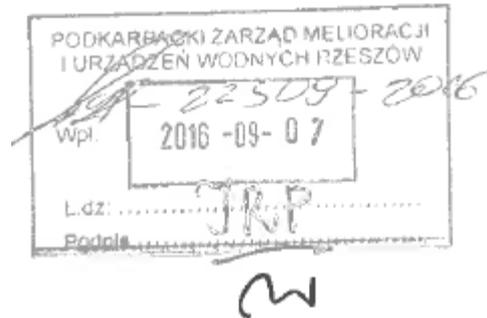


Rzeszów, 7 September 2016.



**REGIONALNY DYREKTOR
OCHRONY ŚRODOWISKA
W RZESZOWIE
REGIONAL DIRECTOR OF
THE ENVIRONMENTAL PROTECTION
IN RZESZÓW
38 Józefa Piłsudskiego Alley
35-001 Rzeszów**

WOŚ.4233.24.2013.MG.157



DECISION

Acting on the basis of:

- article 104 of the Act of 14 June 1960 - the Code of administrative procedures (Journal of Laws of 2016, item 23 as amended);
- article 71 clause 2 point 2, 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 3 October 2008 on provision of information on the environment and its protection, public participation in the environmental protection and environmental impact assessments (Journal of Laws of 2016, item 353, as amended);

upon the consideration of the request dated 8 April 2013 submitted on behalf of the Podkarpackie Province by Mr. Stanisław Stachura, Director of the Podkarpacki Board of Amelioration and Hydraulic Structures in Rzeszów to issue a decision on environmental conditions for the project titled: "Vistula Stage 2 - Expansion of the right embankment of the Vistula river over a length of 13.959 km, the right embankment of the San river over a length of 2.193 km and the left embankment of the Łęg river over a length of 0.112 km, within the Communes of Gorzyce and Radomyśl nad Sanem, the Podkarpackie Province" and its accompanying documentation including among others:

- Project information sheet,
- Site and altimetric map covering the area where the project will be implemented and comprising the area which it affects.
- Report on Environment Impact Assessment developed in May 2014 by FPP Consulting Ltd. Co. seated at: 50/52 Wilcza Street, 00-679 Warsaw. Its authors: Marzena Zblewska, Emilia Olkowska, Katarzyna Semaniuk, Wojciech Ciużycki, Rafał Cieślak, Jan Kuszniery, Piotr Tarasiuk, Maciej Arciszewski, Wojciech Czerniak, Michał Jantarski, Janusz Hejduk, Karol Szymankiewicz, Marta Wronka-Tomulewicz, with additions and explanations

I declare

I specify the environmental conditions for the project titled: "Vistula Stage 2 - Expansion of the right side embankment of the Vistula river over a length of 13.959 km, the right side embankment of the San river over a length of 2.193 km and the left side embankment of the Łęg river over a length of 0.112 km, within the Communes of Gorzyce and Radomyśl nad Sanem, the Podkarpackie Province"

Investor of the project - Marshal of the Podkarpackie Province

I. Type of project and place of its implementation:

The project involves the expansion of four sections of the existing embankments with their total length of 16.264 km:

Section I - the right embankment of the Vistula river at the section: 0+000 - 7+205, at the river kilometrage: 286+816 - 279+416

Section II - the right embankment of the Vistula river at the section: 0+000 - 4+889, at the river kilometrage: 278+750 - 273+650

Section III - the right-hand side embankment of the Vistula river at the section: 0+000 - 1+865 at the river kilometrage: 271+806 - 273+783, the left-hand side embankment of the Łęg at the section: 0+000 - 0+112 at the river kilometrage: 0+770 - 0+900

Section San River - the right-hand side embankment of the San river at the section: 0+000 - 2+193, at the river kilometrage: 0+239 - 2+276

Within its scope it covers: elevation and extension of these embankments (their crest) together with compaction of their body, execution of a vertical anti-filtration barrier, anti-filtration protection of the water-side embankment slope, execution of maintenance roads and green paths as well as adaptation of the existing infrastructure to the new technical parameters of these embankments and demolition of the building located at the cadastral plot no. 975, the precinct of Wrzawy.

Location of the project:

Section I - Precinct of Chwałowice - 4, 5, 6, 13, 14, 15, 16, 17, 18, 19, 20, 21,22, 23, 24, 25, 26, 44, 381, 382, 383, 384, 385, 386, 387, 388/2, 388/1, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408/2, 409/1, 409/2, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 475, 910/1, 424/2, 424/1, 426/1, 426/2, 427/1, 427/2, 428/1, 428/2, 429/1, 430/1, 431/1, 432/1, 433/1, 433/2, 434/1, 434/2, 435/1, 435/2, 436/1, 436/2, 408/3, 408/4, 437/1, 437/2, 438/1, 438/2, 439/1, 439/2, 440/1, 441/1,442/1, 443/1, 444/1, 445/1, 446/1, 447/1, 448/1, 449/1, 450/1, 451/1, 452/1, 453/1, 454/1, 455/3, 456/3, 457/3, 458/1, 459/1, 460/1, 275/1, 272/1, 272/3, 273, 271, 267, 145, 270, 268/2, 268/1, 93/1, 92/1,92/2, 91/1, 91/2, 90/1, 89/1, 87/1, 86/1, 85/1, 84/1, 84/2, 80/1, 80/2, 50/1, 50/2, 49/1, 49/2, 48/1, 47/1, 45/1, 272/4, 88/1, 39.

Section I - Precinct of Witkowice - 2, 3, 4, 5, 6, 8, 9, 10, 12, 13, 14, 15, 46/2, 47/2, 48/2, 49/2, 50/2, 50/1, 49/1, 48/1, 51/2, 51/1, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 106, 107, 108, 109, 110, 111, 112, 113, 114/2, 114/1, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146/1, 146/2, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172/2, 172/1, 173, 174/1, 174/2, 175, 176, 177, 178, 179, 180, 181, 182, 183, 186, 187, 202, 203/6, 203/2, 203/1, 203/3, 203/4, 203/5, 518/4, 518/2, 516/2, 516/1, 517/2, 517/1, 514/2, 514/1, 513/2, 513/1, 510/1, 510/2, 509/1, 509/2, 505/1, 505/2, 504/5, 504/6, 504/3 504/1, 504/4, 503/1, 503/2, 500/1, 500/2, 499/1, 499/2, 337, 498/2, 498/1, 497/6, 497/5, 497/3, 497/4, 494/1, 494/2, 206/5, 206/6, 206/4, 206/3, 207/1, 207/2, 208/1, 208/2, 209/1, 209/2, 210/1, 210/2, 211/1, 211/2, 212/1, 212/2, 213/1, 213/2, 214/1, 214/2, 215/1, 215/2, 216/1, 216/2, 217/1, 217/2, 218/1, 218/2, 219/1, 219/2, 220/1, 220/2, 221/1, 221/2, 222/1, 222/2, 223/1, 223/2, 224/1, 224/2, 225/1, 225/2, 226/1, 226/2, 227/1, 227/2, 228/1, 228/2, 229/1, 229/2, 230/1, 230/2, 231/1, 231/2, 232/1, 232/2, 233/1, 233/2, 234/1, 234/2, 235/1, 235/2, 236/1, 236/2, 237/1, 237/2, 238/1, 238/2, 240/1, 240/2, 241/1, 241/2, 242/1, 242/2, 244/1, 244/2, 245/1, 245/2, 246/1, 246/2, 247/1, 247/2, 248/1, 248/2, 249/1, 249/2, 250/1, 250/2, 251/1, 251/2, 252/1, 252/2, 253/1, 253/2, 254/1, 254/2, 255/1, 255/2, 256/1, 256/2, 259/1, 259/2, 260/1, 260/2, 258/3, 258/4, 261/1,

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II. Conditions on utilisation of the land at the stage of implementation and operation or usage of the Investment, taking into special account the need to protect valuable environmental assets, natural resources and historical sites and to reduce nuisance to their neighbouring areas:

1. All storage places of bulk materials will be secured against its dispelling and dissolving (e.g. by means of tarpaulins).
2. All storage places of construction materials and/or waste will be set up beyond the special flood hazard area.
3. The risk of water contamination by operational fluids derived from vehicles and machines will be mitigated by running regular checks on the technical condition of equipment and provision of sorbents (aimed to neutralise leaks) at the construction site.
4. No repairs and maintenance of facilities and equipment (e.g. oil replacement etc.) will be conducted at the construction site.
5. The construction site facilities should be located at places which allows for the delivery of materials which require periodic storage prior their use at the construction site. Access roads to the construction site should be lined with concrete slabs, which - upon the completion of works - will be removed.
6. The construction site facilities will be equipped with portable toilets (being provided with features to collect domestic waste by companies with appropriate entitlements to conduct this type of activity).
7. All construction works will be conducted beyond the flood risk period.
8. All earthworks should be conducted at riverside positions, first from one river bank and then from the other, in the way which ensures keeping the base flow.
9. Drainage water from construction trenches, prior to their introduction into the environment, should be cleaned (due to the high content of total suspension).
10. It is prohibited to take ground (soil mass) from within the inter-embankment area.
11. In the course of the project no works may interfere in the Vistula riverbed and its riverside vegetation; then their interference into the inter-embankment area will be limited to its marginal side which is directly adjacent to the planned embankment . The Investment will be limited to the area directly occupied for the investment i.e. the redeveloped section of

the embankment with a technological landline margin within its demarcation lines and the construction site facilities area.

12. Prior to conducting earthworks, it is necessary to remove a fertile layer of soil with its thickness of 20 - 30 cm, which is then to be stacked at the behind-embankment and used to clear the area upon the completion of construction works and top-soiling.
13. This fertile layer of soil will be removed beyond the period from 1 March to 31 July. At wetlands, within which the environmental supervision unit reports the habitat of amphibians, it will be conducted in the period from 1 August to 15 October. If - due to technical reasons - it is necessary to conduct it (thoroughly or partially) at another time it will be performed under the environmental supervision unit.
14. It is prohibited to store waste, earth masses and set up material bases within the inter-embankment of the Vistula river, hollows and areas of water stagnation, wetland depressions as well as within other wildlife habitats specified by the environmental supervision unit.
15. Construction materials as well as aggregate and waste materials will be transported along the existing roads or temporary roads which are set out in such a manner as to limit their interference into wildlife habitats specified by the environmental supervision unit.
16. The construction site facilities should be set up beyond the place of occurrence of wildlife habitats, i.e. within min. 30 m from the edge of a given valuable natural habitat (its panel). The selection of this place of the construction site facilities requires consultation with the environmental supervision unit. It is permitted to locate material bases at the following locations:

A. Section I:

a) main:

- at km 0+550 - 0+750 (at the water-side and land-side),
- at km 1+750 - 2+500 (at the land-side),
- at km 5+650 - 5+750 (at the land-side),
- at km 7+000 - 7+200 (at the water-side and land-side),

b) potential

- at km 0+000 - 0+550 (at the water-side and land-side),
- at km 0+750 - 1+750 (at the water-side and land-side),
- at km 2+500 - 2+700 (at the land-side),
- at km 2+550 - 2+650 (at the water-side),
- at km 2+750 - 2+850 (at the land-side),
- at km 2+870 - 5+650 (at the land-side),
- at km 5+750 - 7+000 (at the land-side),
- at km 6+100 - 6+250 (at the water-side),
- at km 6+900 - 7+000 (at the water-side),

B. Section San:

a) main:

- at km 0+000 - 0+150 (at the embankment water-side and land-side),
- at km 0+000 - 1+600 (at the land-side),
- at km 1+850 - 2+200 (at the land-side),

C. Section II:

a) main:

- at km 0+200 - 1+600 (at the land-side),
- at km 1+700 - 1+800 (at the land-side),
- at km 2+550 - 2+700 (at the water-side and land-side),
- at km 4+170 - 4+250 (at the water-side and land-side),
- at km 4+850 - 5+000 (at the water-side and land-side),

b) potential

- at km 0+000 - 0+100 (at the water-side and land-side),
- at km 0+150 - 0+200 (at the land-side),

- at km 4+450 - 4+850 (at the land-side),
 - at km 4+600 - 4+850 (at the water-side),
- D. Section III:
- a) main:
 - at km 0+050 - 0+350 (at the water-side and land-side),
 - at km 0+800 - 1+000 (at the land-side),
 - at km 1+300 - 1+500 (at the land-side),
 - b) potential
 - at km 0+350 - 0+800 (at the water-side and land-side),
 - at km 0+800 - 0+950 (at the water-side),
 - at km 1+300 - 1+500 (at the water-side),
 - at km c. 2+000 (at the water-side).

In the first place the location of material bases will affect the areas specified above as the principal ones.

17. The felling of approx. 2910 trees and shrubs with its area of approx. 3.12 ha will be limited to the area within the project demarcation lines. Moreover, this felling will be conducted within the period from 16 October to 15 February.
18. It is unacceptable to damage trees and shrubs which are not intended for felling and near which earthworks related to the investment are conducted. The following will be applied: trunk covers e.g. such as straw mats, formwork made of braided wired boards (trimmed boards, 2nd class, min. thickness - 20 mm, round galvanised steel wire), soil used to backfill boards at the base of tree trunks. In case the above protective measures cannot be technically applied, it is recommended to enclose (for the duration of the work) groups of tree / shrub plantings. Wooden bars having a diameter of approx. 6 cm and a height of approx. 2.5 m, polypropylene mesh with a height of approx. 1.8 m in bright colours, galvanised wire will be used among others to secure greenery; in case this is not technically plausible, fencing will be made by means of a coloured tape. When works are completed at a given section, the above-specified protective measures will be removed. It is prohibited to gather any construction materials and/or near tree trunks (i.e. within the contour of tree crests and at least 2 m beyond this contour) and shrubs. Fungicides will be applied to protect wounds of trees and shrubs after technical cuts and for potential maintenance of greenery damaged during the execution of works.
19. All valuable natural habitats pointed out by the environmental supervision (e.g. alluvial forests, plant clusters to be protected etc.) in the proximity of which works will be conducted will be properly protected during works e.g. by means of tape enclosures.
20. The section from the estuary of the San river downstream to the village of Zawichost will be completely excluded from works in the period from April 1 to the end of June. At this section heavy construction works i.e. earthworks conducted with the use of heavy construction equipment, earth fertilisation will be performed in the period from 1 August to the end of January. Lighter works i.e. clean-up works without the use of heavy construction equipment and high-capacity trucks may be used throughout the year except for the period from April to June.
21. Works interfering into breeding sites for amphibians identified by the environmental supervision (e.g. water reservoirs, drainage ditches, drains from embankment water locks, places of periodic water stagnation) will be conducted beyond the period from 1 March to 30 June, then works interfering into wintering places for amphibians identified by the environmental supervision will be conducted with the exception of the period from 1 November to end of February. Works interfering with breeding and wintering sites for amphibians should be performed in the period from 1 July to the end of October.
22. Works conducted at spring mass migration places for amphibians identified by the environmental supervision will be made within a landline (with its width corresponding to the width of the migration corridor) with the exception of the period from 1 March to 31 May, i.e. upon the end of the main period of breeding migrations of this group of animals. These temporary enclosures of the above-mentioned corridors are designed to allow

amphibians to reach their mating places and reduce their mortality (being run over by mechanical equipment). Fences - as recommended by the herpetological supervision unit also used in the period of autumn migrations in order to protect individuals moving to their wintering grounds. Fences will be placed within the following mileage:

A. Section I:

- a) at km 2+200 - 2+350 (at the water-side),
- b) at km 2+600 - 2+800 (at the water-side),
- c) at km 2+750 - 2+850 (at the land-side),
- d) at km 3+850 - 4+200 (at the land-side) and within a length of approx. 150 m on the right side of the access road at km 4 + 100 of the embankment,
- e) at km 4+750 - 5+400 (at the water-side),
- f) at km 5+600 - 5+700 (at the water-side),
- g) at km 6+150 - 6+230 (at the water-side),
- h) at km 6+150 - 6+300 (at the land-side),
- i) at km 6+150 - 6+250 (at the water-side),
- j) at km 6+650 - 7+000 (at the land-side),

B. Section San

- a) at km 1+450 - 1+600 (at the land-side) and within a length of approx. 100 m along the right side of the local access road (which allows to reach the embankment) located at km around 1+600,

C. Section II

- a) at km 0+000 - 0+100 (at the water-side),
- b) at km 0+800 - 1+150 (at the water-side),
- c) at km 0+920 - 1+120 (at the land-side),
- d) at km 1+950 - 2+000 (at the water-side),
- e) at km 1+950 - 2+100 (at the land-side),
- f) at km 2+250 - 2+050 (at the water-side),
- g) at km 2+850 - 3+150 (at the water-side),
- h) at km 3+150 - 3+300 (at the water-side),
- i) at km 4+500 - 5+000 (at the water-side),
- j) at km 4+700 - 5+000 (at the land-side) together with the double-sided fencing local of the local access road (which allows to reach the embankment) (at km around 4+900) within a length of approx. 100 m

D. Section III

- a) at km 0+450 - 0+550 (at the land-side),
- b) at km 1+300 - 1+720 (at the land-side),
- c) at km 1+900 - 2+000 (at the land-side).

In case the environmental supervision considers it justified, the above-mentioned fences may be placed also at other sections specified by the supervision. The design of these enclosures was specified in Point 25.

23. Wheel tracks and other ground depressions (emerged at the construction site) where water can be collected will be immediately eliminated in order to prevent amphibians from their spawn deposition and settlement at these places. All amphibian habitat which will emerge at the construction site i.e. deep trenches with stagnant water, deep wheel tracks, will be - prior to their backfilling - checked for the presence of amphibians. In case any amphibians are found, it is necessary to drain water and - upon lowering the water level - penetrate the bottom and catch animals under the herpetological supervision unit. Any caught animals should transferred to appropriate (for individual species) habitats. Dried trenches, wheel tracks should be backfilled just after these animals are caught, in the presence of a herpetologist.
24. Wetlands, which are the habitat of amphibians, prior to their elimination should be checked by the herpetological supervision unit for the presence of animals. Wetlands will be eliminated under the herpetological supervision. Works will be conducted in September. Any caught animals should transferred to their - appropriate for individual

species - habitats. In case it is necessary to destruct habitats which are wintering places for amphibians, at the beginning of September for the duration of works, these habitats should be enclosed in order to restrict access to them by winter migratory birds.

25. In order to secure the construction site against the potential entry of amphibians into the area, prior to starting construction works, protective fences will be placed within sections pointed out by the environmental supervision unit. These fences will be made full (e.g. using film) or perforated (e.g. using mesh, with their maximum mesh size of 4.5 to 4.5 mm) and is buried down to a minimum depth of 15-20 cm. The height of aboveground fencing, throughout its length, will be at least 50 cm. The upper edge of fencing will be smoothly finished and bent outwardly, throughout its length, at an angle of 45-90° forming a peak with minimum width of 10 cm. This protective fencing - during the activity of amphibians - will regularly (at least once a week) checked for leaks. Any defects will be eliminated on a regular basis.

Vegetation along these protective fences will be mowed. At the ends of this protective fencing, it is necessary to dig out pits with their dimensions of approx. 0.5 x 0.5 x 0.2 m, which will be lined with film (instead of pits, little buckets with more or less the same dimensions can be tightly dug ii). Twice a day: in the morning and evening - during the activity of amphibians - the herpetological supervision unit will collect amphibians gathering along the fencing as well as found in pits / buckets and transported them to their replacement position. It is advisable to place, for example, sticks in buckets in order to let small mammals leave them. Upon the period of activity of amphibians such pits / buckets will be removed.

26. Trenches and structures which can be a trap for small animals, mostly amphibians, should be appropriately secured (e.g. tightly cover after day's works). Moreover, the above-mentioned places will be checked daily and, in case of any animals trapped in them, they will be caught and transferred to their - appropriate for given species - habitats beyond the area of works.
27. In case, valuable species of saproxylobionts (including, among others: Hermit beetle) are found within trees projected for removal, it is necessary to take out rotten wood with them at their larval or other preimaginal stages and transfer them to another tree (with visible wood depreciation) located nearby. These works will be performed under the supervision of an entomologist.
28. It is prohibited to eliminate reeds at the Strachocka river and any interference into them. No construction works will be conducted in the period from 1 April to 31 July within a distance of less than 50 metres from them.

