

Wrocław, December 18th, 2015

DECISION

Pursuant to Article 71 Par. 2 Subpar. 1, Article 75 Par. 1 Subpar. 1i and Article 82 and Article 85 of the Act of October 3rd, 2008 *on the Provision of Information on the Environment and its Protection, Public Participation in Environmental Protection and Environmental Impact Assessments* (Journal of Laws of 2013, item 1235 as amended) in connection with Article 104 § 1, 108 § 1 of the *Administrative Procedure Code* of June 14th, 1960 (Journal of Laws of 2013, item 267 as amended) as well as § 2 Par. 1 Subpar. 36, § 3 Par. 1 Subpar. 33 and Subpar. 65 of the Regulation of the Council of Ministers of November 9th, 2010 *on determining the types of projects that may significantly affect the environment* (Journal of Laws No. 213, item 1397 as amended), following an analysis of the application by the Director of the Regional Water Management Authority in Wrocław submitted by the Authorised Representative – Mr. Tomasz Wróblewski, designer at Hydroprojekt Wrocław Spółka z o.o., with its seat at Wybrzeże Wyspiańskiego 39 in Wrocław, dated January 13th, 2015, ref. No.: HP/RB/DS/1/2015,

I determine

environmental conditions for the undertaking entitled: “Construction of “Roztoki Bystrzyckie” – a dry flood control reservoir on Goworówka Stream near Roztoki, Międzylesie Municipality, Lower Silesian Province” according to scenario II.

I. I define

1. The type and location of the undertaking:

The undertaking in question entails the construction of a dry flood control reservoir, located in the region of Roztoki, Międzylesie Municipality, Lower Silesian Province.

2. Area use conditions during undertaking implementation, with special consideration for the need to protect valuable environmental qualities, natural resources and monuments and to limit disruptions to the adjacent areas:

- 2.1. Commence earthworks and construction works beyond the animals' breeding seasons, i.e. not during the period from August 15th to March 15th, and once began, continue uninterruptedly subject to time restrictions stemming from other clauses of the present decision.
- 2.2. The necessary felling of trees and shrubs colliding with undertaking implementation shall be performed between August 15th and March 15th.
- 2.3. Removal of trees with the circumference at breast height exceeding 100 cm shall be preceded by an expert entomologist's and an expert chiropterologist's inspection in terms of the presence of bats and invertebrates, who, if presence of the aforementioned species is confirmed, shall indicate permissible tree felling dates and methods.
- 2.4. Root stubbing of felled trees and shrubs growing on stream bed slopes shall not be carried out during the period from March 1st to May 30th (the optimum period for the performance of these works is between June 1st and September 15th).
- 2.5. Works along Goworówka and Nowinka watercourses, such as: liquidation of the existing watercourse sections, regulation of the existing watercourse sections and transfer of the first waters through the newly constructed watercourse sections, shall

not be performed between April 1st and May 31st under any circumstances. The optimum period for the performance of these works is between June 1st and September 15th.

- 2.6. All works in watercourse beds shall be performed under the supervision of an ichthyologist (visits at least one every three days during works in watercourse beds).
- 2.7. New sections of Goworówka and Nowinka beds and water discharge devices shall be constructed as dry works. Once their construction is complete:
 - a) one shall direct stream waters to new beds;
 - b) a cofferdam closing the bed section intended for liquidation shall be performed in the upper course of the stream;
 - c) one shall wait until water flows from the bed section intended for liquidation (one shall take action to facilitate its flow, e.g. perform additional excavations or trenches to enable a greater number of aquatic organisms to get out of the water and if organisms remain after water has drained, e.g. in isolated still water pools, they shall be caught under an ichthyologist's supervision and transferred to an appropriate location in terms of habitat);
 - d) one shall build a cofferdam in the downstream section of the bed to be liquidated;
 - e) the bed sections intended for liquidation shall be backfilled.
- 2.8. The regulating works planned in the stream beds shall be carried out in such a way as to make the site of the works move together with the stream current (the works shall begin upstream). The works within the Goworówka Stream shall be carried out first and the works within the Nowinka Stream shall follow.
- 2.9. The concrete 115 m long and 4 m wide bottom of the tunnel constructed under the reservoir dam shall be covered with an approximately 10 cm thick layer of gravel with stones approx. 50 cm in diameter set in groups of 3-5 or one by one, irregularly distributed, in the centre or by the tunnel sides. The material (gravel and stones) shall be obtained from the bottom of the liquidated Goworówka Stream section. There shall be no sharp edges on the stones which could injure animals when there is a water freshet and the current is fast.
- 2.10. Set large stones (diameter of approx. 50 cm) in the bottom of the regulated Goworówka (65 m) and Nowinka (274 m) sections. These shall be set similarly to those in the concrete tunnel bottom referred to in clause I.2.9.
- 2.11. Cover new Goworówka (in total approximately 345 m) and Nowinka (226 m) river bed sections with an approximately 30 cm thick layer of gravel. Moreover, set large stones (diameter of approx. 50 cm) in the bottom. These shall be set similarly to those in the concrete tunnel bottom referred to in clause I.2.9.
- 2.12. The construction site backyard shall be located:
 - a) outside of areas covered with high greenery (trees, shrubs);
 - b) outside of areas of determined natural habitats and habitats of protected species;
 - c) at a distance of at least 100 m from existing water reservoirs and wetlands.The selected location for the construction site backyard shall be consulted with a phytosociologist.
- 2.13. Construction machinery and vehicle traffic shall be restricted to the construction site backyard, existing roads, access roads and – once constructed – internal roads. The abovementioned areas, if unhardened, shall be covered with concrete slabs on a subcrust layer.
- 2.14. Before commencing the construction stage, complete the construction site backyard and access roads. The construction site backyard shall be used to store construction materials, park and fill up machinery, perform on-going repairs to machines and devices, for staff and common use facilities (changing rooms, office, workshop, portable toilets) and for waste containers.

- 2.15. The construction site backyard and all access roads to be used by machines and vehicles shall be paved with concrete slabs on a subcrust layer. Every day, after completion of works, and in particular on non-working days, machines and vehicles shall be parked in a designated area within the construction site backyard.
- 2.16. A part of the construction site backyard designated for parking and filling up machines shall be insulated from the soil.
- 2.17. Access to the construction site shall be based on existing roads.
- 2.18. Construction materials, and in particular bulk materials, shall be stored only on hardened surfaces within the construction site backyard.
- 2.19. Earth for construction of the dam shall be routed directly to the target section of the dam and used to build the dam immediately after unloading.
- 2.20. Prior to the commencement of construction works one shall collect a layer of topsoil at least 0.2 m thick. The collected topsoil shall be stored within the construction site backyard in the form of heaps not wider than 3 m and not higher than 1.5 m. The topsoil shall be sprinkled as often as necessary so that it does not dry out. After completion of construction works the stored topsoil shall be used to restore the fertile soil layer.
- 2.21. Trees and shrubs which are to be retained shall be protected in the following manner:
- a) before commencing construction works, all trees and shrubs not anticipated to be felled and located within or in the immediate vicinity of the works area shall be protected against damage by boarding up the trunks up to at least 1.5 m from the ground level (the boards shall be attached to the trunk in a manner which does not injure the tree);
 - b) it is recommended to carry out works within the reach of tree and shrub root clumps manually;
 - c) uncovered roots shall be covered using, for example, hay or burlap mats; for temperatures exceeding 20°C, the mats shall be moistened with water in order to prevent the roots drying out, and for negative temperatures the mats shall be dry, to avoid freezing of roots;
 - d) if the roots are damaged, cut off the damaged ends and apply an anti-fungus substance to the roots;
 - e) do not store construction materials (in particular bulk materials) or mark out transport routes and parking areas under the crowns of trees or within the reach of shrubs.
- 2.22. Within the area of determined and potential habitats of Dusky large blue *Phengaris nausithous* and Scarce large blue *Phengaris teleius* located within the boundaries of the planned earthworks and construction works, one year prior to commencing the construction works and during the year of their performance if scheduled to commence in September or later, perform mowing once a month (mowing height: 10 cm) during the period from the beginning of June to the end of September.
- 2.23. Under phytosociological supervision:
- a) mark out (in a manner visible for the contractors) the boundaries of nature habitat swathes which are to be retained: 6430 – mountain herbs *Adenostylion alliariae* and riparian herb growths *Convolvuletalia sepium*, 9170 – *Galio-Carpinetum* and *Tilio-Carpinetum* oak-hornbeam forests and *91E0 – riparian mixed forests of willow, poplar, alder and ash tree (*Salicetum albo-fragilis*, *Populetum albae*, *Alnenion glutinoso-incanae*) as well as alder forests on percolating mires, which shall not be disturbed during the performance of works;
 - b) conduct works within the boundaries of the best preserved swathe of *91E0 habitat, forked by the Goworówka, Cieszycza and Bielica watercourses – the phytosociologist should take part in selecting trees and shrubs to be felled, so as to

