

[LETTERHEAD]

REGIONAL DIRECTOR FOR THE ENVIRONMENT PROTECTION IN RZESZÓW  
Al. J. Piłsudskiego 36  
35-001 Rzeszów

Rzeszów, 02.01.2017

REF. NO. WOOŚ.4233.2.2015.KR.76

### DECISION

Acting on the basis of:

- Article 104 of the Act of June 14<sup>th</sup> 1960 Code of Administrative Procedure (Journal of Laws of 2016, Item 23 as amended);
- Article 71 Clause 2 Point 1, Article 73 Clause 1, Article 75 Clause 1 Point 1 Letter i, Article 80, Article 82, Article 85 Clause 2 Point 1 of the Act of October 3<sup>rd</sup> 2008 on sharing information about the environment and its protection, public participation in environment protection and environmental impact assessments (Journal of Laws of 2016, Item 353 as amended);

after examining the Application

of Marshal of the Podkarpackie Province, dated July 28<sup>th</sup> 2015, Ref. no.: IM.403.61.7.2015 on behalf of whom acts Mrs. Małgorzata Wajda, the Director of Podkarpacki Board of Amelioration and Hydraulic Structures in Rzeszów, ul. Hetmańska 9, 35-959 Rzeszów, regarding the issue of a decision on environmental conditions for the implementation of the Project: *San III – extension of the left bank of San River at km 0+000 – 4+445, Gorzyce Commune, Podkarpackie Province*

and the following documents:

1. Report on Environmental Impact of the Project – prepared by: Agencja Technik Ekologicznych i Realizacji Inwestycji mkm PERFEKT Sp. z o.o. 30-363 Kraków ul. Rzemieśnicza 1, Mrs. Aleksandra Papin (MSc), Mrs. Daria Drober (Mc), Mrs. Magdalena Perdyła (MSc), Mrs. Magdalena Struk (MSc), Mrs. Ewa Michalska (MSc Eng.), Mrs. Joanna Karda (MSc), Mr. Waław Nalepa (MSc Eng.) January 2016;
2. Supplement to the Report on Environmental Impact of the Project – prepared by: Agencja Technik Ekologicznych i Realizacji Inwestycji mkm PERFEKT Sp. z o.o. 30-363 Kraków ul. Rzemieśnicza 1, Mrs. Aleksandra Papin (MSc), Mrs. Magdalena Struk (MSc), Mrs. Ewa Michalska (MSc Eng.), Mrs. Joanna Karda (MSc), June 2016;
3. Situation and altitude map in the scale enabling detailed presentation of the boundaries of the area which the Application concerns, and the area it covers, which the Project will affect;
4. Drawing showing the range of Project's impact;
5. Information from the Land Register, based on EGIB (Registry of Land and Buildings);

I hereby adjudicate

I describe the environmental conditions for the Project: San III – extension of the left bank of San River at km 0+000 – 4+445, Gorzyce Commune, Podkarpackie Province, Option 1.  
The Investor: the Marshal of Podkarpackie Province, al. Łukasza Cieplińskiego 4, 35-010 Rzeszów.

### **I. Type of the Project and the location of its implementation:**

The Project covers extension of the left bank of the San River at km 0+000 – 4+445, within the boundaries of Gorzyce Commune, including connection to the San River bank within the boundaries of Zaleszany Commune.

The Project covers a section of the embankment connected to the Vistula River, as well as continued bank of the San River.

The proposed Project includes the necessary elevation of embankment crest to meet technical conditions for hydraulic structures; average increase of the embankment height will be approx. 0.80 m.

### **II. Conditions for the use of land during the phase of implementation, operation and use of the subject of the Project, with particular emphasis on the necessity to protect valuable natural resources and monuments, and to reduce the nuisance for the neighboring areas:**

- 1) There will be no excavation of heap soils from the riverside's area.
- 2) It is not allowed to interfere with the riverbed of San River, its riverside vegetation, water reservoirs, natural watercourses and ditches.
- 3) Permanent occupation of the land for the Project and occupation during the construction work stage is acceptable in the area of:
  - a) approx. 20 – 30 m from the axis of the existing embankment towards the side beyond the embankment, and approx. 4 – 5 m from the foot of the embankment towards the river side's area – for a green road (section of the embankment at approx. km 0+000 – 2+960),
  - b) approx. 20 – 30 m from the axis of the existing embankment towards the side beyond the embankment (section of the embankment at approx. km 3+440 – 4+445),
  - c) approx. 4 – 5 m from existing foot of the embankment towards the river side's area – for the landscaped strip (section of the embankment at approx. km 2+960 – 3+130 and km 3+210 – 3+440),and near the embankments crossing the occupation is bigger.  
Construction of proposed technological route, for occupation of the land during the construction works, and it is identical with the strip allocated to the extension of the embankment.
- 4) Prior to the commencement of works a layer of topsoil will be removed, approx. 20 – 30 cm thick, which then will be stored in piles on the side beyond the embankment and re-used for the site reinstatement.
- 5) Removal of the topsoil will take place in a period excluding from March 1<sup>st</sup> to July 31<sup>st</sup>, and in the wetland areas, where the environment supervision will identify presence of amphibians, the works will be carried out in a period from August 1<sup>st</sup> to October 15<sup>th</sup>. If for technical reasons the works will have to be carried out (partially or totally) in other periods of time, they will be supervised by environmental inspectors.
- 6) The site facilities, yards for construction machines and vehicles, technological roads will be located on the side beyond the embankment. Construction of technological roads will be located in the area allocated to the embankment's extension. It is not allowed to store waste, heap of earth, locate storage for building materials in the riverside area, and within the natural habitat indicated by the environmental supervision on the side beyond the embankment.
- 7) Routing for the transport of materials will occur on existing roads or on designated temporary roads, allocated on the basis of reduced impact on the natural habitat indicated by the environmental supervision.
- 8) Felling will be limited to trees and shrubs growing on foot, slopes and crest of the embankment allocated for the extension, and in a strip required for the Project, i.e. to approx. 150 trees and approx. 0.5 ha of shrubs. Felling will take place from October 16<sup>th</sup> to the end of February. Prior to the trees felling they will be checked for presence of bats (e.g. in tree hollows or under tree bark).

- 9) Trees which are located close to the embankment and are not identified for felling, will be appropriately protected:
  - a) near the trunk of a tree, within the outline of the crown and at a distance of 2 m from this outline, there will be no storage of building materials, soil or waste,
  - b) individual trees, shrubs or their stands, will be fenced off (preferably along the outline of the tree crown). If fencing is not possible, then the trunks will be protected with timber boards, straw mats, etc. Protection will be made without the use of nails. Bottom end of the board will be resting on the ground, not on roots, will be covered with soil or additionally protected with a wire,
  - c) all works within the root systems will be executed manually,
  - d) uncovered root systems will not be left without protection against drying out (or winterkill) for longer periods of time,
  - e) in case of deep excavations, special screens will be provided for protection of root system, with biologically active base which will allow quicker reconstruction of the root systems,
  - f) temporary roads should be set outside of the outline of tree crowns and root systems; if the roads have to be set out within the outline of the crown or roots of a tree, the road will be built applying a base of coarse gravel or other similar material.
- 10) Habitats indicated in Appendix I of the Council Directive 92/43/EEC of May 21<sup>st</sup> 1992 on protection of natural habitat and wild flora and fauna (named afterwards: Habitats Directive), with code nos 6440, 6510 and 91E0, as well as other valuable natural habitats or habitats of species indicated by the environmental supervision, in the vicinity of which the construction works will take place, will be adequately protected by e.g. tape fencing.
- 11) The ruts and dips occurring on the construction site during execution works, where accumulation of water is possible, should be immediately removed in order to prevent squawking and colonizing aforementioned locations by amphibians. Amphibian habitats which will develop on the site, i.e. deep excavations with stagnant water and deep ruts, prior to backfill will be inspected for presence of amphibians. If presence of the amphibians is observed, the water will be drained. After water level is reduced (water is pumped out) the place should be inspected and all the amphibians caught under herpetological supervision. The animals should be transferred to a habitat suitable for the specific species. Backfill of drained excavations, ruts, should take place directly after removal of the animals, at the presence of the herpetologist.
- 12) Excavations and structures which can pose a trap for small animals, mainly amphibians, will be adequately secured (e.g. with a sealed cover immediately after completion of days' work). In addition, these places will be inspected on daily basis and if any animals are trapped there, they will be removed and transferred to another suitable habitat outside of the construction area.
- 13) In section of the embankment approx. at km 3+440 – 4+445 protection against animals digging barrows will be provided in a form of special nets. Net parameter will be specified by the environmental supervision.
- 14) After completion of the works the embankment will be re-covered with a layer of humus, and the ground will be sown with a mix of native plants and grass, in a way which will limit surface erosion to a minimum, and access of slurry forming fraction into the water.
- 15) During embankment's maintenance works, within five years after completion of works, the Project's area should be checked for the presence of invasive plant species. If the embankment's maintenance works (e.g. mowing) will not be sufficient for removal of these plants, after the botanist's consultation, other actions should be taken to their effective removal.
- 16) Places of storage of loose materials should be protected against material's blowing away or washing away (e.g. by using tilts).

