Contract 3B.3: Flood protection Tarnobrzeg – Stage 1 (Wisła 1)
Target: “Vistula River – Stage 1 – extension of the right bank of Vistula River at km 5+950 – 15+819 on the stretch from Tarnobrzeg (Skalna Góra) to Koćmierzowa (border of Podkarpackie and Świętokrzyskie Provinces)”

FINAL REPORT ON THE IMPLEMENTATION OF MEASURES SPECIFIED IN THE ENVIRONMENT MANAGEMENT PLAN for the period: 29 December 2016 – 15 June 2018

Contract no. 5.2 Design and Construction Supervision. Project Management, Technical Assistance and Training, Technical Support for the Project and Strengthening of PIU’s Institutional Capacity”

ODRA-VISTULA FLOOD MANAGEMENT PROJECT
the scope implemented by State Water Holding Polish Water – Regional Water Management Authority in Rzeszow

The Contract for Consultant’s Services dated 20 July 2017

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INTRODUCTION

This Report is the final report of the Contract’s Engineer for the period December 2016 – June 2018, covering the stage of construction works. It presents a report on the implementation of measures specified in the Environmental Management Plan (EMP) for the task: "Vistula River – stage 1 – extension of the right bank of Vistula River at km 5+950 – 15+819 on the stretch from Tarnobrzeg (Skalna Góra) to Koćmierzów (border of Podkarpackie and Świętokrzyskie Provinces)", under the Contract 3B.3: Flood protection Tarnobrzeg – stage 1 (Wisła 1).

The Report covers the period from the date of signing the Contract with the Contractor, i.e. from 29 December 2016 to the date of completion of works, covered by the Contract 3B.3, which took place on the day of signing the Protocol of removing defects and faults, i.e. 15 June 2018. Final Acceptance Protocol was signed on 30 May 2018, in accordance with the Annex No 5.

For this Contract, the following have been presented:

- status of implementation of mitigation measures set out in the Appendix 1 to the EMP;
- status of implementation of monitoring measures described in the Appendix 2 to the EMP;
- problems regarding the implementation of mitigation measures;
- photographic documentation;
- summary.

Appendix to this Report is a Check List for implementation of measures listed in Appendix 1 and Appendix 2 to the EMP for the Contract 3B.3.
1 BASIC INFORMATION ABOUT THE CONTRACT 3B.3

1.1 GENERAL DATA

The Contract 3B.3 is one of three Works Contracts implemented under Subcomponent 3B and one of the three Contracts currently implemented by the Regional Water Management Authority in Rzeszów. The basic information about the Contract is provided below.

Name of the Contract

Flood protection Tarnobrzeg 3B.3 – stage 1 (Wisła 1)

The Contractor

Consortium:

- Company DABI SM BUDNY Sp. z o.o. Spółka Komandytowa, 32. Włościńska Street, 43-518 Ligota – Consortium’s Partner
- Green Plants and Remediation Company Zakład Zadrzewień Zieleni i Rekultywacji Sp. z o.o., 8. Fabryczna Street, 39-400 Tarnobrzeg – Consortium’s Partner

Task list

Extension of the right bank of Vistula River at km 5+950 – 15+819 on the stretch from Tarnobrzeg (Skalna Góra) to Koćmierzowa (border of Podkarpackie and Świętokrzyskie Provinces)

The scope of the Contract included e.g.:

- elevating and expanding of embankment’s crest by 1.5 - 1.8 m in relation to the previous elevations, and densification of the embankment’s body;
- sealing the embankment’s body and subbase with approx. 10 m deep anti-filtration membrane and sealing the embankment’s waterside slope with a waterproof membrane covered with the layer of the material that builds embankment’s body;
- reconstruction of the existing service roads (in embankment’s area) on the site beyond the embankment;
- construction of the operational road on the missing sections;
- construction of the maintenance zone from the side of the embankment’s waterside slope;
- reconstruction of 15 embankment crossings aimed to match them to the modified dimensions of the embankment as a result of the elevation;
- protection of the existing embankment’s structures (2 sluices and 2 culverts).
1.2 **Basic Terms of the Contract**

- **Contract signing date:** 29 December 2016
- **Works commencement date:** 23 January 2017
- **Works completion date (according to the Contract):** to 15 December 2017
- **Annex No 1 signing date:** 15 March 2017
- **Annex No 2 signing date:** 28 June 2017
- **Annex No 3 signing date:** 11 October 2017
- **Annex No 4 signing date:** 8 December 2017
- **Annex No 5 signing date:** 27 February 2018
- **Annex No 6 signing date:** 25 April 2018
- **Annex No 7 signing date:** 28 May 2018
- **Works completion date (according to the Annex No 7):** 30 May 2018
- **Final Acceptance Protocol signing date:** 30 May 2018
- **Faults and Defects Removal Protocol signing date:** 15 June 2018
2 MITIGATION AND MONITORING MEASURES LISTED IN THE EMP FOR THE CONTRACT 3B.3

The Environmental Management Plan (EMP) for the Contract 3B.3 was prepared on 22 July 2016 (final version). On 3 August 2016, the World Bank issued “No objection” decision, approving the Environmental Management Plan as one of the tender documents for the selection of the Contractor for construction works under the Contract. The Environmental Management Plan is the document that organizes the actions undertaken under the Contract, obliges everyone involved in the Contract implementation to comply with its requirements. A detailed description of the Contract implementation in terms of the environmental management was presented as the Appendixes to the EMP – Appendix 1 containing Mitigation Measures Plan and Appendix 2 containing Monitoring Measures Plan.

2.1 REQUIREMENTS SPECIFIED IN THE APPENDIX NO.1 TO THE EMP

The Appendix 1 to the EMP for the Contract 3B.3 includes a set of 65 mitigation measures aimed to prevent and to limit the negative impact of the Project on the environment. Those measures result, to a large extent, from the Environmental Decision (Decision on environmental conditions dated 19 September 2013, Ref. no. WOOŚ.4233.19.2013.GJ-95), but also the formal requirements of the World Bank.