- limit their number as much as possible; it is forbidden to mark out roads or locate the construction site backyard and material storage sites in this area;
- c) restore the fertile soil layer after completion of works – the supervision should primarily include the selection of species for sowing and determination of exact dates of works.
- 2.24. Locations where works shall be performed, and in particular earth trenches, construction site backyard and storage sites shall be fenced off using mesh fencing (eye size not exceeding 0.5 x 0.5 cm and height of at least 0.5 m) to prevent small animals from entering these areas. The mesh should be dug into the soil to a depth of at least 15 cm. The construction site and construction site backyard should be fenced off throughout the entire works performance period, and the fencing should be regularly inspected in terms of breaches (during the period from March 1st to August 31st inspections at least once every 3 days and during the period from September 1st to the end of February – not less than once every 10 days). All damage should be repaired immediately. The installation of fencing and its inspections should be performed under the supervision of a herpetologist.
- 2.25. If small animals appear within the construction site or construction site backyard, despite compliance with the requirements set out in clause I.2.20, the animals shall be captured under the supervision of a herpetologist and transferred to a location with habitat characteristics correct for the species, outside the investment impact zone.
- 2.26. Within the boundary of the reservoir basin, local terrain depressions should be retained to fill with water during water freshets.
- 2.27. Wheeled vehicles are forbidden to travel along the stream bed and earth, gravel and stones cannot be moved by shoving in watercourse beds. Access roads cannot run in watercourse beds: all equipment is to enter from the bank.
- 2.28. Following completion of the works, clear the area and perform operations which aim to recreate green areas, including sowing with native species in accordance with habitat conditions.
- 2.29. Within the investment area, during the performance of works, remove invasive plant species (at least twice a year) until they vanish and replace them with local plants. The removal shall be done by plucking out and disposal of plants.
- 2.30. Information on the arrangements pertaining to the manner and scope of operations referred to in clause I.2.3, I.2.6, I.2.23-I.2.26, as well as the documents confirming the participation of a specialist (e.g. an arrangement report and/or the specialist's declaration confirming the operations were performed correctly) shall be submitted to the Regional Director for Environmental Protection in Wrocław within 30 days of making and/or implementing those arrangements.
- 2.31. The Contractor is obliged to regularly remove contamination from roads which occurs as a result of movement of vehicles and machinery associated with the implementation of the designed investment.
- 2.32. Parking sites and access roads for equipment shall be made with slope to ensure stormwater, meltwater and waste-water drainage into drainage systems in a manner which prevents any contaminants from penetrating the soil or mixing with surface waters.
- 2.33. The technical state of construction and transport equipment shall be checked regularly to eliminate leaks of carbohydrate petroleum derivatives into the soil.
- 2.34. If contamination with petroleum derivatives does occur, the contaminated soil shall be removed immediately.
- 2.35. A station with a sorbent used to eliminate any leaks and spillages of petroleum derivatives should be located near the machinery parking and filling sites.

- 2.36. The construction site backyard shall be equipped with tight domestic waste-water holding tanks, the content of which shall be handed over to entities with appropriate permits to remove it.
 - 2.37. The drainage duration times shall be as short as possible and one shall apply methods limiting the quantity of the water pumped out and protecting it against contamination.
 - 2.38. Construction works and earthworks shall only be carried out using machinery and devices in working order and with low noise emission levels. These works shall be carried out during the day. Defective machinery which might result in increased noise levels in the surroundings shall not be used for the works.
 - 2.39. Provide a place for safe manoeuvring of vehicles in the form of yards, and turn off engines during the potential stoppage of vehicles.
 - 2.40. Use only means of transport and devices which are in working order and have valid certificates in order to reduce the emission of gaseous substances and dusts into the atmosphere.
 - 2.41. Use low power consumption machines and equipment; switch off the power supply when they are not in use.
 - 2.42. During the course of construction works, limit the consequences of secondary dust contamination by observing high standards of works and in particular by systematic clearance of the construction site, sprinkling dusty road surfaces and removal of contamination using machinery (special purpose vehicles).
 - 2.43. Wastes generated during the implementation of the investment shall be segregated and selectively stored in containers or in designated and suitable locations in conditions which prevent dust emission and prevent the wind picking up light fractions resulting in a negative environmental impact. One shall also ensure regular waste collection by entities authorised to manage it further.
 - 2.44. Hazardous wastes shall be segregated and stored separately in designated containers set on hardened ground, secured against unauthorised access until handed over to entities authorised to manage such wastes further.
- 3. Environmental protection requirements necessary during the undertaking execution stage:**
- 3.1 Use 6 lanterns (2 by the utility building, 4 in the area of the water discharge devices) to illuminate the area under normal operating conditions.
 - 3.2 Discharge domestic waste-water to a tight holding tank and regularly hand it over to entities with appropriate authorisations for its further management.
 - 3.3 Maintain the minimum acceptable flow on the Nysa Kłodzka River downstream of the dam.
- 4. Environmental protection requirements necessary to be taken into account in the documentation for issuing the decision referred to in Article 72 Par. 1 of the Act on the Provision of Information on the Environment and its Protection, Public Participation in Environmental Protection and Environmental Impact Assessment**
- 4.1 Area lighting shall be installed under a chiropterologist's supervision. Light sources should be directed towards roads and elements of structures and should include housings which shall limit the light emitted towards high greenery (trees and shrubs) and water surfaces.
 - 4.2 The dam shall have the form of an earth-fill dam.
 - 4.3 The main discharge in the tunnel shall include an electrically operated closing mechanism with a manual emergency operation drive.
 - 4.4 One of the tunnel sections, known as the "main tunnel", where river bed waters shall flow through under normal reservoir operation, shall be adjusted to the natural

Goworówka river bed width along the section where the body of the dam shall be built, i.e. approximately 4 m.

- 4.5 The cross-section of the relocated Goworówka river bed shall be adjusted to the cross-section width of the natural river bed in the area of the dam, i.e. bottom width of approximately 6.0 m upstream of the dam and approximately 7.0 m downstream of the dam.
- 4.6 The new 226.0 m long Nowinka River section shall have the river bed width of approximately 3.0 m.

II. I find:

1. Natural compensation to be necessary:

- 1.1 For the felling of 5.77 ha of riparian and oak-hornbeam forest habitats within the area and in the vicinity of the planned undertaking, the following plantings are required on plots no. 193, 211, 213, 217/1, 217/2 in Roztoki precinct and plots no. 136 and 139 in Michałowice precinct:
 - a) riparian stands (great maple, ash tree, crack willow, black alder, other native deciduous species) – on an area not smaller than 3.5 ha;
 - b) oak-hornbeam stands (hornbeam, oak, other native deciduous species) – on an area not smaller than 12.5 ha.The precise selection of species and their percentage share in the plantings shall be consulted with a phytosociologist. Carry out maintenance works (e.g. annual mowing of grown grasses, fencing of cultivation areas, use of repellents or making up for shortages) on the cultivations for at least 10 years.
- 1.2 For the destruction of approximately 0.76 ha of Dusky large blue and Scarce large blue habitat, the arable lands in the basin of the reservoir with an area of at least 3 ha shall be transformed into hay meadows by sowing a mixture of native grasses (the species mix shall be arranged with a phytosociologist; the mix should include Great burnet *Sanguisorba officinalis*). The meadows shall be mowed once a year after September 15th throughout the entire use period. In a given year do not mow more than 50% of the area, then in the subsequent year mow the area which was not mowed the year before. Remove the mowed biomass away from the meadow.
- 1.3 For the destruction of the nesting site of White-throated dipper *Cinclus cinclus*, make three birdhouses with parameters adjusted to the species' requirements under an ornithologist's supervision and hang them: under the bridge over the Nysa Kłodzka River in Roztoki, under the new bridge over Nowinka (approximately 1+170 km of the Roztoki – Gajnik road) and under the bridge on the Nysa Kłodzka River along the Domaszków – Międzygórze road.
- 1.4 For the destruction of potential dwelling places (refuges) for bats, under a chiropterologist's supervision:
 - a) in early spring (March – April) hang 32 houses for bats (Issel or Stratman models); the bat houses should be in groups of 6-8, at locations as close as possible to places where tree felling was performed;
 - b) perform 4 chambers (8 chambers in total) in 2 shafts of the reservoir dam (dimensions: 1.3 m wide, 1.1 m high and 0.4 m deep) which shall constitute bat refuges. 1 m x 0.5 m entry openings located at a distance of 2.2 m away from the shaft ceiling shall lead to the chambers; they shall be connected with the chamber proper by a 0.5 m x 0.5 m entry channel with an overall length of approximately 1.7 m; the chambers' ceiling and walls should be rough.
- 1.5 Information on the arrangements pertaining to the manner and scope of operations referred to in clause II.1.1-II.1.4, as well as the documents confirming the participation

of specialists (e.g. an arrangement report and/as well as the specialist's declaration confirming the operations were performed correctly) shall be submitted to the Regional Director for Environmental Protection in Wrocław within 60 days after making and/or implementing the arrangements.

2. The need to monitor the environmental impact of the undertaking:

2.1 Control the state of riparian and oak-hornbeam forest habitats as well as compensation plantings (riparian and oak-hornbeam). The monitoring should be performed in four stages, each time by a phytosociologist and in accordance with the National Environmental Monitoring methodology for the given habitat type:

- Stage I: during the season preceding the construction or during the season the reservoir construction commences, assess the state of riparian and oak-hornbeam forest habitats at 2 points, which shall constitute reference stations;
- Stage II, III and IV: 5, 10 and 15 years after the compensation plantings respectively, assess the state across all areas where the plantings were made.

A monitoring report shall be drawn up each time which shall include a comparison of the results from the given stage with the results of the previous stage, photographic documentation and a description. The report shall be handed over to the Regional Director for Environmental Protection in Wrocław by the end of the calendar year during which the monitoring was performed.