29. Nesting booths should be hung out as part of the investment:

- a) the total number - 280, including: 105 - type "A", 150 - type "B", 6 - type "D" for hoopoe, 9 - for mergansers and owls, 2 - for nuthatch, 8 - for kestrels,
- b) at least half of these booths will be hung out within Section II where felling will be the most intense.
- c) works related to the hang-out of nesting booths for birds should be conducted under the supervision of an ornithologist with the record of their location in the GPS system and at the map
- d) these boxes will be regularly (annually) maintained and cleaned in autumn and winter periods (removal of old nests - in the period from 16 October to the end of February). During this period their occupation by birds will be monitored. As part of this monitoring while cleaning it is necessary to run one-off checks of their settlement (on the basis of manure, feathers, element used for building a nest, egg shells, etc.). Such monitoring will be conducted by an ornithologist. Such maintenance, cleaning and monitoring of the existing boxes will be run for a period of 10 years from the start of construction works and of new boxes - for 10 years upon their set-up. Appropriate permits should be

obtained for the above-mentioned activities to be conducted within the nature reserve area.

30. As part of the investment it is required to hang out boxes for bats in the number of approx. 50 along the entire section of performance of these works, in the inter-embankment area at places specified and supervised by a chiropterologist. These boxes will be made from sawdust, wood or other material in accordance with the current environmental knowledge and guidelines provided by the chiropterological supervision unit. Breeding boxes will be hung at trees at a height of over 4 metres, at a distance of not less than 50 metres from one another on the western or southern side of their trunks. These boxes will be arranged in tree clusters in the inter-embankment, more or less evenly, in sunny places which border with tree plantings. Their exact locations must be fitted to terrain and habitat conditions taking into account access (convenient access road / path) at their installation and monitoring. When hanging these breeding boxes it is necessary to mark their positions (via the GPS system) and draw up a map of their locations. It is possible to place them close to the embankment, which allows for their hang-out as well as further monitoring. They are projected to be monitored for 3 years starting from their hang-out. Inspections will be conducted once in autumn months when cleaning boxes (when their settlement, e.g. on the basis of droppings, will be reported).
31. As part of the investment it is necessary to mount 25 poles with a height of 120-180 cm, with planting of wild rose bushes in order to create favourable habitats for red-backed shrike. These poles will be arranged at a distance of 300 metres from one another, on the eastern side of the embankments, at a distance of 20 - 30 metres from them (so as not to interfere with their infrastructure and mowing). Such poles with rose bushes should be placed in open areas for: Section II: 0+000 - 2+000 km of the embankment, Section I: 5+800 - 7+100; 3+600 -4+300 and 0+000 - 2+500 km of the embankment. The above-specified works will be performed under the supervision of an ornithologist.
32. Upon the completion of earthworks, it is necessary to immediately clean up the area covered by these works: sow any damaged ground surfaces, grass the redeveloped section of the embankment and sow with a mixture of indigenous plants conforming habitat requirements in order to minimise surface erosion and suspension-forming fractions fail to reach waters.
33. For a minimum period of 5 years from the completion of construction works the area covered by the project should be monitored for the occurrence of invasive foreign plants. In case such species are found, it is required to take actions to remove them. This monitoring should be run while the embankments are mowed. In case such conducted treatments referring to the embankments and their maintenance (e.g. mowing) are not effective to remove the above-specified plants, the botanical supervision unit which supervises the area will specify measures aimed to eliminate the above species. This monitoring and elimination of the above-specified species should cover the expanded embankments but also the area which is adjacent to them which is not less than the one located within the project demarcation lines. Based on such botanical monitoring and its results the Investor will take appropriate action to eliminate these plants.
34. Any works interfering with watercourses, ditches and their beds should be performed beyond the period from March 1 to June 30 and conducted from their bank positions.
35. The project in consideration will be conducted under the supervision of an experienced environmental supervision team:
 - a) It will be composed of ornithologist, botanist, herpetologist, entomologist and chiropterologist; this environmental supervision will be performed by specialists with higher education in the field of biology, forestry, environmental protection who has run at least two professional wildlife supervisions during investments in the field of ornithology / botany / herpetology, respectively (in case a given specialist has experience in the field of for example botany and herpetology it is possible to combine these two functions by one person); there will be monthly reports prepared which will cover activities conducted under the environmental

- supervision; there will be a statement / report on this conducted environmental supervision, together with photographic documentation, will be submitted to this body (local authority) within six months upon the completion of the investment;
- b) throughout the duration of the investment the environmental supervision unit will oversee the observance of the terms and conditions of the present decision, as well as supervise:
 - appropriate protection and organisation of the construction site, back-up facilities, material bases, car parks and waste storage sites;
 - detection and identification of animal species within the area of construction works and application for derogation decisions in case of protected species;
 - c) herpetological supervision unit - along the entire section of the conducted works - will:
 - monitor the construction works area for the presence of amphibians and take actions from the scope of their protection, catchment and movement;
 - identify the presence of amphibians in the vicinity of the construction site and oversee the elimination of potential risks,
 - undertake and coordinate actions related to the active protection of amphibians and control the effectiveness and quality of works conducted in this field,
 - monitor the state of security of the construction works area (protective fences);
 - d) catchments (from traps) should continue throughout the activity of amphibians; caught amphibians will be transferred to their suitable habitats located beyond the construction site as selected by the herpetological supervision unit; In case of amphibians migrated for breeding "in amplexus", they will be transferred in pairs; amphibians should preferably be transferred with soft water plants, moss or leaves, preferably in humid conditions than in water; if this transfer occurs in water, its amount has to be adapted to its individuals and their sizes; monitoring over the state of temporary fencing (protective fences must be performed at least once a week e.g. during inspections of catchment traps);
 - e) In case of any identified collision of conducted works with plants under the species protection, the botanical monitoring unit will state it necessary to apply for a derogation decision; if let by technical conditions, copies of protected species will be transferred to their suitable habitats; the botanical supervision unit will supervise, among others, the observance of the intended scope of felling of trees and shrubs, oversee the protection of trees and bushes not intended for removal, will select and enclose (using a tape) valuable habitats near which works are conducted, control the execution of grassing at the embankment and sowing with a mixture of indigenous plants, monitor the presence of invasive foreign species and - in case of their occurrence - set the rules for their removal,
 - f) the ornithological supervision unit will, among others: supervise the felling of trees and shrubs and oversee the removal of humus and activities related to the hang-out of boxes for birds and their monitoring, as well as - in the period from March 1 to July 31 - will supervise the course of works in the vicinity of reeds at the Strachocka (except for the period of April - June when any works at the section from the estuary of the San river to Zawichost are prohibited);

- g) the entomological supervision unit will among others: supervise trees projected to be removed within which there may be present valuable species of saproxylobionts; in case of their finding appropriate actions will be undertaken;
 - h) the chiropterological supervision unit will supervise the felling of trees which - taking into consideration of their dimensions and character (e.g. the presence of tree hollows, protruding bark portions) - are assumed to be the habitat of bats; in case of identification of these organisms within them, take appropriate actions; also oversee activities related to the hang-out and monitoring of boxes for bats;
 - i) at least 8 visits per months are recommended under the wildlife supervision; the herpetological supervision will be conducted on a continuous basis during the spring and autumn migration of amphibians; upon every visit, there will be a description on the state, conditions and possible indications for the contractor together with by photographic documentation drawn up in the form of Environmental Supervision Card.
36. The embankment at the operation stage will be mowed:
- a) within Section I - mowing at the embankment water-side slope will start not earlier than on 15 June, then at the embankment water-side slope - not earlier than on 1 July,
 - b) within Section II, II and Section San River - mowing will start not earlier than 1 June,
 - c) the embankment should be mowed in turns i.e. on 1 June the embankment will be mowed along a length of, for example, 300 metres, then further 300-metre sections will be mowed with a delay two weeks; in case of necessity (to remove invasive vegetation) it is acceptable to mow the embankment at an earlier date, in consultation with the environmental supervision unit.
37. Prior to the start of construction works, the boundaries of the "*Wisła pod Zawichostem*" Nature Reserve will be marked by means of 35 boards with the following text: "*Rezerwat przyrody Wisła pod Zawichostem*" ["*Wisła pod Zawichostem* Nature Reserve"] made of galvanised steel sheet. Each of them will be placed on a steel post fixed to the ground.
38. At the stage of performance of construction works, the following technical and organisational measures should be applied: keep machines which emit noise and vibrations during the project implementation in good conditions which will allow for the observance of the standards set out in the applicable detailed regulations, construction works related to the project implementation will be conducted daytime i.e. from 6.00 AM to 10.00 PM only
39. The existing buildings and structures should be inventoried prior to the commencement of works and upon their completion. The work contractor will be accountable for its accomplishment. In case of conducting construction works which cause the transmission of vibration exceeding the acceptable standards, appropriate methods aimed to reduce nuisance should be undertaken (in particular in respect to residential premises close to the embankments in the field of their technical security and comfort for sanitary maintenance and use).
40. In order to reduce a level of noise emitted to the environment during construction works conducted close to the existing residential premises, it is necessary to use portable sound barriers with their height of min. 4.0 m.
41. Access roads used to transport materials will be kept in good conditions and - upon the completion of construction works - their state will be restored to the one (or at least not worse than the one) prior to the project implementation.
42. It is required to seek to minimise the environmental impact of the project during its implementation through, among others, organisational solutions, which include:
- a) elimination of idling operation of combustion engines of machinery and transport equipment, among others during stops, breaks, etc.,

- b) spray of ground surface in rain-free periods,
 - c) application of tarpaulins when soil and bulk materials are transported and stored,
 - d) maintenance of exit routes in good condition.
43. Waste generated during the project implementation will be stored separately in containers at the construction site facilities.

III. Requirements on the environmental protection required to be taken into account in the construction project

1. The recommendations arising from Point II of the Decision will be taken into consideration.
2. A vertical anti-filtration barrier will be made embankment water-side foot. This barrier will be linked with a geomembrane screen. The barrier will reach max. 10 m below the terrain level. This screen in the embankment water-side slope will be made of geomembrane anchored at the top at the embankment crest and in the bottom in the vertical anti-filtration barrier.
3. Parameters of the extended embankments:
 - Section I:
 - width of the embankment = approx. 3 m and approx. 5 m at a road section going along it,
 - inclination of the embankment water-side slope = 1:2.5-1:4.7 and the embankment water-side slope = 1:2.5-1:2.7,
 - ordinate of the embankment crest = 143.91-145.90 m above sea level. (linked to the existing embankment ordinate).
 - Section II:
 - The width of the embankment crest = approx. 3 m and approx. 5 m at a road section going along it.
 - inclination of the embankment water-side slope = 1:2.2-1:4.2 and the embankment water-side slope = 1:2.5;
 - ordinate of the embankment crest = 146.06-147.79 m above sea level. (linked to the existing embankment ordinate).
 - Section III
 - The width of the embankment crest = approx. 3 m and approx. 5 m at a road section going along it.
 - inclination of the embankment water-side slope = 1:2-1:4 and the embankment water-side slope = 1:2-1:3,
 - ordinate of the embankment crest = 147.79-148.24 m above sea level. (linked to the existing embankment ordinate).
 - Section San River
 - width of the embankment crest = 2.5-4 m,
 - inclination of the embankment water-side slope = 1:2.5-1:4.1 and the embankment water-side slope = 1:2.6-1:2.8;
 - ordinate of the embankment crest = 145.90-146.23 m (linked to the ordinate of the existing embankment).
4. There will be no "green route" at the section running through the "Wisła nad Zawichostem" Nature Reserve i.e. at the section with a length of approx. 300 m (at the land plot no. 2, within the precinct of Witkowice, in the Commune of Radomyśl nad Sanem).
5. At the modernised embankment ramps in Section I, apart from ramps at km 0+530 and 6+410, it is required to set up barriers aimed to limit free entry into the inter-embankment by unauthorised persons / units but letting land owners to enter (drive into) it.
6. In order to secure the flood-protection embankments against digging and burrowing animals, there will be a galvanised steel mesh placed from the base of the flood-

protection embankment to the height of control water at the embankment water-side slope, at a depth of min. 0.2 m below the ground. This mesh will have the following parameters:

- thickness of its wire: min. 2.5 mm
- maximum dimensions of its eyelet: 8 x 8 cm,
- anchoring by means of steel bars in an amount of min. 1 pc. per 1m². This mesh will be mounted along the entire length of the embankments covered by the project.

7. Any interference with watercourses/trenches is permitted only to a limited extent, i.e.:

A. watercourses are permitted to be reinforced only within the redeveloped embankments water-locks / their inlets / outlets, respectively,

Section I:

a) the embankment water-lock 1.1 at km 2+735 at the drainage ditch:

- the inlet: reinforcement of the bottom with a stone cover and the slopes with mesh-stone mattresses at a length of up to 5 m and a bank-wall (river-bank band) made of fascine bunch at a length of up to 27 m,
- the outlet: reinforcement of the bottom with a stone cover and of the slopes with a mesh-stone mattress at a length of up to 5 m and a bank-wall (river-bank band) made of fascine bunch at a length of up to 25 m, moreover, at its estuary into the reservoir, a stone cover is permitted at a length of approx. 3 m in order to protect the place of water discharge.

b) the embankment water-lock 1.2 at km 4+093 at the drainage ditch:

- the inlet: reinforcement of the slopes with mesh-stone mattresses at a length of up to 27 m and a stone cover at the bottom,
- the outlet: reinforcement of the bottom with a stone cover and of the slopes with a mesh-stone mattress at a length of up to 28 m; moreover a bank-wall (river-bank band) made of fascine bunch at a length of up to 35 m,

c) The embankment water-lock 1.3 at km 6+206 at the Strachocka river:

- the inlet: reinforcement of the bottom with a stone cover and of the slopes with a mesh-stone mattress at a length of up to 11 m; moreover a bank-wall (river-bank band) made of fascine bunch at a length of up to 66 m, locally at the river meander (the left bank) reinforcement of the slope with mesh-stone mattress at a length of up to 20 m,
- the outlet: reinforcement of the bottom with a mesh-stone mattress at a length of up to 4 m, then with a stone cover - up to 6 m and of the slopes with a mesh-stone mattress; moreover a bank-wall (river-bank band) made of fascine bunch at a length of up to 25 m.

Section II:

a) The embankment water-lock 2.1 at km 0+055 at the drainage ditch:

- the inlet: reinforcement of the bottom with a stone cover at a length of up to 14 m and of the slopes with mesh-stone mattresses; moreover a bank-wall (river-bank band) made of fascine bunch at a length of up to 26 m,
- the outlet: reinforcement of the bottom with a stone cover and of the slopes with a mesh-stone mattress at a length of up to 16 m; moreover a bank-wall (river-bank band) made of fascine bunch at a length of up to 23 m,

b) the embankment water-lock 2.2 at km 2+178 at the drainage ditch:

- the inlet: reinforcement of the bottom with a stone cover and of the slopes with a mesh-stone mattress at a length of up to 17 m,
- the outlet: reinforcement of the bottom with a stone cover and of the slopes with mesh-stone mattresses at a length of up to 9 m; moreover a bank-wall (river-bank band) made of fascine bunch at a length of up to 28 m,

c) The embankment water-lock 2.3 at km 4+887 at the Sanna river:

- the inlet: reinforcement of the bottom with a stone cover and of the slopes with mesh-stone mattresses at a length of up to 18 m and a bank-wall (river-bank band) made of fascine bunch at a length of up to 48 m,

- the outlet: reinforcement of the bottom with a stone cover and of the slopes with mesh-stone mattresses at a length of up to 16 m; moreover a bank-wall (river-bank band) made of fascine bunch at a length of up to 30 m,

Section III:

- a) the embankment water-lock 3.1 at km 0+303 at the drainage ditch:
 - the inlet: reinforcement of the bottom with a stone cover at a length of up to 8 m and of the slopes with a mesh-stone mattress - the left bank at a length of up to 31 m, the right bank - at a length of up to 8 m, at the remaining section - the left bank at a length of up to 56 m, the right bank at a length of up to 76 m - a bank-wall (river-bank band) made of fascine bunch,
 - the outlet: reinforcement of the bottom with a stone cover and of the slopes - with mesh-stone mattresses at a length of up to 12 m and then the right bank: at a length of up to 107 m - a mesh-stone mattress, further 119 m - a bank-wall (river-bank band) (fascine bunch), the left bank at a length of up to 113 m - a bank-wall (river-bank band) (fascine bunch).
- B. It is necessary to make plantings upon the completion of works within these reinforcements. In order to strengthen the area of these plantings, jute meshes are recommended to protect crops and seedlings exposed to water erosion. Plantings should be made following the following conditions:
 - a) use plants from the same catchment area for planting aquatic plants,
 - b) use local seeding material or/and grass fragments (obtained prior to the start of works) for seeding lands being exposed during works,
 - c) use self-seedlings (preserved in the course of preparatory works) as much as possible in order to make woodlots.

IV. I do not impose any obligation to run environmental impact assessment under the proceedings on the issuance of permit to implement the investment.

V. I do not consider necessary to run proceedings on cross-border impact under the proceedings on the issuance of permit to implement the investment.

JUSTIFICATION

The Regional Director for Environmental Protection in Rzeszów received a request dated 8 April 2013 submitted by the Marshal of the Podkarpackie Province represented by Mr. Stanisław Stachura, Director of the Podkarpacki Board of Amelioration and Hydraulic Structures in Rzeszów to issue a decision on environmental conditions for the project titled: "Vistula Stage 2 - Expansion of the right embankment of the Vistula river at a distance from Sandomierz up to the boundaries of the Lublin Province at a length of 14.5 km" which was changed to: "Vistula Stage 2 - Expansion of the right embankment of the Vistula river over a length of 13.959 km, the right embankment of the San river over a length of 2.193 km and the left embankment of the Łęg river over a length of 0.112 km, within the Communes of Gorzyce and Radomyśl nad Sanem, the Podkarpackie Province".

The request was properly completed in accordance with article 74, clause 1 of the Act of 3 October 2008 on the provision of information on environment and its protection, public participation in environmental protection and environmental impact assessments.

Through the letter dated 16 February 2015 (symbol: IM.403.55.18.2014), the Applicant requested to recognise the Marshal of the Podkarpackie Province as the Investor who granted a power of attorney in the range of representation to Ms. Małgorzata Wajda, Director of the Podkarpacki Board of Amelioration and Hydraulic Structures in Rzeszów.

The project aims to increase a level of flood protection within the following rivers: Vistula, San and Łęg. It involves the expansion of the right embankment of the Vistula river, the right embankment of the San river and the left embankment of the Łęg river.

The area covered by the project is located within the following Communes: Gorzyce and Radomyśl nad Sanem in the Podkarpackie province. The total length of all the sections planned for expansion amounts to 16.264 km.

The projected investment is classified to a group of projects for which it may be necessary to run a procedure in the range of environmental impact assessment, pursuant to article 63, clause 1 in connection with article 59, clause 1, point 2 of the Act on the provision of information on environment and its protection, public participation in environmental protection and environmental impact assessments in connection with paragraph 3, clause 1, point 65 (*flood-protection structures, excluding redevelopment of flood-protection embankments consisting in sealing of embankment bodies and their substrate, in order to reduce the possibility of their washout and breakage during the passage of flood waters as well as regulation of waters or their drainage understood as management of waters which allow for their use for shipping purposes*) of the Regulation of the Council of Ministers dated 9 November 2010 on the types of projects which may significantly affect the environment (Journal of Laws of 2016, item 71).

Taking into consideration the qualification of flood-protection embankments into flood protection structures, in line with the definition provided in the Act dated 8 July 2010 on special principles of preparation of investments for their implementation in the scope of flood protection structures and constructions (Journal of Laws of 2015, item 966 as amended), for which it is required to determine environmental conditions to implement a given project prior to obtaining a decision / permit to implement this project in the field of flood protection structures, the Regional Director of the Environmental Protection in Rzeszów is the competent authority to issue a decision on environmental conditions and permit for project implementation, pursuant to article 75, clause 1, point 1, letter i of the Act on the provision of information on environment and its protection, public participation in environmental protection and environmental impact assessments.