- 17) Servicing, maintenance, refueling of equipment will take place outside of the Project's area.
- 18) The risk of contamination of water with vehicle and plant generated liquids will be limited by ongoing regular inspections of technical condition of equipment and provision of e.g. sorbents enabling neutralization of leaks on the construction site.
- 19) Site facilities will be provided with portable toilets, and ensuring for disposal of sewage by a company authorized to provide this type of service.
- 20) Access to the site facilities and to the construction site will take place on existing roads, and if contraction of temporary roads will become necessary, they should be made of reinforced concrete slabs. On completion of works, temporary roads will be dismantled, area cleared and reinstated for use. The existing roads which will be used by the constructions equipment will be renovated, if necessary.
- 21) Water for the site facilities and, if required, for spraying exposed ground surface during periods of dry and windy weather, will be delivered by bowsers. .
- 22) One should aim at minimizing impact of the Project implementation on the environment by e.g. applying organizational solution, including:
  - a) elimination of idling of combustion engines of machines and transport vehicles during stoppage and work breaks, etc.,
  - b) spraying of surface exposed to dusting, in the area of currently executed works, during rainless periods,
  - c) use of tilts during transport of soil and loose materials, or for their storage,
  - d) maintaining paved road surfaces (i.e. access roads) used by vehicles, in good technical condition.
- 23) In the areas near residential buildings, works will be carried out on the river side's area, and the existing embankment will form a natural barrier for sound waves; in these areas only one piece of construction machine will be working at any given time.
- 24) In the areas near residential buildings for the duration of the construction works, in the end section of the embankment, along provincial road no. 854 (at approx. km 3+340 to km 4+445) temporary acoustic screens will be provided. Screens to be approx. 2.5 m high.
- 25) The construction works and activities related to transport in the vicinity of sites under noise protection, will take place during day-shift hours, i.e. between 6 am and 10 pm.
- 26) Implementation works will be carried out under supervision of experienced environmental supervision employees:
  - a) environmental supervision will be carried out by people with the professional experience on at least 2 projects; monthly reports of the environmental supervision activities shall be provided. Within six months from completion of the works a report from the environmental supervision, including the photographs, will be submitted to the party conducting supervision of Natura 2000 sites;
  - b) environmental supervision is obliged to watch over throughout the Project's implementation phase; environmental supervision will be responsible for correct location of the site facilities, taking into account location of natural habitat, species habitat; detection of presence of animal species in the construction area where works are executed;
  - c) herpetological supervision will be responsible for:
    - checking the construction area for presence of amphibians and taking actions for their protection, catching and translocation,
    - detecting presence of amphibians in the vicinity of the construction site and elimination of possible risk,
    - undertaking and coordination of activities related to active protection of amphibians and control of efficiency and quality of works in this scope,
    - setting and checking status of protection in the construction area(amphibian fence);

- d) caught amphibians will be transferred to the habitat suitable for specific species located outside of the construction site, determined by the herpetological supervision;
- e) in case of clash of construction works with protected plant species habitats, the individual plants will be transplanted to the place of appropriate habitat, if technically possible; environmental supervision will take care of i.e. compliance with the intended scope of felling trees and shrubs, protection of trees and shrubs not intended for felling, identifying and fencing off valuable natural habitats in the vicinity of which the construction works will take place; environmental supervision will check application of humus on the embankment and sowing of mix of native plants;
- f) it is advisable for the environmental supervision to carry out at least eight site inspections each month (or more, depending on the requirements of the Employer); during spring and autumn migration of the amphibians the herpetological supervision will be constant. After each inspection a description of carried out activities will be provided, including the photographs, in form of Environmental Supervision Sheet, which will also include possible recommendations for the Contractor.

### **III. Requirement for environmental protection to be allowed for in the Building Permit Design:**

- 1) Allow for recommendations listed in Point II of the Decision.
- 2) In order to secure the areas of Project implementation from possible entry of the amphibians into the construction site, prior to commencement of works an amphibian fence will be provided in sections indicated by the environmental supervision.
- 3) The amphibian fence will have solid surface (e.g.. foil) or mesh (size of mesh max 4.5 by 4.5 mm) and will be buried in the ground to the depth of at least 15-20 cm. Height of the amphibian fence above the ground, along the entire length will be at least 50 cm. Upper edge of the fence to be gentle, bent to the outside, for the entire length of the fence, at the angle of 45-90°, forming a canopy with a width of at least 10 cm. During the amphibian active period the fence shall be inspected on regular basis, at least once a week, for possible faults. Any defects will be removed on the ongoing basis. The vegetation along the fence will be mowed. Fencing will cover sections of identified amphibian migration, and in addition, a section of at least 200 m long, before and behind the specific places. The 5 m long end section of the amphibian fence will run at the right angle to the construction site.
- 4) In the vicinity of provincial road no. 854 a flood protection will be provided in form of a retaining wall (sheet pile wall with concrete clamp) located behind road safety barrier (on river side drainage channel along the retaining wall) will be provided in order to enable road drainage. A strip between the road and channels will be paved – it will serve as operational area for the structure. Rain water and meltwater will be drained from the channels through the inlets, to surface water drain provided with non-return valve/latch. Road drainage channels will be provided below drainage outlets on the existing road bank, on the riverside, allowing for drainage of water onto the slope.
- 5) Along the entire length of the road, from the site beyond the embankment on the embankment's crest, drainage channels will be provided in order to enable road drainage. Rain water and meltwater will be drained from the channels through the inlets, to surface water drain provided with non-return valve/latch. Road drainage channels will be provided below drainage outlets on the existing road bank, on the riverside, allowing for drainage of water onto the slope. Slope of the embankment from site beyond the embankment, as well as the embankment's crest will be strengthened with concrete slabs at the height of drainage outlets.
- 6) The drainage channels to be: max 0.3 – 0.6 m wide; max 0.1 – 0.15 m high; max 0.05 – 0.10 m deep; min slope of the bank 1:2.

- 7) Vertical anti-filtration barriers will be designed, approx. 10 – 14 m deep (approx. 6 – 10 m for these ground conditions), in the axis of embankment (at km 0+000 – 2+960) and 8 m in the base of the embankment (at km 3+440 – 4+435), including surface screen.

- IV. **I do not impose an obligation to carry out an environmental impact assessment as part of the proceedings for the issue of a decision on permission for implementation of the Project.**
- V. **I do not state that it is necessary to conduct proceedings on cross-border impact as part of the proceedings for the issue of a decision on permission for implementation of the Project.**

## **JUSTIFICATION**

An Application was submitted to the Regional Director for the Environment Protection in Rzeszów, by Mrs. Małgorzata Wajda, the Director of Podkarpacki Board of Amelioration and Hydraulic Structures in Rzeszów, ul. Hetmańska 9, 35-959 Rzeszów, authorized by the Marshal of the Podkarpackie Province on July 28<sup>th</sup> 2015, Ref. no.: IM.403.61.7.2015, regarding the issue of a decision on environmental conditions for the implementation the Project: *San III – extension of left bank of San River at km 0+000 – 4+445, Gorzyce Commune, Podkarpackie Province.*

The Application was correctly compiled, in accordance with Article 74 Clause 1 of the Act of October 3<sup>rd</sup> 2008 on sharing information about the environment and its protection, public participation in environment protection and environmental impact assessments.

The Project's aim is the improvement of flood protection of the areas in the San River's catchment area, within the boundaries of Gorzyce Commune, i.e. for surrounding residential buildings, farm buildings, farm land and technical infrastructure. According to the provisions of the Report, left bank of the San River protects the area of approx. half of Gorzyce Commune, the towns of Gorzyce, Wrzawy, Motycze Podmuchowe, in total of 8,772 inhabitants.

The proposed Project is included in the group of projects for which the environmental impact assessment procedure may be required, based on Article 63 Clause 1 in connection with Article 59 Clause 1 Point 2 of the Act on sharing information about the environment and its protection, public participation in environment protection and environmental impact assessments, in accordance with Paragraph 3 Clause 1 Point 65 (flood protection structures excluding renovations of flood banks comprising of sealing of the embankments' bodies and base layer, in order to reduce risk of washing out or breaks during flood wave, as well as regulation of water or its canalization, understood as management of water allowing for its use for the navigation) of the Regulation of the Council of Ministers of November 9<sup>th</sup> 2010 on the projects likely to have significantly impact effect on the environment (Journal of Laws of 2016, Item 71).

Taking into account scope of the Project, which allows to classify it as flood protection structure, in accordance with Laws of the Act of July 8<sup>th</sup> 2010 on particular terms of preparation and implementation of projects with regard to flood control structures (Journal of Laws of 2015, Item 966 as amended), for which setting environmental conditions for the implementation of the Project takes place prior to obtaining the decision on permission to implement flood protection structures' Project, the Regional Director for the Environment Protection in Rzeszów is the authority competent for issue a decision on environmental conditions for the implementation of a project, based on Article 75 Clause 1 Point 1 Letter i) of the on sharing information about the environment and its protection, public participation in environment protection and environmental impact assessments .