The list of measures listed in the table contains references to requirements of the Environmental Decision (if they result directly from requirements of the Environmental Decision) as well as to the list of organizational units responsible for their implementation. The measures are divided into 10 categories:

1) Requirements for environmental protection to be included in the building design (items 1-5 in the Appendix 1 to the EMP);
2) Requirements for land acquisition (items 6-9 in the Appendix 1 to the EMP);
3) Measures to be implemented prior to the works commencement (items 10-18 in the Appendix 1 to the EMP);
4) Requirements regarding the provision of access roads to the construction site (items 19-21 in the Appendix 1 to the EMP);
5) Organization of the site facilities, warehouses and storage yards (items 22-23 in the Appendix 1 to the EMP);
6) Requirements for felling of trees and shrubs (items 24-25 in the Appendix 1 to the EMP);
7) Requirements for the construction work stage (items 26-56 in the Appendix 1 to the EMP);
8) Requirements after the completion of the construction works (items 57-61 in the Appendix 1 to the EMP);
9) General requirements (item 62 in the Appendix 1 to the EMP);
10) Requirements for the demolition of the outbuilding on land plot nos. 803/1 and 803/2 in Sielec village region (items 63-65 in the Appendix 1 to the EMP).

2.2 REQUIREMENTS SPECIFIED IN THE APPENDIX 2 TO THE EMP

The Appendix 2 to the EMP for the Contract 3B.3 includes a set of 65 measures aimed to control the mitigation measures implementation defined in the Appendix 1. Table of the monitoring measures includes the same thematic categories as those applied to the mitigation measures. In the table of the monitoring measures specified the areas, methods, period and frequency of monitoring, as well as the organizational units responsible for conduct of the monitoring measurements.
3 THE SUPERVISION SYSTEM ON THE IMPLEMENTATION OF MEASURES SPECIFIED IN THE EMP FOR THE CONTRACT 3B.3

Supervision over the implementation of mitigation measures and monitoring measures specified in the EMP for the Contract 3B.3 was carried out by all organizational units involved in the Contract implementation i.e. the Contractor for construction works, the Contractor’s Engineer, the Project Implementation Unit (PIU) and the Project Coordination Unit (PCU). Information on the scope of activity of each organizational unit is presented below.

3.1 THE CONTRACTOR FOR CONSTRUCTION WORKS

The person responsible for implementing the measures specified in the EMP on behalf of the Contractor for construction works was the Site Manager. According to the EMP requirements, in order to support the Site Manager in the EMP implementation, the Contractor’s Environmental Supervision team was appointed, composed of a person acting as the Coordinator for Environmental Management and experts in various disciplines. The duty of the Coordinator for Environmental Management was ongoing cooperation with other experts of the Contractor’s Environmental Supervision team, the Site Manager, the Contractor’s staff and with the Engineer’s Environmental Expert in the implementation of the EMP, as well as his own reporting. Moreover, according to item nos. 45 and 46 in the Appendix 1 to the EMP, the Contractor assured the archeological and sapper supervision according to the EMP requirements.

After each month of the construction works the Contractor’s Coordinator for Environmental Management prepared so-called Checklist to describe in details the current status of implementation of the EMP requirements in this month. The checklist was submitted to the Environmental Expert in the Engineer’s team as an Appendix to the Reports on the implementation of measures specified in the EMP together with other appendixes i.e. botanist’s note, zoologist’s note, herpetologist’s note and photographic documentation.

3.2 THE ENGINEER

Direct supervision over the EMP implementation on behalf of the Engineer’s team was carried out by the Key Environmental Expert in cooperation with the Engineer and other members of the Engineer’s team performing the investor supervision over the investment implementation. The Key Environmental Expert cooperated with supporting experts in the Engineer’s team and in addition, liaised with the Contractor’s Coordinator for Environmental Management to determine the scope of conditions to be met at each stage, to coordinate the EMP requirements implementation, to participate in current problems solving and monitor the construction site area. At the end of each reporting period (each month and each quarter), the Key Environmental Expert verified the Contractor’s environmental documentation, including the EMP measures implementation checklist and then prepared his own reports submitted to the Project Implementation Unit.
3.3 **PROJECT IMPLEMENTATION UNIT (PIU)**

Direct supervision over the EMP implementation on behalf of the Project Implementation Unit (PIU) was carried out by the Environmental Expert cooperating with PIU’s Manager, other PIU’s members and other organizational units of the Regional Water Management Authority in Rzeszów. The Environmental Expert and the PIU’s Manager liaised with the Key Environmental Expert in the Engineer’s team to supervise the EMP implementation and to participate in current problems solving. At the end of each reporting period (each month and each quarter) the Environmental Expert and the PIU’s Manager verified the Contractor’s and the Engineer’s environmental documentation and then forwarded it to the Project Coordination Unit.

3.4 **PROJECT COORDINATION UNIT (PCU)**

Direct supervision over the EMP implementation on behalf of the Project Coordination Unit (PCU) was carried out by the Environmental Expert in cooperation with other PCU’s members. The Environmental Expert liaised with the PIU’s Manager and with the Environmental Expert in the PIU team. He also cooperated with representatives of other organizational units i.e. the Key Environmental Expert in the Engineer’s team, the Site Manager, and the Coordinator for Environmental Management in the Contractor’s Environmental Supervision team. The Environmental Expert supervised the EMP implementation, was involved in current problems solving and participated in monitoring of construction site area. At the end of each reporting period (each month and each quarter), he verified the environmental documentation provided by the Project Implementation Unit and prepared the contents of the reports to be submitted to the World Bank.
4 REPORT ON IMPLEMENTATION OF MEASURES SPECIFIED IN THE EMP FOR CONTRACT 3B.3

4.1 STATUS OF IMPLEMENTATION OF MITIGATION MEASURES FROM APPENDIX 1 TO THE EMP (ITEMS 1-65)

According to the Appendix 1 to the EMP for the Contract 3B.3, the Designer, the Contractor and the Engineer are the Units responsible for the implementation of 65 mitigation measures described in items 1-65 in the Appendix 1 to the EMP. The Designer was responsible for the implementation of mitigation measures described in items 1-5 in the Appendix 1 to the EMP, the Contractor was responsible for the implementation of mitigation measures described in items 6-7, 9-65 in the Appendix 1 to the EMP and the Engineer of Regional Water Management Authority in Rzeszów was responsible for implementation of mitigation measure described in item 8 in the Appendix 1 to the EMP. In one case (mitigation measure in item 56 in the Appendix 1 to the EMP) PIU and the Consultant were indicated along the Contractor.