2.2 Control the state of meadows within the reservoir basin. The monitoring should be performed in four stages, each time by a phytosociologist and in accordance with the National Environmental Monitoring methodology for the given habitat type:

- Stage I: during the season preceding the construction or during the season the reservoir construction commences, assess the state of meadow habitats at 3 points, which shall constitute reference stations;
- Stage II, III and IV: 5, 10 and 15 years after the compensation plantings respectively, assess the state across all areas where the plantings were made.

A monitoring report shall be drawn up each time, which shall include a comparison of the results from the given stage with the results of the previous stage, photographic documentation and a description. The report shall be handed over to the Regional Director for Environmental Protection in Wrocław by the end of the calendar year during which the monitoring was performed.

2.3 For a period of at least 3 years from the date of hanging the boxes which are to constitute a substitute habitat for White-throated dipper, control the boxes in terms of their habitation by birds and in terms of the need to perform possible repairs. The maintenance of boxes shall be limited to repairs entailing improving their tightness and making up for missing elements (do not use any chemical substances for maintenance), and to cleaning the boxes from faeces. In the event of more serious damage or destruction of a box, replace it with a new one. Controlling the boxes in terms of habitation by birds shall be carried out during the period from April 20th to May 20th, and in terms of possible repairs – after August 15th. All controls should be carried out by an ornithologist.

2.4 For a period of at least 5 years starting a year after hanging the boxes as part of compensation measures for bats, control them in terms of habitation by bats and in terms of the need to make possible repairs. The maintenance of boxes shall be limited to repairs entailing improving their tightness and making up for missing elements (do not use any chemical substances for maintenance), and to cleaning the boxes from faeces. In the event of more serious damage or destruction of a box, replace it with a new one. Inspection of the boxes in terms of habitation by bats shall be carried out

during the period from April 20th to May 20th, and in terms of possible repairs – after August 15th. All inspections should be carried out by a chiropterologist.

- 2.5 Check the effectiveness of functioning of the tunnel for Goworówka waters under the dam body as a corridor for fish fauna moving up- and downstream. The first check shall be performed immediately after the construction and then annually during the trout spawn season. The checks should be performed by an ichthyologist. If any irregularities affecting migrations are observed, these shall be remedied immediately.
- 2.6 Along regulated stream sections (bank reinforcements) for 3 vegetative seasons after the completion of works, monitor the watercourse banks in terms of occurrence of invasive species, and in particular Impatiens *Impatiens spp.* and Sosnowsky's hogweed *Heracleum sosnowskyi*. The monitoring should be performed by a botanist. If their occurrence is identified, remove them systematically (at least twice a year) until they vanish and replace them with local plants. The removal shall be done by plucking out, taking away and disposal of plants.
- 2.7 Information on the arrangements pertaining to the manner and scope of operations referred to in clause II.2.1, II.2.2 and II.2.5 as well as the documents confirming the participation of specialists (e.g. an arrangement report and/as well as the specialist's declaration confirming the operations were performed correctly) and the results of tests referred to in clause II.2.1-II.2.2 shall be submitted to the Regional Director for Environmental Protection in Wrocław within 60 days after making/implementing the arrangements. The results of all monitoring tests (II.2.1-II.2.6) shall constitute a basis for undertaking – if the specialist or the Regional Director for Environmental Protection in Wrocław finds it necessary – additional activities minimising or compensating the negative impact.

III. I do not impose a requirement to conduct an environmental impact assessment within the scope of the proceedings for issuing the decision referred to in Article 72 Par. 1 of the Act on the Provision of Information on the Environment and its Protection, Public Participation in Environmental Protection and Environmental Impact Assessment;

IV. The Appendix constituting the undertaking specification is an integral part of the decision.

V. The decision is subject to an order of immediate enforceability.

JUSTIFICATION

Mr. Tomasz Wróblewski, a designer at Hydroprojekt Wrocław Spółka z o.o. with its seat at Wybrzeże Wyspiańskiego 39 in Wrocław, acting for and on behalf of the Regional Water Management Authority in Wrocław, submitted application ref. No. HP/RB/DS/1/2015 on January 13th, 2015 to the Regional Director for Environmental Protection in Wrocław for issuing a decision on environmental conditions for the undertaking under the name:

“Construction of ‘Roztoki Bystrzyckie’ – a dry flood control reservoir on Goworówka Stream near Roztoki, Międzylesie Municipality, Lower Silesian Province”.

The earth-fill reservoir dam made within the scope of the planned undertaking, with a maximum height of 15.5 m and designed water damming-up of max. 14.5 m, in accordance with § 2 Par. 1 Subpar. 36 of the Regulation of the Council of Ministers of November 9th, 2010 on *determining the types of projects which may significantly affect the environment*, hereinafter referred to as the EPA Regulation, qualifies as an undertaking which might always have a significant impact on the environment. Due to its small volume (the holding capacity is approximately 2.9 million m³), the planned reservoir qualifies as an undertaking which might

have a potential significant impact on the environment. Within the scope of the undertaking, it is necessary to reconstruct an underground gas pipeline (pressure: 1.6 Mpa), which, in accordance with the EPA Regulation, qualifies for § 3 Par. 1 Subpar. 33. Furthermore, regulation of the Goworówka River and the Nowinka Stream are planned, so the undertaking in question also qualifies for § 3 Par. 1 Subpar. 65 of the EPA Regulation.

The planned undertaking is an investment related to flood defences as defined by the provisions of the Act of July 8th, 2010 on *special rules concerning the preparation of investments related to flood defences* (Journal of Laws of 2015, item 966 as amended). The reconstruction of the gas pipeline in question is necessary as defined by the provisions of Article 9 Subpar. 8e of the aforementioned act.

Pursuant to the statutory disposition of Article 75 Par. 1 Subpar. 1i of the Act of October 3rd, 2008 on the *Provision of Information on the Environment and its Protection, Public Participation in Environmental Protection and Environmental Impact Assessment*, hereinafter referred to as the EPA Act, the correct body for issuing the decision on environmental conditions is the Regional Director for Environmental Protection in Wrocław.

The parties to the proceedings have been identified by the body on the basis of a list of parties and topographic maps for design purposes with the investment range and impact areas marked attached to the application. The parties include: the applicant, owners and administrators of properties within the investment area and its impact zone. Thus, in the administrative proceedings in question the number of parties exceeds 20. In connection with the above, and pursuant to the legislative instruction of Article 74 Par. 3 of the EPA Act, the body informs the parties to the proceedings regarding all actions of the public administration bodies pursuant to the principle set forth in Article 49 of the *Administrative Procedure Code* by announcements.

The announcements were placed for 14 days on information boards at the City and Municipality of Międzyzylesie Town Hall, City and Municipality of Bystrzyca Kłodzka Town Hall and the Regional Directorate for Environmental Protection in Wrocław, and published in the Public Information Bulletin on the website of the Regional Directorate for Environmental Protection in Wrocław: www.wroclaw.rdos.gov.pl.

By a notice dated January 27th 2015, ref. No.: WOOŚ.4233.1.2015.AW.2, and an announcement dated January 27th 2015, ref. No.: WOOŚ.4233.1.2015.AW.3, the body informed the applicant's Authorised Representative and the other parties to the proceedings on commencing proceedings for the decision on environmental conditions.

Within the scope of the conducted administrative proceedings on the environmental impact assessment, a set of information in accordance with Article 74 Par. 1 of the EPA Act was submitted. The application was accompanied by an environmental impact report for the planned undertaking entitled: "Construction of 'Roztoki Bystrzyckie' – a dry flood control reservoir on Goworówka Stream near Roztoki, Międzyzylesie Municipality, Lower Silesian Province" [Jerzy Krajewski, PhD, Tomasz Wróblewski, MSc Eng., Grzegorz Chudy, MSc Eng., Wojciech Jankowski, PhD, Michał Smoczyk, MSc, Grzegorz Bobrowicz, MSc Eng., Paweł Kmieciak, MSc Eng., Anna Kmieciak, MSc Eng., Anna Kmieciak, MSc Eng., Elżbieta Szopińska, PhD, Angelika Kuśmierczyk-Jędrzak, MSc Eng., Anna Gizowska, MSc Eng., Wrocław, August 2014], hereinafter referred to as the "Report".

Pursuant to Article 21 of the EPA Act, information on the application for issuing a decision and on the submitted report were included in the publically available reference information on documents containing information about the environment and its protection, under numbers: 4/2015, 5/2015.

The submitted documents required to be supplemented within the scopes of: exclusion of the construction of the district road from the scope of the investment, providing more detailed information pertaining to the planned relocation of the overhead MV line and the underground gas pipeline and the utility building at the right abutment of the dam, solutions within the scope

of drainage of hardened surfaces, impact of the planned investment on the existing protected monuments, undertaking impact assessment (also including emergency situations) on the nearby Długopole Zdrój “C” SPA protection zone, impact of tectonic dislocation phenomena on the stability of the reservoir and definition of actions minimising the negative impact, definition of the final scope of the area occupied by the investment in question, impact assessment of the undertaking on all indicators which define hydro-morphological elements, demonstrating whether the ecological state or ecological potential shall deteriorate or a risk of failure to achieve a good ecological state or potential shall occur, and proving that the undertaking shall not have a negative impact on environmental objectives, marking out on a topographic map the impact of the reservoir associated with the changes to the frequency as well as to the reach and level of flood waters, providing more detailed information on the scope of works associated with river maintenance, environmental protection, analysis of the climate taking into account undertaking implementation, use and liquidation stages and a description of the landscape within which the undertaking is to be located together with scenario justification and indication of its impact on the landscape.