In accordance with the regulations in force, the information regarding submitted Application was placed on publically accessible list of documents containing information about the environment and its protection, prepared by the Regional Director for the Environment Protection in Rzeszów, i.e. on the information card under the number 858/2015. In the announcement dated August 3<sup>rd</sup> 2015, Ref. no.: WOOŚ.4233.2.2015.KR.3 the parties to the proceeding were informed about its initiation and about the possibility to become familiar with submitted documents.

After the review of gathered case materials and taking into account provisions of Article 63 Clause 1 of the Act on sharing information about the environment and its protection, public participation in environment protection and environmental impact assessments, it was considered that mainly due to the location of the proposed Project (renovated embankment is a boundary of the site important for Valley of the Lower San River SAC - PLH180020), risk to natural habitats in the area of the Project implementation (proposed Project is associated with extension of the existing flood protection embankments, construction works will damage a vegetation, trees and shrubs will be removed, also sites/habitat of protected species of plants and animals could be damaged), cumulative impact (start section of the embankment at km 0+000 will be joint with right bank of the Vistula River (design stage of *The Vistula River Stage 2* Task), and the end section at km 4+445 will be joint with renovated left bank of the San River covered by the Task *San II*, that it is necessary to carry out the environmental impact assessment and the same, prepare the Environmental Assessment Report, element of which will be the assessment required in connection with the provisions of Article 6.3 of the Council Directive 92/43/EEG of 21<sup>st</sup> May 1992 on protection of natural habitat and wild flora and fauna (named Habitats Directive). Therefore the Regional Director for the Environment Protection in Rzeszów issued on September 7<sup>th</sup> 2015 a ruling Ref. no.: WOOŚ.4233.2.2015.KR.12, stating the obligation to carry out the environmental impact assessment and describing the scope of the Environmental Assessment Report. As a result, in a decision dated October 20<sup>th</sup> 2015, Ref. no.: WOOŚ.4233.2.2015.KR.19, the proceeding was suspended, and the parties to the proceeding were informed in the Notice on 20<sup>th</sup> October 2015, Ref. no.: WOOŚ.4233.2.2015.KR.20.

The Applicant with a letter dated February 3<sup>rd</sup> 2016, Ref. no. IM.403.36.2.2016, submitted the Environmental Assessment. With a decision dated February 9<sup>th</sup> 2016, Ref. no.: WOOŚ.4233.2.2015.KR.25, the Regional Director for the Environment Protection in Rzeszów resumed the proceedings, informing the parties in the Notice dated 9<sup>th</sup> February 2016, Ref. no.: WOOŚ.4233.2.2016.KR.26.

Information about the Environmental Assessment Report was placed on publicly accessible list of documents containing information on the environment and its protection, run by the Regional Director for the Environment Protection in Rzeszów, i.e. in the information card under number 292/2016.

In the course of the proceedings it was found that the submitted materials do not adequately cover all issues relevant to the environment protection resulting from Act on sharing information about the environment and its protection, public participation in environment protection and environmental impact assessments. Therefore, in a letter dated May 2<sup>nd</sup> 2016, Ref. no.: WOOŚ.4233.2.2015.KR.37, the Applicant was requested to supplement the Report. Relevant clarification of the Report was provided by the Applicant with a letter dated July 8<sup>th</sup> 2016, Ref. no. JRP.403.32.2a.2016.

After review of the documents and clarifications submitted by the Applicant, it was found that the Report meets the requirements of Article 66 of the Act on sharing information about the environment and its protection, public participation in environment protection and environmental impact assessments.

As part of the proceedings regarding issue of the decision on environmental conditions for the proposed Project, the Regional Director for the Environment Protection in Rzeszów in a letter dated August 1<sup>st</sup> 2016, Ref. no.: WOOŚ.4233.2.2015.KR.47 to State District Sanitary Inspector in Tarnobrzeg, and in a letter dated September 16<sup>th</sup> 2016, Ref. no.: WOOŚ.4233.2.2015.KR.55 to State District Sanitary Inspector in Stalowa Wola, requested issue of the opinion in accordance with Article 77 Clause 1 Point 2 of the Act on sharing information about the environment and its protection, public participation in environment protection and environmental impact assessments. The required by law documents were attached to these letters, including a copy of the Application submitted by the Investor for issue of a decision on environmental conditions for the Project, Environmental Assessment Report and its supplement.



After review of the documents the State District Sanitary Inspector in Tarnobrzeg in a letter dated September 1<sup>st</sup> 2016, Ref. no.: PSNZ.466.5.2016, issued a positive opinion on the implementation of the Project. The Regional Director for the Environment Protection in Rzeszów determining the conditions for the implementation and operational of the Project that are necessary for the Investor to apply, took into account and refined the opinion of the above mentioned Authority.

State District Sanitary Inspector in Stalowa Wola did not provide the opinion within the statutory period of 30 days from the receipt of a letter regarding issue of the opinion on the implementation of the Project, as described in Article 77 Clause 1 Point 2 of the Act on sharing information about the environment and its protection, public participation in environment protection and environmental impact assessments, which is treated as no objection to the proposed development, in accordance with Article 78 Clause 4 of the aforementioned Act.

In the Environmental Assessment Report the effects foreseen in case of non-undertaking of the Project were described, the option of selected for the implementation by the Investor as well as alternative options were reviewed.

#### Description of the effects for the environment foreseen in case if the Project is not implemented (so-called Option Zero).

Option Zero assumes leaving the embankments in their current condition, which in the future may result in flood risk and flooding of the area on beyond the embankment.

Option Zero means no interference in current embankments of the San River and in the natural environment of the section of the river valley. The principal benefits of not implementing the Project include mainly lack of the interference in the natural habitats and in habitats occupied by species, including no felling of trees and shrubs, no damage to vegetation on the route of extended embankment, no effect on social conditions of the Project, no restrictions in use of the farm land and residential areas located directly near the embankment, as well as no danger to fauna that would be related to modernization of the embankments. The river side's area would remain untouched, in its current condition – as a refuge for the animals of the area.

As a consequence of not implementing the Project would be flooding and damage to the adjacent areas, i.e. the residential buildings, farm building, local roads and driveways, technical infrastructure and farm land, continuous loss incurred by the farmers after the floods.

It should also be noted that the option of not implementing the Project (Option Zero) is unfavorable for the "safety" of structures of existing flood embankments. Existing anti-filtration protection in the embankment already do not perform their functions – there are water leaks through the embankments, and if nothing is done, this status will be continuously deteriorating.

As part of the Project the reinstatement of the access roads used for transport is envisaged.

Based on the undertaken analysis and calculations, there are four options of the design for the extension of the San River embankments.

The main difference between the options is the location:

- Option I – extension of the embankment mainly on the area beyond the embankment, partly in riverside's area,
- Option II – extension mainly along the axis of the embankment, including construction of a new section of the embankment,
- Option III – extension of the embankment mainly in river side's area,
- Option IV – construction of a boulevard and a retaining wall (process solution).

The main difference between these options is occupation of the area in both riverside and area beyond the embankment, or in case of Option IV, process of elevation of the embankment.

## Option I

### **Section 1 at km 0+000 – 3+130:**

At approx. km 0+000 – 2+960 a design of extension of the embankment towards the side beyond of the embankment is proposed in form of a typical earth-fill embankment, with the parameters:

- a) embankment's crest width approx. 3 m,
- b) landside and riverside slope grade 1:1.5 – 1:2.5,
- c) average height increase of 1 m.

Proposed embankment will be joined with the Vistula River embankment (Vistula River Stage 2), which was extended towards the river side direction – the length of junction approx. 100 m. It is anticipated the following:

- construction of paved flood route including berms and turnouts next to the foot of embankment from the side beyond the embankment, and connection to the existing roads,
- construction of paved flood route away from the foot of the embankment from the side beyond the embankment (recreating of already existing road), including connection to the existing tar road,
- provision of a landscaped strip along both sides of embankment,
- construction of a vertical anti-filtration barrier in the axis of the embankment, including connection to the barrier of Vistula River Stage 2,
- extension of the existing embankment's crossings, including hardening of the road surface,
- provision of a boulevard – retaining wall (sheet pile wall with concrete clamp, including a guard rail) on the river side, including earth-fill embankment on side beyond the embankment.

### **Section 2 approx. at km 3+130 – 3+445:**

- continuation of the retaining wall (sheet pile wall with concrete clamp, including a guard rail), extension of existing embankment's crossing,
- provision of mobile flood protection system,
- provision of a landscaped strip along the riverside of embankment,
- provision of drainage along the proposed retaining wall (the side beyond the embankment),
- construction of a road barrier in vicinity of the retaining wall, with district road, and change of location of existing road barrier at embankment's crossing at approx. km 3+180.