In accordance with the applicable regulations, information on the submitted request was entered into a publicly-accessible database of documents containing information about

the environment and its protection kept by the Regional Director for Environmental Protection in Rzeszów i.e. Information Card under No. 400/2013.

As the number of parties to the proceedings in this case is more than 20, in accordance with article 74, clause 3 of the Act on the provision of information on environment and its protection, public participation in environmental protection and environmental impact assessments, the provisions of article 49 of the Code of administrative procedures were applied in the scope of correspondence and its delivery. The Regional Director of the Environmental Protection in Rzeszów, though the notice dated 23 April 2013 (symbol: WOOŚ.4233.24.2013.MG-5) notified the parties of the initiation of administrative procedures aimed to issue a decision on environmental conditions for the project implementation.

Upon the analysis of the gathered evidence and taking into account the provisions of article 63, clause 1 of the Act on the provision of information on environment and its protection, public participation in environmental protection and environmental impact assessments, it was concluded, mainly due to the location of the projected investment (partly within the site of community importance: the Valley of the Lower San River PLH180020, partly within the site of community importance: the Tarnobrzeg Valley of the Vistula River PLH180049, partly in the immediate vicinity of the "*Wisła pod Zawichostem*" ["Vistula at Zawichost"] Nature Reserve, threat to wildlife habitats in the area of the investment (projected expansion and anti-filtration protection of the San and Vistula embankments also within other investments) that it is necessary to assess its environmental impact and thus to prepare Report on environmental impact assessment including, among others, an assessment required by the provisions of article 6.3 of the Council Directive 92/43/EEC of 21 May 1992 on the conservation of wildlife habitats and its wild fauna and flora (i.e. the so-called Habitats Directive). Therefore, the Regional Director of the Environmental Protection in Rzeszów issued the decision dated 17 May 2013 (symbol: WOOŚ.4233.24.2013.MG-10) in which he stated an obligation to run Environmental Impact Assessment of the projected investment and defined the scope of its Report. Consequently, through the decision dated 20 May 2015 (symbol: WOOŚ.4233.24.2013.MG-11) he suspended the ongoing proceedings and notified its parties through the notice dated 20 May 2013 [symbol: WOOŚ.4233.24.2013.MG-12].

The Applicant submitted the Report on Environmental Impact Assessment together with the letter dated 25 July 2014 [symbol: IM.403.55.6.2013]. In this letter he also notified on the change in the name of the investment into: "Vistula Stage 2 - Expansion of the right embankment of the Vistula river over a length of 13.959 km, the right embankment of the San river over a length of 2.193 km and the left embankment of the Łęg river over a length of 0.112 km, within the Communes of Gorzyce and Radomyśl nad Sanem, the Podkarpackie Province", which was imposed by the changed scope of the project. This change was not taken into consideration in the decision.

By the decision dated 1 August 2014 [symbol: WOOŚ.4233.24.2013.MG-25] the Regional Director for Environmental Protection in Rzeszów resumed the proceedings and notified the parties through his notice dated 1 August 2014 [symbol: WOOŚ.4233.24.2013.MG-26].

Information on the Report on Environmental Impact Assessment was entered into a publicly-accessible database of documents containing information about the environment and its protection kept by the Regional Director for Environmental Protection in Rzeszów i.e. Information Card under No. 786/2014.

On 25 July 2013 this office received a request dated 22 July 2013 submitted by the Society for Nature Conservation (pol. *Towarzystwo Ochrony Przyrody*, TOP) represented Mr. Wiesław Nowicki, PhD on its accession to participate in the present proceedings as a party.

On 25 August 2014 this office received a request dated 20 August 2014 submitted by the National Bird Conservation Society (pol. *Ogólnopolskie Towarzystwo Ochrony Ptaków*, OTOP) represented Mr. Wiesław Nowicki, PhD and Mr. Dariusz Bukaciński, PhD on its accession to participate in the present proceedings as a party.

The Regional Director of the Environmental Protection in Rzeszów, upon the analysis on the Rules of the Society for Nature Conservation and the Statue of the National Bird Conservation Society, through the notice dated on 26 September 2014 (symbol: WOOS.4233.24.2013.MG-40) notified the parties on the accession of these organisations to the above-mentioned proceedings as parties.

In the course of the run proceedings it was found that the submitted materials do not sufficiently present all issues which are relevant from the point of view of the environmental protection under the Act on the provision of information on environment and its protection, public participation in the environmental protection and environmental impact assessments. Through the letters dated: 30 September 2014 [symbol: WOOS.4233.24.2013.MG-43] and 1 April 2015 [symbol: WOOS.4233.24.2013.MG-58] the Applicant was called to supplement the Report. Appropriate supplements to the Report were submitted by the Applicant in the letters dated 16 February 2015 [symbol: IM.403.55.18.2014] and dated 20 April 2015 [symbol: IM.403.55.3.2015].

Upon the analysis of the documents and explanations submitted by the Applicant, it was concluded that the supplemented Report complies with the requirements of article 66 of the Act on the provision of information on environment and its protection, public participation in the environmental protection and environmental impact assessments.

As part of the proceedings, Regional Director of the Environmental Protection in Rzeszów - through the letter dated 19 May 2015 (symbol: WOOS.4233.24.2013.MG-66) - asked the State District Sanitary Inspector in Stalowa Wola and the State District Sanitary Inspector in Tarnobrzeg for their opinions pursuant to article 77, clause 1, point 2 of the Act on the provision of information on environment and its protection, public participation in the environmental protection and environmental impact assessments.

In the opinion dated 17 June 2015 (symbol: PSNZ.466.6.2015), the State District Sanitary Inspector in Tarnobrzeg stated that nuisance related to the project and its implementation will occur at the construction stage which may lead to the deterioration of human living conditions due to the conduct of construction works and transport. Such negative effects will cease upon the completion of this investment, thus it is considered to be local and short-termed. It was also pointed out that the prepared report stated it necessary to redevelop technical infrastructure in relation to present collisions with, among others, sanitary sewage and water supply systems. The water supply system is secured in the following manner, among others: keeping a distance of min. 1.5 m from a water pipeline together with parallel running a sewer pipeline along this water pipeline and at the junction of projected sewer pipelines with water pipelines; if this distance of pipelines is less than 0.6 m it is required to use protective tubes on sewer pipes. At the same time - in connection with the project implementation, at the expansion stage and in the course of transport of earth material to expand the embankments - excessive dusting (especially during rain-free periods), extra noise and vibrations caused by machinery may occur, thus it is required to minimise this nuisance for local residents and conduct these works during the day. Having regard to the opinion, its recommendations, solutions (included in the report and its supplements submitted by the Investor), land use and protection / security measures applied in the course of the project implementation, the State District Sanitary Inspector in Tarnobrzeg in the opinion specified the terms and conditions which - if met at the expansion stage - will contribute to the minimisation of impacts on human health and living conditions. These conditions were taken into consideration and detailed in this decision.

The State District Sanitary Inspector in Stalowa Wola did not take a position in the matter under consideration, which was considered, in accordance with article 78, clause 4 of the above-specified Act on the provision of information on environment and its protection, public participation in environmental protection and environmental impact assessments as having no reservations to the provided Report and thus the investment itself.

The Report on Environmental Impact Assessment describes its expected effects on the environment in case of taking no action to implement the project, analyses the variant selected for implementation by the Investor and other alternative variants.

Variant based on taking no action to implement the project

No action to implement the project stands for no interference in the current Vistula and San embankments and the natural environment of the valley of the Upper Vistula river. The existing state of land development and use as well as the habitat of plants and animals would be preserved. There would be no felling of trees and shrubs.

This inaction to run the project will lead to the following: floods, damage and destruction of adjacent areas, i.e. residential and business / farm premises roads, technical infrastructure as well as agricultural fields bringing loss to farmers. This situation leads to difficulties in planning investment activities both by the local government as well as by residents at areas affected by flooding and to reductions in the usable value of these areas on a regular basis

If the project is cancelled, it will eliminate its environmental impact related to the conduct of construction works projected under the reconstruction of the Vistula, San and Łęg embankments. At this stage, in case of taking no action to implement the project, the environmental impact will be more favourable than in the case of its implementation.

However, in case of cancellation of the project, it may cause the flood-protection embankment to break when hit by high flowing waters. Then, in case of flooding and breakage of the embankment body, losses suffered by the environment may be incomparably higher: its negative impact on forest, agricultural and urbanised areas can be expected.

When woodlands are flooded, it may cause damage to trees. Such losses and their scale are impacted by a level of intensity of flooding as well as such factors as, for example: impairment of trees against flood effects due to abiotic, biotic and anthropogenic factors, which mainly refers to areas in the proximity of industrial plants, characterised by high pollution; silting up and backfilling with water-transferred materials (e.g. gravel, sand); washing-out of surface, fertile soil components; long water stagnation; flooding of forests during their growing season; dominant decaying processes leading to the decline of tree roots and, consequently, the dying of vegetation, both woody and bushy. These losses may be very high because dead trees are of low technical quality and are not suitable for proper use. In some cases, when riparian forests are flooded, it may have some positive effects because flood waters also bring large amounts of valuable nutrients, which - upon water recede - impacts the development and rejuvenation of trees.

In turn, raised waters when they flood agricultural lands bring damage to agricultural crops. The main negative factors include: destruction of the soil cover and disturbance of water-soil relations, which in turn may lead, among others, to damage suffered by vegetation.

If water persists for a long period of time, it may also bring damage to material possessions held by local residents.

Variant I - alternative

This variant assumed that the existing flood-protection embankments will be elevated by approx. 1-1.5 m taking into account their potential polder retention and keeping riverbed and inter-embankment areas at the state which is not worse than the existing one. It was assumed that upon three 'Strumień' polders (1, 2 and 3) are constructed on the left bank of the Vistula river, north of Szczucin (which may absorb approx. 160 million m³ of water) it would reduce environmental losses due to its reduced land occupation and thus minimise interference with natural habitats within the following 'Natura 2000' sites: the Tarnobrzeg Valley of the Vistula River PLH180049 and the Valley of the Lower San River PLH180020. It would also lead to an increase in the safety of flood protection structures located within the analysed area as their burden would be reduced. It would allow to shorten sections projected for elevation, which would significantly reduce the scope of works, use of materials and shorter implementation of this project. The Applicant failed to follow this variant because, as

it was pointed out in the report, the date of construction of these polders has not been known yet and in fact it is not certain that they will be constructed at all.

Variant II - investment-based

This variant assumed that the existing flood-protection embankments will be expanded without taking into account the 'Strumień' polders. The embankment crests were assumed to be set up on the basis of dependable and controllable flows for the second (II) class of embankments and their technical importance.

Taking the above into consideration it should be stated that the variant II (based on the redevelopment of these embankments without changing their location with an elevation of their crest) is the most optimal variant which meets the safety requirements for structures of this type and the most favourable one for the environment. This variant is also - when compared with other provided variants - the most economical. It will protect their inter-embankment areas against flooding, which increases a sense of security felt by people without causing any significant losses to the environment. Moreover, at the selection of the right variant for implementation, the projected scope of works (which is reflected in a lesser scale of its effects onto individual components of the environment) was also decisive.

Variant III - alternative

It was also analysed that it is possible to supplement the existing embankments with transverse dikes which would prevent the movement of flood waters along the line-formed inter-embankment areas. These singled-out complexes would be treated as protected areas <10 km, which would make it possible to classify them into the fourth (IV) class of technical importance. Due to the protection of populated areas it would be necessary to raise their class up to the third (III) class of technical importance. The implementation of this variant would involve occupying more area which could not be accepted by the local community, and would lead to increased costs. This variant was rejected.

It was also considered that it is possible to provide material for the embankment expansion, including mining, by means of a dredger, from sediments from the Vistula riverbed. However, due to no recognition of the quality and quantity of sediments brought by the river at this section, it cannot be ruled out that this collection of aggregate may have negative effects onto its hydraulics and the composition of fauna species. The variant also considered the possibility of collection of soils from the inter-embankment, but it was dropped due to the fact that most land plots from which soils could be collected are located at the protected area: the *Wisła pod Zawichostem* ["Vistula at Zawichost"] Nature Reserve or the Natura 2000 site: the Valley of the Lower San River. Moreover, upon the estimation of soil mass which could be obtained from the specified areas it was concluded that this amount of ground would not be sufficient. So its provision (transport) from the existing aggregate mines located within 20 km from the site was considered the best.

It was also considered that it is possible to extend the inter-embankment, however it would be plausible in the Section I only, there are no conditions to widen the embankment in other Sections.

The second (II) variant was chosen to run the project; it was also the most beneficial for the environment. The existing embankments will be extended at their water-side. At places where the embankment is to be elevated, it will automatically extend its body base, which involves occupying more area (according to its new height).

Under the project implementation the following was planned:

- elevation and extension of the embankment crest together with compaction of its body,
- provision of anti-filtration protection of the substrate in the form of a vertical anti-filtration barrier.
- provision of anti-filtration protection made of geomembrane at the embankment water-side,

- provision of protection of the embankment water-side against digging and burrowing animals,
- provision of service roads at the embankment land-side and in sections at the embankment crest,
- adjustment of embankment passages to the changed embankments upon their elevation,
- demolition and construction of embankments water-locks,
- redevelopment of technical infrastructure,
- demolition of the abandoned building colliding with the planned by-embankment road.

The area of the planned investment is located within the Vistula river basin. Vistula is the main and longest (1047 km) river in Poland. Its sources are located in southern Poland at an altitude of 1107 m above sea level on the western slope of *Barania Góra* [Barania Mount] in the *Beskid Śląski* [Silesian Beskid] Mountains. The planned project covers a section of the Vistula river from the bridge in Nagnajów up to Zawichost.

Trześniówka is a right tributary of the Vistula river. Its length is 56.9 km and its catchment area is 569.6 km². Its source is located on the *Płaskowyż Kolbuszowski* [Kolbuszowski Plateau] at an altitude of approx. 230 m above sea level, northwest of Cmolas. It flows into the Vistula river at 272 km of its course, in Sandomierz at an altitude of 140 m above sea level. Its main tributaries are: Kaczówka, Koniecpólka, Mokrzyszówka, Żupawka and Dąbrówka.

Łęg is a right tributary of the Vistula river, which enters it at 274 km in its course, near the village of Zalesie Gorzyckie. Its sources are located in the southern part of the *Płaskowyż Kolbuszowski* [Kolbuszowski Plateau]. Its catchment area is 960.2 km², while its length of 81.6 km. The upper course of the river is called Zyzoga. It has one large tributary, i.e. Przyrwa on its left-bank.

San is a right tributary of the Vistula river, which enters it northeast of Sandomierz. The length of its watercourse is 443.4 km and its catchment area of 16 861 km² (14 390 km² of which is located in Poland). Its sources are located in Ukraine at an altitude of approx. 925 m above sea level on the south eastern slopes of the *Piniaszkowy Mount* in the *Bieszczady Zachodnie* [Western Bieszczady] Mountains. On the river there are two artificial reservoirs: Solińskie Lake (*Jeziro Solińskie*) and Myczkowskie Lake (*Jeziro Myczkowskie*). Its main tributaries in the upper course are as follows: Niedźwiedź, Negryłów, Wołosaty, Solinka, Hoczewka, Oślawa, Sanoczek, Tyrawski Potok, Baryczka, Słupnica and Olszanka, the in the lower course: Wiar, Wisznia, Rada, Łęg Rokietnicki, Szkło, Lubaczówka, Lubienia, Wisłok, Trzebońnica, Tanew, Bukowa.

In line with "the Water Management Plan for waters within the Vistula river basin" (Polish Monitor of 2011, no. 49, item 549), further called the Water Management Plan (WMP), the planned project will be implemented in the catchment of eight surface water bodies:

- Tributary from Chwałowice, code: PLRW20001723154,
- Strachocka River, code: PLRW2000172312,
- Vistula River from Wisłoka to San, code: PLRW20002121999,
- San River from Rudnia to the estuary, code: LRW20002122999,
- Łęg River from Murynia to the estuary, code: PLRW200019219899,
- Trześniówka from Karolówka to the estuary, code: PLRW200019219699,
- Vistula River from San to Sanna, code: PLRW2000212319,
- Sanna River, code: PLRW200017219898

The Surface Water Body - Tributary from Chwałowice, code: PLRW20001723154 is a natural body of water. In the Water Management Plan the state of this Surface Water Body is defined as 'poor'. Under the State Environmental Monitoring - SEM (2010-2012) the ecological state of the analysed Surface Water Body was assessed as 'good'. The chemical state was considered 'good'. Thus, the state of the Surface Water Body was rated 'good'.

The Surface Water Body - Strachocka River, code: PLRW2000172312 is a natural body of water. In the Water Management Plan the state of this Surface Water Body is

defined as 'poor'. Under the SEM (2010-2012) the ecological state of the analysed Surface Water Body was assessed as 'good'. The chemical state was considered 'good'. Thus, the state of the Surface Water Body was rated 'good'.

The Surface Water Body - Vistula River from Wisłoka to San, code: PLRW20002121999 is a heavily changed water body. In the Water Management Plan the state of this Surface Water Body is defined as 'poor'. Under the SEM (2010-2012) the ecological potential of the analysed Surface Water Body was assessed as 'poor'. However, the chemical state was considered 'good'. Thus, the state of the Surface Water Body was rated 'poor'.

This Surface Water Body is at the list of surface water bodies intended for the in-take of water for the purpose of public water supply for human consumption.

The Surface Water Body - San River from Rudnia to the estuary, code: LRW20002122999 is a heavily changed water body. In the Water Management Plan the state of this Surface Water Body is defined as 'poor'. Under the SEM (2010-2012) the ecological potential of the analysed Surface Water Body was assessed as 'moderate'. However, the chemical state was considered 'good'. Thus, the state of the Surface Water Body was rated 'poor'.

The Surface Water Body - Łęg River from Murynia to the estuary, code: PLRW200019219899 is a heavily changed water body. In the Water Management Plan the state of this Surface Water Body is defined as 'good'. Under the SEM (2010-2012) the ecological potential of the analysed Surface Water Body was assessed as 'moderate'. However, the chemical state was considered 'good'. Thus, the state of the Surface Water Body was rated 'poor'.

The Surface Water Body - Trześniówka from Karolówka to the estuary, code: PLRW200019219699 is a heavily changed water body. In the Water Management Plan the state of this Surface Water Body is defined as 'poor'. Under the SEM (2010-2012) the ecological potential of the analysed Surface Water Body was assessed as 'moderate'. However, the chemical state was considered 'good'. Thus, the state of the Surface Water Body was rated 'poor'.

The Surface Water Body - Vistula River from San to Sanna, code: PLRW2000212319 is a heavily changed water body. In the Water Management Plan the state of this Surface Water Body is defined as 'poor'. Under the SEM (2010-2012) the ecological potential of the analysed Surface Water Body was assessed as 'poor'. However, the chemical state was considered 'good'. Thus, the state of the Surface Water Body was rated 'poor'.

The Surface Water Body - Sanna River, code: RW200017219898 is a natural body of water. In the Water Management Plan the state of this Surface Water Body is defined as 'poor'. Under the SEM (2010-2012) the ecological state of the analysed Surface Water Body was assessed as 'poor'. However, the chemical state was considered 'good'. Thus, the state of the Surface Water Body was rated 'poor'.

In view of the provisions of article 38d, clause 2 of the Act dated 18 July 2001 - Water Law (Journal of Laws of 2015, item 469 as amended) artificial and heavily modified surface water bodies aim in environmental terms to protect these waters and raise their ecological potential and chemical conditions, so as to reach good ecological potential and chemical conditions of surface waters and prevent the deterioration of their ecological potential and chemical conditions. Then surface water bodies which are not designated to be artificial or heavily modified aim in environmental terms to protect, improve and restore the status of surface water bodies, so as to achieve their good conditions (article 38d, clause 1 of the above-specified Water Law).

Water quality elements and their components being impacted by the project were settled on the basis of the assessment of the project impact onto the ecological potential / state of waters under the project impact. It was examined the project impacts on every quality element taken into consideration when classifying the ecological potential / status of waters i.e. on biological elements and their hydro-morphological and physicochemical supporting elements.