According to the Reports on the implementation of measures specified in the EMP submitted by the Contractor and information from the Engineer:

a) 55 (85%) mitigation measures have been implemented during the whole Contract realization including:
   • 50 (77%) fully implemented measures (items 2-3, 8-9, 11-24, 27-29, 31-34, 36-42, 45-52, 54-59, 61-64 in the Appendix 1 to the EMP);
   • 5 (8%) partially implemented mitigation measures (items 6-7, 10, 26, 30 in the Appendix 1 to the EMP).

b) 10 (15%) mitigation measures have not been implemented during the whole Contract realization including:
   • implementation of 7 (11%) measures was pointless due to the fact that the environmental conditions did not provide the opportunity to undertake these measures (items 25, 35, 43-44, 53, 60, 65 in the Appendix 1 to the EMP);
   • implementation of 3 (4%) measures was done at the Building Design stage (items 1, 4-5 in the Appendix 1 to the EMP).

Mitigation measures have been implemented by the Contractor assisted by the Contractor’s Environment Supervision Team.

During the whole Contract realization:

a) The Contractor: did not discover / did not discover significant / discover significant* defects in implementation of mitigation measures;

b) The Contractor’s Environment Supervision Team: did not discover / did not discover significant / discover significant* defects in implementation of mitigation measures;
c) The Engineer: did not / did not discover significant / discover significant* defects in implementation of mitigation measures;
d) PIU: the Contractor: not discovered / did not discover significant / discovered significant* defects in implementation of mitigation measures;
e) Did not occur / Occurred* the necessity to implement remedial measures.
Preventive measures were implemented.

- **Mitigation measures regarding protection of air quality**
  - During the construction works stage, i.e. from December 2016 till June 2018, a technical condition of the vehicles and the construction equipment was checked in order to identify any defects that might cause an increase the pollutions rate in the air;
  - Throughout the whole Contract realization (from December 2016 till June 2018) regular cleaning of the surface of technological lanes was carried out.
  - From April 2017 to September 2017, a regular sprinkling of the haul road’s surface was provided to prevent excessive dusting in the periods of persistent drought;
  - In September 2017, contamination of the asphalt roads in Sielec village was observed. It resulted from the activities not related to the Project, i.e. the agricultural machines operation. The contamination was removed in the same month;

- **Mitigation measures regarding protection of soil and ground**
  - Throughout the whole Contract realization, i.e. from December 2016 till June 2018, the area of conducted works was checked for possible soil contamination;
  - Throughout the whole Contract realization (from December 2016 till June 2018), access to sorbents intended for use in the event of an uncontrolled leakage of harmful substances, was provided in the site facilities.
  - From August to October 2017, small quantities of earth heaps along with topsoil were extracted as a result of the earthworks and stored on the site, partially on the riverside’s area. At the next stage of the construction it was used to raise the ground level;
  - In September 2017, a construction machine was damaged on the construction site within the riverside’s area. To prevent contamination of soil and the ground a vessel for hydraulic oil, as well as mats and sorbents, were provided. No soil contamination occurred. The construction machine was transported out to be repaired outside the embankments riverside’s area. From October 2017 to the end of the whole Contract realization, the technical condition of the vehicles and the construction equipment was inspected;

- **Mitigation measures regarding protection of surface water**
The waste (including PVC rolls) occurring on the embankment riverside’s area, at approx. km 10+970, nearby embankment crossing, from November 2017 to January 2018, was removed in February 2018;

The Contractor did not execute works in the direct vicinity of watercourses and did not interfere in riverbank areas;

**Mitigation measures regarding protection of groundwater**

- During the construction works, i.e. from December 2016 till June 2018, technical condition of the vehicles and the construction equipment, as well as construction site, was inspected in order to identify any hazardous substances leakage during either operation or parking;
- Throughout the whole Contract realization (from December 2016 till June 2018), access to sorbents intended for use in the event of an uncontrolled leakage of harmful substances was ensured in the site facilities.

**Mitigation measures regarding noise protection**

- During the whole Contract realization, the Contractor did not execute works which would require the use of motor pumps;
- Throughout the whole Contract realization, the Contractor respected the permissible time range of conducting works being a source of the noise emission i.e. between 6:00 am and 10:00 pm.

**Mitigation measures regarding protection of fauna and flora**

- From January 2017 to September 2017 the fence around the construction works area was installed;
- In August 2017 protection of surrounding greenery was provided. In September 2017 need to improve the tree protection at approx. km 12+300 was indicated. The tree protection was improved before construction of service road began;
- The topsoil removal was performed gradually from January 2017 to September 2017 under the environmental supervision, outside the wetlands. In addition, sowing of hummed sections of the embankment was carried out, as well as mechanical removal of weeds and lichens on the sown sections of the embankment.
- Due to the summer migration in July, August and September 2017 the amphibians were caught and relocated from the construction works area. In the following months (October – November 2017) the control of the amphibians activity was carried out along the possible migration routes, as well as around the natural habitats and the still water areas. From January to March 2018 due to the hibernation period, no amphibian relocation was performed. No mortality of the amphibians due to the construction equipment operation was observed. Works nearby the sites of amphibian activity and procreation in the
summertime, do not require herpetological fencing;

- In the period of the topsoil removal, regular inspection of the amphibians activity was carried out. Additionally, in October and November 2017 the excavations for the mobile flood protection system (approx. km 15+600 – 15+800) and for the embankment’s sluice (approx. km 12+860) were inspected for the presence of amphibians and small animals. After the completion of the mobile flood protection, no potential trap for animals occurred and no need for inspections was indicated. In December 2017 regular inspections for the presence of amphibians and small animals was carried out around the embankment’s sluice (approx. km 12+860 and 13+840) and in the excavations for anchoring the waterproof membrane. In January 2018 such a control was only carried out around deep excavations (around the sluices). Throughout the whole Contract realization, no animals stuck in the excavations. According to the provided information, in August and September 2017, as well as in February and March 2018 no deep excavations occurred as a result of the construction works and no other anthropogenic traps causing the risk for small animals were observed at the construction works area. In the following months, i.e. April and May 2018 transport of earth material and the construction works area was overseen for the presence of amphibians;

- In April 2018, on the paved road on the embankment riverside (extension of the embankment crossing) at approx. km 8+200 Common toads Bufo bufo stuck in the collapsed road surface were found. The action aimed to relocate the amphibians was undertaken;

- In October and November 2017 the fence around the excavation for the mobile flood protection system (approx. km 15+600 – 15+800) was installed to prevent from the presence of medium and large animals. Moreover, temporary ramps made of wooden boards were installed for the night time to let the animals stuck in the excavations get away. From November 2017 till the end of the whole Contract realization the activity of the animals (big mammals’ traces i.e. roe deer and deer) encountering no obstacles, was observed within the construction works area. Provision of intentional breaks in fencing allowed free migration of mammals.

