	0	0	0	0	0	0	0	+1	0	0	0

**Legend:** 0 = no impact; -1= minor negative impact; -2= significant negative impact; +1= minor positive impact; +2= significant positive impact

## 6. DESCRIPTION OF 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.3.1 Contract for particular environmental components is presented in the Annex No. 1. These measures were developed on the basis of knowledge, experience and good practices in this area. A check-list or the DEMP will be prepared for each site where construction, demolition, renovation, maintenance and upgrading works will be carried out, where mitigation measures will be included taking into account the provisions of the ED as well as 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<sup>11</sup> Environmental and Social Operating Policies and Procedures, the World Bank's Environmental, Health and Safety Guidelines (EHS Guidelines<sup>12</sup>), the ES Code of Conduct (developed at the bidding stage<sup>13</sup>), as well as those arising from applicable Polish legislation (including Labour Code, Construction Law, and others).

No alternative locations were analyzed as stated in Section 1.2.

In addition, environmental compensation measures have been provided for each location. These will vary from location to location, as well as with any recommendations from RDEP. For the construction of new fences (Brzuchania, Góra Świętej Anny, Użranki, Nowy Gdańsk, Pastewnik) consideration was given to leaving free space between the ground and the lower part of the fence so as not to interfere with the migration of small animals. The hanging of bird and bat boxes is planned for individual stations depending on the environmental impact. In addition, if obstruction markings will not be required, towers that are newly constructed or painted will be in neutral colors. These issues will be described in detail in the site-specific DEMPs.

<sup>11</sup> Available, among others, on the website:

<https://policies.worldbank.org/sites/PPF3/Pages/Manuals/Operational%20Manual.aspx#S3-2> (w części pt. Investment Project Financing / Environmental and Social Safeguard Policies).

<sup>12</sup> The guidelines are posted on the World Bank's website, at:

[https://www.ifc.org/wps/wcm/connect/Topics\\_Ext\\_Content/IFC\\_External\\_Corporate\\_Site/Sustainability-At-IFC/Policies-Standards/EHS-Guidelines/](https://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/Sustainability-At-IFC/Policies-Standards/EHS-Guidelines/) oraz <https://www.ifc.org/wps/wcm/connect/29f5137d-6e17-4660-b1f9-02bf561935e5/Final%2B-%2BGeneral%2BEHS%2BGuidelines.pdf?MOD=AJPERES&CVID=jOWim3p>

<sup>13</sup> In accordance with the conditions specified in the tender documents

## 6.1 Specific requirements in the field of World Bank's ES policies (environmental and social aspects, including risks of sexual exploitation, sexual abuse and sexual harassment)

The performance of the 4A.3.1 Contract is associated with the need to meet a number of ES requirements (environmental, social, occupational health and safety aspects), which are governed by national legislation governing environmental protection, occupational health and safety as well as labour law. State institutions and bodies supervise their observance. In particular, with regard to compliance with occupational health and safety regulations and labour law, the state sanitary inspection authorities and the state labour inspection authorities are authorised to control the activities of entrepreneurs, including on the construction sites. However, due to the high importance attached to the ES requirements by the World Bank, the terms and conditions of contracts subsidised by a World Bank loan impose obligations to ensure implementation of the applicable regulations. Particular attention concerns such issues as:

- Protection of young people employed to perform the Contract;
- Elimination of inappropriate forms of behaviour by persons employed to perform the Contract (including sexual harassment and bullying);
- Ensuring the safety and health protection of people employed to perform the Contract, including the provision of health and safety services required by law;
- Ensuring appropriate social and employment conditions to employees employed to perform the Contract (including fair pay conditions).

The following is a list of issues in the form of requirements for the Contractor, related to the WB ES policies. It should be emphasised that the ES requirements and conditions specified for the Contractor and its employees also apply to the Contractor's Subcontractors and their employees or Subcontractors.

- The Contractor will provide training and implement an anti-sexual harassment and bullying awareness programme. These activities will be carried out throughout the duration of the Contract at least every other month. These will take the form of information, education and awareness campaigns.
- The Contractor shall immediately inform the Contracting Authority of all reported and suspected cases of sexual harassment and bullying.
- The Contractor shall inform all persons employed on the construction site of the possibility of making complaints about working and pay conditions and shall deliver an information leaflet with the necessary information on how to make a complaint, in which he shall ensure that there are no repercussions for the person reporting the problem. The content of the leaflet will be agreed with the PEU.