### **Section 3 approx. at km 3+445 – 4+445:**

- extension of the embankment towards the riverside (overlapping with the retaining wall), in form of addition of a new typical earth-fill embankment with the following parameters:
  - a) embankment's crest width approx. 3 m,
  - b) riverside slope grade 1:1.5 – 1:2.5,
  - c) landside slope grade 1:1.5 – 1:10 (requirement to provide embankment's crossing),
  - d) average height increase of 0,45 m.
- provision of a landscaped strip along the riverside of embankment,
- extension of the existing embankment's crossings, including hardening of road surface,
- provision of surfaced anti-filtration protection – at embankment's waterside slope (foil or bentomat) and vertical at the foot on riverside slope,
- provision of protection against animals digging barrows,
- provision of drainage (the side beyond the embankment) along proposed earth-fill embankment – near the road located on the embankment's crest,
- construction of access road located on the embankment, including turnout (strengthening of the slope of the embankment from the side beyond the embankment), pedestrian walkway and road barrier,

- demolition of existing exit roads at approx. km 3+432, 4+085, 4+172, 4+406.

As part of the Project it is foreseen to provide temporary technological roads (to be dismantled on completion of the works) and reinstatement (renovation) of access roads used for transport equipment.

During the extension of the embankment it might be necessary to reconstruct or protect underground services clashing with the works. Hectometer marking, embankment's turnpikes and slope stairs will be provided as well.

#### Option II – alternative

##### **Section 1 at km 0+000 – 3+130:**

- extension of the embankment along the axis, in form of typical earth-fill embankment:
  - a) embankment's crest width approx. 3 m,
  - b) landside and riverside slope grade 1:1.5 – 1:2.5,
  - c) average height increase of 1 m.
- construction of flood route next to the food of embankment from the side beyond the embankment ,
- provision of a landscaped strip along both sides of embankment,
- provision of vertical anti-filtration protection at the foot on riverside slop, and surfaced anti-filtration protection at embankment's waterside slope,
- extension of existing embankment's crossings (2 pcs.),
- demolition of residential building and farm building clashing with extension of the flood embankment.

##### **Section 2 approx. at km 3+130 – 3+235:**

- reconstruction of a district road and a provincial road (including section of access to ferry),
- extension of existing embankment's crossing.

##### **Section 3 approx. at km 3+235 – 4+445:**

- construction of a new earth-fill embankment in river side:
  - a) embankment's crest width approx. 3 m,
  - b) landside and riverside slope grade 1:1.5 – 1:2.5,
  - c) height of embankment approx. 4 m.
- provision of a landscaped strip along both sides of embankment,
- construction of flood route next to the food of embankment from the side beyond the embankment,
- provision of surfaced anti-filtration protection (foil or bentomat) and vertical anti-filtration protection along the entire section of embankments' waterside slop,
- construction of a ditch along the entire section and a culvert at approx. km 3+305 draining water from beyond the embankment to riverside,
- construction of necessary embankment's crossings.

#### Option III – alternative

##### **Section 1 at km 0+000 – 3+115**

- extension of the embankment towards the riverside in a form of a typical earth-fill embankment, including drivable crest, approx. 4.5 – 5 m wide with the following parameters:
  - a) embankment's crest width approx. 3 m (or 4.5 – 5 m),
  - b) landside and riverside slope grade 1:1.5 – 1:2.5,
  - c) average height increase of 1 m.
- provision of a landscaped strip along the riverside of embankment,
- provision of vertical anti-filtration protection at the foot on riverside slop, and surfaced anti-filtration protection at embankment's waterside slope,
- extension of existing embankment's crossings (2 pcs.),
- renovation of a flood road along the entire length.

##### **Section 2 approx. at km 3+110 – 3+415:**

- construction of a retaining wall (sheet pile wall with concrete clamp),

- extension of existing embankment's crossing,
- provision of mobile flood protection system.

**Section 3 approx. at km 3+410 – 4+445:**

- extension of the embankment towards the riverside, including reconstruction of a road on embankment's crest, with parameters:
  - a) embankment's crest width approx. 4.5 m, including hardening of the surface,
  - b) landside and riverside slope grade 1:1.5 – 1:2.5,
  - c) average height increase 0.45 m.
- provision of a landscaped strip along the riverside of embankment,
- extension of existing embankment's crossings (8 pcs.),
- provision of surfaced anti-filtration protection (foil or bentomat at embankment's waterside slope) and vertical anti-filtration protection at embankment's waterside slope. This type of the filtration protection will be a reference to the same type of filtration protection for San II.

Option IV – alternative

This option proposed construction of a boulevard (retaining wall on river side and earth-fill embankment on side beyond of the embankment) or retaining wall alone, along the entire length of the embankment, except for section at km 3+180 – 3+214, where at the intersection with a road to the ferry a mobile flood protection system was proposed.

The need to construct an earth-fill embankment along the entire length on side beyond the embankment is imposed by the provisions of the Regulation of the Minister of the Environment on technical conditions for hydraulic structures and their location, Paragraph 53: 'The crest of a hydraulic structure fitted with a sealed ledge should be elevated above Max PP and probable maximum flood level by at least 0.4 m and may not be lower than the level of water in exceptional conditions of work for this structure'.

In Option IV it was also foreseen to extend existing embankment's crossings as well as to renovate embankment's road in Section 1 and roads on embankment's crest in Section 3.

However, this solution has no environmental justification. This type of solution is dedicated to embankments in city centers, where the existing buildings do not allow for extension of earth-fill embankments. This is not an environmentally friendly solution, even if it does not include occupation of additional land or destruction of protected habitats in the river side's area, but it will have substantial impact on local water and soil environment, not taking into account local conditions, it will also be a barrier for animal migration.

After the review and analysis, Option I was selected as the most favorable, from technical environmental and economical point of view. This option is the best possible environmental option, because Section 1 at km 0+000 – 3+130 the least intervenes in area beyond the embankment, where natural habitat sites of Natura 2000 are located, i.e. riparian forest. Whereas in Section 3 at km 3+445 – 4+445 the proposed extension of the embankment in riverside's area is the best possible option for reconciliation of environmental and social aspects. Intervention in the river side's area is minimal, and Natura 2000 site in this section (at the embankment) is not naturally rich, as there are only meadows, wastelands, cluster of shrubs and few trees. Extension of the embankment in this option will not cause demolition of residential or farm buildings.

The option which is adopted for implementation, on one hand complies with the legal requirements (Class II of the structure), on the other hand provides a protection against flood water and takes into account availability of the land, with the least intervention in valuable natural habitats. This option, during construction phase, as well as during operational phase, will not cause over standard impact on the environment – air pollution or noise emission is small and related only to the construction phase.

Option I will not involve interference in the San River bed, riverside habitats, and the interference in habitats in the riverside's area will be very small, limited only to small sections of celernic meadows. It is anticipated that only approx. 0.18 % of this habitat will be affected.

Interference in other protected habitats will be as equally small. It is estimated that the implementation of the Project will affect approx. 0.01 % of habitat no. 6510 and approx. 0.005 % of habitat no. 91E0. Other options, except for Option IV, assumed larger effect on the protected habitat.

The San River is the largest Carpathian tributary of the Vistula River. It is 443.4 km long, with a catchment area of 16,861.3 km<sup>2</sup>. The source of the San River is located in West Bieszczady Mountains, in Ukraine. Sections of the lower course of the San River are provided with embankments. The San River runs into Vistula River near the town of Dąbrówka Pniowska, at km 279.7.

The section of San River covered by the Project has lowland character. It mostly runs through deeply indented valley, slopes of the riverbanks are steep. The riverbed is regulated. Flood embankments are at a substantial distance from the riverbed, approx. 200 – 600 m. Open farmland dominates on the side beyond the embankments, and arable land runs along the river at a considerable distance. In addition, near the village of Wrzawy numerous oxbows, swamps, wetlands, network of small watercourses and ditches are present. There is one check point in the area of Gorzyce Commune, and it is located in Wrzawy Village on San River, at the San River estuary into Vistula River. Water gauge station on the San River is located approx. 4.76 km away from the end section of the Project.

The main source of water supply to Gorzyce Commune inhabitants is Quaternary level of groundwater resources. There are two groundwater intakes in the area of Gorzyce Commune: one is in Gorzyce and the other one in Wrzawy (closed). There are no operational surface water intakes within the area of implementation of the Project, or in its close vicinity. No protective zones have been established in this area for surface water intake for mass water supply. The nearest surface water intake, in relation to the embankment area is located on Opatówka River, approx. 4.90 km away from the initial section of the Project. The nearest surface water intake on the San River is more than 21 km away from the end section of the embankment.

According to the Regulation of the Council of Ministers of October 18<sup>th</sup> 2016 on Water Management Plan for Vistula River basin (Journal of Laws, item 1911) (WMP) this Project will be implemented within the following Bodies of Surface Water (BSW):

- *Wisła od Wisłoki do Sanu* [Vistula River from Wisłoka to San River] – code: RW20002121999, type: large lowland river (21). Indicated BSW is a strongly changed water body (exceeded indicators: m1, m4), its condition in WMP is evaluated as bad (ecological potential – week, chemical condition – good). It is indicated as being at risk of failing to achieve environmental goals and has exceptions 4(4)-1 (lack of technical possibilities).

Catchment area of BSW *Wisła od Wisłoki do Sanu* [Vistula River from Wisłoka to San Rivers] was classified as protected area, designated for the protection of objects of protection for the area of importance to the Community:

- *Dolina Dolnego Sanu* [Lower San Valley] PLH180020,
- *Tarnobrzaska Dolina Wisły* [Tarnobrzeg Valley of Vistula River] PLH180049,
- *Góry Pieprzowe* [Pieprzowe Mountains] PLH260022,
- *Wisła pod Zawichostem* [Vistula River at Zawichost] REZ13456 – nature reserve, dependent on water.