In reference to the following Surface Water Bodies:

Surface Water Body - Tributary from Chwałowice, code: PLRW20001723154,

Surface Water Body - San River from Rudnia to the estuary, code: LRW20002122999,

Surface Water Body - Trześniówka from Karolówka to the estuary, code:

PLRW200019219699,

Changes related to the flood-protection redevelopment will cover the inter-embankment and behind-embankment areas within the section covered by the investment. Local impacts are expected to potentially occur at the implementation stage only. At further stages i.e. at the time upon the completion of construction works no impacts are expected on the state of the analysed Surface Water Bodies.

The planned project related to the redevelopment of the flood-protection embankment will not affect water quality indicators in terms of physico-chemical elements, substances which are harmful to the aquatic environment and hydro-morphological as well as biological elements.

In emergency situations, fuel may get out of machines operating at the construction site. However, this threat risk is incidental in its character. Under the redevelopment of the existing embankment, potential changes will be temporary and will disappear upon the completion of construction works. The project implementation does not involve any interference in the watercourse bed(s).

Surface Water Body - Strachocka River, code: PLRW2000172312,

At the inlet of the embankment water-lock 1.3 it is projected to reinforce the Strachocka riverbed (from the inlet) / bottom with a stone cover and strengthen its slopes with a mesh-stone mattress over a length of 11 m. Within the remaining section (66 m) a bank-wall (river-bank band) will be used (with fascine bunch applied) in order to reinforce the slope base. Locally, at the river meander (left bank) it is projected to strengthen the slope with a mesh-stone mattress over a length up to 20 m. At the outlet out of the embankment water-lock it is projected to strengthen the bottom and slopes with a mesh-stone mattress over a length of 4 m. At the further section (up to 6 m) it is projected to strengthen the bottom with a stone cover and reinforce the slopes with a mesh-stone ma. Within the remaining length (up to 25 m) a bank-wall (river-bank band) will be used (with fascine bunch applied) in order to reinforce the slope base.

Impacts on biological elements are expected to occur the project implementation only. Any impact onto phytoplankton, zooplankton, benthos will be short-termed (approx. 2-3 months) on a local basis and will not affect the behaviour of the existing structures of the aquatic environment.

Some water turbidity will occur in the course of works. It will lead to the deterioration of such parameters as total suspended solids, dissolved oxygen and other indicators specifying aerobic conditions and organic impurities. Due to the fact that works will be performed locally, it will not lead to any permanent reduction in the class of this Surface Water Body and its state in terms of physico-chemical elements. Turbidity will be reversible in its character and will be limited to the project implementation stage only. Upon the completion of works, the state of this Surface Water Body will naturally improve.

Under the project implementation, within the area covered by the direct range and impact of works, there may be unstable - temporary changes taking place within water-dependent flora / fauna ecosystems and their habitat conditions. Thus, it is specified that impacts will refer to indicators on morphological conditions, i.e. bottoms / slopes and their structures. It should be noted that the range of such impacts will be local in nature and will not affect negatively the hydro-morphology of the entire Surface Water Body.

Surface Water Body - Vistula River from Wisłoka to San, code: PLRW20002121999,

Within the inlet of the embankment water-lock 2.1 (drainage ditch) it is projected to reinforce (from the inlet) the bottom with a stone cover and strengthen the slopes with a mesh-stone mattress over a length of up to 14 m. Within the remaining length (up to 26 m) a bank-wall (river-bank band) will be used (with fascine bunch applied) in order to reinforce the

slope base. Then within the outlet it is projected to reinforce (from the outlet) the bottom with a stone cover and strengthen the slopes with a mesh-stone mattress over a length of up to 16 m. Within the remaining length (up to 23 m) a bank-wall (river-bank band) will be used (with fascine bunch applied) in order to reinforce the slope base.

Within the embankment water-lock 2.2 (drainage ditch) it is projected to reinforce (from the inlet) the bottom with a stone cover and strengthen the slopes with a mesh-stone mattress over a length of up to 17 m. Then within the outlet it is projected to reinforce (from the outlet) the bottom with a stone cover and strengthen the slopes with a mesh-stone mattress over a length of up to 9 m. Within the remaining length (up to 28 m) a bank-wall (river-bank band) will be used (with fascine bunch applied) in order to reinforce the base.

Here the results of the project impact assessment onto the ecological potential of waters will be the same as in the case of the Surface Water Body - Strachocka River.

Surface Water Body - Łęg River from Murynia to the estuary, code: PLRW200019219899,

At the inlet of the embankment water-lock 3.1 (drainage ditch) it is projected to reinforce (from the inlet) the bottom with a stone cover (over a length of 8 m) and strengthen the slopes with a mesh-stone mattress (the left bank - over a length of 31 m, the right bank - over a length of 8 m). Within the remaining length (the left bank - over a length of 56 m, the right bank - over a length of 76 m) a bank-wall (river-bank band) will be used (with fascine bunch applied) in order to reinforce the slope base. At the outlet it is projected to reinforce the bottom with a stone cover and strengthen the slopes with a mesh-stone mattress over a length of up to 12 m, secure the right slope: over a length of up to 107 m with a mesh-stone mattress and further 119 m with a bank-wall (river-bank band) (fascine bunch) and secure the left slope over a length of up to 113 m with a bank-wall (seawall) made of fascine bunch. The length of these reinforcements results from changes in the discharge riverbed course.

Here the results of the project impact assessment onto the ecological potential of waters will be the same as in the case of the Surface Water Body - Strachocka River.

Surface Water Body - Vistula River from San to Sanna, code: PLRW2000212319,

Within the embankment water-lock 1.1 (drainage ditch) at the outlet it is projected to reinforce (from the inlet) the bottom with a stone cover and strengthen the slopes with a mesh-stone mattress over a length of up to 5 m. Within the remaining length (up to 27 m) a bank-wall (river-bank band) will be used (with fascine bunch applied) in order to reinforce the slope base. Then within the the outlet it is projected to reinforce the bottom with a stone cover and strengthen the slopes with a mesh-stone mattresses over a length of up to 5 m; then a bank-wall (river-bank band) (with fascine bunch applied) will be used over a length of up to 25 m in order to strengthen the slope base. Moreover, at the estuary into the reservoir, it is projected to use a stone cover over a length of up to 3 m in order to protect the place of water discharge.

Within the embankment water-lock 1.2 (drainage ditch) at the outlet it is projected to reinforce (from the inlet) the bottom with a stone cover and strengthen the slopes with a mesh-stone mattress over a length of up to 27 m. Then at the outlet it is projected to reinforce the bottom with a stone cover and strengthen the slopes with a mesh-stone mattress over a length of up to 28 m. Within the remaining length (up to 35 m) a bank-wall (river-bank band) will be used (with fascine bunch applied) in order to reinforce the slope base.

Here the results of the project impact assessment onto the ecological potential of waters will be the same as in the case of the Surface Water Body - Strachocka River.

The Surface Water Body - Sanna River, code: PLRW200017219898

At the inlet of the embankment water-lock 2.3 it is projected to reinforce (from the inlet) the Sanna riverbed with a stone cover and strengthen the slopes with a mesh-stone mattress over a length of 18 m. Within the remaining length (up to 48 m) a bank-wall (river-bank band) will be used (with fascine bunch applied) in order to reinforce the slope base. At

the outlet it is projected to reinforce the bottom with a stone cover and strengthen the slopes with a mesh-stone mattress over a length of up to 16 m. Within the remaining length (up to 30 m) a bank-wall (river-bank band) was used. Moreover, the length of these reinforcements results from changes in the discharge riverbed course.

Here the results of the project impact assessment onto the ecological state of waters will be the same as in the case of the Surface Water Body - Strachocka River.

The above reinforcements at the watercourses and ditches are constructed as it is required to secure the flood-protection embankment and the water-lock coming through its body against the destructive activity of water and wash-out, protect the watercourses / ditches and their slopes located in the direct proximity of the embankments and accompanying equipment and to secure these slope curves and bases projected for re-profiling and grassing.

The projected investment is located at a distance of approx. 80 - 500 m from the Vistula river and approx. 60 - 500 m from the San river.

There was one primary aquifer i.e. Quaternary waters identified in the Commune of Radomyśl nad Sanem within the area of the planned project. Its floor is limited by impervious tertiary forms while its ceiling sometimes reaches the ground surface. The surface of ground waters is generally natural and unconstrained within the above-floodplain terrace or at a slight tension when overburdened by clays and silt within the floodplain terrace. It gets stabilised at different depths from 0-2 m below the terrain level up to approx. 2-3 m below the terrain level. Within the above-floodplain terrace the depth of ground waters increases to approx. 4-5 m below the terrain level and within dune areas it reaches several metres. At the same it often happens here that within vast wetlands the surface of water gathering at the ceiling of little permeable organic soils keeps close to the ground surface.

The project site is situated within the Main Groundwater Reservoir No. 425 - "Dębica - Stalowa Wola - Rzeszów" enclosed by the Vistula and San rivers.

In the Commune of Gorzyce there is one basic aquifer within sandy Quaternary forms located above the ceiling of an impermeable layer of 'Krakowiec' clays. This aquifer is made of variously-grained sands containing an admixture of gravel in their floor part and dust in their ceiling part with their thickness of 0 to 22 m (13-15 m on average). Waters which are present in sands form natural and unconstrained surfaces, locally, when overburdened, they are under a little hydrostatic pressure. The surface of waters is at a depth of 0.5 to 4 m below the terrain level.

According to the "the Water Management Plan for waters within the Vistula river basin" and its settlements, the planned project will be implemented within the ground water bodies numbered: PLGW2200127 and PLGW2200126 with the good state of their waters.

In accordance with the provisions of article 38e of the above-specified Water Law, ground water bodies aim in environmental terms to prevent or limit the input of pollutants into them, prevent their deterioration, protect and improve their status, undertake corrective measures as well as ensure the balance between their intake and supply of these waters in order to achieve their good state.

Underground waters and their elements being impacted by the project were settled on the basis of the assessment of the project impact on the quantitative state elements such as: the surface of underground waters, its location, volume of reserved groundwater resources and the chemical state elements such as: water quality.

The implementation of the project will not affect the quantitative and qualitative state of these ground water bodies. The investment consists solely in the expansion of the existing flood-protection embankments and it does not involve any intake of ground waters. Potential local contamination of underground waters may come from accidental oil leaks out of construction equipment or penetration of substances from within the construction site facilities.

The anti-filtration barrier is used to seal the expanded embankment substrate. The need for its construction derives from the geological structure of the embankment substrate which is made of Quaternary sediments (sands and gravels). They allow for the filtration of

water into the behind-embankment when flooded. Additionally, the substrate consists of alluvial soil, which - when affected by underground waters for a long period of time - may undergo plasticisation which in turn may result in the destruction of some part(s) of the flood-protection embankment.

In recent years, as part of the modernisation, there was an anti-filtration barrier made in the existing embankment body, however - due to the redevelopment of this embankment - currently it would fail to meet its tasks. The new barrier is projected in the embankment water-side foot. This barrier will be linked with the mentioned screen at the embankment water-side slope. It is projected to reach max. 10 m below the terrain level. This screen in the embankment water-side slope will be made of geomembrane anchored at the top at the embankment crest and in the bottom in the vertical anti-filtration barrier in so-called anchoring ditches sealed with aluminum-cement hold-up. The application of this vertical anti-filtration barrier increases the stability factor, eliminates seepages at the land-side slope and - going across the privileged route of filtration in the layer of sands lying directly below the embankment body - significantly reduces the amount of filtering water. Filtration volumes are so little that they can be taken over by the existing drainage system at the behind-embankment with no need of its expansion.

This adopted method of sealing the embankment and its substrate by means of the anti-filtration barrier lowers the surface of ground waters in the embankment body during floods, extends its route of filtration by going across the privileged route of filtration. A level of hydraulic gradient in the substrate behind the embankment is lower than the threshold. This solution cuts off the route of filtration through the substrate and the embankment body during floods thus securing all the area protected by the embankment.

In view of the so-far made embankment sealings by means of anti-filtration barriers with their filtration index $k=10^{-8}$ m/s, no negative impact onto the ground-water relations were found, in particular in the area of agricultural use. The discharge of waters from the above-specified areas - upon the retreat of flood waves - is provided by water drainage structures in the form of watercourses, canals, channels and drainage ditches directing surface waters into the river via embankment water-locks.

At the same time - due to the high thickness of permeable forms with their relatively high filtration index and the suspension of this barrier (i.e. it does not reach impermeable forms), the impact of this barrier is local in its character.

The report presents filtration and stability calculations included in the Annex to the construction project. These calculations show little impact of the barrier onto a unit flow under the embankment when under flood flows.

The planned project is located beyond the protection areas which were set for the intake of surface and underground waters.

The planned investment and its implementation does not threaten the environmental objectives.

The investment entitled: *"Vistula Stage 2 - Expansion of the right embankment of the Vistula river over a length of 14.116 km and the right embankment of the San river over a length of 2.037 km within the Communes of Gorzyce and Radomyśl nad Sanem, the Podkarpackie Province"* was included in the Mater Plan for the Vistula river basin in the Annex No. 2 List no. 1 - *Investments which do not negatively affect the good state of waters and its achievement or which do not worsen the state of waters* - Investment ID in the Master Plan 1_496_W, justification - Works involving the redevelopment of the existing embankments have no impact on aquatic organisms and their impact on other elements of the assessment of their state is little, which made it possible to consider the investment as 'non-affecting'.

The project in question is planned to be implemented:

- partly within the site of community importance: the Valley of the Lower San River PLH180020. The investment borders with the Natura 2000 site: the Valley of the Lower

San River PLH180020 (Section II borders from km 0+000 up to km 2+180, Section San River borders from km 0+180 up to km 2+192),

- partly within the site of community importance: the Tarnobrzeg Valley of the Vistula River PLH180049 (this site is in collision with Section III in the vicinity of Zalesie Gorzyckie with its area of approx. 0.063 ha).
- partly within the "*Wisła pod Zawichostem*" ["Vistula at Zawichost"] Nature Reserve in operation in the Podkarpackie Province under the regulation no. 43/08 dated 10 October 2008 issued by the Governor of the Podkarpackie Province on the recognition of the "*Wisła pod Zawichostem*" ["Vistula at Zawichost"] Nature Reserve (Official Gazette of the Podkarpackie Province no. 80, item 1862). In the case of the above-specified Nature Reserve, Section I borders with this area over a length of approx. 280 m (from approx. km 3+020 up to approx. km 3+300).

The embankments projected to be expanded run partially along the boundaries of the above-mentioned areas. In connection with this extension of the embankment, from within the inter-embankment, the performance of works will be related to interference in the above-specified areas i.e. it comes to the occupation of a given area within the project demarcation lines. The project also interfere in other natural areas, i.e. Important Bird Area (IBA): the Valley of the Lower San River PL143, which is crossed by all sections of the embankment. The project is located within the following ecological corridors: the Valley of the Upper Vistula river Kpd-10, the Valley of the Central Vistula GKPdC-10 and the Janowskie Forests GKPdC-1B. The ecological corridor: the Valley of the Upper Vistula River KPd-10 is crossed over a length of approx. 2 km through Section San River while Sections: II and III border with corridor. Section I and Section San River border with the ecological corridor: the Valley of the Central Vistula River. Two corridors border with Section I; Janowskie Forests GKPdC-1B and the Valley of the Central Vistula River GKPdC-10 and two corridors are crossed by Section San River: the Valley of the Upper Vistula River KPd-10 over a length of approx. 2 km, Sandomierska Backwoods - Janowskie Forests GKPd-7A over a length of approx. 2 km, the Valley of the Central Vistula River GKPdC-10 borders with Section I and Section San River.

The most important natural hazards related to the project implementation stage include: destruction of natural and species habitats; high reduction of natural habitat areas being dependent on periodic floods of river waters (their reduction up to the inter-embankment area); threat of liquidation of valuable natural habitats lying within the floodplain in the course of 'cleaning-up' the inter-embankment; changes in habitat conditions at the inter-embankment (among others as a result of increased levels of depth and velocity flood waters); disappearance of natural habitats being dependent on the river located at the behind-embankment (e.g. riverine forests, alluvial meadows, deterioration of the state of bird habitats); decreased water retention in the river valley (a risk of drop of the level of ground waters); deterioration of the river valley as the ecological corridor (narrowing the flood zone with its typical habitats from the inter-embankment area); deterioration of all landscape values.

Due to that the planned project involves the redevelopment of the existing flood-protection embankments, the impact on flora and fauna will be related mainly to the construction stage. The expansion of the embankments involves the permanent occupation of a landline of approx. 20 m from the embankment axis. As a result of construction works, vegetation will be destroyed, trees and bushes - felled and cut down, positions / habitats of plants and animals as well as their feeding sites may be damaged within the area planned for the embankment crest, slopes, temporary roads, technological routes or construction sites. Within this landline vegetation will be damaged and small invertebrates living within - eliminated, due to the compaction of its substrate.

In order to diagnose the above-specified impact and their range in order to implement the project the following natural inventory was conducted. Though the landline for the project implementation itself is narrower, with a view to a full exploration of the area (also in the vicinity of this investment) the inventory covered an area located 250 m from the embankment on both its sides.

As a result of the conducted field studies, the occurrence of the following 3 types of habitats listed in the Annex I of Directive Habitat were identified: 3150 - oxbow lakes and natural eutrophic water reservoirs with communities of *Nympheion*, *Potamion* [Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation] 6440 - Alluvial meadows of river valleys of the *Cnidion dubii* 91E0 - Willow, poplar, alder and ash riparian forests *Salicetum albo-fragilis*, *Populetum albae*, *Alnenion glutinoso-incanae*, river-spring alder carr (priority habitat) [Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Pandion*, *Alnion incanae*, *Salicion albae*)]. The above-specified habitats was developed in one subtype each. These habitats are covered under the following Natura 2000 sites: the Valley of the Lower San River and the Tarnobrzeg Valley of the Vistula River. Other naturally valuable plant communities, not included in the Annex I of the Habitats Directive, include, among others: fresh and moist meadows from the *Molinio - Arrhenetheretea* class and reed rushes from the *Phragmitetea* class.

The habitat coded 3150 at this area is represented by the following subtype: 3150-2 - Oxbow lakes and small ponds. Within the study area between the Vistula river bank and the embankment there are numerous oxbow lakes, mostly well-preserved ones, there are numerous populations of Floating fern *Salvinia natans* at some of them. The habitat coded 6440 at the study area has one subtype: 6440-1 - Alluvial meadows of river valleys of *Violo-Cnidietum dubii*. For this habitat there are also many patches, well-preserved, including with numerous populations of rare species - mouse garlic. Within the study area there was also only 1 subtype of willow riparian forests identified: 91E0-1 - Willow riparian forests *Salicetum albae* with river wickers *Salicetum triandro-viminalis*. The habitat is dominant in the inter-embankment and represents potential natural vegetation here. Vast patches of the habitat coded 91E0-1 found in the inter-embankment have unsatisfactory or poor conditions. Juveniliation is one of the most important deformations of this habitat - there are very few typically-developed, old tree stands here; moreover this is community which is - to a very large extent - subject to synanthropisation, in particular neofitisation of its flora. Behind the embankment its vegetation is heavily transformed and currently natural forest communities do not grow here. In the opinion of the authors of the Report, the specified inventoried meadows, often intensely used - though they represent communities which are typical to the habitats coded 6510 from the Annex I of the Habitats Directive - are naturally valuable. Also the mentioned reed rushes from the *Phragmitetea* class are of great biocenotic importance. Within the area of field studies two zones can be distinguished: the area of land bounded by the project dividing lines where construction works are projected and the remaining area at a distance from the demarcation lines up to the inventory buffer boundary. None or just parts of marginal habitats and communities were specified which is due to the fact that the embankment within the analysed section is very well-kept: it is mowed, with no trees growing within. Therefore, flora and vegetation within this embankment and its immediate vicinity (at the embankment there are heavily-used grass groups with numerous synanthropic species) are much more anthropogenic in their character than in the buffer zone, in particular from the river side, where valuable semi-natural and natural forest and non-forest communities grow.