- The Contractor shall inform the Contracting Authority of all incidents involving workers and members of the public in accordance with the procedure provided by the Contracting Authority. In the event of an accident, the Contractor shall take all actions required under applicable law, such as, but not limited to, the Construction Law and the Labour Code.
- The Contractor shall ensure equal pay for employees performing the same work without regard to sex, sexual orientation or age, and persons employed on the Contract shall not be subjected to harassment or discrimination on grounds of sex, sexual orientation or age.
- The Contractor shall, in accordance with the possibilities and conditions and the Polish Labour Code regulations, satisfy the living and social needs of employees at the workplace.
- The contractor is obliged to facilitate the employees' improvement of professional qualifications.
- The Contractor may only employ worker who is at least 18 years of age, has completed at least eight years of primary schooling and has produced a medical certificate stating that the work of a given type does not endanger his health.
- The Contractor shall employ a health and safety specialist with qualifications and professional experience in accordance with Polish labour legislation.

However, it must be stressed that the Contractor is required to apply and comply with all provisions of the Labour Code and will act in accordance with the ES Code of Conduct.

## 6.2 Requirements for the implementation of action plans during the construction phase

In order to ensure the proper organisation of the works and the proper implementation of the conditions specified in the check-lists or in the DEMP for each site, the Contractor is required to prepare and obtain the approval of the Contracting Authority and then implement the following documents:

- *The construction site organisation design*, which should include, but not be limited to, elements such as:
  - location of the construction site,
  - development of the construction site facilities,
  - securing the construction site facilities,
  - technological roads, including obligatorily planned temporary land occupation,
  - environmental protection at the construction site;

- *A waste management plan*, which should contain, inter alia, the following main elements and detailed guidelines contained in Annex 1 as well as in the check-lists or the DEMP:
  - the existing and expected types and amounts of waste,
  - ways to prevent the negative impact of waste on the environment,
  - waste management, including collection, transport, recovery and disposal of waste,
  - the type of waste produced (e.g. waste from the construction, repair and dismantling of buildings and road infrastructure - including soil from contaminated sites, hazardous waste, municipal waste, waste containing asbestos) and the method of its storage and disposal;
- *A plan for dealing with uncontrolled emissions (spills) of petroleum-derived substances* which should include, inter alia, elements on how to deal with chemical and oil spills, i.e.:
  - the mode of equipping with appropriate materials in relation to the anticipated threats and substances,
  - mode of alerting and notifying individual services,
  - a course of action to reduce spillage,
  - procedure for handling absorbent materials;
- *Safety and Health Protection Plan (SHP plan)*, which should include, inter alia, the following items:
  - indication of the elements of the plot or area development that may pose a threat to human safety and health,
  - information on the anticipated threats occurring during the execution of construction works, specifying the scale and types of threats as well as the place and time of their occurrence, including in relation to the natural environment,
  - information on the separation and marking of the site for construction works, depending on the type of risk,
  - information on the method of training employees before commencing particularly dangerous works,
  - determination of the method of storing and handling hazardous materials, products, substances and preparations on the construction site,
  - indication of technical and organisational measures aimed at preventing hazards resulting from the execution of construction works in areas of special health risk or in their vicinity, including ensuring safe and efficient communication enabling rapid evacuation in the event of fire, breakdown and other hazards,

- indication of the place of storage of construction documentation and documents necessary for the proper operation of machines and other technical devices,
- information on troubleshooting the COVID-19 problems.

The Contractor, when developing the above documents, shall take into account the relevant World Bank operational policies on health, environment and safety principles, including the ES<sup>14</sup> . Before implementation, these documents must be approved by the Contracting Authority, which then also monitors their correct implementation.

The Contractor shall also provide training on the terms and conditions of implementation of the EMP to the Contractor's management and engineering staff and regular training of Employees on health and safety, awareness raising against sexual harassment and bullying.

The Contractor, when developing the above documents, shall take into account the relevant World Bank operational policies on health, environment and safety principles. Before implementation, these documents must be approved by the Contracting Authority, which then also monitors their correct implementation. The requirement to develop and obtain approval of the content of the above-mentioned documents will be indicated in the check-lists or the EMP for individual locations.