This BSW was classified as protected area, designated for water intake supply for the consumption of the people.

The environmental goal of this BSW is to achieve good ecological potential; possibility of migration of aquatic organisms in the section of essential watercourse – Vistula River from San to Wisłoka Rivers and maintaining good chemical status. The deadline for achieving this goal has been extended to 2021.

- *San od Rudni do ujścia* [San River from Rudnia to estuary] – code: RW20002122999, type: large lowland river (21). Indicated BSW is a strongly changed water body (exceeded indicators: m1, m4), its condition in WMP is evaluated as bad (ecological potential – moderate, chemical condition – good). It is indicated as being at risk of failing

to achieve environmental goals and has exceptions 4(4)-1 (lack of technical possibilities).

Catchment area of BSW *San od Rudni do ujścia* [San River from Rudnia to estuary] was classified as protected area, designated for the protection of objects of protection for the area of importance to the Community:

- *Uroczyska Lasów Janowskich* [Janowskie Forest Sacred Spot] PLH060031,
- *Dolina Dolnego Sanu* [Lower San Valley] PLH180020,
- *Lasy Janowskie* [Janowskie Forest] PLB060005, dependent on water.

The environmental goal of this BSW is to achieve good ecological potential; possibility of migration of aquatic organisms in the section of essential watercourse – San River from Radunia River to estuary and maintaining good chemical status. The deadline for achieving environmental goal for BSW *San od Rudni do ujścia* [San River from Rudnia to estuary] has been extended to 2021.

Establishing what elements of water quality and its storage will be affected by the project was provided based on the assessment of the impact of the project on the environmental potential of BSW.

Impact factor generated at the stage of implementation of the project were identified as:

- felling of trees and shrubs related to extension of the embankment,
- earthworks related to extension of the embankment.

As part of the Project it is proposed to modernize the embankment by increasing its height and width, in form of the earth-fill embankment at km 0+000 – 2+960 (Section 1) and at km 3+440 – 4+445 (Section 3), and in form of a boulevard (retaining wall on river side and earth-fill embankment on side beyond of the embankment) and the retaining wall (sheet pile wall with concrete camp) at km 2+955 – 3+180 and 3+212 – 3+445 (partly Sections 1 and 2), and with mobile flood protection system at km 3+180 – 3+212.

Work related to extension of the embankment will be carried out at a substantial distance from the San River bed, maintaining current condition of the river side's area. The exception will be a short section, where extension of the embankment towards the side beyond the embankment would have to include demolition of residential buildings located directly at the foot of side beyond the embankment.

Proposed works will not have substantial permanent impact on composition and quantities of phytoplankton, benthos aquatic invertebrates and phytobenthos in the San River. Interference in the San River bed is not anticipated. There will be no strengthening applied, and all works will be carried out in the area of the existing embankment, at a substantial distance from the riverbed (the wide river side's area will remain). It is not expected to destroy or cover the periphyton habitats associated with waters of the river side's area. Closing of oxbows is not planned. There will be no separation of the watercourse, building barriers or changes in the structure of the subsoil, liquidation of shallows and fall. In connection with the implementation of the Project, the structure of riverside habitats currently affecting the shading of the watercourse will not be liquidated. The extension of the embankment will not change the current ichthyofauna status in the river, it will not cause significant changes in the species composition of fish in the river. The current water flow will be maintained. Implementation of the Project will not contribute to such acceleration of water runoff, which could affect the level of groundwater.

Impact on surface water at the stage of implementation of the Project maybe caused in the emergency situation only, when pollutants will penetrate water level due to accidental spills of petrol and other substance used at the construction site.

According to WMP, implementation of the project will take place within two Bodies of Groundwater (BGW):

- No. 119 (code: PLGW2000119); WMP describes its condition as good (quantities – good, chemical condition – good). It is indicated as not being at risk of failing to achieve environmental goals,
- No. 135 (code: PLGW2000135); WMP describes its condition as good (quantities – good, chemical condition – good). It is indicated as not being at risk of failing to achieve environmental goals.

Both Bodies of Groundwater have been classified as protected areas, designated for water intake supply for the consumption of the people. The environmental goal of these water bodies is to maintain good quantities and good chemical condition.

Water conditions in the Project area have been considered average, due to the deposition in the free standing water bearing level at a depth of 1.3 m – 3.40 m b.g.l. and pressure water level at a depth of 1.40 m – 5.80 m b.g.l., and the presence of soil sensitive to moisture (dust and clay). In addition, the foundation of the embankment mainly consists of layers of permeable soils (from fine sands to coarse sands), which during the freshet will cause rapid filtration of water to the side beyond of the embankment.

The area of the Project is located within the area of separated Main Groundwater Reservoir no. 425 *Dębica – Stalowa Wola – Rzeszów*.

Sealing of flood banks will block the filtration path of groundwater along the side beyond the embankment – water side path. The sealed anti-filtration barrier will effectively counteract the process of scouring, so that there will be no seepage through the embankment. This barrier at the same time will limit the flow of water and air directly under the proposed structures, during floods will significantly reduce the water pressure on the side beyond the embankment, by extending the groundwater filtration path, and thus reducing the amount of water entering the side beyond the embankment. After the flood subsides, hydro-insulating barrier will allow for infiltration of groundwater in the riverbed direction. The direction of groundwater flow and inflow of the groundwater into the river in the analyzed area will not change. It is not planned to immerse the barrier to reach impermeable layers.

Impact on the quantities of groundwater might be related to the damming of surface water during the occurrence of a flood, and water retention in the riverside's area. There will be an increase in the ground water table in aquifers that are in hydraulic contact with surface waters. This scenario is already taking place during the flood.

Possible contamination of groundwater may be the result of accidental leaks of petroleum substances from construction equipment or infiltration of substances from the construction site. In the event of such situations, the construction site will be provided with sorbents for the chemical precipitation of chemicals for their immediate neutralization.

Implementation of the Project will involve water intake (delivered in cisterns), for use for construction works and for site facilities used by the construction staff. Based on the scope of proposed works it is foreseen to use water – up to max few hundred m<sup>3</sup> throughout the construction phase. Quantities of emission of sewage can be estimated as several dozen throughout the implementation phase. During the implementation phase portable toilets will be provided. Sewage from the toilets will be collected and discharged at Waste Treatment Plant by specialized company, authorized to provide this service.

Site facilities, yards for construction equipment and vehicles, technological roads, will be located on side beyond the embankment. Construction roads will be located in the area of the embankment's extension. In case of the need for temporary storage of materials required for construction works – areas for storage and places for equipment parking during execution of works will be located outside of the riverside's area.

On completion of the Project, the adjacent area will be tidied up. It is anticipated to shut down the construction site, including dismantling of the technological road, and levelling of site, together with sowing of grass mix. The design allows also for reinstatement of the access roads.

The Project was included in the Plan of Flood Risk Management for Vistula River Basin, which is an attachment to the Regulation of the Council of Ministers of 18<sup>th</sup> October 2016 on admission of Flood Risk Management Plan for Vistula River Basin (Journal of Laws, Item 1841) – it is placed on the list of strategic activities in water region of the Upper Vistula River, no. 6.52, action no. 22, ID 3\_624\_W.

The site of the Project covers existing embankments of the left bank of San River. The entire section of the Project maintains wide riverside's area with riverside communities, and partially it is used as farmland. Therefore the Project does not anticipate interference in the San River bed, because the works on the embankment's extension will be carried out at

a distance of approx. 200 – 600 m from the river bed of San River. Interference in the riverside's area will be limited to a small strip of land directly near the embankment. The side beyond the embankment is dominated by the open farmland, and the farm buildings are located at a considerable distance from the embankment. In the area allocated to the embankment's extension there are grasslands with numerous types of synanthropes – common, mowed on regular basis; there no environmentally valuable habitats or species.

Due to the implementation of the Project, a number of trees and shrubs was allocated for removing, because of clash with proposed construction works. The option which is preferable for the implementation limits the necessary felling to a minimum – it is anticipated that approx. 150 trees and approx. 0.5 ha of shrubs will be removed from side beyond the embankment and the riverside's area. Trees and shrubs which are not allocated for felling will be adequately protected during construction phase.

Mouse garlic *Allium angulosum* was identified during survey of the Project's implementation area, species under partial protection by the Regulation of the Minister of the Environment of October 9<sup>th</sup> 2014 on protection of plant species (Journal of Laws of 2014, Item 1409). It was identified in the most area of the meadows in the river side's area, on sites of habitat with a Code o. 644 (its quantity within a single site of the habitat was estimated as several hundred). Due to the implementation of the Project, it is foreseen to destroy part of the habitat of these species, with the area of approx. 0.14 ha. It should be emphasized, that this will not be a significant impact, due to the fact that this species will retain its gene pool in the remaining part of the meadows, which are not affected by the Project. In addition, in the Project's area, in the river side of San River, there are two species of orchid neottia ovata (*Listera ovata*) and broad-leaved helleborine (*Epipactis helleborine*), which are also under partial protection. Individual sites of this species were identified close to the San River bed, totally out of reach of the Project. Extension of the left bank of the San River will have no impact on these species

None of the species of fungi or lichen was identified as protected species in the Regulation of the Minister of the Environment of 9<sup>th</sup> October 2014 on protection of fungi species (Journal of Laws of 2014 Item 1408).