- In January 2018 the amphibian hibernation pits were discovered during the topsoil removal from the embankment waterside’s ramp at approx. km 9+980 and during preliminary works of construction of service road on embankments’ landside at approx. km 15+200. The pits were fenced and marked with the information about the suspension of the earthworks. In February and March 2018 the earthworks were still suspended, the pits were fenced off, marked and the condition of the fencing was controlled. In April 2018 due to the end of the amphibian hibernation period, the fence and marks were removed and
earthworks were resumed;

- During the whole Contract realization, the construction works area was controlled for the presence of protected plant species and potential impact on natural habitats in the riverside’s area.

• **Mitigation measures regarding protection of cultural heritage**
  - From August to September 2017 the chapel located at approx. km 12+845 was under renovation. In September 2017 the necessity of maintaining the fencing around the chapel till the end of the construction works was indicated. From October 2017 to April 2018 the chapel was fenced off and protected from damage caused by vehicles used for the construction works;
  - From August to December 2017 Natura 2000 information sign was fenced off and protected from damage caused by vehicles used for the construction works. In January 2018 the fence was destroyed by unauthorized persons. In January and February 2018 the Contractor proceeded to complete the stolen fence and in March 2018 the information sign was fenced off with a warning tape. In the following months (April and May 2018) the Natura 2000 information sign at approx. km 12+845 was fenced off and protected from damage.

• **Mitigation measures regarding Site Facilities management**
  - In August 2017 the fencing along the construction works area from the embankment riverside was completed. From September 2017 due to thefts and devastations, some sections of the fencing were destroyed;
  - Throughout the whole Contract realization, the works were executed in accordance with site facilities design;
  - Throughout the whole Contract realization, the Site Facilities were properly maintained, were clean and marked in accordance with the EMP requirements.
4.2 STATUS OF IMPLEMENTATION OF MONITORING MEASURES FROM APPENDIX 2 TO THE EMP (ITEMS 1-65)

According to the Appendix 2 to the EMP for the Contract 3B.3 monitoring measures implemented under this Contract cover 65 items, however, the monitoring items 1, 4-5 in the Appendix 2 to the EMP were implemented in the previous reporting period.

During the whole Contract realization, the Engineer carried out monitoring of the implementation of mitigation measures described in the Appendix 1 to the EMP (chapter 4.1). Monitoring included: (i) verification of requirements described in the EMP for the current stage of the works; (ii) verification of the Contractor’s documents related to the implementation of the EMP requirements; (iii) ongoing checks on the construction site; (iv) ongoing consultations with the Contractor’s representatives.

Conclusions from monitoring of mitigation measures implementation:

a) During the whole Contract realization, the Contractor implemented 55 (85%) monitoring measures listed in the Appendix 2 to the EMP (items 2-3, 6-24, 26-34, 36-42, 45-52, 54-59, 61-64 in the Appendix 2 to the EMP) (chapter 4.1). There were no cases of irregularities or problems in monitoring measures implementation;

b) During the whole Contract realization, the Contractor did not carry out 10 (15%) monitoring measures described in the Appendix 2 to the EMP (chapter 4.1) as:

- implementation of 7 (11%) monitoring measures was pointless due to the fact that the environmental conditions did not provide the opportunity to undertake these measures (items 25, 35, 43-44, 53, 60, 65 in the Appendix 2 to the EMP);
- implementation of 3 (4%) monitoring measures was done at the Building Design stage (items 1, 4-5 in the Appendix 2 to the EMP).

The lack of implementation of the abovementioned measures does not constitute a deviation from the conditions set out in the EMP.

• Protection of air quality

- In September 2017 contamination of the asphalt roads in Sielec village was observed, at approx. km 8+250. At the same time attention was paid to keeping public roads clean, and in the following months (i.e. November and December 2017) reminded about the need to keep public roads clean, as far as technically possible (cleaning the vehicles leaving the construction site) and the opportunity allowed by weather conditions (precipitation, soil moisture etc.).
- From November 2017 to March 2018 no violation of the EMP requirements related to the protection of air quality was observed. In April 2018 excessive
dusting from the roads surface, mainly dirt roads, was observed during the vehicle traffic, due to little precipitation, low humidity, and high temperatures. The Contractor took action to limit the dusting, mainly by a regular sprinkling of the haul road’s surface in the dry periods and using tilts on trucks transporting loose materials. In May 2018, the necessity of taking effective actions to limit the dusting to the end of the construction works stage was indicated.