In connection with the above, this body queried the Investor’s Authorised Representative regarding the aforementioned issues, in letters dated: February 6th, 2015 (ref. No.: WOOŚ.4233.1.2015.AW.5), March 19th, 2015 (ref. No.: WOOŚ.4233.1.2015.AW.7), July 6th, 2015 (ref. No.: WOOŚ.4233.1.2015.AW.8), and July 22nd, 2015 (ref. No.: WOOŚ.4233.1.2015.AW.9).

The final update was submitted on August 11th, 2015, with a letter ref. No. HP/RB/DS/9/2015. In complying with the statutory disposition of Article 77 Par. 1 Subpar. 2 in connection with Article 78 Par. 1 Subpar. 2 in connection with Article 75 Par. 1 Subpar. 1i of the EPA Act, on August 18th, 2015 the Regional Director for Environmental Protection in Wrocław applied by letter ref. No. WOOŚ.4233.1.2015.AW.12 to the National District Sanitary Inspectorate in Kłodzko for an opinion before issuing the decision on environmental conditions, informing the parties to the proceedings of this fact in an announcement dated August 19th, 2015, ref. No.: WOOŚ.4233.1.2015.AW.13. The planned reservoir is not designated for continual storage or holding of no less than 10 million m³ of new or additional water volume, and thus provision of Article 75 Par. 1 Subpar. 1a fifth indent of the EPA Act is not applicable here. It should also be pointed out that Directive 2011/92/EU of the European Parliament and of the Council of December 13th, 2011 on the assessment of the effects of certain public and private projects on the environment transposed to the EPA Regulation states that undertakings which are subject to an environmental impact assessment listed in appendix 1 do include dams and other devices used to retain or permanently hold water if new or additional volumes of held or retained waters exceed 10 million m³. In appendix 1, the Directive does not take into account reservoirs with smaller holding capacities, constructed in connection with the execution of a damming structure more than 5 m high, such as is the case here. Thus it was within the jurisdiction of the National District Sanitary Inspector in Kłodzko to issue the present decision.

The National District Sanitary Inspector in Kłodzko did not respond within the deadline prescribed by Article 77 Par. 6 in connection with Article 78 Par. 4 of the EPA Act, which the body assumed to mean a lack of any objections.

In accordance with Article 79 Par. 1 of the Act of October 3rd, 2008 *on the Provision of Information on the Environment and its Protection, Public Participation in Environmental Protection and Environmental Impact Assessment*, the Regional Director for Environmental Protection in Wrocław, on the basis of Article 33 of the cited Act, by an announcement dated September 30th, 2015, ref. No.: WOOŚ.4233.1.2015.AW.17, published information about the planned undertaking, that is about:

- the commencement of environmental impact assessment proceedings,
- the decision to be issued on this matter,

- the body in charge of issuing the decision and the body in charge of issuing the opinion,
- the opportunity to review the documentation of the case and the location where it is made available for review,
- the possibility of submitting comments and applications,
- the manner and location for submitting comments and applications, at the same time setting out a 21-day deadline for submitting them,
- the body in charge of considering comments and applications.

In the announcement, the body indicated that the proceedings to issue a decision on environmental conditions for the undertaking in question were conducted for the Regional Water Management Authority in Wrocław, on behalf of which Mr. Tomasz Wróblewski is acting, representing Hydroprojekt Wrocław Sp. z o.o. It clarified that the body in charge of issuing a decision on environmental conditions for the planned undertaking which may always significantly impact the environment, listed in § 2 Par. 1 Subpar. 36 of the Regulation of the Council of Ministers *on the determination of types of projects which may significantly affect the environment* (Journal of Laws No. 213, item 1397 as amended) in accordance with Article 75 Par. 1 Subpar. 1i of the EPA Act, was the Regional Director for Environmental Protection in Wrocław. The body announced that it had applied to the National District Sanitary Inspectorate in Kłodzko for an opinion before issuing the decision (as the body in charge of the case). Additionally, it indicated that anyone might review the entire documentation collected for the case from October 6th, 2015 to November 3rd, 2015 (incl.) at the Regional Directorate for Environmental Protection in Wrocław at Powstańców Warszawy Square 1, in room 3018 between 8:00 am and 2:00 pm. It announced the opportunity to submit, between October 14th, 2015 and November 3rd, 2015 (incl.), comments and applications pertaining to the planned undertaking in writing to the aforementioned address, verbally for the record or using electronic means of communication without the need to apply a safe electronic signature as referred to in the *Electronic Signature Act* of September 18th, 2001 (Journal of Laws 2013, item 262 as amended). It indicated that the Regional Director for Environmental Protection in Wrocław was the body in charge of considering comments and applications. The society was informed that comments and applications submitted after the designated deadline would not be considered. With reference to the disposition in Article 3 Par. 1 Subpar. 11 of the EPA Act, information on the planned undertaking were published through:

- publication on an information board at the location of the body in charge of the matter, that is the Regional Directorate for Environmental Protection in Wrocław,
- publication of the information on the website of the Public Information Bulletin of the Regional Directorate for Environmental Protection in Wrocław (www.wroclaw.rdos.gov.pl),
- notification of the planned undertaking by an announcement in a manner customarily adopted at the site of the planned undertaking,
- publication in the press – in an extra to the Lower Silesian *Gazeta Wyborcza*.

The above announcement was displayed from October 6th, 2015 to November 3rd, 2015 (incl.) on:

- the information board at the City and Municipality of Międzyzylesie Town Hall,
- the information board at the City and Municipality of Bystrzyca Kłodzka Town Hall,
- the information board at the Regional Directorate for Environmental Protection in Wrocław,
- the website of the Regional Directorate for Environmental Protection in Wrocław, www.wroclaw.rdos.gov.pl, in the Public Information Bulletin.

On October 6th, 2015 the announcement was published in an extra to the Lower Silesian *Gazeta Wyborcza*.

No comments or applications were submitted during the designated period from October 14th, 2015 to November 3rd, 2015 (incl.). No comments were submitted after the designated period either.

Due to the complex character of the matter and the need to thoroughly analyse the received evidence in the form of subsequent updates to the documentation, as well as due to the need to make it possible for the parties to comment on the collected evidence, conduct the proceedings with the participation of the society and collect applicable opinions, the Regional Director for Environmental Protection in Wrocław set out subsequent new deadlines for considering the case, which were communicated to the Investor's Authorised Representative on an ongoing basis as well as other parties to the proceedings in announcements (of August 12th, 2015, ref. No.: WOOS.4233.1.2015.AW.10 and of October 12th, 2015, ref. No.: WOOS.4233.1.2015.AW.19), and notices (of August 12th, 2015, ref. No.: WOOS.4233.1.2015.AW.11 and of October 12th, 2015, ref. No.: WOOS.4233.1.2015.AW.20). The deadline was set in the aforementioned announcement of October 12th, 2015, ref. No.: WOOS.4233.1.2015.AW.19.

Pursuant to the principle defined in Article 10 § 1 of the *Administrative Procedure Code*, the Regional Director for Environmental Protection in Wrocław, by an announcement dated November 10th, 2015, ref. No.: WOOS.4233.1.2015.AW.21, and a notice dated November 10th, 2015, ref. No.: WOOS.4233.1.2015.AW.22, informed the Investor's Authorised Representative and other parties to the proceedings that a complete set of evidence had been collected as required to process the application to issue a decision on environmental conditions for the undertaking in question, that there was a possibility to review the entire material collected in this case and that there was an option to submit comments and applications as to the collected evidence. The documents were presented for review at the Regional Directorate for Environmental Protection in Wrocław, Powstańców Warszawy Square 1, 50-153 Wrocław.

Before issuing the present decision on environmental conditions, no party submitted comments or applications to the proceedings within the above deadline.

By letter dated November 25th, 2015 (received on November 26th, 2015), ref. No.: HP/RB/OŚ/3/2015, the applicant requested to subject the decision to an order of immediate enforceability pursuant to Article 108 of the *Administrative Procedure Code*.

The Authority concurred with the Investor's application and the present decision is subject to an order of immediate enforceability. According to the statutory disposition of Article 108 §1 of the *Administrative Procedure Code*, issuing an order of immediate enforceability decision is solely possible if it is necessary on account of the property and assets defined in that provision, and namely "on account of the protection of human life and health or the protection of national property against major losses or on account of another social interest or particularly important interest of a party". The execution of the decision shall be "necessary" in a situation where "in the given period and situation, the performance of the rights and obligations as prescribed by the decision is necessary, as a delay in their execution threatens the protected assets. This threat has to be real, and not only theoretical or probable" (Borkowski J. [in:] Adamiak B., Borkowski J., *Administrative Procedure Code*. Commentary, 8th issue: C.H. Beck, p. 524).

The Roztoki Bystrzyckie dry reservoir under construction shall fulfil a flood defence function, and as such shall protect human life and health across flood risk areas. The reservoir shall also protect public facilities in the form of roads, bridges as well as cultural, religious and historic structures. Furthermore, it should be emphasised that the undertaking is part of the entire Kłodzko Valley flood defence system with special consideration for the protection of Kłodzko.