## 7. DESCRIPTION OF MEASURES IN THE FIELD OF ENVIRONMENTAL MONITORING

After the preparation of check-lists or the DEMP for individual locations and Annex 1 for this document, an annex with a set of monitoring activities applicable to the Contractor of the 4A.3.1 Contract will be prepared for each location. These activities will be developed on the basis of the conditions contained in the applicable decision on environmental conditions, supplemented with additional conditions established at the stage of preparing the check-lists and the DEMP.

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<sup>14</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)

## 8. PUBLIC CONSULTATION

### 8.1 Public consultation on the environmental management framework (2015)

The draft Environmental and Social Management Framework (ESMF) for the OVFMP was subject to a public consultation procedure conducted in accordance with World Bank's Operational Policy OP 4.01. Their purpose was to enable the public to familiarise themselves with the content of this document and to provide an opportunity to make any comments, queries and proposals on its content.

Documentation of the public consultation process on the ESMF document is available on the website of the Odra-Vistula Flood Management Project Coordination Unit<sup>1516</sup>.

### 8.2 Public consultations at the EIA stage (2021)

In accordance with the Polish EIA procedure, at the stage of issuing the decision on environmental conditions, the planned project falling within the scope of the 4A.3.1 Contract, was subject to the obligation to conduct public consultations depending on the decision of the competent RDEP. At the stage of the EIA procedure, possible consultations with the public participation will be conducted by the authority issuing the decision on environmental conditions, i.e. the appropriate RDEP or in the case of Legionowo City Hall. Description of the individual stages of the EIA procedure conducted at the stage of issuing the decision on environmental conditions, along with the description of the public consultations conducted by the competent RDOS within the framework of the said procedure will be presented in the text of the decision of the competent authority.

### 8.3 Public consultations at the EMP stage (2021)

Due to the fact that the 4A.3.1. Contract is divided into 11 different locations throughout Poland and the works are not carried out in one period, the public consultation will be subject to DEMP for those locations where RDEP will issue the environmental decision and the environmental impact will be significant. In the case of locations where a check-list will apply, the local community will be notified in the usual way about the works and the nuisance.

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<sup>15</sup> [http://www.odrapcu.pl/doc/OVFMP/RPZSiS\\_Zalacznik\\_08\\_Raporty\\_z\\_procedury\\_upublicznienia\\_projektu\\_EM\\_AF.pdf](http://www.odrapcu.pl/doc/OVFMP/RPZSiS_Zalacznik_08_Raporty_z_procedury_upublicznienia_projektu_EM_AF.pdf)

<sup>16</sup> [http://www.odrapcu.pl/doc/OVFMP/RPZSiS\\_Zalacznik\\_09\\_Raporty\\_z\\_konsultacji\\_spolecznych\\_RAF.pdf](http://www.odrapcu.pl/doc/OVFMP/RPZSiS_Zalacznik_09_Raporty_z_konsultacji_spolecznych_RAF.pdf)

### 8.3.1 Public consultations at the GEMP stage

GEMP, due to the general nature of the document, containing guidelines for the Contractor on environmental policy and on how to prepare and implement the DEMP, will not be subject to the usual public consultation. It is not advisable to carry out the consultations properly at this stage, taking into account the fact that the projects will be carried out in different, distant places of the country and the document does not contain much of the relevant information that will be described in the DEMP and in the checklists prepared after the issuance of the DEC. The public consultation process itself during Contract 4A.3.1 will not be omitted, but only postponed and carried out in a local character i.e. for each radar tower separately.

In the course of preparation of the GEMP, decisions on environmental conditions of the investment are being processed, which in accordance with the law are subject to public consultations. Then, after this process, DEMP or checklists will be prepared for particular locations. This means that locally the public is already informed about the investment intention at this stage.

In its current form, the document is clear and focuses on issues common to the tasks. However, due to the stage of its preparation it does not have enough information to arouse interest of local communities. Therefore, it was concluded that the public consultation of the GEMP should be limited to the publication of the document on the website of the Employer and the OVFM Project.

The more valuable and effective public consultation for each location, and thus for the entire project, will be carried out on a site-by-site basis at the stage of developing and agreeing the DEMP and checklists.