- Protection of soil and ground
  - In September 2017, the topsoil heaps left on the embankment riverside’s area at approx. km 12+800, were observed. The obligation of removing the topsoil and deposing it in the designed area out of the riverside’s area was indicated. The topsoil disposal resulted from the construction works technology and the weather conditions that impeded removing it from the embankment riverside’s area. From October 2017 to March 2018 some topsoil heaps on the riverside’s area, were observed. Topsoil heaps were kept within the construction works area and did not pose a threat to the quality of earth and soil within the embankment riverside’s area. The topsoil was removed and used to cover the embankment slopes after the construction works;
  - During the whole Contract realization, technical condition of the construction equipment was inspected in order to identify, among other, any cases of hazardous substances leakage as well as, ground and soil contamination. In September 2017 a construction machine was damaged on the riverside’s area within construction works area. To prevent contamination of soil and the ground a vessel for hydraulic oil as well as mats and sorbents were provided. No soil contamination occurred. The construction machine was transported out to be repaired outside the embankments riverside’s area;
  - In February 2018, a little leakage of oil derivatives from the vehicle (road roller) left on the embankment landside in the vicinity of the site facilities, at approx. km 7+600 was observed. In March 2018 another little leakage of oil derivatives on the embankment crossing at approx. km 12+866 was observed. In both cases, reminded of the need to take all necessary measures to reduce the risk of ground contamination, including the control of the technical condition of vehicles and construction machinery, and the elimination of the effects of leakage of harmful substances;
  - From November 2017 to January 2018 cases of leaving for a long time (at least a few weeks) within riverside’s area (riparian vegetation), a construction waste in the form of used waterproof membrane PVC rolls, waste 17 02 03 (accumulation of waste at approx. km 10+970 in the vicinity of the embankment crossing and single waste in several other places) were observed. Some single waste including PVC rolls, empty oil containers (hazardous waste
15 01 10*) was also observed within riverside’s area. Therefore, follow the EMP requirements, there was necessity of removing wastes (in particular, their large accumulations and any waste qualified as hazardous waste) from the riverside’s area to site facilities area or another place with a paved surface, adopted for temporary storage of waste. In April 2018 some solid wastes left within the construction area were still present. At the same time, some actions aimed to remove the waste, undertaken by the Contractor were observed. Due to approaching a deadline for completion of the construction works, the Contractor was reminded of the need to final clean the construction site area from all type of waste;

- In June 2018 there was non-compliance with the conditions for carrying out construction works specified in the EMP (item 6 and item 30) and in the Environmental Decision (item II.9 and item II.11), as land (several dozen meters outside the construction site) was occupied by the construction equipment and significantly modified within the riverside’s area, at approx. km 13+300 - 13+400. Therefore, the Contractor was requested to immediately adapt the construction works to the relevant provisions of the EMP and the Environmental Decision, by permanently removing heavy construction equipment from the riverside’s area beyond the construction site boundary, removing the accumulated earth heaps and restoring the land to the original condition through appropriate reclamation.

- **Protection of surface water and groundwater**
  - During the whole Contract realization, the construction works in the area of watercourses were inspected, as well as regular inspections of the construction site area were carried out for leakage of oil derivatives during the equipment operation. In October 2017, in accordance with the provisions of the EMP, it was pointed out necessary to comply with the prohibition of refueling and repairs of equipment at the construction site area, especially within the riverside’s area;
  - During the whole contract realization, no surface water or groundwater contamination was observed.

- **Noise protection**
  - Throughout the whole Contract realization, no acoustic pollution emissions were exceeded, work was carried out outside the night period, and the impact of ongoing works on the acoustic climate was monitored;
  - Throughout the whole Contract realization, no threats to the acoustic climate from the work carried out were recorded.

- **Protection of fauna and flora**
  - During the whole Contract realization, natural environment in the vicinity of
the construction works was monitored on an ongoing basis;

- The construction works were conducted outside the protected natural habitats of plants, no greenery damage nor wildlife mortality were caused, the works in the vicinity of natural habitats, excavation, and still water areas were controlled. No threats for the natural environment was observed;

- In August 2017, need to improve the tree protection and implementation of all measures to protect the greenery, according to the item 14 in the Appendix 1 and the Appendix 2 to the EMP was recommended. In September 2017 need to improve the tree protection at approx. km 12+300 was indicated. The tree protection was improved before construction of service road began. In October 2017 it was established, that neither on the construction site nor access roads there were places, where trees would be exposed to the risk of damage as a result of ongoing construction works (the works in places where such a risk was present were previously completed) therefore, no trees protection (timber planks or mats) was necessary. In November 2017 the site control revealed mechanical damage on some trees (trunks and roots) in the vicinity of the site used for earthworks on the riverside’s area (approx. km 11+500 – 11+900), caused probably by the heavy equipment operation. It was recommended to use a horticultural ointment accelerating the process of natural regeneration of plant tissues and protecting against fungal and bacterial infections, in cases of mechanical damage to tree trunks or branches;

- In October 2017 the necessity of removing some little amounts of topsoil being accidentally spread outside the construction works area, that could disturb natural habitats within riverside’s area (approx. km 10+000 and km 11+000) was indicated, and it was recommended to take any possible preventive actions in the future. In November 2017 some actions taken by the Contractor aimed to clean the site at approx. km 11+000 were observed. At the same time, the necessity of removing the topsoil at approx. km 10+000 was reminded again;

- In November 2017, topsoil stored around the trees at approx. km 11+500 – 11+900 as well as, on construction site for the mobile flood protection system at approx. km 15+800, causing the risk of damage to tree trunks or root system under pressure, was observed. Therefore, follow the EMP requirements, there was indicated that all construction works, especially with the use of heavy equipment, should be carried out with no risk to trees damage (both directly i.e. mechanical damage, or by weakening the root system under the pressure of earth heaps stored in its surroundings). It was recommended to take any possible actions to eliminate the risk of trees damage, by appropriate land preparation, organization and carrying out works with the use of heavy equipment, as well as by removing earth heaps lying around the tree trunks. In December 2017 the Contractor took action to limit the risk of the trees damage
during works with use of heavy equipment, within the construction site area and in its close vicinity (proper arrangement of the topsoil heaps, temporarily storage on the border of the construction site, and if possible provision of zones free of heaps around the trees), especially within the stretch - km 11+492 – 11+962 and km 15+700 – 15+800 (construction site for the mobile flood protection). Moreover, the obligation of carrying the construction works with the use of heavy equipment with no risk of trees damage was reminded. It was recommended to take any possible actions to eliminate the risk of trees damage, by appropriate land preparation, organization and carrying out works with the use of heavy equipment, as well as by removing earth heaps lying around the tree trunks. In February and March 2018 some topsoil heaps around the trees at approx. km 9+980 was observed;

- In April 2018 amphibians and reptiles were observed in some locations in the surroundings of the construction works area. In May 2018 amphibians were observed and heard in the vicinity of the construction works area. Despite of that, no amphibians or any animals mortality as a result of the vehicle or construction equipment operation was observed. No necessity to apply protections in form of herpetological fence was indicated. Completion of the construction works with use on heavy equipment, in the amphibians migration areas, was confirmed. No anthropogenic traps posing a threat to animals were found.