The Project will only to a small degree impact on the natural habitats listed in Appendix I to Habitats Directive, and which are subject of the protection of Natura 2000 sites of Lower San River Valley SAC. The interference will affect habitat of celernic meadows *Cnidion dubii* (Code no. 6440), section approx. 260 m long at km 3+240 – 3+500 and at the embankment's crossing no. 1. Total area of occupation of this habitat is approx. 0.14 ha. Taking into account that the area of habitat 6440 within the entire site of Natura 2000 Lower San River Valley SAC is 79.38 ha, the Project will reduce it by 0.018%. The project will also impact on lowland habitat and extensively used fresh mountain meadows *Arrhenatherion elatioris* (Code no: 6510). It is anticipated to occupy approx. 0.15 ha of this habitat, which is approx. 0.01% of the total area within the entire site of Natura 2000 Lower San River Valley SAC. In addition the Project will occupy a priority habitat, i.e. water meadows of willow, poplar, alder and ash willow habitats, intraspecific algae. The implementation of the project will result in a small interference in this habitat, i.e. approx. 0.05 ha of this area will be occupied, which is approx. 0.005% of total are of this habitat within the site of Natura 2000 Lower San River Valley SAC. In should be emphasized that the Project will not cut-off this habitat from periodic river floods – it will also not impact on the depth of ground water level in the river side's area.

Referring to the impact of the Project on the aforementioned natural habitats, cumulative impacts associated with the implementation of works of a similar nature should be taken into account, i.e. including the extension of flood embankments as part of the San I and San II projects, and Vistula River Stage 2, which interfere in the site of Natura 2000 Lower San River Valley SAC. In case of habitat no. 6440, the area foreseen to be damaged as the result of Projects' implementation, including the assessed Project, is in total approx. 0.48% of total area within the site of Natura 2000 Lower San River Valley SAC. Total area of habitat 6510 which will be destroyed as a result of these projects is approx. 0.09% of total area of this habitat within the site of Natura 2000. Area of habitat 91E0 will be reduced by



approx. 0.15% total area of this habitat within the site of Natura 2000. Therefore, taking into account area of habitats which are part of Natura 2000 habitat and will be destroyed during projects' implementation, it can be stated that there is no significant impact on the above mentioned sites also in the aspect of cumulative impacts.

Among invertebrates, the protected species identified in the area designated for this project and in its vicinity, are: red-tailed bumblebee *Bombus lapidarius*, buff-tailed bumblebee *Bombus terrestris*, white-tailed bumblebee *Bombus lucorum*, common carder bee *Bombus pascuorum*, and edible snail *Helix pomatia*. All species are under partial protection under the Regulation of the Minister of the Environment of October 7<sup>th</sup> 2014 on protected species of animals (Journal of Laws of 2014, Item 1348). Bumblebees have been identified in the area of fields and meadows of the riverside's area and on the embankment. These species are not endangered as a result of the project - no dens or burrows have been found on the embankment, whereas the snails are commonly found in moist bushes and herbaceous plants in the riverside's area. The species is not endangered by the implementation of the Project.

The herpetofauna in this area is represented by species such as: sand lizard *Lacerta agilis*, viviparous lizard *Zootoca vivipara*, slow worm *Anguis fragilis*, green frog *Pelophylax esculentus*, marsh frog *Pelophylax ridibundus*, pool frog *Pelophylax lessonae*, common frog *Rana temporaria*, moor frog *Rana arvalis*, tree frog *Hyla arborea*. All these species have been identified within the river side's area. Species are subject to partial protection, with the exception of the moor frog and the tree frog, which are subject to strict protection under the Regulation. It is not expected to interfere in water holes or oxbows as a result of implementation of the Project, which are favorable habitats for amphibians. In addition, a number of minimizing measures have been proposed in relation to Batrachofauna. It should also be emphasized that the execution of works will be supervised by natural supervision, in which the role of the herpetologist has been emphasized.

The assessed Project, due to the distance to the river bed and lack of interference in oxbows located within the riverside's area, will not impact on fish species, which are present in the San River.

Within the area of the embankment no bird nests have been identified – breeding areas are located in trees of the river side's area. In the entire area of assessment 79 species of birds have been identified. It included breeding birds, as well as bird using this area as feeding place, or migratory bird species. Seven species of birds have been identified, as indicated in Appendix I to European Parliament and Council Directive 2009/147/UE of November 30<sup>th</sup> 2009 on protection of wild birds (Bird Directive): ruff *Philomachus pugnax*, Montagu's harrier *Circus pygargus*, white stork *Ciconia ciconia*, great egret *Egretta alba*, red-backed shrike *Lanius collurio*, common tern *Sterna hirundo*, common crane *Grus grus*. Among these species only red-backed shrike is regarded to be a breeding species for this area. Sites of the shrike are located in the river side's area, among the trees, which are not identified for felling, at approx. 70 – 140 m from the foot of the embankment. In the area where the shrike is present, the embankment's extension will take place on the side beyond the embankment, therefore the species is not directly affected by the Project. It should also be noted, that felling of trees will be limited to the necessary minimum and will be carried out outside of the bird breeding season, i.e. excluding period from March 1<sup>st</sup> – October 15<sup>th</sup>. Main danger to ornithofauna at the Project's implementation phase is: loss of habitat due to occupation of land for the Project (felling of trees, shrubs, removing low vegetation, limiting feeding base, increased anthropopressure), noise generated by the construction equipment. It will only have short and periodic impact.

From the mammals under protection in the entire river side's area, there is an otter present. It is a species under partial protection of the Regulation, and subject to protection within the Natura 2000 site. Due to the fact that this species is active mainly at night, it can be assumed that the scope of the construction works carried out during the day will not cause a significant threat to the species, especially as identified areas of presence of otter are totally outside of the area of construction works. The Project does not interfere in the river and riverside habitat, therefore an otter can still find suitable feeding places. In the

riverside's area five species of bats have been identified: Common noctule *Nyctalus noctula*, Common pipistrelle *Pipistrellus Pipistrellus*, Nathusius' pipistrelle *Pipistrellus nathussi*, Serotine bat *Eptesicus serotinus*, Daubenton's bat *Myotis daubentonii*, and they are under strict protection. The most attractive type of the environment for bats is among the trees along the San River, where most of them have been observed. The Project's range does not affect riverside habitats, therefore extension of the embankments will not pose a threat to these species of bats.

The main threats to mammals at the stage of the Project implementation, including common species, will primarily be the loss of habitats, cutting of high, medium and low vegetation, limiting the feeding base and increased anthropopression and the associated noise, causing deterrence and scaring. A short-term disturbance of mammalian migration routes is also possible - due to the disturbance caused by noise. This threat can be considered as insignificant and temporary (limited to the construction phase).

Since the 'channels' hollowed out in the embankment by the animals constitute filtration paths for water during flooding, on the embankment's section at km 3+440 – 4+445, where the embankment will be extended towards the river side, protection against animals digging barrows in the form of special mesh was designed.

When assessing the impact of a project with respect to cumulative activities, one should indicate the projects planned for implementation, related to flood protection, to which *Vistula River – Stage 2, San I* and *San II* are of particular importance, in relation to this section of the San River bank.

For the Task *San I – Stage I – extension and filtration protection of right bank of the San River at km 2+215 – 9+417, at a distance of 7.202 km, area of Radomyśl nad Sanem Commune, Podkarpackie Province, RDOŚ in Rzeszów* issued a decision on environmental conditions in 2012, Ref. no.: WOOŚ.4233.32.2012.MG-30.

For the Task *San II – extension and filtration protection of left bank of the San River at km 4+438 – 9+390, at a distance of 4.952 km, area of Zaleszany Commune, RDOŚ in Rzeszów* issued a decision on environmental conditions in 2012, Ref. no.: WOOŚ.4233.24.2012.MG-20.

For the Task *Vistula River Stage 2 – extension of right bank of the Vistula River, at a distance of 13.959 km, right bank of San River at a distance of 2.193 km and left bank of Łęg River at a distance of 0.112 km, area of Gorzyce and Radomyśl nad Sanem Communes, Podkarpackie Province, RDOŚ in Rzeszów* issued a decision on environmental conditions in September 2016, Ref. no.: WOOŚ.4233.24.2013.MG.157.

Cumulative impact resulting from the combined impact of the planned Project and other planned or implemented projects in the vicinity, include the area of direct and indirect impact on a section down the river towards the estuary to the Vistula River. In the vicinity of the Project there were not found other projects, which together with the impact of this section of the embankments, would lead to the intensification of impacts, including the exceeding of the environmental quality standards. The only impacts may appear in the case of simultaneously carried out activities for the San and Vistula Rivers, in the context of the need to clear vegetation, transform the ground surface. Cumulative impact may occur in the case when the assessed project will be implemented at the same time as projects located in its immediate vicinity, within the same surface water bodies, which will generate, among others, accumulation of noise, air pollution, or possible cumulating of surface water pollutants. In addition, the impacts and their relevance will be spread, depending on the adopted design solutions, process principles, or i.e. ways and possibilities of obtaining soil for extension of the embankment, necessary felling of trees and shrubs, etc.