The area of all these valuable natural habitats and plant communities in a landline of 250 m at each side from the embankment axis within all Sections amounts to 307.88 ha, of which the habitats listed in the Annex I of the Habitats Directive occupy approx. 226.97 ha (approx. 73.7 % out of all the inventoried valuable natural habitats). The largest area is occupied by the habitat coded 91E0 - this is approx. 199.80 ha, of which 63.01 ha was inventoried within the Natura 2000 site: the Valley of the Lower San River. The habitat coded 6440 was found at approx. 22.72 ha, of which 2.04 ha within the Natura 2000 site: the Valley of the Lower San River. The smallest area was occupied by the natural habitat coded 3150-2: Oxbow lakes and natural eutrophic water reservoirs with communities of *Nympheion*, *Potamion* - this is approx. 4.45 ha, of which 0.68 ha was inventoried within the Natura 2000 site: the Valley of the Lower San River.

In case of plant communities the largest area was occupied by fresh and moist meadows from the *Molinio - Arrhenetheretea* class - this is approx. 78.56 ha (approx. 25.5% out of all

the natural habitats and valuable plant communities), then reed rushes *Phragmitetea* - 2.35 ha (approx. 0.8% out of all the natural habitats and valuable plant communities). Within the Natura 2000 site: the Tarnobrzeg Valley of the Vistula River no collision of works was reported with the natural habitats protected within the limits of the above area.

There will be direct destruction of these natural habitats within the land line to be occupied for the project investment. In case of the habitats from the Annex I of the Habitats Directive a total of 5.12 ha will be destroyed; including respectively: 3.98 ha for the 91E0-1 habitat, 0.94 ha for the 6440-1 habitat and 0.20 ha for the 3150-2 habitat. Then among plant communities which will be destroyed there are respectively: fresh and moist meadows from the *Molinio - Arrhenetheretea* class - 0.87 ha and reed rushes from the *Phragmitetea* class - 0.01 ha.

Then the following losses will be incurred in the habitats within the Natura 2000 site: the Valley of the Lower San River: the habitat coded 91E0-1 - Willow riparian forests *Salicetum albae* with river wickers *Salicetum triandro-viminalis* - 0.8 ha (0.1% out of the total area of this habitat within the Natura 2000 site), the habitat coded 6440-1 Alluvial meadows of river valleys of *Violo-Cnidietum dubii* - 0.2 ha (0.3% out of the total area of this habitat within the Natura 2000 site), the habitat coded 3150-2 - 0.8 ha (0.1% out of the total area of this habitat within the Natura 2000 site),

When assessing the project impact onto individual natural habitats it was pointed out in the report that within the analysed area the habitat coded 6440 should be regarded as one of the most valuable one. However, works conducted at the embankment will not affect the change of habitat conditions within alluvial meadows. At some sections their patches border with the embankment, thus in case of entering the area of these meadows, there is a potential risk of their periodic physical damage during works, however it will refer to marginal parts of these patches at the very boundary, which should have neither significant nor irreversible negative impacts. The basic conditions for the preservation of this habitat are as follows: to keep its habitat conditions i.e. periodic flooding and drying-up, which stay undisturbed in the inter-embankment and their adequate extensive use, which in turn is not connected with works conducted at the embankment. A similar situation applies to the other two habitats: Willow riparian forests *Salicetum albae* with river wickers *Salicetum triandro-viminalis* and Oxbow lakes and small ponds. Works conducted at the embankment will not affect the change of their habitat conditions. At some sections their patched border with the embankment, thus, just like in the case of the habitat coded 6440 there is a potential risk of periodic physical damage in the course of conducting these works. The area of these habitats will only be interfered into at their outskirts without fragmentation. Accordingly, the impacts specified above will not be considerably negative.

A level of risk in terms of the deterioration of natural habitats in relation to the Natura 2000 site: the Valley of the Lower San River is as follows: 91E0-1 - min. 10.1 ha (1% out of the total area of this habitat within the site of community importance: the Valley of the Lower San River is as follows), 6440-1 - min. 0.5 ha (0.61% out of the total area of this habitat within the Natura 2000 site), 3150 - 2 (54% out of the total area of this habitat).

Thus, in order to minimise the project impact onto a level of deterioration of these natural habitats a series of mitigation measures will be undertaken. Within the sections where works will be conducted in the vicinity of riparian forests, it was proven reasonable to secure patches of the above-specified habitat by making tape enclosures. Moreover within the above-specified habitats neither waste will be collected nor construction site facilities - located. The planned technological landline projected to be occupied in the course of running works is identical with the one intended for the embankment expansion. These habitats are subject to their occupation within their bordering, marginal parts. Within the embankment projected for expansion, humus will be removed, secured and then used for cleaning-up the investment area and - upon the completion of works - any damaged ground surfaces will be grassed and sowed with a mixture of indigenous plants.

Referring to the project impact onto these natural habitats it should be emphasized that damaged ground surfaces are open to the process of neofitisation, which may reduce their value. Especially habitats located in river valleys are exposed to it. The report also

points out that during the first season - upon the expansion of the embankments - ground having its surface exposed will make a place for the potential development of communities of expansive, ruderal plants, with their low value in environmental terms which favour the development of invasive species. Plants - if their diaspora enter a given site accidentally or will be introduced intentionally - may spread massively and rapidly colonise a new area of this site. They include, among others, such species as: Japanese knotweed *Reynoutria japonica* and Sakhalin knotweed *R. sachalinensis*, Giant goldenrod *Solidago gigantea*, Canadian goldenrod *Solidago canadensis*, Himalayan balsam *Impatiens glandulifera*, Wild Cucumber *Echinocystis lobata*, Single leaf maple ash *Acer negundo*, Black cherry *Prunus serotina*. Single leaf maple ash *Acer negundo* is particularly expansive in its seizure of riparian habitats. Due to the above, it was pointed out in the mentioned mitigation measures to sow damaged ground surfaces using indigenous species. All the activities aimed to maintain the embankment i.e. its every-year mowing will reduce the expansion of the aforementioned plants. However, taking into account the project interference into the valleys of these valuable rivers (not only in the Podkarpacie Province), it was ordered - within 5 years from the completion of this project - to monitor the area covered by the project for the occurrence of invasive plants and, if necessary, undertake appropriate actions related to the elimination and reduction of their spread.

In the case considered, it is also relevant to assess the project impact onto the natural habitats being protected within the Natura 2000 sites: the Tarnobrzeg Valley of the Vistula River and the Valley of the Lower San River in the context of their cumulative impacts.

According to the information held by this Office it is concluded that, for example, in order to implement the project: "San I - Stage 1 - Expansion and anti-filtration protection of the right embankment of the San river at km 2+215 - 9+417 over a length of 7.200 km in the Commune of Radomyśl nad Sanem" (Decision of the Regional Director for Environmental Protection in Rzeszów dated 20 July 2012, symbol: WOOS.4233.32.2012.MG-30) it is planned to fell trees and shrub plantings with a total area of approx. 11 ha; this felling will be limited to the embankment crest and foot projected for redevelopment. For the purposes of the above-specified project and its implementation, 0.2% of the natural habitats within the site of community importance: the Valley of the Lower San River, including, respectively: 0.04% - the habitats of Oxbow lakes and natural eutrophic water reservoirs with communities of *Nymphaeion*, *Potamion* [Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation] 0.18% - the habitats of Alluvial meadows of river valleys of the *Cnidion dubii*, 0.07% - the habitats of Willow, poplar, alder and ash riparian forests *Salicetum albo-fragilis*, *Populetum albae*, *Alnenion glutinoso-incanae*, river-spring alder carr [Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Pandion*, *Alnion incanae*, *Salicion albae*)]. 0.06% - the habitats of Riparian mixed forests of *Quercus robur*, *Ulmus laevis* and *Ulmus minor*, *Fraxinus excelsior* or *Fraxinus angustifolia*, along the great rivers *Ficario-Ulmetum*. Then the project: "San II - Expansion and anti-filtration protection of the left embankment of the San river at km 4+438 - 9+390, over a length of 4.952 km, in the Commune of Zaleszany, the Podkarpacie province (Decision of the Regional Director for Environmental Protection in Rzeszów dated 14 May 2012, symbol: WOOS.4233.24.2012.MG-20) covers the removal of shrub plantings within an area of approx. 0.3 ha and felling of approx. 400 trees. This task will be limited embankment crest and feet projected for expansion, therefore it will not interfere into the natural habitats located at the behind-embankment and the inter-embankment.

Moreover, this scope of this project under consideration may overlap with other activities, e.g. related to the felling of trees and shrub plantings from the area threatened with flooding conducted on the basis of article 88, clause 1 of the Act - Water Law. Within the embankment under consideration, in reference to the area of the Vistula and San inter-embankment, there were two decisions issued by the Director of the Regional Water Management Authority in Kraków (Cracow) with an order to remove excessive wickers. Then, based on the decision (symbol: OKI-ms-770-839-2/12), excessive wickers were removed from the land plot no. 460/1 from an area of 2.97 ha and from the land plot no. 95 - from an area of 1.61 ha in the precinct of Zalesie Gorzyckie. This felling was completed on

28.02.2013. Then, through the decision (symbol: OKI-ms-770-840-4/12/13), excessive wickers were removed from the land plot no. 1 from an area of 0.89 ha and from the land plot no. 4 - from an area of 2.05 ha in the precinct of Gorzyce. This felling was completed on 28.02.2014. Taking the above-mentioned land plots into consideration, only one of them (no. 460/1) is partially located within the the site of community importance: the Tarnobrzeg Valley of the Vistula River PLH180049. Other parcels are situated beyond the the protected areas, including the Natura 2000 sites.

As for the planned investment, felling within the Natura 2000 sites will include approx. 655 trees from the Natura 2000 site: the Valley of the Lower San River and 1 tree from the Natura 2000 site: the Tarnobrzeg Valley of the Vistula River.

The project area borders or partially interferes in the following two Natura 2000 sites: the Valley of the Lower San River and the Tarnobrzeg Valley of the Vistula River. In both cases, it is a short stretch of the project location within the Natura 2000 sites: the Tarnobrzeg Valley of the Vistula River is in conflict with Section III over a short distance only in the vicinity of Zalesie Gorzyckie and this stretch has virtually no trees, with an area of 0.063 ha. In turn, the Natura 2000 site: the Valley of the Lower San River PLH180020 is in collision with Section II (4.087 ha collided) and Section III (2.422 ha collided) with a total area of 6.509 ha.

Soils required to accomplish the task will come from external suppliers; it is not projected to collect soils from within the inter-embankment area. It is concluded on the basis of the report that within 20 km from the projected investment there are several aggregate mines which can provide necessary soils with specified parameters. Then supplies of aggregate may run independently, which is its key advantage.

Then the project under consideration, taking into account: the impact onto the natural habitats covered by the above-specified Natura 2000 sites and other valuable natural habitats, level of their occupation, including their slight loss within the Natura 2000 sites, character of works (the expansion of the existing embankments will intervene mainly into anthropogenically transformed habitats at their crest and foot, other habitats will be occupied only within a marginal part which borders with them from the inter-embankment side) and suggested mitigation measures (among others: protection of natural habitats, appropriate location of construction works facilities, collection of soils masses from external sources etc.) will not be related to the significantly negative impact onto the above-specified areas and valuable natural habitats located beyond their borders.

It is derived from the submitted documentation that within the area covered by the natural inventory, 3 rare species of vascular plants were found, namely: Floating fern *Salvinia natans*, Autumn crocus *Colchicum autumnale* and Mouse garlic *Allium angulosum*. Floating fern *Salvinia natans* belongs to a group of plants under the strict species protection in line with the Regulation of the Minister of Environment dated 9 October 2014 on the species protection of plants (Journal of Laws of 2017, item 1409). Within the study area, a lot of stands with numerous populations of this species were found, there was even one oxbow lake completely overgrown with Floating fern *Salvinia natans*. Disappearing oxbow lakes, which is related to the river regulation, is a potential threat to this species. Autumn crocus *Colchicum autumnale* under partial species protection is another protected species found within the project impact. In the Podkarpacie region it is already very rare, its stands in the estuary of the San river are the northernmost in the whole Carpathian mountains and in eastern Poland. Under the field inventory also Mouse garlic *Allium angulosum*, under partial species protection in line with the above-specified regulation, was found present. The field studies did not provide evidence on the presence of any fungi, lichenised fungi (lichen), bryophytes and vascular plants listed in the Annex II and IV of the Habitats Directive. The project implementation involves the occupation of land and destruction of one stand of Floating fern *Salvinia natans*. This destruction within the investment will not, due to the state of its population in this region, any negative consequences for the whole volume of the species. Mouse garlic *Allium angulosum* is another species being subjected to the impact of a risk of destruction and deterioration of the quality of its habitat. In connection with the

project implementation, 6 stands of Mouse garlic *Allium angulosum* will be destroyed due to the occupation of land and mechanical destruction. This species is neither endangered nor vulnerable to its extinction in the region. The destruction of these positions within the investment will not have any negative consequences for the whole volume of the species. The project will not involve the elimination of any stands of Autumn crocus *Colchicum autumnale*. Moreover, it was specified in the provisions of this decision that it is necessary - at places where it is technically possible, upon some consultation with the botanical supervision, in case of any collision of works with stands of protected species - replant (move) species from a given stand to its adequate habitat.

The inventory of invertebrates was made on the basis of direct observations and search for their potential habitats. The varied course of the Vistula river, presence of small water as well as moist meadows and scrubs indicate that various species of invertebrates can potentially occur here. In spite of this, there were no protected species of saproxylobionts found at the floodplain terrace covered by the projected works due to a lack of large trees with vast rotten wood fragments and as a result of a high level of river-rising waters which flood rotten wood fragments and tree hollows. Often tree plantings by the embankments take the form of willow or poplar plantations. On the right-hand side of the embankment, Hermit beetle *Osmoderma eremita* was found present in one of large willows with vast rotten wood fragments growing at the boundary of the planned investment demarcation lines. This species is under the strict protection in line with the Regulation of the Minister of Environment dated 6 October 2014 on the species protection of animals (Journal of Laws of 2014, item 1348) and listed in the Regulation of the Minister of Environment dated 13 April 2010 on the natural habitats and species being Sites of Community Importance as well as criteria for the selection of areas eligible to be recognised and designated as Natura 2000 sites (Journal of Laws of 2014, item 1713). In the course of the inventory of greenery, this tree was not projected to be felled. However, it was specified in the provisions of this decision that it is necessary - in case it is required to remove any tree occupied by Hermit beetle *Osmoderma eremita* - to take out choose rotten wood fragments with it at their larval or other preimaginal stages and transfer them to another tree (with adequate habitat conditions) located in its close proximity. All the more that in the inventory buffer at the right-hand side of the project, the potential occurrence of Hermit beetle *Osmoderma eremita* is much higher due to a large number of trees - especially willows (not necessarily large in size) which are annually flooded up to their crowns (as it is so at a floodplain terrace).

In the course of field works, apart from looking for butterflies at flowers, there were also potentially occurring invertebrates searched by finding their habitats and flood plants in the area. On the basis of the found series of sour dock *Rumex sp.* it was found that Large Copper *Lycaena dispar* can occur here. This species is under the strict protection and listed in the above-specified regulation on the natural habitats and species (...) and protected under the Nature 2000 sites: the Tarnobrzeg Valley of the Vistula River and the Valley of the Lower San River. This species can be potentially distributed all over the studied areas because of the prevalence of its food plants. The field studies provided evidence on the presence of 1 individual of this species. Both at the implementation stage and further operation phase the foreseeable impact onto Large Copper *Lycaena dispar* was considered little relevant because of that this species of butterfly was dispersive. This butterfly lives within highly dispersed areas, often away from sites being relevant for its reproduction and if found in a given area it does not mean that this place is relevant for this species. Currently, Large Copper *Lycaena dispar* is widely spread in Poland and is not threatened with extinction.

Under the field inventory a host plant for gossamer-winged butterflies e.g. Great Burnet (*Sanguisorba officinalis*) was found present growing in patches within meadows located by the planned investment and individually all over the area in moist places as well as on the flood-embankment slopes. Therefore, the potential occurrence of both species of gossamer-winged butterflies: Dusky Large Blue *Maculinea nausithous* and Great Burnet *M. teleius* (the species under strict protection listed in the above-specified regulation on the natural habitats and species (...)) is possible in the part of the investment located from the

estuary of Trześniówka up to the location of Progi close to Wrzawy. Both of these species are protected under the Natura 2000 site: the Valley of the Lower San River and in the case of Dusky Large Blue *Maculinea nausithous* also under the Natura 2000 site: the Tarnobrzeg Valley of the Vistula River. However no imagines themselves were found. The impact on these gossamer-winged butterflies refers to the occupation of land and mechanical destruction of potential habitats of the above-specified species of butterflies - 0.04 h each and a risk of destruction and deterioration of the quality of potential habitats with an area of 1.1 ha.

The temporary disruption of the existing ecological balance by construction works will not cause any permanent and considerable destruction of their local populations and other species of butterflies which live here.

Moreover, the planned investment will have a direct impact onto soil-based fauna by interfering with the soil structure in the course of setting up the mentioned anti-filtration barrier and by limiting the permeability of water and air directly below the planned roads, paths and manoeuvring yards. This impact occurs both at the implementation stages as well as the operation phase posing a risk of destruction and deterioration of the quality of habitats and living conditions for such soil fauna. The execution of operational roads is required to ensure the proper operation of the embankment and the communication of emergency services in case of any flood threat. It should be noted that the embankments should be mowed once a year through one-off mowing by means of milling mowers. These machines grind plants and often mix them with ground. Due to the above, there are no conditions for the development of invertebrates because their preimaginal stages overwinter at stems or ground-level parts of plants.

Summing up, the planned project does not generate any negative impact on invertebrates, including species which are covered within the boundaries of the above-specified Natura 2000 sites and under species protection. It should also be noted that - due to the foreseeable nature of works in the course of cleaning-up (grassing, sowing, further mowing of vegetation at the embankment), this impact will be short-term.

The presence of fish species covered by the range of report was found in each of the studied stands. The species found in flowing waters were as follows: Asp *Aspius aspius* - caught at the stand located on the Vistula river; White-finned Gudgeon *Gobio (romanogobio) albipinnatus* - found at two stands on the Vistula river and one on the San river; Spined loach *Cobitis taenia* - its presence was found at four analysed stands located within the bank-area on the Vistula river and on the San river; Stone loach *Barbatula barbatula* - found at one of the stands on the Vistula river. The protected species found at two examined oxbow lakes located between the flood-protection embankment and the Vistula river bank in the proximity of Zalesie Gorzyckie and Pasternik Wrzawski were as follows: Amur bitterling *Rhodeus sericeus* and European weatherfish *Misgurnus fossilis*. Among the above-specified species, Asp *Aspius aspius*, White-finned Gudgeon *Gobio (romanogobio) albipinnatus*, Spined loach *Cobitis taenia*, Amur bitterling *Rhodeus sericeus* and European weatherfish *Misgurnus fossilis* are listed in the Annex II of the Habitats Directive. Furthermore, all the above-specified species, apart from Asp *Aspius aspius*, are covered under partial species protection. In case of fish covered under the Natura 2000 sites (out of the above-listed species, Asp *Aspius aspius* is protected under the Natura 2000 site: the Tarnobrzeg Valley of the Vistula River while Amur bitterling *Rhodeus sericeus*, Asp *Aspius aspius* and White-finned Gudgeon *Gobio (romanogobio) albipinnatus* are protected under the Natura 2000 site: the Valley of the Lower San River), due to a lack of interference in the riverbeds and the above-mentioned oxbow lakes as well as biological cover of the Vistula and San rivers, it is not projected that the planned project will adversely affect the above-listed fish species and their habitats.