- **Protection of cultural heritage and monuments**
  - In September 2017 the necessity of maintaining the fencing (mesh) around the chapel till the end of the construction works was indicated. In the following months, till the end of April 2018, this recommendation was upheld. Throughout the whole Contract realization, the status of the chapel was monitored;
  - In January 2018 restoration of the Natura 2000 information sign fencing in km 12+850 damaged by some bystanders was recommended. The fencing was restored in March 2018. Throughout the whole Contract realization, the status of the information sign was monitored.

- **Site Facilities management**
  - In September and October 2017 it was pointed out the need to supplement the missing fencing of the construction site and its maintenance, especially within ongoing works sections, e.g. approx. km 10+500 – 11+500. In the following months this recommendation was upheld;
  - In April and May 2018, due to approaching a deadline for completion of the construction works, the Contactor was reminded of the need for removal and reclamation of the Site Facilities area.
4.3 PROBLEMS CONCERNING IMPLEMENTATION OF MITIGATION MEASURES

According to the information provided by the Contractor and information of the Engineer and the Employer:

a) in case of 55 mitigation measures implemented during the whole Contract realization, no problems were found in their implementation (items 1-5, 7-9, 11-13, 15-17, 19-25, 27-29, 31-41, 43-49, 51-59, 62-65 in the Appendix 1 to the EMP).

b) in case of 10 mitigation measures implemented during the Contract realization (item 6, 10, 14, 18, 26, 30, 42, 50, 60, 61 in the Appendix 1 to the EMP), the following problems were found in their implementation:

• in case of mitigation measure from Item 6 in the Appendix 1 to the EMP [protection of land surface and landscape, minimization of time activities / the whole section of the reconstructed embankment];

Failure to comply with the conditions for conduction the construction works were identified in June 2018, as land occupancy was extended for several dozen meters outside the construction site and its area was significantly modified within the riverside’s area, at approx. km 13+300 - 13+400 of modernized embankment. Therefore, the Contractor was requested to immediately adapt the construction works to the relevant provisions of the EMP and the Environmental Decision, by permanently removing heavy construction equipment from the riverside’s area beyond the construction site boundary, removing the accumulated earth heaps and restoring the land to the original condition through appropriate reclamation.

• in case of mitigation measure from Item 10 in the Appendix 1 to the EMP [illegal or excessive land occupancy that could cause damage to archaeological or natural resources]:

The fencing area was set before the construction works began within the sections where the works were carried out. Any losses resulting from theft of the mesh were immediately replaced. In September, October and December 2017, as well as in January, February, March and April 2018, it was pointed out the need to supplement the missing fencing of the construction site and its maintenance, especially within the sections of works.

• in case of mitigation measure from Item 14 in the Appendix 1 to the EMP [trees protection/ the whole section of the reconstructed embankment in the places where trees and shrubs occur]:

In September 2017, it was found necessary to improve the tree fence at approx. km 12+300. It was pointed out that in these places the tree fence would be done before the commencement of construction works related to the construction of service road. In November, however, several cases of mechanical damage to tree trunks or root systems of trees growing in the immediate vicinity of the site used for earthworks on the embankment riverside’s area were indicated, which were probably caused by heavy equipment
operation. The presence of topsoil heaps stored around tree trunks that posed a risk of damage to tree trunks or root systems under pressure was also found. Indirectly this was due to the insufficient width of the site intended for earthworks, and thus the inability to work construction machines completely out of the reach of root systems, branches and trunks of some trees. The reason for the damage to root systems was also the need to perform earthworks within their range, in order to anchor the layers of the waterproofing membrane. In connection to the above, in subsequent months, i.e. in December and January, it was recommended to use a horticultural ointment accelerating the process of natural regeneration of plant tissues and protecting against fungal and bacterial infections, in cases of mechanical damage to tree trunks or branches.

- in case of mitigation measure **Item 18** in the Appendix 1 to the EMP
  [protection of the Natura 2000 information sign]:
  Works were carried out in the vicinity of Natura 2000 information sign no. 3 at km 12+845. The area around the sign was fenced off. In January 2018 the fence was destroyed by unauthorized persons, therefore the area was not secured. The Contractor proceeded to complete the damaged fence.

- in case of mitigation measure **Item 26** in the Appendix 1 to the EMP
  [protection of land surface and landscape/habitats protection/whole section of the reconstructed embankment]
  In September 2017, the presence of stockpiled topsoil was found in the embankment riverside’s area at approx. km 12 + 800. This resulted from the technology of the conducted works and the existing weather conditions that prevented the direct export of topsoil outside the embankment riverside’s area. In May and June 2018, despite the completion of works in previous months, corrections were made to the embankment’s slope grade at the section km 12+300 - 13+800. This operation required the removal of the topsoil within the aforementioned section.

- in case of mitigation measure **Item 30** in the Appendix 1 to the EMP
  [protection of surface water / the embankment riverside’s area and sections of the embankment where there are water reservoirs or ditches and wetlands]:
  In the period from November 2017 to January 2018, several cases of leaving single construction wastes, as well as their accumulations (PVC rollers) were found in places not intended for this purpose in the embankment’s riverside’s area.

- in case of mitigation measure **Item 42** in the Appendix 1 to the EMP
  [protection against noise / existing roads at sections of the embankment, of which the Contractor will use]:
  In September 2017 contamination of asphalt roads in Sielec village was observed, due to the roads being used also by agricultural machines not related to works under the Investment. The contamination has been removed.

- in case of mitigation measure **Item 50** in the Appendix 1 to the EMP
[protection of soil, surface waters and air / the whole section of the embankment being reconstructed]:
In February and March 2018, single cases of slight leakages of oil derivatives were observed in the area of construction works of the embankment crossing. The Contractor undertook actions that resulted in removing the pollution.

- in case of mitigation measure **Item 60** in the Appendix 1 to the EMP
  [protection of flora / entire section of the reconstructed embankment from the embankment’s waterside]:
  To determine the current location of protected habitats, especially the natural habitat no. 6510, as well as restoration of meadow wall on the embankment slopes, where the natural habitat no. 6510 reaches the embankment slope, could not be accomplished. There was no confirmation of natural habitat no. 6510 reaching the embankment slope after the botanical inventory (Botanical Note - June 2017).