However, regardless of the time of implementation of these flood protection measures, they will be associated with permanent occupation / transformation of natural habitats, including the necessity of cutting down high and medium vegetation, and including the impact on protected areas.

In summary, one should not expect accumulation of the significant negative impact, on the larger scale of the region of Upper Vistula River, or on a smaller scale – of San River's catchment area, or even Gorzyce and Zaleszany Communes. Potential cumulative impacts

can be avoided by proper time planning of works for this Project, and for other flood protection activities within the San and Vistula Rivers catchment area.

By reviewing gathered documents it is assessed that changes in the local landscape will have local character, limited in their range to the area of the Project itself and to its immediate vicinity.

Therefore, it is anticipated, that the proposed technical, structural and organizational solutions will ensure effective flood protection of the environment, including surface water, groundwater, soil and air, and that the above conditions of the implementation of the Project will be complied with. The Project then, will not significantly impact on the environment, resources, natural formations and components in a negative way, as indicated in Article 2 Paragraph 1 of the Act of April 16<sup>th</sup> 2004 on the nature protection (Journal of Laws of 2016, Item 2134 as amended). It will also not impact significantly on goals and objects of protection of Natura 2000 Lower San River Valley SAC, on integrity of this area and cohesion of Natura 2000 network. As part of the impact assessment, a relevant impact assessment, as required by Article 6.3 of the Council Directive no. 92/43/EWG of May 21<sup>st</sup> 1992 on natural habitat and wild flora and fauna.

Activities directly affecting visual and aesthetic values involve physical interference in the landscape and will rely on the addition or removal of certain elements, including i.e., construction of embankments, access roads or tree felling. Impact on landscape values in the implementation phase will be short-term and related to the extension of the existing embankment and interference in local habitats, which will be marked by removing parts of trees and shrubs from the riverside's area, temporary occupation of adjacent areas for access roads and construction site, increased traffic of vehicles and heavy construction equipment, temporary storage of materials, earth masses, and waste at the stage of project implementation.

Changes to the landscape related to felling of tall vegetation will be of a permanent nature, but due to the scale of this activity (it involves cutting of approx. 150 trees and approx. 0.5 ha of shrubs) the change will be insignificant.

During the operating stage the project will not impact on the landscape more than it does now. The embankments currently exist, and they are permanent feature of local landscape.

During the implementation phase no changes to the climate on a regional scale are foreseen. Possible differences may occur locally in the area of executed works. It will be related to felling of trees, organization and execution of works on the construction site. The changes will have temporary character and will locally impact on air humidity, temperature, sun exposure in the immediate vicinity of the construction works. No changes to the parameters of microclimate are foreseen at the operational stage.

During the construction work's stage the noise will be generated by work of the construction equipment – trucks, diggers, bulldozers, levelers and other equipment related to the embankment's extension, as well as saws during tree cutting, and the noise related to transport of materials, or waste removal (traffic generated by trucks). Noise emission during the construction phase will be limited in time to the construction activities (time of the construction works and time of work of the equipment itself) and it will gradually move as works progress – along the extended embankment, in a section approx. 4.5 km long.

The analysis of noise spreading during construction stage was performed in accordance with the instruction of Building Research Institute ITB 338/2008 – 'Methods of determining emission and ambient concentration of industrial noise in the environment', in accordance with methodology indicated in Polish Standard PN-ISO 9613-2 'Acoustics, Suppression of sound during propagation in open space. General calculation method'. Due to the fact that the construction works will take place during the day only, the calculation excluded model of a noise spreading in the environment during the night.

The following assumptions were used for calculation purpose:

- 100 m long section where the works will be carried out; the section will be moving along the embankment as works progress, therefore works will be carried out in sections, each time in a 100 m long section,

- limit to the operation of equipment – only piece of equipment is working at any given time; time of work 4h/8h, road roller 82 KM – 1 off, equivalent sound power level A – LAWT = 103 dB
- transport vehicles 24 off / 8h
- average speed 20 km/h
- sound power level of a single truck = 100 dB
- work only during the day
- height of point of noise emission assumed at 0.6 m (at 20 km/h the noise source is the motor and exhaust pipe)
- acoustic screen 2.5 m at height.

Based on the results obtained from the calculations at the observation points, taking into account the above assumptions for individual noise sources (from DR1 to DR13 – heavy vehicle traffic), it can be concluded that the introduction of temporary acoustic screens for the duration of construction works will allow compliance with acoustic standards at all observation points located in areas legally protected in acoustic terms, meeting the same requirements of the Regulation of the Minister of the Environment of June 14<sup>th</sup> 2007 on permissible noise levels in the environment (Journal of Laws of 2014, Item 112).

During the operational stage the embankment will not be a source of acoustic nuisance, and therefore will not impact on the acoustic climate.

Main sources of emission of pollutants to the air during the implementation phase will be: trucks, bulldozers, road roller, compactors, wood cutting saw, excavators, generators and pumps. During the implementation phase the unorganized emission of dust and gas into the air will take place as a result of the earthworks, combustion of fuel in construction equipment and transport vehicles, as well as emission of dust from the access roads. Inconveniences caused during this stage of Project implementation will have short-lived, reversible character and they will cease when implementation phase ends.

A calculation analysis of the impact on the atmospheric air was provided for the project, which indicates that the proposed project will not exceed the permissible concentrations in the air, in accordance with the Regulation of the Minister of the Environment of August 24<sup>th</sup> 2012 on levels of certain substances in the air (Journal of Laws of 2012, Item 1031), because for all pollutants emitted as a result of implementation of works, calculations showed compliance with applicable legal regulations in the field of air protection. In addition, given the solutions presented in the Report that minimize the range and volume of unorganized emissions, which include eliminating idling of internal combustion engines of machines and means of transport, among others during stoppages, breaks at work, etc., during rainless season - spraying surfaces exposed to dusting in the area where works are currently being carried out, using tilts during transport of soil and loose materials or storing them, keeping the access roads in good technical condition, can be considered that the implementation of the task will not significantly affect the state of air quality in its location or comfort of living for local inhabitants.

Activities related to implementation of the Project will result in generating waste. General rules will apply, as indicated in the Regulation of December 14<sup>th</sup> 2012 on waste (Journal of Law of 2016, Item 1987, as amended), and in particular: the works will be organized in a way which minimizes quantity of generated waste, waste will be stored in designated place at the site facilities, marked accordingly and will be collected by a company specialized collection or treatment of waste. Storage of waste (i.e. in containers) will take place in a way which will prevent their spreading in the environment. Containers used for collection of waste will be resistant to their effects. Surface, on which waste will be collected, will be sealed. Proposed storage options will not cause any danger to soil and water environment, and will protect waste from spreading into the environment.

The Project will be implemented in the area where there are no monuments listed in the historic monuments register, based on the regulations on protection and maintenance of the monuments, dated July 23<sup>rd</sup> 2003 (Journal of Laws of 2003, no. 162, Item 1568, as amended), therefore the significant impact on protected monuments and cultural goods is not

foreseen. The closest monument in relation to the Project's site is located in the town of Wrzawy – at a distance of more than 500 m from the San River banks.

As part of the administrative proceedings, from August 9<sup>th</sup> 2016 to August 30<sup>th</sup> 2016 and from September 22<sup>nd</sup> 2016 to October 13<sup>th</sup> 2016 public consultation was ensured – in reference to Article 79 of the Act on sharing information about the environment and its protection, public participation in environment protection and environmental impact assessments. The notice of the Regional Director for the Environment Protection in Rzeszów dated August 1<sup>st</sup> 2016, Ref. no.: WOOŚ.4233.2.2015.Kr.49, and dated September 16<sup>th</sup> 2016, Ref. no.: WOOŚ.4233.2.2015.KR.57 regarding submitted application and Environmental Assessment Report, including information on commencement of environmental impact assessment, on initiating of the procedure, on subject of the decision, on the unit relevant for the issuance of the decision and on the unit relevant for the issuance of opinion on implementation of the Investment, on the possibility of acknowledging case documentation and the place where it will be made available, on possibility and the date for submitting comments, taking into account statutory 21-day period for submitting comments, and on the unit competent to consider comments, it was made public. Notices were placed on the information board and on the website of Regional Director for Environment Protection in Rzeszów, on the information board and the website of the Podkarpacki Board of Amelioration and Hydraulic Structures in Rzeszów, near the place where the project will be implemented, on the information board and the website of Municipal Offices of Gorzyce and Municipal Offices of Zaleszany.

During two public participation events, no comments or motions regarding the Project were submitted to the authority.

According to the Announcement of Regional Director for the Environment Protection in Rzeszów dated October 28<sup>th</sup> 2016, Ref. no.: WOOŚ.4233.2.2015.KR.65, prior to issue of this decision the parties to the proceedings were informed about the possibility to comment on the gathered evidence, in accordance with Article 10 of Administrative Procedure Code (APC).