In the course of field works in the immediate vicinity of the project, all over the area (Section I, II, III, San), 41 habitats of amphibians and reptiles (26 of which were populated by amphibians) were found. Taking into consideration all the findings of amphibians and reptiles

within all the sections, Green Frogs *Rana esculenta complex* (11 stands) and Common frog *Rana temporaria* (9 stands) were the most commonly identified. On the basis of the conducted studies in the direct vicinity of the project there was only one habitat of amphibian entered into the Annex II of the Habitats Directive was found, i.e. European fire-bellied toad *Bombina bombina* protected under the Natura 2000 site: the Valley of the Lower San River. This stands was located beyond the boundaries of the above-specified Natura 2000 site. In contrast, there were 7 stands of this species found throughout the study area. It was inventoried in small numbers, in the following population: one habitat with a population of 1-5 individuals, two habitats with a population of 6-10 individuals and further four with a population of 11-50 individuals. The habitat of European fire-bellied toad *Bombina bombina* was used together with other species: European Tree Frog *Hyla arborea*, Moor Frog *Rana arvalis*, Edible Frog *Pelophylax esculentus* and European green toad *Bufo viridis*. Among the above-specified species, European fire-bellied toad *Bombina bombina*, European Tree Frog *Hyla arborea* and Moor Frog *Rana arvalis* are under the strict protection while Common frog *Rana temporaria* and Edible Frog *Pelophylax esculentus* are under the partial protection. The project implementation involves the occupation of land and imposes a risk of destruction of the habitats of amphibians and reptiles. The impact related a risk of partial destruction of the habitats of amphibians and reptiles refers to the total surface area of 0.34 ha. This influence at a significant level refers to one habitat which is related to the impact onto the species listed in the Appendix II, i.e. European fire-bellied toad *Bombina bombina*. As a result of the project implementation, there will be a little area of a drainage ditch (with a total area of approx. 0.22 ha) destructed. The inventoried stand is not located within the Natura 2000 Site: the Valley of the Lower San River PLH180020, where European fire-bellied toad *Bombina bombina* is subject to protection. Within the oxbow lakes and ponds located in the inter-embankment there was a permanent breeding site of amphibians found. Nevertheless, the project / its scope does not cover an interference into water reservoirs while depletion will occur within a small area of the drainage ditch only.

The impact of the considered investment onto the habitat of amphibians, reptiles and species inventoried in them is related to the limitation of free migration and the deterioration of quality within the habitats of amphibians and reptiles due to their potential contamination. This limitation of free migration will have the highest impact during the construction stage. Upon the completion of works related to the redevelopment of the flood-protection embankment, they will be an obstacle for amphibians but will not constitute this kind of barrier which amphibians will not be able to overcome. Due to the above, the present decision in its provisions suggests a number of mitigation measures, including the ones related to the meeting of deadlines, use of protective enclosures and transfer of amphibians found at the construction site or in wetlands which collide with such conducted works. Moreover, it was pointed out that the removal of humus within wetlands which could form a potential habitat for amphibians should be performed in autumn months (based on: "the Handbook on amphibians and their protection" written by: R. T. Kurek, M. Rybacki, M. Sołtysiak: Bystra 2011) Moreover, under the terms and conditions of the decision, in case the environmental supervision authority finds that the course of routes of spring migration of amphibians crosses through the place of planned works, works within the migration corridor will be suspended for the period from 1 March up to 31 May so as to prevent these animals from being run over by mechanical equipment. It is also proven reasonable to execute temporary enclosures in order to secure the migration corridor of these animals (the conduct of this operation should be monitored and consulted with the environmental supervision authority).

Due to the above any significant negative impact of the project under consideration onto amphibians is expected.

The Valley of the Vistula and San rivers is characterised by an abundance of ornithofauna. The Vistula river constitutes an intensive migration channel for almost all groups of breeding birds in Poland and Scandinavia. Thereto the San river is a migration channel for birds coming from / going to the Black Sea. Up to 104 species of birds (which breed here, use this area during their breeding season and as their feeding area) was found in total,

which must be regarded as a high score. Out of this number within the study area, the following species of birds listed in the Annex I of the Directive 2009/147/EC dated 30 November 2009 on the conservation of wild birds (the Birds Directive) were identified: 11 breeding species (white stork, marsh harrier, corncrake, ringed plover, tern, little tern, kingfisher, black woodpecker, Syrian woodpecker, barred warbler, red-backed shrike), feeding 4 species which have their nests located beyond the study area (black stork, honey buzzard, white-tailed eagle, lesser spotted eagle). Moreover, several species (oystercatcher, Mediterranean gull, lack-headed gull, Caspian gull) breed within a few dozen kilometres from the study area and their broods in the coming seasons are highly probable. Special attention and protection is deserved by broods of the following species inhabiting the Vistula islands, sandbanks and stone spurs: little ringed plover, common ringed plover, common sandpiper, common gull, common tern, little tern as well as breeding species of sandy bank slopes: kingfisher, sand martin. A total ban on the felling of trees growing on steep, sandy slopes is the condition for maintaining this habitat. At the study area, several reeds inhabited by rush birds (i.e. western marsh harrier, little grebe, common moorhen, water rail as well as sparrows from the families: *Locustella* and *Acrocephalus*) were found. Field/meadow areas with an abundant mosaic of farmland birds spread on the right side of the embankment. In the immediate vicinity of the redeveloped embankment, several nests / stands of red-backed shrike can be found, which close to the embankment found its optimal habitats (bushes in the open environment of grasses) found its optimal habitats. When there is a low level of the Vistula river, its exposed sandbanks are used by numerous and diverse (in its spectrum of species) migratory *Charadriiformes*. A robust flight-over of honey buzzard (not met elsewhere in Poland) and high numbers of hen harrier provide evidence on birds' rich food base. White-tailed eagles regularly migrate and winter along the Vistula river and this phenomenon has much intensified over the last decade. The Vistula river constitutes a migration channel for this species. The Vistula river is also a natural migration route for gulls and terns. Marsh terns (terms from the group of *Chlidonias*) are observed here not only during their flight-overs but they migrate here throughout their stay in Poland. The number of wintering *Anseriformes* depends on a level of severity of a given winter. A new element which has a significant impact on the abundance and species composition of wintering *Anseriformes* refers to the creation of Jezioro Machowskie [Machowskie Lake] close to Tarnobrzeg. The creation of this large ice-free reservoir set up a wintering place (the largest one in this part of the country) for *Anseriformes* as well as black-throated loons or coots.

One of the elements which negatively affects birds in the course of running works will refer to noise emitted by moving vehicles and operating machines at the construction works stage. Noise will be a noticeable influence within the redeveloped embankment and will have a direct impact on birds found in its vicinity.

Noise generated in the course of operation of construction machines and equipment is characterised by a variable level of intensity over time. It depend on momentary conditions, mainly on the character of construction works performed at a given moment.

Starting the expansion of the embankments also leads to forming an ecological trap in the form of short-term favourable conditions for nesting (e.g. for sand martin, ringed plover, lapwing, mallard, etc.). For example, when a trimmed slope is left at a high prism of taken-off humus it may encourage sand martin *Riparia riparia* to dig out nests and establish a colony. Little ringed plovers *Charadrius dubius* eagerly occupy open parts of the construction works site (for example humus-free places projected to put surface ground on) building nests and taking their offspring there. Similar is the case with several other species (including: lapwing, mallard, white wagtail, wheatear, etc.) which are able to make use of formed temporary conditions and thus their broods are directly exposed to destruction resulting from the continuation of construction works. Another impact refers to accidental killing as a result of collisions with vehicles and may primarily involve nesting birds when their offspring (fledglings) leave nests, birds which during migration move low above the ground or feed on it, which also refers to preying birds. The deterioration of the quality of habitats is related to the organisation of conducting works, construction works sites, storage of building materials etc. It results in the destruction and reduction of a number of available nesting and feeding

sites. With the environmental supervision authority operating at the projected level, the impact of the above-specified influences may be considered negligible.

Moreover, the seizure of land for investment leads to the total destruction of habitats of avifauna (which form breeding and feeding sites). This influence primarily affects the area within the project demarcation lines where habitats will be totally changed and trees and shrubs - felled. The loss of habitats does not have to result from their total destruction, but it may come from the deterioration or destruction of just one of the habitat types used by a given species. For example some species have their feeding sites spatially separated from their nesting sites (it refers to the majority of preying birds, including Lesser spotted eagle *Aquila pomarina* or Common buzzard *Buteo buteo*) and the destruction of one component of their habitat stands for withdrawing to other areas. Moreover, this influence is periodical - upon the completion of repair works, during the operation stage, the embankment area can be used again as their feeding and nesting sites.

Increased human penetration within this area may contribute to startling (disturbance) of birds sitting on nests, which in turn may lead to leaving broods by adult birds, exposing eggs and nestlings onto cold / hypothermia or their plundering by predators. Under the condition of keeping the regime of works / their deadlines and assuming that only trees and bushes in the immediate vicinity of the flood-protection embankment will be felled, among the species listed in the Annex I of the Birds Directive, red-backed shrike is the one to suffer a substantial loss in its population (its several stands are located in the immediate vicinity of the embankment). In case of red-backed shrike, as a natural compensation, it was suggested to identify 25 places located on the east side of the flood-protection embankment where bushes of wild rose will be planted and - next to them - poles will be set up for red-backed shrikes to use them as look-out points. This type of places are eagerly occupied as breeding sites.

It is also dangerous to disturb, as a result of works, the natural balance of reeds. Particular attention should be taken within reeds on the Strachocka river where Western marsh harrier with its breeding sites were found. Therefore, any interference into the above-specified reeds were banned. Moreover, a period of running works in their region was limited from 1 April to 31 July.

In the immediate vicinity of the embankment there are no trees with nests occupied by preying birds or other rare species. However, very close to the embankments there are two breeding sites of Syrian woodpecker; its district covers an area of approx. 1.5 km² and undoubtedly also includes trees projected for felling. The situation is similar in the case of black woodpecker; its breeding region has an area of approx. 300-400 ha and trees projected for felling are undoubtedly within its territory. At the time when works will be conducted to expand the embankments, the number of territorial corncrakes may fall but their level may return to their initial number in the future. A high level of flexibility in the choice of habitats and impressive mobility of males during the breeding season in search of new hunting grounds lead to the conclusion that - as a result of the planned works - this species will not suffer. The felling of trees in the immediate vicinity of the embankment will bring significant losses, especially for birds nesting in tree hollows. As a natural compensation for this group of species (birds nesting in tree hollows and other such covers (owls, mergansers, hoopoe, tits, flycatchers, starling, nuthatch, etc.), also referring to the southern part of the *Wisła pod Zawichostem* ["Vistula at Zawichost"] Ornithological Reserve, it was proposed in the decision to hang nesting boxes for birds. The number and types of the proposed boxes were selected on the basis of the analysis of species nesting within the area of the investment and the number and size of felled trees made in the submitted documentation.

This planned felling of trees (approx. 2900, of which there are 340 trees with a diameter equal to 20 cm or more) and bushes will reduce a volume of birds nesting in tree hollows, at bushes and trees. Taking into consideration the influence of this aspect, it was pointed out in the decision and its provisions that this felling of trees and shrubs should be conducted to the extent necessary for the implementation of this project. Moreover, it should be conducted in the period from 16 October to 15 February. In case of owls (tawny owl), white-tailed eagle and black woodpecker, their nesting starts in February. In case of breeding

of water birds (greylag goose, mute swan) under mild spring conditions their breeding territories are occupied as early as February. In case of the group of species listed in the inventory on the studied section of the Vistula river, it can be considered that the substantial part of their reproductive ends at the end of July (and this is the time limit which is valid and applicable to the planned works). In case of water birds (diving ducks, great crested grebe) it actually often happens that nestlings hatch in mid-August and then mid-October being the end of the breeding season is legitimate.

The negative impact of the project onto birds is also made - in case of birds nesting on the ground - by works in the range of removal of humus. For this reason, fertile layers of soil will be removed beyond the period from 1 March to 31 July (in case of any need to conduct this type of activity at another time it will be consulted with the environmental supervision authority which safeguards the course of such works).

Thus, as a result of the project implementation, on one hand it will lead to the seasonal imbalance of the specified population(s) in the course of works at the flood-protection embankment but on the other, in successive seasons, there may be some changes expected in the structure of domination of individual species within groups of nesting birds. Next, within a few forthcoming seasons there will be an increase in the density of open landscape species. Then, in case of breeding birds associated with the Vistula river (common gull, common tern, little tern, ringed plover, little ringed plover, sandpiper, kingfisher, sand martin) the impact of the planned investment within the scheduled scope will be negligible. Similar is the case for other species of wetland bird which treat the Vistula river as an abundant feeding area during their migration (e.g. black-throated loon, whooper swan, black-crowned night heron, Caspian tern, whiskered tern, black tern, dunlin, ruff, wood sandpiper, oystercatcher). Species of birds with their large feeding areas in the breeding season (e.g. black stork, white stork, lesser spotted eagle, honey buzzard, white-tailed eagle) also should not be affected by the planned investment. The investment will be also irrelevant for wintering / migrating / nomadic birds such as: hen harrier, merlin, crane or woodlark).

The section from the estuary of the San river downstream to Zawichost is valuable in terms of its avifauna. Therefore, on the basis of the Report, the decision and its provisions point out that "heavier" works should be conducted performed in the period of August - January. The total ban on any works during the period of April - June would be applicable at this section. In the immediate vicinity of the embankment there are no trees with nests occupied by preying birds or other rare species. The redeveloped embankment should be mowed not earlier than 1 June. The report considered mowing the embankment in turns (alternatively) as an optimal solution, i.e. on 1 June the embankment will be mowed along a length of, for example, 300 metres, then further 300-metre sections will be mowed with a delay two weeks each. This type of alternation is aimed to provide abundant food resources over a long period of time for a wide range of bird species (from storks and prey birds, through owls, up to sparrows). Then mowing within Section I will be run later i.e. mowing at the embankment water-side slope will start not earlier than on 15 June and at the embankment water-side slope - not earlier than on 1 July,

Thus, taking into consideration the scope of conducted works as well as the suggested - in the decision and its provisions - mitigation and compensation measures, no significantly negative impact of the project onto ornitho-fauna is forecasted.

The nature of habitats within the area of the project: the river and its valley, wetlands, fields and meadows adjacent to watercourses as well as woodlands, field-forest mosaic, indicates the presence of wide-range species: elk, deer, roe deer, wild boar, hare, fox, beaver, otter, muskrat, marten which is also confirmed by the data obtained from hunters' associations and forestry inspectorates. Other species i.e. polecat, badger, ermine, weasel, squirrel, edible dormouse, hazel dormouse, forest dormouse and other carnivorous species and rodents are also possible to occur. The course of the conducted field works proved the presence of the following species of mammals listed in the Annex II of the Habitat Directive: Eurasian Beaver *Castor fiber* (the species was identified on the basis of clues, bites, holes and burrows) and European Otter *Lutra lutra* (the species was identified on the basis of droppings). Both beaver and otter are among the species protected under the sites of

community importance: the Valley of the Lower San River and the Tarnobrzeg Valley of the Vistula River. The occurrence of otter is connected with the presence of watercourses found in the inter-embankment and of the Vistula riverbed, then due to no interference into bank-side areas and reduction of works to the area projected for the intended extension of the embankment, no negative influence impact of the project is foreseen onto the above-specified species by limiting its migration capabilities and depletion of food resources. Moreover, the undertaken mitigation measures, including the presence of the environmental supervision will allow for the elimination of any threats for the above-mentioned species in the form of construction of traps etc. at the construction works site.

Within the investment, the most important places due to the migration of mammals include ecological corridors, particularly the ones which are crossed by the projected investment or located in its immediate neighbourhood i.e. the major ecological corridors being a part of the South and South-Central Ecological Corridor. The mentioned ecological corridors are of significant importance for Eurasian Beaver *Castor fiber* and European Otter *Lutra lutra*. The area may be also attended during migration by Grey wolf *Canis lupus* and Eurasian lynx *Lynx lynx*. This ecological corridor is also a connecting element for the population of large mammals, especially for: Elk *Alces alces*, Red deer *Cervus elaphus* as well as for animals related the local field-forest landscape, among others: European roe deer *Capreolus capreolus*, Red fox *Vulpes vulpes*, Wild boar *Sus scrofa*, European hare *Lepus europaeus*.

Noise through startling (disturbance) and stressful actions may negatively affect the daily migration of medium and large mammals, including above all predators. Noise at the operation stage will be connected with machines, their passage and operation, but the impact of these factors will be temporary only. Due to the fact that these species are able to adapt to such noise and also choose new migration routes and feeding sites this impact will not significantly negative. This aspect can be relevant in case of, for example, wolf - the investment may affect moving (migrating) individuals of this species because the closest Nature 2000 site where wolf is protected is located at a distance of min. 1.6 km from the project (the species being under strict protection and belonging to the priority species, is not subject to protection within the following 'Natura 2000' sites: the Tarnobrzeg Valley of the Vistula River and the Valley of the Lower San River). The project implementation cannot reduce the occurrence of this species due to its possible long-distance migrations and it does not make any barrier which impedes migrations between and among refuges being relevant for wolf. It should also be noted that animals enter and cross the construction works site usually at night while no construction works are conducted. Mammals are very cautious and careful when approaching any places of presence / work of people and heavy machinery, hence such works constitute no direct threat to the local animal population. Under the analysed investment the barrier effect should not occur. The embankment area will be decreased but still these animals will be able to migrate within. The elevation and expansion of the existing embankments will not impede any small, medium and large animals.

However, some disturbance is foreseen within daily migration routes due to the project implementation. The seizure of land for the investment will lead to the total destruction of habitats of small, medium and large mammals, i.e. loss of hiding, breeding and feeding places by them. The landscape structure will be also subject to changes, which may affect the life of mammals, primarily medium and large ones. Due to the seizure of land and its range in reference to the habitats being typical to the common species (possible utilisation of adjacent areas), the impact is considered to be negligible.

Then potential accidental killing of animals (due to an increase in traffic) derives from the operation of heavy construction machines within the project demarcation lines and access roads. It may refer to accidental incidents only, with a low probability level of occurrence, and the exposure to this impact is considered to be temporary. As for large predatory mammals and ungulates such accidental incidents could result from collisions on access roads, however this is not as significant aspect as it is in the case of road and rail investments (due to less traffic). It is expected that such cases occur accidentally.

The project investment will cause insignificant effects associated with the area occupation related to the mechanical destruction of habitats and feeding areas. This influence will be temporary, limited to repair works within a given section.

The obtained inventory results represent a diverse level of activity by bats. Along the river and its valley bats are characterised by their regular presence and quite high activity. The following six taxa of bats were found present: Common Noctule *Nyctalus noctula*, Soprano Pipistrelle *Pipistrellus pygmaeus*, Common Pipistrelle *Pipistrellus pipistrellus*, Nathusius's Pipistrelle *Pipistrellus nathusii*, Serotine *Eptesicus serotinus*, Daubenton's Bat *Myotis daubentonii* (none of these species is covered under the above-mentioned. Natura 2000 Sites, all these species are under strict protection). Common Noctule *Nyctalus noctula* and Serotine *Eptesicus serotinus* were dominant, found almost uniformly over the entire length of the monitored section. Myotis bats were the third taxon found regularly. Among the three found *Pipistrellus* bats, Nathusius's Pipistrelle was the most common. Apart from Noctule bats (which fly high and with their repetitive flying routes impossible to determine) in case of other taxa there was an increased level of activity by bats observed along the embankment and rows of trees and shrubs. Bats use linear landscape elements as shields against weather conditions (wind) and as landmarks. Green areas within the valley of the Vistula river are the most important types of habitats for bats, mainly for Daubenton's bat *Myotis daubentonii*. These sites serve as feeding grounds, watering areas as well as corridors of local flight-overs seasonal migrations. The listening-out results indicate the presence and activity along all sections of the planned investment. Approximately 20-30% perceived bat signals contained feeding buzzes i.e. sounds which occur while feeding. Both for bats and birds the valley of the Vistula river is one of the main migratory routes in Poland. In the area of field studies, no breeding colonies of bats were identified, but - due to an increased level of activity by bats during the breeding season - it can be assumed that their breeding colonies of at least a few species are found within several kilometres from the area of field research. Within the study area, no large structures such as fortifications, caves, etc. (which can be a place of stay for a large number of wintering bats) were found present. Changes derived to the the investment implementation can be caused by either direct intervention into the landscape and - indirectly - through the impact of the investment onto the natural environment. In case of bats, accidental incidents could result from collisions on access roads, however this is not as significant aspect as it is in the case of road investments (less traffic). The probability of collision with vehicles refers mainly to low-flying bats (e.g. Brown Long-Eared Bat *Plecotus auritus*) and its risk increases due to that the construction works site is illuminated (serves as an insect attractant) which have attracting effects on insects, but still it also depends on a degree of activity of species present there. In case of bats this risk of accidentally killing refers only to increased traffic on local roads. Such potential accidental killing can only relate to incidents, with a low probability level of occurrence, and the exposure to this impact is temporary. Places where so-called linear landscape features (along which bats most frequently fly) cross roads are at risk. The risk of loss of habitats due to their elimination or their unfavourable change due to the investment implementation is the highest for the felling of trees and bushes in the river valley. It applied especially for old and grand trees with hollows and / or slits in the bark, occasionally or regularly used by bats. Large and hollowed trees are the most important for bats. The inventory of tree plantings conducted as required for the investment pointed to the collisional location of about 2900 trees, of which approx. 373 trees with their diameter at breast height (DBH) equal to 20 cm or more. With such tree sizing it can be expected that some of them may have hollows, protruding outer bark or - convenient for bats - hiding places behind broken-off branch fragments. It will primarily refer to Section II. Thus, on the grounds of the provisions of the Report, it was ordered to hang out approx. 50 boxes for bats along the whole section of running works under the supervision and in the places specified by a chiropterologist within the inter-embankment area. Taking into consideration the impact generated at the stage of investment as well as the suggested mitigation and compensation

measures no significantly negative impact of the project onto bats is projected due to the project implementation.