- in case of mitigation measure **Item 61** in the Appendix 1 to the EMP
  [protection of land surface and landscape / entire work area]:
  The maintenance of green areas through mowing and manual removal of hard lichens was carried out on hummed and sown sections of the embankment. In some months (i.e. October 2017 - April 2018) no maintenance works were carried out due to soil moisture.
4.4 PHOTOGRAPHIC DOCUMENTATION


Photograph 2. Works at mobile flood protection system at approx. km 15+750 (November 2017).
Contract 3B.3: Flood protection Tarnobrzeg – stage 1 (Wisła 1)

Target: “Vistula River – stage 1 – extension of the right bank of Vistula River at km 5+950 – 15+819 on the stretch from Tarnobrzeg (Skalna Góra) to Koćmierzowa (border of Podkarpackie and Świętokrzyskie Provinces)”

Photograph 3. Tree protection in vicinity of the embankment at approx. km 7+650 (December 2017)

Photograph 4. Foundation under mobile flood protection system at approx. km 15+700 (January 2018).

Contract 3B.3: Flood protection Tarnobrzeg – stage 1 (Wisła 1)

Target: “Vistula River – stage 1 – extension of the right bank of Vistula River at km 5+950 – 15+819 on the stretch from Tarnobrzeg (Skalna Góra) to Koćmierzowa (border of Podkarpackie and Świętokrzyskie Provinces)”

Photograph 5. Fenced off chapel in the vicinity of modernized embankment at approx. km 12+850 (February 2018).

Photograph 6. Fenced off Natura 2000 information sign at approx. km 12+850 (November 2017).
Contract 3B.3: Flood protection Tarnobrzeg – stage 1 (Wisła 1)

Target: “Vistula River – stage 1 – extension of the right bank of Vistula River at km 5+950 – 15+819 on the stretch from Tarnobrzeg (Skalna Góra) to Koćmierzowa (border of Podkarpackie and Świętokrzyskie Provinces)”

Photograph 7. Forming of the embankment’s body at approx. km 12+900 (January 2018).

Photograph 8. Protection and signage of amphibian’s wintering place at approx. km 15+200 (February 2018).
Contract 3B.3: Flood protection Tarnobrzeg – stage 1 (Wisła 1)

Target: “Vistula River – stage 1 – extension of the right bank of Vistula River at km 5+950 – 15+819 on the stretch from Tarnobrzeg (Skalna Góra) to Koćmierzowa (border of Podkarpackie and Świętokrzyskie Provinces)”

Photograph 9. Formed embankment’s waterside slope at approx. km 13+000 (December 2017).

Photograph 10. Metal mesh fence on the riverside’s area at approx. km 13+840 (December 2017).
Contract 3B.3: Flood protection Tarnobrzeg – stage 1 (Wisła 1)

Target: “Vistula River – stage 1 – extension of the right bank of Vistula River at km 5+950 – 15+819 on the stretch from Tarnobrzeg (Skalna Góra) to Koćmierzowa (border of Podkarpackie and Świętokrzyskie Provinces)”

Photograph 11. Transport of loose materials at approx. km 11+450 (February 2018).

Photograph 12. Formed embankment’s landside slop at approx. km 8+250 (March 2018).
Contract 3B.3: Flood protection Tarnobrzeg – stage 1 (Wisła 1)

Target: “Vistula River – stage 1 – extension of the right bank of Vistula River at km 5+950 – 15+819 on the stretch from Tarnobrzeg (Skalna Góra) to Koćmierzowa (border of Podkarpackie and Świętokrzyskie Provinces)”

Photograph 13. Formed embankment’s waterside slop at approx. km 9+550 (March 2018).

Photograph 14. Formed embankment crossing’s slope at approx. km 10+960 (March 2018).
Contract 3B.3: Flood protection Tarnobrzeg – stage 1 (Wisła 1)

Target: “Vistula River – stage 1 – extension of the right bank of Vistula River at km 5+950 – 15+819 on the stretch from Tarnobrzeg (Skalna Góra) to Koćmierzowa (border of Podkarpackie and Świętokrzyskie Provinces)”

Photograph 15. Embankment’s waterside slope after sowing and embankment crossing at approx. km 8+250 (April 2018).

Photograph 16. Embankment’s landside slope and technological lane at approx. km 9+550 (April 2018).

Contract 3B.3: Flood protection Tarnobrzeg – stage 1 (Wisła 1)

Target: “Vistula River – stage 1 – extension of the right bank of Vistula River at km 5+950 – 15+819 on the stretch from Tarnobrzeg (Skalna Góra) to Koćmierzowa (border of Podkarpackie and Świętokrzyskie Provinces)”

Photograph 17. Embankment’s waterside slope at approx. km 10+950 (April 2018).

Photograph 18. Embankment crossing on the embankment’s waterside at approx. km 10+960 (April 2018).

Contract 3B.3: Flood protection Tarnobrzeg – stage 1 (Wisła 1)

Target: “Vistula River – stage 1 – extension of the right bank of Vistula River at km 5+950 – 15+819 on the stretch from Tarnobrzeg (Skalna Góra) to Koćmierzowa (border of Podkarpackie and Świetokrzyskie Provinces)”

Photograph 19. Forming of the embankment crossing at approx. km 12+860 (April 2018).

Photograph 20. Embankment crossing during reconstruction at approx. km 14+270 (April 2018).
Contract 3B.3: Flood protection Tarnobrzeg – stage 1 (Wisła 1)

Target: “Vistula River – stage 1 – extension of the right bank of Vistula River at km 5+950 – 15+819 on the stretch from Tarnobrzeg (Skalna Góra) to Koćmierzowa (border of Podkarpackie and Świetokrzyskie Provinces)”

Photograph 21. Forming of the embankment crossing slop at approx. ok. km 9+980 (May 2018).

Photograph 22. Asphalt technological lane on the embankment’s landside at approx. km 7+550 (May 2018)
Contract 3B.3: Flood protection Tarnobrzeg – stage 1 (Wisła 1)

Target: “Vistula River – stage 1 – extension of the right bank of Vistula River at km 5+950 – 15+819 on the stretch from Tarnobrzeg (Skalna Góra) to Koćmierzowa (border of Podkarpackie and Świętokrzyskie Provinces)”

Photograph 23. Embankment’s landside slope and part of embankment crossing at approx. ok. km 7+650 (May 2018).

Photograph 24. Embankment crossing on the embankment’s landside at approx. km 8+220 (May 2018).