### 8.3.2 Public consultations at the DEMP stage

It is envisaged that a dedicated DEMP will be prepared for each site once the environmental administrative approvals, notably the Decision on Environmental Conditions, have been obtained. It will be subject to mandatory public consultations conducted in accordance with the World Bank operational policies (OP/PB 4.01). Given the threats posed by the outbreak of the coronavirus causing COVID-19 disease, the action plan related to the publication of DEMP projects will take into account the recommendations of the World Bank's Technical Note "Public consultation and stakeholder involvement in activities supported by the World Bank, in the event of restrictions in the conduct of public meetings"<sup>17</sup>.

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<sup>17</sup> Compared to the procedures in place before the coronavirus pandemic, in the current situation the paper version of the draft EMP document was abandoned for consultation in public offices and bureaus, the publicity period was extended (to 15 working days) and the organisation of an open public debate at the end of the publicity period of the draft EMP document was abandoned. Instead of the aforementioned debate, a publicly accessible teleconference (webinar) was organised on the last day of the public consultation, consisting of a presentation of the draft EMP document and a Q&A session.



After the development of the draft DEMP and obtaining the PCU approval (consent to make it public) for the commencement of the publication procedure, the electronic version of the draft DEMP will be posted on publicly available websites: on the IMGW-PIB website - <https://www.imgw.pl>, OVFM PCU - <http://odrapcu.pl> and the commune office competent for a given location.

Detailed information on the possibility of reading this document and the possibility of submitting applications and comments (along with an indication of detailed contact details: postal address, e-mail address, telephone number) will be made public in the Notice available at the appropriate time in the following places:

- on the websites:
  - IMGW-PIB – <https://www.imgw.pl>,
  - OVFM PCU – <http://odrapcu.pl>,
  - and the competent commune office;
- on notice boards in the relevant commune and at the premises of the above-mentioned institutions;
- in the IMGW-PIB social media, <https://www.facebook.com/Meteoimgw>;
- in the appropriate local press, on the Internet.

The above-mentioned announcements will also include information about the possibility of participating in a publicly available teleconference (webinar), planned for the date indicated in the announcement (with the date and time of the teleconference) and information about the location of the link enabling the download of the "Step by Step Instructions" and the link enabling taking part in a teleconference.

Information about the commencement of the publicity procedure of the draft DEMP and the possibility to submit proposals and comments will also be sent by e-mail to the following persons, institutions and organisations:

- the competent commune head, mayor or city president,
- the competent city or commune council,
- non-governmental organisations involved in social and / or environmental issues specific to a given location, as indicated in the DEMP.

Details concerning the publication of the draft DEMP, incoming comments and inquiries, the teleconference conducted as well as the questions and answers given to them, will be included in the annex to the given DEMP.

After the end of the public consultation period, a report on public consultations of the draft DEMP and the final version of a given DEMP for the 4A.3.1 Contract will be prepared. After the above-mentioned works are completed, these documents will be submitted to the World Bank for the final approval clause, the so-called "No objection".

### 8.3.3 Public consultations od checklists

In cases justified by the small scope of works with minimal environmental impact (e.g. tower modernisation) or the specificity of activities not requiring an DEC (e.g. construction of a storage facility in Legionowo or refurbishment of a research and power building at the same location) a checklist will be prepared. In cases where the Environmental Management Plan will be in the form of a checklist, the document will not be subjected to public consultation but will be made public on the website of the Contracting Authority and the OVFM Project.

## 9. ORGANISATIONAL STRUCTURE OF IMPLEMENTING THE EMP

The 4A.3.1 Contract is part of the Odra-Vistula Flood Management Project co-financed by the World Bank, the Council of Europe Development Bank, the European Union Cohesion Fund and the state budget. Therefore, the structure of supervision over the implementation of the DEMP must comply with both the provisions of Polish law and the requirements of the World Bank.

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

The Project Coordination Unit (PCU), which functions as an organisational unit within the structures of the National Water Management Authority (KZGW), an organisational unit of the State Water Management Company Wody Polskie (PWP), is responsible for the overall coordination of the implementation of individual EMP under the OVFM. The tasks of the PCU include, among others:

- managing the tasks of Project Execution Units (PEU) and Project Implementation Units (PIU) in the scope of tasks included in the Project;
- technical assistance and support to the PUI and the PEU in the implementation of tasks included in the Project, including the application of the World Bank's procedures related to procurement, environmental protection and social matters;
- preparation of annual work programs under the Project and assessment of their progress;
- supervision over the works of the Project and evaluation of their progress;
- ongoing control and monitoring of financial resources allocated for the implementation of the Project and participation in the management of Project financial resources;
- Reporting, including preparation and submission of quarterly reports on Project implementation to the World Bank, BRRE and the Steering Committee.