Based on the above, the Regional Director for Environmental Protection in Wrocław decided that subjecting the present decision to an order of immediate enforceability is necessary due to the protection of human life and health as well as due to social interest.

In accordance with Article 66 Par. 1 Subpar. 5, 6, 7 of the EPA Act, the Report included:

1. a description of the analysed scenarios, including:
 - a) the scenario proposed by the applicant and a rational alternative scenario,
 - b) the scenario most favourable from the environmental point of view together with a justification for its selection,
2. a definition of the expected environmental impact of the analysed scenarios,
3. a justification of the scenario suggested by the applicant together with an outline of its environmental impact.

4 scenarios for the undertaking were analysed in the Report (I, II, III, IV): scenario I with the crest of the dam at an elevation of 420 m AMSL and the maximum damming-up level at an elevation of 419.37 m AMSL, scenario II with the crest of the dam at an elevation of 422 m AMSL and the maximum damming-up level at an elevation of 420.72 m AMSL, and scenarios III and IV with the crest of the dam at an elevation of 421.7 m AMSL and the maximum damming-up level at an elevation of 420.53 m AMSL. The scenarios also differ in terms of the site for setting the body of the dam: in scenarios I and II it is designed to be constructed at chainage km 0.540 and in scenarios III and IV at chainage km 0.654 of the Goworówka Stream. The height of the crest and location of the dam shall directly impact the volume of the reservoir, which shall result in the flood wave reduction level. The conducted analyses indicate that the above is only significant for flood waves larger than flows reflecting design water levels. For flows with design wave size, an approximately 74% reduction of the flood wave was obtained for all scenarios. For flows with control wave size, the reduction of the flood wave for the scenarios differed. For scenario I, reduction of the flood wave at an approximate level of 35% was achieved, for scenario II at an approximate level of 72% and for scenarios III and IV at an approximate level of 32%. Taking into account the reductive effectiveness of the reservoir, scenario II is the most favourable. Furthermore, in scenarios I and II an additional flood reserve was introduced, raising the crest of the dam by 0.3 m for scenario I and by 1.0 m for scenario II above the obtained maximum reservoir damming-up level. The extraordinary damming-up level obtained in such manner made it possible to obtain additional flood capacity in the event of a second flood wave.

The next scenario selection criterion was structural safety. The dam was designed as an earth-fill structure for all four scenarios. The differences between scenarios pertain to design solutions of sluice devices (spillways and relief). Technical solutions which also take into account solutions most favourable for the environment were adopted as undertaking scenario selection criteria. In scenarios I and II the relief devices are designed in the form of a tunnel along a 115.5 m long and 11.40 m wide section divided into three openings, 1 x 4.0 m and 2 x 1.70 m wide (with the main tunnel in the largest opening and an emergency and communication tunnel in the other two), and in scenarios III and IV in the form of a tunnel with two openings (2.1 x 2.0 m each). In scenario I spillway devices are designed in the form of a sloped spillway located along the right dam head, and in scenario II the spillway devices are designed in the form of two Ø3.60 m diameter pipelines run as in scenario I along the right dam head. Inlets to spillway devices are to be located at chainage km 0.200 of the dam axis. In scenarios III and IV, spillway devices are designed in the form of a head curved spillway, with radius $R = 37.5$ m and a length of 31.0 m, together with a side channel and rapids with a 33.3% slope on the downstream slope. In terms of accommodating large flood waters, the solution according to scenarios I and II with

the spillway located away from the dam body seems safest. In scenario I the sloped spillway facilitates constant monitoring and access along the entire length. Furthermore, it is least susceptible to blockages by floating logs or other elements carried by the river rapids. In scenario II, the sloped spillway is replaced by pipelines. To eliminate possible blockages, two pipes, 3.6 m in diameter each, are designed, with inlets secured by grates. The spillway devices in scenario II are designed on the principle of height difference (the main spillway inlet at an elevation of 419.3 m AMSL and the emergency spillway at 499 m AMSL) which facilitates better use of the reservoir and increases its reduction also for control flow flood waters. The spillway devices in scenario II shall be connected with the Goworówka river bed by an estuary section whose bottom elevation in the spot where it meets the channel shall be raised by approximately 0.8 m above the stream bottom, so as to avoid stream waters flowing back into the spillway devices under normal operating conditions.

Taking into account water management as a criterion to select one of the four scenarios, the "Report" authors recommended scenario II. In that solution, it was possible to reduce not only waves with flow reflecting design waters (achieving a reduction of approximately 74%), but also control waves (reduction of approximately 72%). Water management using bottom outlet adjustment requires constant monitoring of the sub-basin closed by the designed dam. However, due to the small catchment area of the sub-basin of the designed reservoir ($A=34.55 \text{ km}^2$) and thus the inability to anticipate and a too short forecast period, the effects achieved using adjustment of the outlet closing mechanism based on forecasts from monitoring seem dubious and dangerous. Therefore, in the above scenarios I and II, one opening (emergency outlet) shall not have a closing mechanism.

For all four scenarios, a similar reservoir basin shape has been designed. The only difference entails a stone rubble trap in scenarios III and IV on the Goworówka River within the reservoir basin. There is no stone rubble trap in scenarios I and II, however, the upper tunnel opening shall be protected by a grate with 40 cm mesh which shall ensure stone rubble with a diameter of less than 40 cm moves along it. The Regional Director for Environmental Protection in Wrocław considered the environmental impact of all analysed scenarios and evaluated the expected impact of the undertaking on particular elements of the environment.

Apart from the aspects discussed above, which significantly affect the selection of the scenario for the construction of the reservoir, environmental and natural aspects are also very important. In designing structures of this type, it is important to ensure throughout the entire construction period that the river is passable to organisms residing therein, and after construction completion one has to ensure that the transformed section has as many characteristics of the natural watercourse as possible. The primary issue is facilitating free migration of fish fauna, macrobenthos and other water organisms under the dam during normal operating conditions. In connection with that fact and taking into account the technical solutions of the given scenarios, scenarios I and II are most favourable. Under these scenarios, the width of one tunnel opening (the main tunnel) through which the river waters shall flow under normal operating conditions shall be approx. 4.0 m. The assumed width shall shape a channel similar to the natural Goworówka river bed along the section where the body of the dam shall be built. The bottom of the tunnel, as a result of natural inflow of stone rubble with a diameter less than 40 cm during larger freshets (mesh of the grate at the inlet of the main tunnel is 40 x 40 cm) shall also be similar to the natural one. In scenarios III and IV the tunnel is split into two rectangular channels, 2.0 x 2.1 m each. The adopted width of both channels is similar to the natural width of the Goworówka Stream along the section where the dam body shall be built. The above solutions shall ensure continuity of the bed is maintained along the entire river section within the boundaries of the investment, and in particular under the body of the dam, whereas solutions under scenarios I and II are definitely more beneficial for organisms which live in Goworówka

waters and its tributaries. Additionally, in scenarios I and II, on the downstream section of the dam, in its body, two vertical reinforced concrete chimneys shall be built facilitating sunlight access to the main part of the tunnel housing the river bed, which shall further contribute to obtaining conditions similar to the natural ones along this section of the river.

In analysing the natural aspects, it may be considered that in terms of retaining the largest possible forest areas, including the best preserved natural habitats (riparian forests), scenarios I and II are the most favourable. The same might be said in terms of felling of trees and shrubs which collide with the planned undertaking.

Based on an analysis of the above solutions, the Regional Director for Environmental Protection in Wrocław concurred with the Investor's application to execute the undertaking under scenario II.

At the design stage, three scenarios for the course of the 1.6 MPa gas pipeline were also taken into account: scenario 1 and 3 as well as scenario 2 adopted (preferred) by the Investor.

Scenario 1 entailed running of the new gas pipeline outside of the reservoir basin, outside of the maximum flooding area under a flood wave with a probability of appearing once in every 500 years. The length of the new gas pipeline section under this solution would be 1.6 km (approximately twice the length in scenario 2), and furthermore, due to terrain conditions, its execution would entail major technical difficulties.

In this scenario the pipeline has to cross Goworówka and Nowinka Streams (just as in scenario 2), but here also Cieszycza and Bielica Streams. Scenario 2 assumes that the new gas pipeline shall be run across the reservoir basin. The new gas pipeline shall be laid along an 830.0 m long section, parallel to the existing gas pipeline, 5.0-6.0 m away from its axis to the East. The gas pipeline shall cross the Goworówka River and the Nowinka Stream. Scenario 3 suggests reinforcing the existing gas pipeline and protecting it against possible floating during water damming-up in the reservoir. Here construction works entail digging up the existing gas pipeline and protecting it mechanically by weighing it down. Due to the need to maintain the gas pipeline in constant use and lack of precise knowledge as to its technical state, this scenario is difficult to execute and creates a danger of gas leak or pipeline damage during the works, which might even lead to an explosion.

The Investor considers scenario 2 to be the most favourable in terms of financial and environmental aspects as compared to scenario 1. Additionally, scenario 3 entails a large risk during the performance of works (reinforcing and securing against floating) and lack of 100% security during use (a possibility of a fault during water damming-up in the reservoir).

Based on an analysis of the proposed solutions pertaining to the reconstruction of the gas pipeline in connection with the construction of "Roztoki Bystrzyckie" dry flood control reservoir on the Goworówka Stream, the Regional Director for Environmental Protection in Wrocław concurred with the Investor's application, i.e. to execute the undertaking under scenario 2.