Contract 3B.3: Flood protection Tarnobrzeg – stage 1 (Wisła 1)

Target: “Vistula River – stage 1 – extension of the right bank of Vistula River at km 5+950 – 15+819 on the stretch from Tarnobrzeg (Skalna Góra) to Koćmierzowa (border of Podkarpackie and Świętokrzyskie Provinces)”

Photograph 25. Embankment’s landside slope and part of embankment crossing at approx. km 8+700 (May 2018).

Photograph 26. Part of the embankment’s crest and embankment’s waterside slope at approx. km 9+500 (May 2018).
Contract 3B.3: Flood protection Tarnobrzeg – stage 1 (Wisła 1)

Target: “Vistula River – stage 1 – extension of the right bank of Vistula River at km 5+950 – 15+819 on the stretch from Tarnobrzeg (Skalna Góra) to Koćmierzowa (border of Podkarpackie and Świętokrzyskie Provinces)"

Photograph 27. Foot of embankment’s waterside slope after sowing at approx. km 9+600 (May 2018).

Photograph 28. Embankment’s crest after modernization at approx. km 7+500 (May 2018).
Contract 3B.3: Flood protection Tarnobrzeg – stage 1 (Wisła 1)

Target: “Vistula River – stage 1 – extension of the right bank of Vistula River at km 5+950 – 15+819 on the stretch from Tarnobrzeg (Skalna Góra) to Koćmierzowa (border of Podkarpackie and Świętokrzyskie Provinces)”

Photograph 29. Embankment’s waterside slope and part of embankment’s crest at approx. km 11+950 (May 2018).

Photograph 30. Embankment’s landside slope and part of embankment’s crest at approx. km 12+900 (May 2018).

Contract 3B.3: Flood protection Tarnobrzeg – stage 1 (Wisła 1)

Target: “Vistula River – stage 1 – extension of the right bank of Vistula River at km 5+950 – 15+819 on the stretch from Tarnobrzeg (Skalna Góra) to Koćmierzowa (border of Podkarpackie and Świętokrzyskie Provinces)”

Photograph 31. Embankment crossing after completion of construction works at approx. km 9+980 (May 2018).

Photograph 32. Embankment crossing after completion of construction works at approx. km 10+960 (May 2018).

Contract 3B.3: Flood protection Tarnobrzeg – stage 1 (Wisła 1)

Target: “Vistula River – stage 1 – extension of the right bank of Vistula River at km 5+950 – 15+819 on the stretch from Tarnobrzeg (Skalna Góra) to Koćmierzowa (border of Podkarpackie and Świętokrzyskie Provinces)”

Photograph 33. Embankment crossing and part of technological lane at approx. km 12+000 (May 2018).

Photograph 34. Embankment crossing after completion of construction works at approx. km 12+330 (May 2018).

Contract 3B.3: Flood protection Tarnobrzeg – stage 1 (Wisła 1)

Target: “Vistula River – stage 1 – extension of the right bank of Vistula River at km 5+950 – 15+819 on the stretch from Tarnobrzeg (Skalna Góra) to Koćmierzowa (border of Podkarpackie and Świętokrzyskie Provinces)”

Photograph 35. Part of embankment’s crest after completion of construction works at approx. km 8+300 (May 2018).

Photograph 36. Part of embankment’s crest after completion of construction works at approx. km 8+700 (May 2018).

4.5 SUMMARY

According to information in chapters 4.1 – 4.2, during the whole Contract realization:

1. **In terms of mitigation measures:**
   *(specified in items 1-65 in the Appendix 1 to the EMP for the Contract 3B.3):*
   
   a) During the entire stage of construction works, the Contractor was implementing 55 of the 65 mitigating measures described in the EMP, 50 of which were fully implemented, 5 measures were implemented partially;
   
   b) The Contractor was not implementing 10 out of 65 mitigating measures - the implementation of 7 was pointless due to the fact that the environmental conditions did not provide the opportunity to undertake these activities, while 3 measures were implemented at the Building Design stage (implemented by the Designer).

The lack of implementation of the abovementioned measures does not constitute a deviation from the conditions set out in the EMP.

2. **In terms of monitoring measures:**
   *(specified in items 1-65 in the Appendix 2 to the EMP for the Contract 3B.3):*
   
   a) The Engineer was conducting activities related to monitoring of the implementation of mitigation measures set out in the Appendix 2 to the EMP, including supervising the implementation of monitoring measures assigned to the Contractor. During the whole Contract realization, 55 monitoring measures were implemented totally or partially;
   
   b) The implementation of 7 measures did not concern the Investment - environmental conditions did not provide the opportunity to undertake these measures, while the implementation of 3 monitoring measure was finally carried out at the Building Design stage.

These activities were carried out in accordance with the conditions set out in the EMP.
The table below presents a quantitative summary of the implementation of measures listed in the Appendix 1 and the Appendix 2 to the Environmental Management Plan (EMP) for the Contract 3B.3.

<table>
<thead>
<tr>
<th>Category</th>
<th>Mitigation measures (items 1-65 in the Appendix 1 to the EMP)</th>
<th>Monitoring measures (items 1-65 in the Appendix 2 to the EMP)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N Item no.</td>
<td>N Item no.</td>
</tr>
<tr>
<td>Entirely implemented measures at the stage of construction works</td>
<td>50 Item: 2-3, 8-9, 11-24, 27-29, 31-34, 36-42, 45-52, 54-59, 61-64</td>
<td>50 Item: 2-3, 8-9, 11-24, 27-29, 31-34, 36-42, 45-52, 54-59, 61-64</td>
</tr>
<tr>
<td>Partially implemented measures at the stage of construction works</td>
<td>5 Item: 6-7, 10, 26, 30</td>
<td>5 Item: 6-7, 10, 26, 30</td>
</tr>
<tr>
<td>Measures not related to the investment covered by the scope of the report</td>
<td>7 Item: 25, 35, 43-44, 53, 60, 65</td>
<td>7 Item: 25, 35, 43-44, 53, 60, 65</td>
</tr>
<tr>
<td>Measures implemented at the Construction Project stage</td>
<td>3 Item: 1, 4-5</td>
<td>3 Item: 1, 4-5</td>
</tr>
</tbody>
</table>