## 9.2 Project Implementation Unit (PIU) and Project Execution Unit (PEU)

The Project Implementation Unit (PIU), i.e. the Institute of Meteorology and Water Management - National Research Institute based in Warsaw, is directly responsible for implementation of the GEM under the 4A.3.1 Contract and monitoring the progress of its implementation.

In connection with the implementation of the OVFM Project, a Project Execution Unit (PEU) was separated in the structure of the PIU, constituting a separate organisational unit and supervised by the Director of the Institute of Meteorology and Water Management - National Research Institute based in Warsaw. Such a structure is transparent and has a very high decision-making level, which increases the effectiveness of the Contract performance.

As part of the supervision over the implementation of the EMP, the PEU performs the following tasks:

- monitoring the progress of the EMP implementation;
- financial management and accounting;
- preparation of necessary reports for the purposes of monitoring the implementation of the EMP and coordination of its implementation by all services involved in the implementation of the EMP;

The scope of duties of the PEU employees related to the supervision over the implementation of the EMP is as follows:

- management, coordination and supervision over the EMP monitoring carried out by the Contractor;
- direct supervision over the proper implementation of tasks;
- cooperation with PCU;
- administrative and legal supervision over the implementation of the EMP;
- verification of Reports and reports on the implementation of the EMP prepared by the Contractor;
- financial supervision over the implementation of the EMP;
- supervision over the correct application of formal procedures in the implementation of the EMP, resulting, inter alia, from the requirements of the 4A.3.1 Contract, Construction Law, Environmental Law and others.

The PEU has appointed an Investor Supervision Inspector who will be responsible for:

- monitoring of the Contractor's activities;

- checking the quality of construction works and built-in construction products performed by the Contractor, in particular preventing the use of defective construction products and products not approved for use in construction;
- representing the Investor at the construction site by controlling the compliance of its implementation with the design and implementation permit, environmental protection regulations and the principles of technical knowledge;
- conducting additional tests if it is necessary to verify the Contractor's reports;
- checking and accepting construction works that are being covered or are coming to an end, and preparing and taking part in the acceptance of finished construction objects.

### 9.3 Contractor

In order to carry out the works, a Contractor who will be responsible for the implementation of the individual EMPs for each location has been selected. The Contractor's obligations in this regard include:

- carrying out construction works on the terms specified in the EMP, in accordance with contract terms and design documentation, in accordance with applicable law and the requirements of administrative decisions issued for this Contract;
- ensuring constant health and safety supervision;
- keeping construction documentation;
- preparing reports (reports to the RDEP and / or the GDEP [the latter only to the extent resulting from the decisions of the aforementioned authorities obtained during the execution stage, if the Contractor obtains such decisions]);
- applying to the Investor for changes in design solutions, if it is justified by the need to increase the safety of construction works or to improve the construction process in the scope related to the implementation of individual EMP;
- repairing any defects / faults that will be reported by the Investor during the works and in the period of reporting defects, guarantee and warranty. The Contractor is obliged to report all actions that have been taken to remove defects / faults. The report should be submitted to the Investor;
- confirming work actually carried out and the removal of defects, and, at the request of the Investor, checking the construction accounts
- participation in the acceptance of finished building objects and their handing over for use.

Within the Contractor's team, an EMP Coordinator will be appointed - a person who will coordinate and supervise the activities related to the implementation of the EMP. Throughout

the duration of the Contract, the Contractor will ensure the participation of environmental experts, depending on the needs. The work of the expert team will be coordinated by the Contractor's EMP Coordinator. The EMP Coordinator will be responsible for:

- monitoring the implementation of the EMP;
- supervising all issues related to environmental protection through environmental specialists and other personnel;
- constant monitoring of the correctness of the implementation of activities mitigating the negative impact on the environment;
- identifying problems resulting from the harmful impact of construction works on the environment and presenting proposals to solve these problems.

There shall also be a Health and Safety Officer appointed to the Contractor's team, available throughout the period of the Contract, who shall also be responsible for the implementation of other ES issues not included in the EMS. The Contractor will identify a person to whom complaints of bullying, discrimination and ill-treatment can be made.