Within the scope of the environmental impact assessment, the body evaluated the expected impact of the undertaking on particular natural elements, including Natura 2000 site protection objectives.

The planned undertaking is located outside the boundaries of protected areas referred to in Article 6 of the *Environmental Protection Act* of April 16th, 2004 (Journal of Laws 2015, item 1651 as amended), including outside the boundaries of Natura 2000 sites. The nearest Natura 2000 site of Community importance, PLH020016 – "Góry Białskie i Masyw Śnieżnika", is located approximately 3.8 km away.

Construction of the “Roztoki Bystrzyckie” dry flood control reservoir in the estuary section of the Goworówka River (near Roztoki, Międzylesie Municipality) shall entail works pertaining to the following elements: construction of the reservoir’s earth-fill dam located at chainage km 0.540 of the river (counting from its estuary into the Nysa Kłodzka River) together with sluice devices in the form of a reinforced concrete tunnel run under the body of the dam and split into 3 openings, spillway devices in the form of two pipelines run along the right head of the dam, construction of internal roads, relocation of the municipality dirt road along a section of approximately 240.0 m outside of the body of the dam, relocation of overhead 20kV MV power lines outside of the reservoir basin, reconstruction of an underground G200 1.6 MPa gas pipeline and relocation of the Goworówka river bed along the upstream and downstream section (as a result of which a new river bed shall be constructed), relocation of the Nowinka stream bed along a section which collides with the designed dam (and construction of a new river bed), regulation of the Nowinka Stream along a section between the estuary into the Goworówka Stream and the end of the relocated section, regulation of the Goworówka River section downstream of the relocated section, regulation of the Nowinka Stream between the estuary into the Goworówka Stream and the end of the relocated section.

Within the area of the designed undertaking there are shallow, subsoil waters in the alluvial sand-gravel Quaternary deposits, which sit in the bottoms of Nysa Kłodzka and its tributaries. These normally lie directly on the eluvium (rock rubble) of chalk or crystalline rocks, sometimes creating a mutual layer. The waters of that layer usually occur at a depth of 1.0-2.0 m b.g.l. The depth of the trench where the new gas pipeline shall be laid shall be 1.5 m, so the trench may reach the upper levels of groundwater. During the construction and exploitation stage, the planned works associated with the reconstruction of the gas pipeline, shall not have a negative impact on the quantity and quality of groundwater.

The planned construction of the dry reservoir shall proceed within the boundary of a Body of Surface Water (hereinafter referred to as BSW) “*Nysa Kłodzka from the source to Różanka*”, code PLRW60004121169, within the Odra river basin district (Middle Odra water region). The impact of the project associated with a change in the frequency of flooding along the Nysa Kłodzka River section shall also affect the *Nysa Kłodzka from the source to Różanka* BSW, code PLRW60004121169 and BGW code PLGW6220110. The impact of the project associated with a major fault of the reservoir shall affect *Nysa Kłodzka from the source to Różanka* BSW, code PLRW60004121169, *Nysa Kłodzka from Różanka to Biała Łądecka* BSW, code PLRW6000812159, and BGW code PLGW6220110. The designed undertaking shall not impact waters within the river basin district of *Nysa Kłodzka from Różanka to Biała Łądecka* BSW, code PLRW6000812159, apart from an emergency situation, which shall have an impact like any major flood in that region. Thus, the designed undertaking shall not contribute to additional impacts, which might result in a failure to achieve the environmental objectives set forth in the river basin district water management plan of that BSW.

The *Nysa Kłodzka from the source to Różanka* BSW is of type 4 (a highland silicate stream with coarse-grained substrate). In accordance with provisions of the *Odra river basin district river basin management plan* (M. P. No. 40, item 451) (Odra RBD RBMP) published on May 27th, 2011, the *Nysa Kłodzka from the source to Różanka* BSW, code PLRW60004121169, constitutes a part of the Body of Surface Water (hereinafter referred to as BSW) code SO0901. The Body of Surface Water was classified as a natural part of waters, and its status was assessed as bad, at risk of failing to achieve the environmental objectives of Odra RBD RBMP. Exemptions 4(7) – 1 have been determined for it on account of the planned actions within the scope of investment implementation, resulting in changes to the physical characteristics of the BSW, serving a higher social purpose, that is flood protection. The *Nysa Kłodzka from Różanka to Biała Łądecka* BSW is of type 8 (a small highland silicate river). According to the provisions

of Odra RBD RBMP, the *Nysa Kłodzka from Różanka to Biała Łądecka* BSW, code PLRW6000812159, is a part of the Unified Body of Surface Water (UBSW) code SO0902. The Body of Surface Water was classified as a natural part of waters, and its status was assessed as good, at risk of failing to achieve the environmental objectives of Odra RBD RBMP. Exemptions 4(7) – 1 have been determined for it on account of the planned actions within the scope of investment implementation, resulting in changes to the physical characteristics of the BSW, serving a higher social purpose, that is flood protection.

The impact of waters from the “Roztoki Bystrzyckie” reservoir associated with its fault (dam break) shall reach from the designed reservoir to the estuary into Wilczka, in connection with which it shall not only affect BSW and BGW, within the boundaries of which the undertaking shall be implemented, but also the aforementioned *Nysa Kłodzka from Różanka to Biała Łądecka* BSW. However, for the “Roztoki Bystrzyckie” dry flood control reservoir, one can talk about a possibility of a fault (reservoir dam break) when water is dammed up by the reservoir, or, in other words, in the event of a flood with a probability of occurring once every 100 years for a period of 20 hours, and for floods with a probability of occurring once every 200 years for less than 24 hours. The probability of a major fault is very small. In the event of a dam break with the reservoir full of water the flood shall only affect the Nysa Kłodzka River, its valley and the estuary sections of its tributaries and shall not affect its tributaries and their valleys. In connection with the fact that the consequences of such a flood shall not affect Nysa Kłodzka tributaries with the exception of their estuary sections, ecosystems which shall constitute a source of subsequent colonisation of the Nysa Kłodzka River by water organisms after the passage of the flood wave shall not be destroyed. In the event of a serious fault of the reservoir, the planned undertaking shall not change river continuity, the hydrological regime or morphological conditions (hydromorphological water quality elements shall not change) within the *Nysa Kłodzka from Różanka to Biała Łądecka* BSW, within the area of which the undertaking in question shall be executed, and which it shall impact; it shall not affect the water regulation indicator or indicators defining hydromorphological elements, including those associated with the flow rate and flow variation. In connection with the above, the planned undertaking shall not constitute a risk to the achievement of the determined environmental objectives. Hydraulic connectivity with parts of groundwater shall not be lost. No river regulation or reinforcement within the area of that BSW shall take place as part of this investment. Furthermore, the planned investment shall be implemented in the Goworówka River valley, along its estuary section, which should not impact the *Nysa Kłodzka from Różanka to Biała Łądecka* BSW, nor contribute to a failure to achieve the environmental objectives.

Due to the fact that the investment shall be executed during a new urban planning cycle, the identification of some waters and their objectives was also updated with a current assessment of those waters within the boundaries of which the project shall be implemented. According to the updates, the *Nysa Kłodzka from the source to Różanka* BSW constitutes a natural part of waters whose environmental objective is to maintain a good ecological state of waters and to achieve a good chemical state of waters. On account of the planned actions within the scope of investment implementation resulting in changes to the physical characteristics of the BSW, serving a higher social purpose, that is flood protection, given the current state for this part of the waters, exemptions 4(7) – 1 have been determined (deviation from achieving environmental objectives). During the 2015-2021 urban planning cycle there is no justification for the requirement to maintain hydromorphological changes (in accordance with Article 4 Par. 3 of Directive 2006/60/EC of the European Parliament and of the Council of October 23rd, 2000 establishing a framework for Community action in the field of water policy (OJ EU L 327 of 22.12.2000 p. 1; OJ EU Polish special issue, chapt. 15 vol. 5 p. 275 as amended), referred to as the “Framework Water Directive”. The objective of the protection of the Body of Surface Water

under analysis is to achieve, by 2021, a good ecological state and a good chemical state of the waters.

Furthermore, it is indicated in the presented documents that the *Nysa Kłodzka from the source to Różanka* BSW in question lies within an area where waters designated for consumption occur, whereas the designed “Roztoki Bystrzyckie” reservoir shall lie outside of protection zones of direct potable water intakes. Thus, the provisions of the Regulation of the Minister of the Environment of November 27th, 2002 *on the requirements for surface waters for consumption purposes* (Journal of Laws No. 204, item 1728) shall be applicable.

In order to assess the impact of the undertaking on achieving environmental objectives, the submitted Report and updates analyse the impact of the undertaking on the ecological state of these waters by assessing the impact of the project on particular water quality indicators defining the biological elements (impact on fish fauna and possible impact on phyto-benthos, macrophytes, benthic macroinvertebrate fauna), the supporting hydromorphological elements (hydrological system, river continuity, morphological conditions), as well as the supporting physical and chemical water quality elements (temperature, oxygen levels, salinity, water acidity, biogenic conditions, specific pollutants). The analysis was preceded by an assessment of the current ecological state of the waters.

At this point it should be mentioned that the impact assessment on BSW performed by the body was based on indicators and levels defined in the Regulation of the Minister of the Environment of October 22nd, 2014 *on the method for classification of the state of bodies of surface waters and environmental quality standards for priority substances* (Journal of Laws of 2004, item 1482).