None of the parties to the proceedings has taken advantage of the opportunity to comment on the gathered evidence and material on the basis of which the decision on environmental conditions for the implementation of the project *San III – extension of the left bank of the San River at km 0+000 – 4+445, Gorzyce Commune, Podkarpackie Province*, will be issued.

After review of the scope of proposed Project and identification of its impact on the environment and its scale, it was determined that the proposed Project will not cause cross border impact on the environment. For this reason there was no need to carry out the proceedings on cross border impact, as stated in Article 104 of the Act on sharing information about the environment and its protection, public participation in environment protection and environmental impact assessments, and determination of conditions related to this impact in contents of this Decision.

From the proceedings, which included analysis of all gathered evidence, e.g. Environmental Assessment Report, and its supplement, it appears that the implementation and operation of the Project, while taking into account conditions set out in this Decision, will comply with applicable standards for quality of the environment, including human health.

Bearing in mind the above circumstances, on the basis of the regulations referred to in the legal base, the decision was made.

## INSTRUCTIONS

1. Project's Characteristics, forming detailed description of the Project, are an integral part of this Decision.
2. In the case when the implementation of the proposed Project will involve breaking the prohibitions applicable to the species of plants, animals or fungi under protection, it will be necessary to obtain the relevant permits according to in Article 56 of the Act on nature protection.
3. From this Decision, the parties may appeal to the General Director for Environmental Protection through Regional Director for Environment Protection, within 14 days from the date of its receipt.

Enclosed:

1. Project's Characteristics

Signed:

Jarosław Jędrał, Deputy Regional Director for the Environmental Protection in Rzeszów  
For the Regional Director for the Environmental Protection in Rzeszów

[rubber stamp] this Decision became final on 08.02.2017  
signed on 06.03.2017 [illegible]

For:

1. Director of Podkarpacki Board of Amelioration and Hydraulic Structures in Rzeszów, ul. Hetmańska 9, 35-959 Rzeszów
2. Parties to the proceedings through Municipal Offices of Gorzyce, ul. Sandomierska 75, 39-432 Gorzyce, in accordance with Article 49 of CAP, in connection with Article 74 Clause 3 of the Act on sharing information about the environment and its protection, public participation in environment protection and environmental impact assessments.
3. Parties to the proceedings through Municipal Offices of Zaleszany, ul. T. Kościuszki 16, 37-415 Zaleszany, in accordance with Article 49 of CAP, in connection with Article 74 Clause 3 of the on sharing information about the environment and its protection, public participation in environment protection and environmental impact assessments

For the information:

1. WOOŚ

## Project's Characteristics

### **San III – extension of the left bank of San River at km 0+000 – 4+445, Gorzyce Commune, Podkarpackie Province**

Subject of the Project is extension of the left bank of the San River at km 0+000 – 4+445, within the boundaries of Gorzyce Commune (partly in Zaleszany Commune), in Podkarpackie Province.

The basic goal of the Project is the improvement of flood protection of land located in the San River catchment area within the Commune of Gorzyce. The Project implementation is necessary to ensure flood protection of nearby residential buildings, farm buildings, farmland and technical infrastructure. The proposed Project includes the necessary elevating of the embankment's crest to meet the technical conditions required for hydrotechnical structures; average height increase will be approx. 0.80 m.

#### **Section 1 at km 0+000 – 3+130:**

At approx. km 0+000 – 2+960 a design of extension of the embankment towards the side beyond of the embankment is proposed in form of a typical earth-fill embankment, with the parameters:

- a) embankment's crest width approx. 3 m,
- b) landside and riverside slope grade 1:1.5 – 1:2.5,
- c) average height increase of 1 m.

Proposed embankment will be joined with the Vistula River embankment (Vistula River Stage 2), which was extended towards the river side direction – the length of junction approx. 100 m. It is anticipated the following:

- construction of paved flood route including berms and turnouts next to the foot of embankment from the side beyond the embankment, and connection to the existing roads,
- construction of paved flood route away from the foot of the embankment from the side beyond the embankment (recreating of already existing road), including connection to the existing tar road,
- provision of a landscaped strip along both sides of embankment,
- construction of a vertical anti-filtration barrier in the axis of the embankment, including connection to the barrier of Vistula River Stage 2,
- extension of the existing embankment's crossings, including hardening of road surface,
- provision of a boulevard – retaining wall (sheet pile wall with concrete clamp, including a guard rail) on the riverside, including earth-fill embankment on side beyond the embankment.

#### **Section 2 approx. at km 3+130 – 3+445:**

- continuation of the retaining wall (sheet pile wall with concrete clamp, including a guard rail), extension of existing embankment's crossing,
- provision of mobile flood protection system,
- provision of a landscaped strip along the riverside of embankment,
- provision of drainage along the proposed retaining wall (the side beyond the embankment),
- construction of a road barrier in vicinity of the retaining wall, with district road, and change of location of existing road barrier at embankment's crossing at approx. km 3+180.

#### **Section 3 approx. at km 3+445 – 4+445:**

- extension of the embankment towards the riverside (overlapping with the retaining wall), in form of addition of a new typical earth-fill embankment with the following parameters:
  - a) embankment's crest width approx. 3 m,
  - b) riverside slope grade 1:1.5 – 1:2.5,
  - c) landside slope grade 1:1.5 – 1:10 (requirement to provide embankment's crossing),
  - d) average height increase of 0,45 m.
- provision of a landscaped strip along the river side of embankment,
- extension of the existing embankment's crossings, including hardening of road surface,
- provision of surfaced anti-filtration protection – at embankment's waterside slope (foil or bentomat) and vertical at the foot on riverside slope,
- provision of protection against animals digging barrows,
- provision of drainage (the side beyond the embankment) along proposed earth-fill embankment – near the road located on the embankment's crest,
- construction of access road located on the embankment, including turnout (strengthening of the slope of the embankment from the side beyond the embankment), pedestrian walkway and road barrier,
- demolition of existing exist roads at approx. km 3+432, 4+085, 4+172, 4+406.

As a part of the Project it is foreseen to provide temporary technological roads (to be dismantled on completion of the works) and reinstatement (renovation) of access roads used for construction transport.

During the extension of the embankment it might be necessary to reconstruct or protect underground services clashing with the works. Hectometer marking, embankment's turnpikes and slope stairs will be provided as well.

As part of the Project it is proposed to modernize the embankment by increasing its height and width, in form of the earth-fill embankment at km 0+000 – 2+960 (Section 1) and at km 3+440 – 4+445 (Section 3), and in form of a boulevard (retaining wall on river side and earth-fill embankment on side beyond the embankment) and the retaining wall (sheet pile wall with concrete camp) at km 2+955 – 3+180 and 3+212 – 3+445 (partly Sections 1 and 2), and with mobile flood protection system at km 3+180 – 3+212.

Work related to extension of the embankment will be carried out at a substantial distance from the San River bed, maintaining current condition of the riverside's area. The exception will be a short section, where extension of the embankment towards the side beyond the embankment would have to include demolition of residential buildings located directly at the foot of side of the embankment.

The environment protection solutions which will be applied, will include i.e. elimination of idling of combustion engines of machines and transport vehicle during stoppage and work breaks, etc., spraying of surface exposed to dusting, in the area of currently executed works, during rainless periods, use of tilts during transport of soil and loose materials or for their storage, maintaining paved road surfaces (e.g. access roads) used by vehicles, in good technical condition; in the areas near residential buildings for the duration of the construction works, in the end section of the embankment, along provincial road no. 854 (at approx. km 3+340 to km 4+445) temporary acoustic screens will be provided. Repair works, maintenance, refueling of the construction equipment will take place outside of the Project area. The risk of contamination of water by vehicles and equipment will be limited by introduction of ongoing regular inspections of technical condition of equipment and provision e.g. sorbents enabling neutralization of leaks on the construction site.

The option selected for the implementation will not involve interference in the San River bed, riverside habitats, and the interference in habitats in the river side's area will be



very small, limited only to small sections of celernic meadows. It is anticipated that only approx. 0.18 % of this habitat will be affected. Interference in other protected habitats will be equally small. It is estimated that the implementation of the project will affect approx. 0.01 % of habitat no. 6510 and approx. 0.005 % of habitat no. 91E0.

Due to the Project implementation a number of trees and shrubs was identified for felling, because of clash with proposed construction works. The option which is preferable for the implementation limits the necessary felling to a minimum – it is anticipated that approx. 150 trees and approx. 0.5 ha of shrubs will be removed from the area behind of the embankment and the river side's area. Trees and shrubs which are not identified for felling will be adequately protected during construction phase.

During embankment's maintenance works, within five years after completion of works, the Project's area should be checked for the presence of foreign invasive plants. If the embankment's maintenance works (i.e. mowing) will not be sufficient for removal of these plants, after botanist's consultation, other the actions should be taken to their effective removal.

Signed:

Jarosław Jędral, Deputy Regional Directorate for the Environmental Protection in Rzeszów  
For the Regional Directorate for the Environmental Protection in Rzeszów