## 10. SCHEDULE FOR THE IMPLEMENTATION OF THE EMP AND REPORTING PROCEDURES

The implementation of the GEMP, which constitutes the guidance to the Contractor, and the site-specific check-lists and the DEMP, enable the parties involved in the preparation, implementation and supervision of this 4A.3.1 Contract to:

- identify the various environmental aspects which have a significant impact on the state of the environment so that they can be controlled, corrected, reduced but, in turn, having an economic impact;
- correct the adverse effects of the works carried out during the implementation to the benefit of the environment and financial results;
- define the objectives and tasks implemented under the adopted environmental policy, covered by the EMP, which require expenditure and bring measurable effects;
- identify and eliminate potential threats and failures, prevent and remove environmental effects that may be associated with them and entail losses disproportionate to the preventive costs;
- rationally use natural resources, with minimal environmental losses and optimal cost generation.

In addition, the implementation of recommendations and actions resulting from the EMP may reduce or even eliminate the risk of occurrence of events and phenomena unfavourable from the social, environmental and economic point of view, concerning the Contract, in particular:

- the risk of neglecting environmental protection issues in the process of performing tasks by the Contractor;
- risk of escalation of protests of the local society as a result of the Contractor's failure to comply with the technologies for carrying out works and environmental procedures approved by the Investor;
- risk of additional environmental penalties;
- risk of incurring additional losses in the environment.

Bearing in mind the importance of issues determining environmental and social conditions, the following EMP implementation procedures are envisaged:

- The Contractor of the 4A.3.1 Contract, through the Investor, shall submit a draft of this general EMP and subsequently check-lists or DEMP for each location to the PCU for comment;
- after expressing no objection (so-called No Objection) by the World Bank for this EMP, it will be made public in the form of the final version on the websites of the PCU, the Contracting Authority and the Bank throughout the duration of the Contract;
- after obtaining individual EDs, they will be prepared for all DEMP locations, depending on the provisions of the ED;
- for the remaining locations where no ED will be required, checklists will be created;
- after the PCU expresses no objection to the presented check-lists, they will be made public in the final version;
- after the PCU expresses no objection to the presented DEMPs, they will be made public on the website of the OVFM Project and the IMWM-PIB and forwarded for public consultations, in addition, the draft of these EMPs will be forwarded to the World Bank for opinion;
- comments will be taken into account for the draft of the EMPs, and their final versions will be submitted to the World Bank in order to express no objection, the so-called No Objection);
- all activities of the Contractor shall be reported at regular intervals (monthly), in Polish and, if necessary, in English, on paper and electronically, in terms of the obligations arising from the EMP and other contractual documents. These reports will be subject to approval by the Contracting Authority. Upon completion of the Contract, the Contractor shall prepare a final report on the implementation of the EMP, which shall be subject to an opinion and expression of non-objection by the World Bank. It is a condition for the completion and settlement of the Contract.

In addition, the relevant entities involved in the performance of the 4A.3.1 Contract are required to carry out additional monitoring and reporting obligations on environmental issues as specified in the administrative decisions issued for the project and presented at the next



stage in the individual mitigation action plans for each site, in the check-list or as an annex to the DEMP.

The Project work progress reporting system will be based on monthly reports submitted by the Contractor to the PEU. As part of the above-mentioned monthly and quarterly reports or as a separate document, monthly and quarterly reports on the implementation of the EMP will also be prepared.

The PEU will submit quarterly reports to the PCU in the part concerning the tasks performed by them. They will contain the required set of information and descriptions enabling the preparation of a quarterly report of the Project by the PCU. Furthermore, especially in case of problems with the performance of the 4A.3.1 Contract, the PCU will expect the PEU to provide summaries and data on a monthly basis.