The current state of particular biological elements which are decisive when it comes to BSW ecological state is varied, however, the ecological state of the waters of the entire BSW was assessed – based on the results of surface water quality monitoring performed by the Provincial Environment Protection Inspectorate (WIOŚ) in Wrocław during 2011-2013 – as good, also meeting the requirements of protected areas. Quality indicators, including indicators not tested by WIOŚ defining the ecological state of fish fauna, benthic macroinvertebrate fauna and macrophytes, were supplemented with results of own research made by specialists for the needs of the Report, according to GIOŚ research methodology (fish fauna tests in 2012, macrobenthos research in 2013, macrophyte research in 2014). Samples were taken from the Nysa Kłodzka River (Potoczek and Smeryczna stations) and from a section subject to the investment on the Goworówka Stream (upstream of the intake and Goworów). BSW biological elements along the section subject to the application according to the research results presented in the Report (conducted by WIOŚ as well as tests performed by J. Błachuta and M. Smoczyk) qualify for class two (boundary value of the parameter is in accordance with the class which was assigned to biological elements assigned by WIOŚ) and to class three at the sampling station of the Goworówka Stream. Such a state was primarily dictated by the quantity and species state of fish fauna. The presented research results indicated that fish fauna at the three tested stations within the boundaries of the BSW in question is in class II, whereas in case of station 1 – in class III. The ecological state of the river within the scope of macrophytes (acc. to the Macrophyte River Assessment Method, MMOR) tested along the section from the “Boboszków” reservoir dam to the Różanka Stream estuary varied from moderate (2 stations), through good (6 stations) to very good (3 stations). The average for the entire tested section is good. This means slight changes in biological element composition and abundance; the hydrological regime and morphological conditions are slightly affected.

The Body of Surface Water achieves a good ecological state when all the water quality indicators associated with biological elements achieve a good state. Physical and chemical as

well as hydromorphological elements, which are supporting elements, make it possible for the biological elements to achieve a good state. If biological elements meet the good state conditions, this means that the hydromorphological conditions of a given body of water are good enough to allow the biological elements to achieve a good state. Further, in order for the state of the part of the water to be considered as good, both the ecological as well as the chemical states have to be good.

The core component for the assessment of the ecological state of waters is biological elements. All hydraulic undertakings exert a direct impact on the hydromorphology of waters, and every change to the hydromorphological as well as physical and chemical parameters entails changes to the biological elements which are dependent on hydromorphology. Thus, on the basis of the submitted evidence, it was assessed how hydromorphological, physical and chemical parameter changes in a BSW would result in changes to the dependent biological elements.

Taking into consideration the above, potential impact factors include:

- short-term pollutions of water with suspension during the works;
- degradation of a river section upstream of the dam as a result of periodic decrease in the flow speed during damming-up of the reservoir, change to sediment grain size at the undertaking use stage;
- direct destruction of habitats and organisms during the project execution stage;
- unfavourable impacts associated with regulating the river bed and river banks (deterioration of the natural quality of the riverside natural habitat or habitats of species that live in the river, periodic sludge accumulation or other disruptions to habitats as a result of works, destruction of species that live on or in the river bottom, disruptions to fish fauna spawning, migrations of fish fauna and other water organisms if the works are carried out during the wrong period).

The analysis in the Report and additional information dated March 10th, 2015 unambiguously demonstrate that the undertaking shall not impact the hydrological conditions, that is on the quantity and changing flow rates of the waters and the connectivity with Bodies of Ground Water bodies, within the scope of standard flows, as the reservoir is to reduce only catastrophic flows, with flow rates not less than Q10%. During implementation, if massive flow rates do not occur, no significant impact on the size or change to flow rate is anticipated, whereas the impact during the use period shall be short-term, conditional upon the river flow rate, which shall be reduced on the outflow, limited to the duration of the wave with an occurrence frequency of once every 10 years and less (during larger freshets and damming-up of water in the reservoir, lasting from 8 hours once every 10 years to 33 hours every 500 years, over a river section upstream of the reservoir dam, the water flow rate shall be periodically reduced). After that time the water held in the reservoir basin shall flow out into the river downstream of the dam. The increase in the flow rate changes during water damming-up periods shall be limited to the time when water is held in the reservoir, and thus the impact shall be short-term and reversible. During the implementation period a dam shall be constructed, with water sluice devices in the form of a reinforced concrete tunnel over a 115.5 m long and 11.40 m wide section, divided into three openings (main, emergency and communication tunnel). The width of one tunnel opening (the main tunnel), through which the river waters shall flow under normal operating conditions, shall be approx. 4.0 m. The assumed width shall shape a bed in the channel which shall be similar to the natural Goworówka river bed along the section where the body of the dam shall be built. The new Goworówka river bed upstream of the dam body shall be 6.0 m wide along the bottom, and downstream of the dam its bottom shall be 7.0 m wide, which reflects the natural width of the river along that section. The width of the main tunnel shall be slightly smaller than the natural width of the river along this section, by approximately 2.0 m at the inlet and approximately 3.0 m at the outlet. The new Nowinka Stream bed bottom shall be 3.0 m wide, which reflects the natural width of the stream along that section. The widths,

depths and gradients of the new bed sections of Goworówka and Nowinka shall reflect the widths, depths and gradients of the beds of the liquidated sections of those watercourses. Along the tunnel section, in connection with a slightly smaller width, the water table shall be slightly deeper. The impact of the planned undertaking on surface waters shall be associated with relocating Goworówka and Nowinka beds and the regulation of short sections of these watercourses. The length of the regulated bed sections associated with the planned undertaking shall be small – approximately 345.0 m for Goworówka and approximately 226.0 m for Nowinka. After relocating the Goworówka river bed which collides with the planned construction of the dam, it shall be reduced by approximately 90.0 m, whereas after moving the Nowinka stream bed it shall be approximately 26.0 m longer. The widths, depths and gradients of Goworówka and Nowinka beds along the regulated sections shall not change and this shall make it possible to ensure correct conditions for movement of fish fauna inhabiting the river. Consequently, the size and rate of water flow through the new and regulated beds of these watercourses, including the tunnel, shall be similar to that in natural beds. Thus, watercourse continuity shall not be broken.

Along the regulated and new watercourse sections, rip-rap and paving stone shall be used in most places. A small, one-sided application of a retaining wall is planned in the event of relocation of the Goworówka river bed on the downstream section. Thus, it may be considered that the hydraulic connectivity with Bodies of Ground Water shall not be broken.

Changes to the Goworówka watercourse morphological structure shall apply to a short section of the bed. Apart from transformations of the watercourse, there shall be interference in the banks of two watercourses. These regulations shall apply to a downstream section of the Goworówka River downstream of the relocated section and the Nowinka Stream section between the estuary into the Goworówka Stream and the end of the relocated section. In assessing the scale of the impact of the undertaking on the physical characteristics of the water body within the scope of morphological indicators based on the methodology used to identify water bodies which have been significantly altered, contained in the Report and its update of July 17th, 2015, entitled: “Verification of indicators for an assessment of the quantitative and morphological state of bodies of surface waters together with a change to their threshold values to support the initially identified significantly altered bodies of waters” (Błachuta J., Jarząbek A., Kokoszka R., Sarna S., KZGW, Warsaw 2006), it should be stated that investment implementation shall impact the water regulation indicator only to a small extent, but not to an extent which endangers the achievement of the environmental objectives. The used method makes it possible to compare the scale of the undertaking’s impact on the physical characteristics of water bodies. The methodology is based on four morphological indicators: total length of embankments of watercourses significant for the sub-basin area of the water body compared to the total length of significant banks (M1 – threshold value: 60%), total height of stock-taken damming structures compared to the total level difference of watercourses significant for the sub-basin area of the water body (M2 – threshold value: 15%), total length of watercourses cut off by perpendicular structures with a defined gradient compared to the total length of all significant watercourses (M3 – threshold value for permanent damming structures: 30%) and total length of river sections along which regulating works were performed (M4 – threshold value: 50%). The presented indicators make it possible to characterise the spatial scale of the undertaking. The analysis demonstrates that approximately 2.2 % of the length of watercourses significant in the BSW have been transformed – which, after adding to the transformations already in place, assessed in 2007 at approximately 19% and taking into account the transformations of watercourses associated with the planned construction of the “Boboszków” dry flood control reservoir, yields an M4 regulation indicator of approximately 22.3% (with the threshold value equal to 50%). Physical transformations of the HBWS which change the morphological conditions are not sufficiently significant to decrease the ecological

state assessment result. Thus, in this respect, undertaking implementation does not pose a threat to the achievement of environmental objectives during the next urban planning cycle (2021). The M1, M2 and M3 indicators shall not change, as the investment does not entail embanking the watercourses, water damming-up is only periodic (the dam is not a device which dams the water permanently), and the overall length of watercourse parts cut off by perpendicular structures with a given gradient shall not change either. To sum up, it should be stated that undertaking implementation shall result in only a small change of the M4 indicator, which measures regulation: it shall be approximately 22.3% with a threshold value of 0.50 (50%). Despite an increase, the value of the M4 indicator is still below the threshold value, which indicates that the undertaking shall not fundamentally alter the functioning of biological elements and shall not prevent achievement of the environmental objectives.