All the measures which directly affect the visual and aesthetic qualities are derived from the physical intervention into the landscape and will consist in adding or removing certain elements, among others, construction of embankments, roads or felling of trees. This impact onto the landscape values at the implementation stage will be short-term and related to the expansion of the existing flood-protection embankments; removal of fragments of forest areas, trees and shrubs inscribed into the surrounding landscape, cutting down vegetation within the projected investment, temporary occupation of neighbouring lands for roads and construction sites, higher traffic of vehicles and heavy construction machinery, collection and storage of materials, disposal of waste. However, due to the nature of the project, this impact will be related to the construction stage only. At the operation stage the investment will not affect the landscape.

When analysing the the impact of this project onto the natural values of the "*Wisła pod Zawichostem*" ["Vistula at Zawichost"] Nature Reserve (adjacent to Section I at a distance of 280 m) which protects breeding sites, feeding and resting places during the migration of rare bird species being characteristic to the valley of the Vistula river, in particular of species from the group of *Charadriiformes* (waders), it is estimated that the implementation and subsequent operation of the project should not adversely affect these protected species. Taking into consideration the occupancy of the reserve area within the demarcation lines of this Section, it amounts to 0.494 ha. The scope of interfering works within the "*Wisła pod Zawichostem*" ["Vistula at Zawichost"] Nature Reserve refers only to the cutting down of willow bushes at an area of 0.197 ha in Section I. The scope of works does not provide for the felling of trees. Protection measures in the Reserve - in accordance with § 3 of the Regulation no. 43/08 dated 10 October 2008 of the Governor of the Podkarpackie Province on the recognition of the *Wisła pod Zawichostem* ["Vistula at Zawichost"] Reserve - aim to preserve - in social, scientific and educational terms - breeding refuges, feeding and resting places during the migration of the rare birds being characteristic to the valley of the Vistula river, in particular of species from the group of *Charadriiformes* (waders). The planned works in the proposed scope and at the dates indicated in the report will be of marginal importance for birds which inhabit the *Wisła pod Zawichostem* ["Vistula at Zawichost"] Reserve. Including, as stated by the authors of the Report, in case of the so-called primary species (areas up to several hectares) and for some of the so-called secondary species (wryneck, hoopoe, green woodpecker) they will be of no significance at all. In turn, for some secondary and tertiary species (buzzard, kestrel, long-eared owl, tawny owl) such felling may even turn out to be beneficial thanks to their easier access to food resources. It should also be stressed that the project will not interfere into the Vistula riverbed, including sandy river bars located with its range, which are favourable sites for waders and their broods. Therefore, it will not be contrary to the reserve and its objectives in the scope of protection.

A list of bans which apply within the boundaries of nature reserves was specified on the basis of article 15, clause 1 of the Act on the protection of nature. The report concludes that the following bans will be broken:

- capture and killing of wild animals, collection or destruction of eggs, juvenile and other developing forms of animals, deliberate disturbance of vertebrate animals, collection of antlers, destruction of holes, burrows, nests, bedding places and other animal shelters as well as their breeding sites;
- acquisition, destruction or wilful damage of plants and fungi;
- use, destruction, wilful damage, pollution and changes of natural objects, areas, resources and wildlife components;
- devastation of soils or changes of land use or its projected use;

- walking, cycling, skiing and riding horseback, apart from ski trails designated by the director of the national park (as for national parks) or by the regional director for environmental protection (as for nature reserves);
- traffic / movement of vehicles beyond public roads or beyond roads situated on lands owned by national parks or are in perpetual usufruct of national parks, as indicated by the director of the national park (as for national parks) or by the regional director for environmental protection (as for nature reserves);
- disturbance of silence.

In accordance with Article 15, clause 4, point 2 of the Act on the protection of nature, the General Director for Environmental Protection - upon consulting the regional director for environmental protection - may - within the area of a give nature reserve - allow derogations from the bans referred to in clause 1, if it is justified by the need to make linear public-purpose investment, in the absence of alternative solutions and upon the provision of environmental compensation under the meaning of Article 3, point 8 of the Act dated 27 April 2001 - the Environmental Protection Law. The analysed project comes under this exception which states that the above-mentioned bans in force in nature reserves are not valid - the conditions specified in the above-mentioned clause 4, point 2 are fulfilled i.e. the project is a linear investment; the selected variant, as indicated in the preamble, is the most favourable one; also - as it was pointed out in the above-specified documentation - compensation measures were undertaken in relation to the avifauna in the form of hanging boxes for birds.

Therefore, it is expected that the technological, structural and organisational solutions presented in the documentation ensure the effective protection of the environment, including surface waters, underground waters, soil and air, and the terms and conditions of this decision will be fulfilled, hence the projected investment will not significantly adversely affect natural resources, formations and elements, referred to in Article 2, clause 1 of the Act on the protection of nature. Moreover, it was acknowledged that the project under consideration will not have a significant effect on the objectives and objects of protection of the above-specified Natura 2000 sites, integrity of these sites and coherence of the Natura 2000 network. Under the project there was adequate impact assessment run as required by Article 6.3 of the Council Directive 92/43/EEC dated 21 May 1992 on the conservation of wildlife habitats and its wild fauna and flora.

The main sources of air pollution in the course of the project implementation will be as follows: trucks, bulldozers, excavator-bulldozers, excavator-loaders, compactors, road roller, tampers, cement mixers, power generators and pumps. Under the project implementation, there will be non-organised emissions of dusts and gasses into the air derived from conducted earthworks, fuel burning by construction machines and means of transport as well as emissions of dusts coming directly from access roads. Inconvenience related to the implementation stage will be short-term, reversible and will cease together with its completion.

On the basis of the full results of calculations on the distribution of pollutants and their concentrations it was found that the implementation of the planned project will not result in exceedances of the permissible concentrations in the air as specified in the Regulation of the Minister of Environment dated 24 August 2012 on the levels of some substances in the air (Journal of Laws of 2012, item 1031) as for all the pollutants emitted as a result of the conducted works the computational analysis provided evidence on the observance of the existing legislation in the field of air protection. Moreover, taking into consideration all the solutions aimed to minimise non-organised emissions, their range and volumes suggested in the submitted documentation (which include, among others: avoidance of idle operation of combustion engines of machines and means of transport, for example, during stops, breaks; spraying of ground surfaces during rain-free periods, adequate planning and operation of storage sites for bulk materials through their minimal exposure to the wind, coverage with tarpaulins; maintenance of exit roads in good technical conditions, it can be considered that the construction / expansion of the embankment and all related activities will not cause excessive dusting in the immediate vicinity.

At the project implementation stage, some acoustic nuisances occur which will be connected with the conduct of works by means of machines and heavy equipment (for example by excavators, bulldozers), traffic of heavy goods vehicles (estimated at approx. 160 runs within 8 most unfavourable hours per day), execution of earthworks, etc. The place of this impact will be directly related to the place of these works. Moreover, during the projected implementation stage, this type of nuisances caused by construction and assembly works will be short-term and reversible leaving no permanent traces in the environment in acoustic terms.

In order to implement the planned investment, it was decided to make use of the existing network of access roads. These roads - as selected for individual sections - will be used to transport construction materials and provide access to the construction works site. Materials will be delivered to the construction works site, among others, along asphalt district roads and provincial road from which there will be exits directly into lower-class roads characterised by lower load capacity parameters. Therefore, it will be necessary to maintain these roads (their surfaces) in good conditions during construction works and upon their completion, restoring them to their original state.

The nearest acoustically protected areas as specified in accordance with the Regulation of the Minister of Environment dated 14 June 2007 on permissible noise levels in the environment (Journal of Laws of 2014, item 112) are as follows: (1) farmstead areas - for which the permissible noise level is 55 dB (A) during the day and 45 dB (A) during the night - located at a distance from approx. 10 m from the individual sections and (2) single-family housing areas - for which the permissible noise level is 50 dB (A) during the day and 40 dB (A) during the night - located at a distance of approx. 70 m within Section III. The submitted documentation includes the acoustic analysis which specifies the expected range of construction works. Due to the fact that within Section I-III of the projected embankment, these acoustically protected areas are located as close as at a distance of approx. 10 m, there were some solutions suggested which will allow for the observance of the acoustic standards within the nearby located housing development (performance of construction works in the daytime only, use of portable acoustic screens). According to the submitted preliminary analysis, it is expected that these solutions will allow to keep the permissible noise level for farmstead areas at 55 dB (A) in accordance with the Regulation of the Minister of Environment on permissible noise levels in the environment.

During the construction stage there will be vibrations generated by construction and earth works performed with the use of machines and heavy equipment: bulldozers, excavators, compactors, trucks. Taking into account the fact that during the construction phase no machines or heavy equipment (pile drivers, pneumatic hammers, large bulldozers) with an amplitude of vibration acceleration which could cause damage to buildings are to be used, no significant negative impact is foreseen in this regard. In the course of the planned investment trucks and their traffic can be a source of potential vibrations. Prior to the start of construction works, the existing adjacent buildings and structures, their state and conditions will be inventoried. In case of conducting construction works which cause the transmission of vibration exceeding the acceptable standards, appropriate methods aimed to reduce nuisance should be undertaken (in particular in respect to residential premises close to the embankments in the field of their technical security and comfort for sanitary maintenance and use).

During the operation stage it is not projected to use equipment and machines which would make any impact by generation of vibrations. During the investment implementation no climate changes on a regional scale are foreseen. Some potential differences may occur at particular points within the area of conducted works. It will be connected with the felling of trees, organisation and execution of works at construction sites. These changes will be temporary in their character with local impacts on

air humidity, temperature, sunshine in the immediate vicinity of the construction works. Under the investment operation no changes in microclimate parameters are expected.

Operations under the project implementation will result in the generation of waste. The following general rules under the Act dated 14 December 2012 on waste (Journal of Laws of 2013, item 21 as amended) will be observed, in particular: works will be organised in a manner which minimises volumes of generated waste; generated waste will be stored at designated, marked spots at the construction works back-site and transferred to business which operate in the field of collection and treatment of waste. The handling of waste will be conducted in such a manner (for example, in containers) to prevent its spread in the environment.

In the vicinity of the embankments (Section II) there is only one structure listed in the municipal register of monuments kept for the Commune of Gorzyce i.e. war cemetery dated 1809 at the land plot no. 1714/3 in the precinct of Wrzawy. Its distance from the embankment axis is 50 m and from the demarcation lines - approx. 35 m.

Under the proceedings held from 2 June 2015 up to 22 June 2015, public participation was guaranteed in accordance with Article 79 of the Act on the provision of information on environment and its protection, public participation in the environmental protection and environmental impact assessments. The Notice of the Regional Director for Environmental Protection in Rzeszów dated 22 May 2015 (symbol: WOOŚ.4233.24.2013.MG-72) on the submitted application and report on the environmental impact assessment together with information on the participation in this environmental impact assessment, its initiation, decision to be issued, competent body to issue this decision and authority competent to issue appropriate opinion, grounds to get acquainted with all the documentation, place where it is made available, grounds and deadline for submitting comments, 21-day deadline for their submission and competent authority for their consideration is given to the public. It was placed in the following places: on the notice board and website of the Regional Directorate for Environmental Protection in Rzeszów, on the notice board and website of the Podkarpacki Board of Amelioration and Hydraulic Structures in Rzeszów, near the project implementation site, on the notice board and website of the Communal Office of Radomyśl nad Sanem and on the notice board and website of the Communal Office of Gorzyce.

During the conducted public participation no comments or requests related to the present project were submitted at this Office.

Prior to the issuance of this decision the parties were notified on their right to comment on the evidence gathered in accordance with Article 10 of the Code of administrative procedures the Notice of the Regional Director for Environmental Protection in Rzeszów dated 3 July 2015 (symbol: WOOŚ.4233.24.2013.MG-79).

On 21.07.2015 Mr Wiesław Nowicki representing the Society for Nature Conservation got acquainted with the documentation on the project and then in the letter dated 30 July 2015 (submitted electronically and by post) he submitted his comments and remarks. Comment and remarks in the letter of the Society for Nature Conservation (dated 30 July 2015.) and the '*Klub Gaja*' Ecological and Cultural Association [*pol. Stowarzyszenie Ekologiczno-Kulturalne Klub Gaja*] (dated 6 November 2015) were partially the same and they were aimed to:

- a) impose an obligation onto the Investor to properly secure the water-side slope of the redeveloped flood-protection embankment against damage by placing a mesh with appropriate parameters on it in order to protect the embankment structure against its dig-out by beavers, in particular during the occurrence of high water level in the inter-embankment.

- b) exclude the felling trees and shrubs under the discussed investment beyond the demarcation lines of this investment; in particular, exclude the so-called "felling aimed to streamline the riverbed of large waters", specify the date of removal of trees and shrubs to be the period from 16 October to 15 February, and simultaneously exclude the so-called "earth reserve" for the project implementation to be collected from the area of the river inter-embankments,
- c) order to mount barriers or other obstacles (removable in a controlled manner) at the redeveloped embankment passages at the Vistula river embankment section marked "Section I", in order to reduce the harmful impact of unauthorised entry into the *Wisła pod Zawichostem* ["Vistula at Zawichost"] Reserve, and provide access to the inter-embankment by owners of private lands located within the investment area at the embanked Vistula river - if requested so (e.g. by providing them with keys to locks of the projected barriers) - also to be considered in the building permit,
- d) order the Investor to mark the boundaries of the *Wisła pod Zawichostem* ["Vistula at Zawichost"] Reserve in the Commune of Radomyśl nad Sanem by means of notice boards (35 pcs. - according to the Society for Nature Conservation), prior to starting to build the embankment, in accordance with Act on the protection of nature.

Moreover, the above-mentioned letter by the Society for Nature Conservation) also included the following demands to:

- a) exclude to build the so-called "green route" at the section located at the land plot no. 2 within Witkowice (Section I, Radomyśl nad Sanem) where it is to run at the *Wisła pod Zawichostem* ["Vistula at Zawichost"] Reserve,
- b) order special protection of two breeding habitats of Western marsh harrier (the bird listed in the Annex I of the Birds Directive) near the estuary of the Strachocka river, in particular by backfilling reeds (oxbow lakes) where this bird nests and not to conduct any construction works within 50 metres from them in the period from 1 April to 31 July,
- c) order to mount the final number of 550 breeding boxes (including - 250 at the area of Section II - from the border with the city of Sandomierz up to the estuary of the San river and 300 in the southern part of the *Wisła pod Zawichostem* ["Vistula at Zawichost"] Reserve) under the supervision of an ornithologist, based on the sizing specified in the annex to the letter by the Society for Nature Conservation (pol. TOP) as well as on the websites of the 'Bocian' Natural History Society and/or the Society for Nature Conservation and/or USSURI Ltd. Co. till the completion of the project implementation - including:
 - 250 pieces of boxes in Section II - on the right bank of the Vistula river between Sandomierz and the estuary of the San river (125 type "A", 110 type "B", 10 - for owls and/or mergansers and 5 - for hoopoe),
 - 300 pieces of boxes in Section I (the Commune of Radomyśl nad Sanem, also - the Commune of Dwikozy) - 130 type "A", 160 type "B", 10 - for owls and/or mergansers; these boxes are to be cleaned annually, old nests removed in the autumn-winter period (16 October - the end of February) within 10 years from their mounting within the discussed area, then monitored (also performed in the mentioned autumn-winter period) by an ornithologist for 6 years - starting from the 4th year upon these boxes are hung up; the location of the listed boxes outdoors should be stored in the GPS system,
- d) withdraw from the set-up of obligatory construction of 50 boxes (projected to be made and hung for bats for their daily stay) using sawdust - boxes made of wood should also be accepted,
- e) oblige the Investor to obtain all the permits relating to exemptions from the bans which are valid in the species protection of animals and plants in case of any projected destruction of habitats located within the project environmental impact.

Then the 'Klub Gaja' Ecological and Cultural Association [pol. *Stowarzyszenie Ekologiczno-Kulturalne Klub Gaja*] in its letter also requested that the maintenance of the redeveloped embankment, in particular based on its periodic mowing, is to be conducted not earlier than from mid-July every year.

These comments and remarks by the Society for Nature Conservation (pol. TOP) were provided to the Applicant in the letter dated 4 August 2015 (symbol: WOOS.4233.24.2013.MG.88, which responded by the letter dated 31 August 2015 (symbol: IM.403.55.12.2015).

As it is concluded from the above-specified letter, the Applicant accepted the proposal of construction of boxes for bats also to be made of wood, dates of works near the estuary of the Strachocka river, and also excluded the construction of the green route at the land plot no. 2 road in the precinct of Witowice. The Applicant informed further that within Section I it is planned to mount 14 barriers. The felling of trees and shrubs beyond the demarcation lines of this investment will not be conducted; under the project implementation it is not planned to run the so-called "felling aimed to streamline the riverbed of large waters" or collect the so-called "earth reserve" from the river inter-embankments.

The Applicant did not agree with the proposal to secure the water-side slope of the redeveloped flood-protection embankment against damage by placing a mesh on it in order to protect the embankment structure against its dig-out by beavers during the occurrence of high water level in the inter-embankment. Justifying its position the Applicant stated that based on the so-far experience of the branch management of this Office in Tarnobrzeg it is concluded that within the area where the embankments are located, digging a temporary shelter by beavers has occurred only once - within Section II of the Vistula River embankments during the flood in 2010. A hole / burrow (approx. 1 m) to the depth of the barrier at the embankment water-side slope did not pose a threat to its stability and tightness. Analysing the technical solutions under the planned expansion of the embankments, in particular the anti-filtration barrier projected over the entire length of the embankment made of foil with its appropriate thickness as well as taking into account the fact that within the redeveloped sections there was no place where the embankments are in contact with the riverbeds the Applicant Applicant concluded that it is not justified to secure the embankment using a steel mesh all over the water-side slope of the redeveloped embankments (and it significantly increase investment costs).

The Applicant questioned the number (550) of boxes for birds specified in the letter by the Society for Nature Conservation (pol. TOP) pointing to the number of trees projected to be felled (373 with DBH over 20 cm) in which hollows could be found; the Applicant also questioned the solution proposed in the submitted documentation to construct 186 nesting boxes, of which at least half should be hung in Section II where the felling is most intense. The Applicant also upheld its proposal to clean boxes in the autumn-winter period of 5 years upon their hang-out indicating their average lifetime (several years on average). At the same time the Applicant accepted the dimensions of these boxes indicated the letter by the Society for Nature Conservation (pol. TOP).