The following reporting procedures have been established:

1. Reporting:
  - a) reports (monthly, quarterly, ad-hoc, final) will be prepared by the Contractor;
  - b) submission of the report to the Contracting Authority;
  - c) submission of a report to the RDEP and / or the GDEP (only to the extent resulting from the administrative decisions obtained at the implementation stage, if they result in the need to report the activities in question);
  - d) submission of the quarterly report of the PEU to the PCU;
  - e) final report on the implementation of the EMP prepared by the Contractor (after verification by the PCU, submitted to the World Bank no later than 3 months after completion of the works).
2. Archiving:
  - a) The Contractor: 1 copy of each report in electronic version for 5 years from the date of completion of the 4A.3.1 Contract;
  - b) The Investor: 1 copy of each report in electronic version for 5 years from the date of completion of the 4A.3.1 Contract;
3. Evaluation:
  - a) current assessment of the results of the implementation of planned activities resulting from the EMP;
  - b) ongoing analysis of documentation (Contractor's Reports) by the Investor;
  - c) providing the Contracting Authority with reliable information on the course of the construction process, with particular emphasis on the implementation of activities limiting the negative impact on the environment and recommendations resulting from environmental decisions;

d) preparing and submitting quarterly reports by the PCU to the World Bank.

The following is planned:

- ongoing evaluation: Contractor's quarterly reports,
- ex-post evaluation:
  - Report after completion of the works (final reports on the implementation of the EMP, prepared by the Contractor),

## 11. SOURCE MATERIALS

- 1) 10 environmental impact assessment reports for the OVFMP project 4A.3.1 "Modernisation of the POLRAD weather radar network", for each location of the Instal Warszawa Klimas Consortium Przedsiębiorstwo Budowlano-Projektowe Ryszard Klimas, Krotoszyn 2021.
- 2) ISOK - IT System of Country Protection,
- 3) General Directorate for Environmental Protection, Central Register of Forms of Nature Protection,
- 4) Explanations to the geo-environmental map of Poland 1: 50,000 Legionowo sheet (487) - Polish Geological Institute - National Research Institute, Warsaw 2010,
- 5) Collins's Guide. Ptaki [*The birds*]. L. Svensson, K. Mullarney, D. Zetterstrom, Multico 2012,
- 6) Owady [*The insects*] Heiko Bellmann Multico 2007,
- 7) Atlas ptaków Europy [*Bird Atlas of Europe*] Detlef Singer, Delta,
- 8) Przewodnik do oznaczania zbiorowisk roślinnych Polski. [*Guide to the identification of plant communities of Poland.*] Władysław Matuszkiewicz, Polish Scientific Publishers PWN 2008,
- 9) Flora Polski, Rośliny łąkowe [*Flora of Poland, Meadow plants*], Zbigniew Nawara, Multico 2012,
- 10) Flora Polski. [*Flora of Poland*] Rośliny synatropijne. [*Synatropic plants.*] Barbara Sudnik-Wójcikowska. Multico 2011,
- 11) Atlas owadów polskich. [*Atlas of Polish insects.*] Łukasz Przybyłowicz. Publicat,
- 12) Przewodnik do rozpoznawania roślin. [*A guide to plant identification.*] Schauer, Caspari, Ellipse,
- 13) Mammal Research Institute Polish Academy of Sciences Białowieża, Project of ecological corridors connecting the European Natura 2000 Network in Poland, Study prepared for the Ministry of the Environment (Agreement no. 29 XII 2004) as part of the implementation of the Phare PL0105.02 program "Implementation of the European Ecological Network in Poland", Warsaw 2005,
- 14) Zmyślony M. Działanie biologiczne i skutki zdrowotne pól elektromagnetycznych w aspekcie wymagań raportów o oddziaływaniu przedsięwzięć na środowisko. [*Biological effects and health effects of electromagnetic fields in terms of requirements of reports on the impact of projects on the environment.*] Med Pr 2007
- 15) Operational Policy of the World Bank OP 4.01 - Environmental Assessment

- 16) (<https://policies.worldbank.org/sites/PPF3/Pages/Manuals/Operational%20Manual.aspx#S3-2> [in part entitled *Environmental and Social Safeguard Policies*]).
- 17) Framework Plan for Environmental and Social Management, final document, April 2015 ( [http://odrapcu2019.odrapcu.pl/popdow\\_dokumenty/](http://odrapcu2019.odrapcu.pl/popdow_dokumenty/) ).
- 18) Odra Vistula Flood Management Project - Project Operational Manual, Wrocław 2015 ( [http://www.odrapcu.pl/doc/POM\\_PL.pdf](http://www.odrapcu.pl/doc/POM_PL.pdf) ) .
- 19) Website: [http://odrapcu2019.odrapcu.pl/popdow\\_dokumenty/](http://odrapcu2019.odrapcu.pl/popdow_dokumenty/).
- 20) GDEP Geoserwis <http://geoserwis.gdos.gov.pl/mapy/> .

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