Taking into consideration slight interference into the *Wisła pod Zawichostem* ["Vistula at Zawichost"] Reserve, the Applicant provides sufficient marking the boundaries of this reserve in a distinct / visible manner i.e. by its enclosure using a tape for the time when works are performed. The Applicant also explains that works will be conducted under the environmental supervision and the contractor will be obliged to adhere not to infringe the boundaries of this reserve beyond the scope required to run the investment project.

The Investor will obtain all the necessary permits relating to exemptions from the bans in force in relation to the protected species of animals, plants and fungi, in case of having to violate any of these bans. This obligation stems directly from the law and it is not reasonable to mirror it in this Decision as a condition.

Prior to the issuance of the decision the parties were notified once again on their right to comment on the evidence gathered in accordance with Article 10 of the Code of administrative procedures the Notice of the Regional Director for Environmental Protection in Rzeszów dated 14 October 2015 (symbol: WOOS.4233.24.2013.MG.93). In connection with the above-specified Notice at this Office none the parties of the proceedings did not get acquainted with the gathered documentation or submitted comments / remarks.

On 9 November 2015 this Office received a request dated 6 November 2015 made by the 'Klub Gaja' Ecological and Cultural Association [pol. *Stowarzyszenie Ekologiczno-Kulturalne Klub Gaja*] represented by Mr. Paweł Grzybowski to take part in the pending proceedings as a party. The letter also contained some conclusions with a suggestion to insert them in the decision conditions. Through the notice dated 12 November 2015 (symbol: WOOŚ.4233.24.2013.MG.101) the Office notified the parties of the proceedings on the accession of the above-specified Association into the proceedings as a party.

Through the letter dated 12 November 2015 (symbol: WOOŚ.4233.24.2013.MG.100) the Office passed the letter dated 6 November 2015 by the 'Klub Gaja' Ecological and Cultural Association [pol. *Stowarzyszenie Ekologiczno-Kulturalne Klub Gaja*], which was then replied by the Applicant through the letter dated 18 November 2015 (symbol: IM.403.55.17.2015) with additional information provided on the watercourse riverbeds, ditches and their reinforcements. By letter dated 8 December 2015 (symbol: WOOŚ.4233.24.2013.MG.113) the Office called upon to clarify the information contained in the above-specified letter, to which the Applicant replied by the letter dated 27 January 2016 (symbol: IM.403.32.1.2016). Once again the Office called upon to clarify the information contained in the supplement to the letter dated 18 February 2016 (symbol: WOOŚ.4233.24.2013.MG124), in response to which the Applicant filed the supplement together with the letter dated 14 April 2016 (symbol: IM.403.32.2.2016).

By the letters dated 18 May 2016 (symbol: JRP.403.31.3.2016) and dated 25 May 2016 (symbol: JRP.403.31.4.2016), the Applicant provided further clarifications on the project and its scope derived from the arrangements made in consultation with representatives of ecological organisations being parties to the proceedings), with Mr. Wiesław Nowicki PhD representing the Society for Nature Conservation (pol. TOP) and the 'Klub Gaja' Ecological and Cultural Association [pol. *Stowarzyszenie Ekologiczno-Kulturalne Klub Gaja*].

The Applicant has undertaken to:

- secure the embankment water-side slopes - using a mesh - against their damage by burrowing animals, including beavers,
- mount 280 nesting boxes for birds,
- monitor and clean 319 breeding boxes (apart from the ones hung under the considered project, also the ones found within the *Wisła pod Zawichostem* ["Vistula at Zawichost"] Reserve,
- mark - prior to the start of construction works - the area of the reserve with 35 plates made of galvanised sheet metal mounted on metal poles embedded into the ground in accordance with the Regulation of the Minister of Environment dated 10 December 2004 on the design of plates (Journal of Laws No. 268, item 2665),
- set up barriers at the embankment ramps in Section I (apart from the ramps at km 0+530 and 6+410) aimed to limit free entry into the inter-embankment but letting to enter (drive into) it by owners of land plots located at the inter-embankment,
- start mowing upon the completion of the embankments within Section I, not earlier than on June 15 (the water-side slope) and not earlier than on 1 July (the land-side slope).

The above findings are included in this decision.

Through the letter dated 6 June 2016 (symbol: WOOŚ.4233.24.2013.MG.140) the Office once again asked the State District Sanitary Inspector in Stalowa Wola and the State District Sanitary Inspector in Tarnobrzeg for their opinions pursuant to article 77, clause 1, point 2 of the Act on the provision of information on environment and its protection, public participation in the environmental protection and environmental impact assessments.

In the opinion dated 21 June 2016 (symbol: PSNZ.466.6.2015.2016) the State District Sanitary Inspector in Tarnobrzeg upheld its standing expressed in the opinion dated 17 June 2015 (symbol: PSNZ.466.6.2015). The State District Sanitary Inspector in Stalowa Wola did not make a standing on the subject matter, which was treated, in accordance with article 78, clause 4 of the above-specified Act as filing no objections.

Once again, in the period from 14 June 2016 up to 4 July 2016, public participation was guaranteed in accordance with article 79 of the Act on the provision of information on environment and its protection, public participation in the environmental protection and environmental impact assessments. The Notice of the Regional Director for Environmental Protection in Rzeszów dated 6 June 2016 (symbol: WOOS.4233.24.2013.MG.144) on the submitted application and the report on environmental impact assessment together with information on the participation in this environmental impact assessment, its initiation, decision to be issued, competent body to issue this decision and authority competent to issue appropriate opinion, grounds to get acquainted with all the documentation, place where it is made available, grounds and deadline for submitting comments, 21-day deadline for their submission and competent authority for their consideration is given to the public. It was placed in the following places: on the notice board and website of the Regional Directorate for Environmental Protection in Rzeszów, on the notice board and website of the Podkarpacki Board of Amelioration and Hydraulic Structures in Rzeszów, near the project implementation site, on the notice board and website of the Communal Office of Radomyśl nad Sanem and on the notice board and website of the Communal Office of Gorzyce.

During the conducted public participation no comments or requests related to the present project were submitted at this Office.

Prior to the issuance of this decision the parties were notified once again on their right to comment on the evidence gathered in accordance with article 10 of the Code of administrative procedures the Notice of the Regional Director for Environmental Protection in Rzeszów dated 12 July 2016 (symbol: WOOS.4233.24.2013.MG.148. In connection with the above-specified Notice at this Office none the parties of the proceedings did not get acquainted with the gathered documentation or submitted comments / remarks.

Upon the analysis of the scope of the planned project, identification of its environmental impacts and their range, it was found that the planned project will not cause cross-border impacts onto the environment. For these reasons, it was not necessary to run the procedure on cross-border impacts, as referred to in article 104 of the Act on the provision of information on environment and its protection, public participation in the environmental protection and environmental impact assessments and to determine the conditions related to such impacts in the content of this Decision.

On the grounds of the conducted proceedings, including the analysis of all the evidence gathered in the case, among others, the Report on environmental impact assessment it is concluded that the project implementation and its operation, while meeting the conditions specified in the sentence of the present decision, will fulfil all the valid environmental quality standards in the range of human health.

With the above circumstances in view, pursuant to the provisions cited in the legal basis, it decided as in the contents.

NOTICE

1. The Characteristics of the project, which constitutes a detailed description of the project, is an integral part of this decision.
2. In case the implementation of the planned investment involves the violation of bans in force in relation to the species of plants, animals and fungi under the species protection, it is necessary to obtain appropriate permits, referred to in article 56 of the Act dated 16 April 2004 on the protection of nature (Journal of Laws of 2015, item 1651, as amended.).
3. In case of works to be conducted within the *Wisła pod Zawichostem* ["Vistula at Zawichost"] Reserve, it is necessary to obtain the permit referred to in article 15 of Act on the protection of nature dated 16 April 2004.

4. This decision may be appealed by parties to the General Directorate of Environmental Protection through the Regional Director for Environmental Protection in Rzeszów within 14 days of its receipt.

Attachments / appendixes of the decision:

1. Characteristics of the project.

REGIONALNA DYREKCJA
OCHRONY ŚRODOWISKA W RZESZOWIE
al. Józefa Piłsudskiego 38, 35-001 Rzeszów

Z up. REGIONALNEGO DYREKTORA
OCHRONY ŚRODOWISKA W RZESZOWIE

Radosław Jędral
p.o. Zastępcy Regionalnego Dyrektora
Ochrony Środowiska w Rzeszowie

Decyzja niniejsza stała się
ostateczna dnia *12.10.2016r.*
data *25.10.2016r.* *Gniewek Kozłowski*
(podpis, stanowisko)

To be received by:

1. Director of the Podkarpacki Board of Amelioration and Hydraulic Structures in Rzeszów, address: ul. Hetmańska 9, 35-959 Rzeszów
2. The Parties to the proceedings in accordance with article 49 of the Code of administrative procedures in connection with article 74, clause 3 of Act on the provision of information on environment and its protection, public participation in environmental protection and environmental impact assessments through the Communal Office of Gorzyce and the Communal Office of Radomyśl nad Sanem.

For the attention of:

1. State District Sanitary Inspectorate in Stalowa Wola
2. State District Sanitary Inspectorate in Tarnobrzeg
3. Department of Environmental Impact Assessment (pol. WOŚ); files

WOOS.4233.24.2013.MG.157

Characteristics of the project

"Vistula Stage 2 - Expansion of the right-hand side embankment of the Vistula river over a length of 13.959 km, the right side embankment of the San river over a length of 2.193 km and the left side embankment of the Łęg river over a length of 0.112 km, within the communities of Gorzyce and Radomyśl nad Sanem, the Podkarpackie Province"

The investment project covers the redevelopment of the existing embankments classified into the second (II) class of technical importance.

The embankments will be expanded at the water-side. There will be a new anti-filtration barrier made at the water-side foot of each embankment section. The anti-filtration barrier is projected reach max. 10 m below the terrain level. The anti-filtration barrier will be linked with the screen at the water-side slope made of geomembrane anchored at the top at the embankment crest and in the bottom in the vertical anti-filtration barrier in the so-called anchoring ditches sealed with aluminum-cement hold-up. There will be service roads with their surface made of broken stone or bituminous mass at the land-side slope, along the embankment crest and at the so-called by-embankment bench. The width of these roads will be approx. 5 m, including: the width of each lane - approx. 3 m and two-way roadsides - approx. 1 m each. At the water-side at the slope base, apart from the section with a length of approx. 300 m (the land plot no. 2, the precinct of Witkowice) within the "*Wisła pod Zawichostem*" ["Vistula at Zawichost"] Nature Reserve, there will be so-called 'green routes' made, which will provide access to the inter-embankment area. The scope of the expansion of the embankment also includes the redevelopment of the existing embankment passages, embankment water-locks and the protection and redevelopment of their technical infrastructure. In order to protect the embankments against burrowing animals, the embankment water-side slopes will be secured by means of a galvanised steel mesh embedded at a depth min. 0.2 m below the surface.

Prior to the start of construction works, the boundaries of the "*Wisła pod Zawichostem*" Nature Reserve will be marked by means of 35 boards with the following text: "*Rezerwat przyrody Wisła pod Zawichostem*" ["*Wisła pod Zawichostem* Nature Reserve"] made of galvanised steel sheet. Each of them will be placed on a steel post fixed to the ground.

Section I - the right embankment of the Vistula river at the section: 0+000-7+205 Parameters of the embankment upon its reconstruction

- The width of the embankment crest = approx. 3 m and approx. 5 m at a road section going along it.
- The inclination of the embankment land-side slope = 1:2.5-1:4.7 and the embankment water-side slope = 1:2.5 - 1:2.7.

At this section there are eight embankment passages and four entrances into the embankment from the behind-embankment side. The project provides for the expansion of eight passages and two entrances in order to raise their grade-line up to the projected grade-line of the embankment crest. Two entrances into the embankment will be removed at km:

0+390 i 6+070. Under the investment the following embankment passages will be redeveloped: PW 1.1 at km 0+530; PW 1.2. at km 1+310; PW 1:3 at km 2+513; PW 1.4 at km 3+045; PW 1.5 at km 3+600, PW 1.6 at km 4+165; PW 1.7 at km 5+810; PW 1.8 at km 6+410 and the embankment entrances: WW1.1 at km 2+471 and WW1.2 at km 2+733.

The service road will run along the embankment crest at the section at km 2+518.6 - 2+720.9 and its remaining part will be located at the land-side.

The existing water-lock at km: 2+735, 4+093 and 6+ 206 will be redeveloped, and within the area of the water-locks at km 2+735 and 6+206 there will be manoeuvring yards made of Jumbo slabs.

Section II - the right embankment of the Vistula river at the section: 0+000-4+889

Parameters of the embankment upon its reconstruction

- The width of the embankment crest = approx. 3 m and approx. 5 m at a road section going along it.
- The inclination of the embankment land-side slope = 1:2.2-1:4.2 and the embankment water-side slope = 1:2.5.

At this section there are nine embankment passages and two entrances into the embankment from the behind-embankment side. The project provides for the expansion of the existing passages in order to raise their grade-line up to the projected grade-line of the embankment crest and the construction of a new entrance PW 2.4 km 2+4259. Two entrances into the embankment and two embankment passages will be removed at km: 1+960, 3+180, 4+230 and 4+390. Under the investment the following embankment passages will be redeveloped: PW 2.1 at km 1+003, 4; PW 2.2 at km 1+727, 1; PW 2.3 at km 2+149.7; PW 2.5 at km 3+402.5; PW 2.6 at km 3+582.9; PW 2.7 at km 4+181.3; PW 2.8 at km 4+812.7.

The service road will run along the embankment crest at the section at km 2+149.7 - 2+425.9 and its remaining part will be located at the land-side.

The existing water-lock at km: 0+055, 2+178 and 4+887 will be redeveloped, and within their area there will be manoeuvring yards made of Jumbo slabs.

Section III - the right embankment of the Vistula river at the section: 0+000 - 1+865, the left embankment of the Łęg river at the section: 0+000 - 0+112

Parameters of the embankment upon its reconstruction

- The width of the embankment crest = approx. 3 m and approx. 5 m at a road section going along it.
- The inclination of the embankment land-side slope = 1:2-1:4 and the embankment water-side slope = 1:2-1:3.

At this section there are six embankment passages and nine entrances into the embankment from the behind-embankment side. The project provides for the expansion of the existing passages and two entrances in order to raise their grade-line up to the projected grade-line of the embankment crest. Seven existing entrances into the embankment and two embankment passages will be removed at km: 0+040 (the Łęg river embankment) 0+145, 0+741, 0+765, 0+793, 1+070, 1+185, 1+300, 1+588 and 1+680 one passage at km 1+436 will be changed into an entry. Under the investment the following embankment passages will be redeveloped: PW 3.1 at km 0+030; PW 34 at km 0+735; PW 35. at km 0+887; and the embankment entrances PW 3.2 at km 0+254; PW 3.3 at km 0+288; PW 3.6 at km 1+436.

The service road will run along the embankment crest at the sections: at km 0+000 - 0+112 of the Łęg embankment, 0+000 - 0+2656 and 0+701 - 1+865 of the Vistula embankment while the remaining part will be located at the land-side.

In place of the existing water-lock there will be a new one made at km 0+303, and within its area and at km 0+640 there will be manoeuvring yards made of JUMBO slabs.

Section San - the right embankment of the Vistula river at the section 0+000-2+193

Parameters of the embankment upon its reconstruction

- The width of the embankment crest = 2.5-4 m.

- The inclination of the embankment land-side slope = 1:2.5-1:4.1 and of the embankment water-side slope = 1:2.6-1:2.8.

There are two embankment passages at this section. The project provides for the expansion of the existing passages and two entrances in order to raise their grade-line up to the projected grade-line of the embankment crest. Under the investment the following embankment passages will be redeveloped: PW 1.9 at km 0+180; PW 1.10 at km 1+594.

The operating route road run along the land-side only.

The water-lock inlet and outlet at the watercourses and ditches will be strengthened in order protect the flood-protection embankment and the water-lock coming through its body against the destructive activity of water and wash-out, protect the watercourses / ditches / their slopes located in the direct proximity of the embankments and accompanying equipment and to secure the slope curves and bases projected for re-profiling and grassing. The inclination of the slopes at the place of reinforcement by means of a mesh-stone mattress will be max. to 1:1.5.

The Embankment water-locks: 1.1, 1.2, 2:3

At the place of a bank-wall (river-bank band), at the side of the water-gate inlet and outlet, the watercourse / ditch slopes have their inclination close to 1:2 or below, the slopes will be profiled to the existing condition.

The Embankment water-locks: 1.3, 2.1

At the place of a bank-wall (river-bank band), at the side of the water-gate inlet and outlet, the watercourse / ditch slopes have their inclinations at varied levels. In case the inclination is more than 1: 2, their reprofiling will be conducted.

The embankment water-lock: 2.2

At the place of a bank-wall (river-bank band), at the side of the water-gate outlet, the ditch slopes have their inclinations at varied levels. At the section of approx. 10 m behind the heavy reinforcements (behind the slope strengthening with a mesh-stone mattress), the slope inclination will not be more than 1:2.

The embankment water-lock: 3.1

At the place of a bank-wall (river-bank band), at the side of the water-gate inlet, the ditch slopes have their inclinations at varied levels. Behind the heavy reinforcements (behind the slope strengthening with a mesh-stone mattress), the slope inclination is close to 1:2 or less. In case the inclination is more than 1: 2, their reprofiling will be conducted. At the inlet side, at the final section, the slopes have their inclination close to 1:2 or less, the slopes will be profiled to the existing condition.

In order to run transport for the purposes of the planned investment implementation, the network of the existing roads will be used, which - upon its completion - will not be left in worse conditions than they were prior to the project.

The execution of a by-embankment road involves the demolition of the abandoned building at the cadastral plot no. 975, the precinct of Wrzawy.

The following solutions will be applied to protect the environment, among others: good organisation of work, efficient equipment and good quality materials; avoidance of idle operation of combustion engines of machines and means of transport (among others: during stops, breaks at work, etc.), in rain-free periods. spray-out of ground surfaces, location of warehouses / storage sites for bulk materials at places which are the least exposed to wind, coverage with tarpaulins; maintenance of exit roads in good conditions; construction works performed in daytime only, use of portable acoustic screens. Construction works will be conducted in a manner which protects soil against pollution; the construction works back-site will be provided with sorbents for potential machine failure and leaks of petroleum substances.

Under the project implementation it is projected to remove approx. 2900 trees and shrubs from the area of approx. 3.12 ha. As a natural compensation for the group of species

nesting in tree hollows and other such covers (owls, mergansers, hoopoe, tits, flycatchers, starling, nuthatch, etc.), nesting boxes for birds will be hung on trees. They will be regularly maintained within at least 10 years upon they left hanging. Their cleaning will be conducted annually during autumn-winter months (removal of old nests from 16 October to the end of February) within 10 years upon their set-up. As part of monitoring, while cleaning, checks on their occupation by birds will be run (on the basis of manure, feathers, element used for building a nest, egg shells, etc.). Such monitoring will be conducted by an ornithologist. Moreover, for the period of 10 years upon the start of construction works, 319 existing boxes (hung within the "*Wisła pod Zawichostem*" ["Vistula at Zawichost"] Nature Reserve) will be monitored. All actions within the boundaries of the nature reserve will be performed upon obtaining appropriate permits. Boxes for bats will be also hung, which will be monitored for 3 years upon its hang-up. Inspections will be conducted once in autumn months when boxes are to be cleaned (their occupation, e.g. on the basis of droppings, will be reported).

Mowing will be within a set of treatments aimed to maintain the embankments. It will be performed in turns (alternatively), i.e. on 1 June the embankment will be mowed along a length of, for example, 300 metres, then a consecutive 300-metre section will be mowed upon two weeks. Within Section I - mowing at the embankment water-side slope will start not earlier than on 15 June, then at the embankment water-side slope - not earlier than on 1 July,

For a minimum period of 5 years from the completion of the construction, the area of the project will be monitored for the occurrence of invasive foreign species of plants and in case of their appearance (based on the results of botanical supervision), appropriate measures will be taken to remove them.

Z up. REGIONALNEGO DYREKTORA
OCHRONY ŚRODOWISKA W RZESZOWIE



Radosław Jędral
p.o. Zastępcy Regionalnego Dyrektora
Ochrony Środowiska w Rzeszowie