Once impacts which affect the achievement of environmental objectives were identified or those causing a deterioration to the state as defined by the Framework Water Directive, and taking into account the scope of hydromorphological changes, it was determined that the potential negative impact on biological elements would be most profound during the undertaking implementation stage. These pertain to short river sections (a few hundred meters for the Nowinka Stream and a few dozens of meters for the Goworówka River), constituting less than 2.2% of the length of watercourses significant in the BSW. After the implementation period the impacts shall be limited to morphological transformations insignificant for the entire HBWS, resulting from regulating short watercourse sections. The implementation and use of the undertaking shall not cause a deterioration to the BSW ecological state. It is also anticipated that the undertaking shall not impact the hydrological conditions within the scope of standard flows. The reduction of flood flows shall not cause direct negative impacts, as the reservoir is only anticipated to reduce catastrophic freshets, which are harmful even to biological elements. Works in the river bed and along the banks shall entail direct destruction of water plants and plants growing along the banks as well as macrobenthos and fish fauna habitats and feeding grounds; however, compared to the significant length of the Nysa Kłodzka River itself (44.73 km) in the BSW in question, possible losses (occurring along regulated sections, approx. 65 m for the Goworówka River and approx. 274 for the Nowinka River and along relocated watercourse beds) shall be insignificant in relation to phytobenthos, macrophytes, benthic macroinvertebrate fauna and fish fauna, and shall not result in a failure to achieve the environmental objective.

Once new sections of Goworówka and Nowinka Streams are constructed, their flowing capacity is enhanced and waters are transferred through them, the sections of these watercourses which collide with the dam body construction area with a total length of approximately 635.0 m shall be liquidated (backfilled). The liquidation of the current Goworówka river and Nowinka stream beds shall result in a destruction of aquatic and bank flora, destruction of a part of the aquatic fauna, in particular that of smaller sizes and limited locomotion abilities (benthic macroinvertebrates), partial deterioration of habitats of fish fauna which retreats from those sections during the performance of the works and limiting their food base as well as irreversible destruction of habitats of plants and animals which live there.

Within the scope of impact on biological elements, it should be stated that during the construction phase of the planned undertaking, backfilling of Goworówka and Nowinka Stream sections is anticipated as well as reinforcement of bank sections of these streams (the bottom remains unaltered), which might entail the destruction of plant and animal species associated with the banks of these watercourses (macrophytes, phytobenthos) and part of the aquatic fauna, in particular that of smaller sizes and limited locomotion abilities (benthic macroinvertebrates). These works shall also affect fish fauna, through changes to habitats resulting in a deterioration of the food base and a reduction of the number of convenient habitation locations. However, taking into account the planned minimising actions, including the manner of conducting works

indicated in the present decision and the obligation to perform these under ichthyological monitoring, as well as the fact that these works shall pertain to sections with a length insignificant on the scale of the entire code PLRW60004121169 BSW (less than 4%) and that the destroyed ecosystem elements shall gradually restore themselves and the ecological continuity of watercourses shall not be interrupted, it should be stated that these actions shall not constitute a risk of a failure to achieve the environmental objectives for this BSW.

The impact on physical and chemical elements shall be short-term, occurring only during the works performance stage. It may apply to physical and chemical parameters, such as general suspension or oxygen dissolved in water. The level of suspension along the Goworówka River and Nowinka Stream sections covered by the application, is marginal under standard flow, which is associated with the type of watercourse and the structure of its bottom (a highland silicate stream with coarse-grained substrate). The planned works in the river bed shall be a source of suspensions penetrating to the water in an insignificant degree and shall not constitute a threat to the achievement of the environmental objective. Reinforcing the Goworówka River banks along a 65.0 m section and the right bank of the Nowinka Stream along a 274.0 m section with rip-rap may constitute a source of a small quantity of suspensions in the form of deposits from the bottom (the bottom is a coarse-grained substrate) and soils from the banks. The performed earthworks and construction works along new sections of both watercourses shall be “dry”, away from the existing beds, and thus, apart from a short period of connecting them to the existing river bed, this activity shall not generate pollutants in the form of a suspension even more so because its bottom shall be lined with a coarse-grained material. In order to minimise the generation of suspension in water, the delivered stones shall be unloaded on the river bank and then the blocks shall be carried by hand from the bank to the river bed and, as far as possible, carefully placed on the bank slopes. In stream sub-basins where silicate rocks are dominant, including Goworówka and Nowinka, not much suspension is generated, and suspension particles are relatively large and sink very quickly. Furthermore, in fast flowing watercourses at the foot of the mountains, with cold, oxygen rich waters, suspensions which penetrate into the water during the performance of works shall not significantly affect the existing oxygen conditions or water organisms. Undertaking implementation shall not affect water salinity, acidity or temperature.

The implementation and use of the undertaking shall not deteriorate the water quality indicators used to assess its chemical state. With correct use of machinery and devices, there shall be no river pollution by petroleum derivatives. Furthermore, within the construction site backyard, parking sites hardened and insulated from the soil have to be designated, where machines shall be filled up, serviced, repaired and held. The construction site shall be located away from the reach of flood waters. The dry reservoir does not generate or emit chemical substances. The cleanliness of the reservoir as well as rivers and groundwater depends on the cleanliness of the sub-basin and its anthropogenic use. Reservoirs with permanent damming-up feature mechanisms which facilitate deposition of pollutants. Long-term stagnation of water in a reservoir facilitates depositing contaminants, and thus an increase in the thermal condition of the held water, growth of phytoplankton and sedimentation of deposits. Urban waste-waters discharged into the river and agriculture (through fertilisation management and erosion processes) are a source of nitrogen and phosphorus compounds which accelerate the growth of phytoplankton and in general are a cause of eutrophication of permanently damming reservoirs. A dry reservoir is free from all of the above defects. Due to the stagnation of water limited in time (the reservoir shall only reduce ten-year flows), temporarily held water has a thermal condition similar to that of the river thermal conditions and a turbulent flow, the water is oxygen-rich and as such makes the growth of phytoplankton difficult, and a constant outflow prevents pollutant deposits. There shall be no recreational use of the reservoir. Furthermore, it should be pointed out that the reservoir is implemented in the estuary section of the Goworówka

River. The Nysa Kłodzka National Monitoring conducted in 2012 showed that waters of that BSW achieved a good chemical state. Most of the area is taken up by semi-wild mountain meadows, mostly found on slopes of hills and by farmlands. In the Goworówka valley as well as the valleys of its tributaries, especially in areas forked by the valleys of those streams, within their flooding terraces, there are riparian forests of a sub-montane character. On steep valley slopes of these streams and on gorge slopes of the tributaries, there are oak-hornbeam forests of a sub-montane character. In the use structure of the planned reservoir area, greenfields constitute approximately 52.6% of the reservoir area, forests approximately 20.0%, and arable land approximately 27.4%. These are not particularly industrialised areas, constituting a risk of significant water pollution. Thus, it can be ascertained that short-term water stagnation in the reservoir, taking into account the good chemical state of this body of water and the fact that the reservoir is implemented in a Goworówka River valley region subject to little anthropogenic transformation, in its estuary sections, does not carry a significant risk of polluting surface waters, and consequently a deterioration of the chemical state of this body of water. The project shall not have a negative impact on environmental components determining the BSW state, and thus shall not contribute to a failure to achieve a good BSW ecological and chemical state in the current and the next planning cycle. The investment shall not alter the requirements which surface waters designated for consumption should meet.

The undertaking lies within the boundaries of the water management planning unit – a Body of Ground Water (BGW) code PLGW6220110, *in the Middle Odra water region/Metuje water region/Orlica water region/Łaba and Ostrożnica (Upa) water region* (6000/5000). According to the *Odra river basin district management plan*, the aforementioned BSW exhibits a good quantitative state and a good chemical state. In 2008, a review of the BSW boundaries set out in 2005 took place and as a result of these works a new BSW division of Poland was established. The new division into BSW shall be applicable from the next planning cycle, that is towards the end of 2015. According to those data, the dry reservoir lies within the boundary of BSW No. 125. The quantitative and chemical state of this body of water has not changed.

In accordance with the binding legal regulation, the environmental objective for a Body of Ground Water is:

1. prevention or limiting of introducing pollution;
2. prevention of the deterioration of their state and improvement of that state, and thus for the present case, maintenance of good quantitative and chemical states;
3. protection and repair activities as well as ensuring balance between water uptake and feed, so as to achieve a good state.

The implementation and use of the investment should not affect the quantitative and chemical state of this Body of Ground Water. Works associated with the construction of the reservoir may cause short-term, temporary, local lowering of the water table level caused by the need to carry out necessary drainage during earthworks and construction works. This mainly applies to excavation of non-bearing soils under the foundation of the dam body, excavations associated with the construction of sluice devices and excavations associated with the construction of new watercourse beds (Goworówka, Nowinka). During the undertaking use stage the demand for water shall be very low: it shall be associated with the work of one person dealing with the protection of the reservoir and temporary presence during reservoir operation. Water shall be supplied to the utility building (surface area: approx. 150 m²) from a performed borehole intake. During the implementation and use stage, process waste-water potentially changing the chemical composition of the waters shall not be generated. Urban waste-waters at the use stage shall be discharged to a holding tank emptied by a septic tanker truck as and when required. Stormwater and meltwater from hardened surfaces, such as internal access roads with very low traffic intensity (one vehicle every few months) as well as the roof of the utility building, shall be discharged along the surface to the adjacent areas. The dam downstream slope shall be

covered with geotextile and then with an approximately 20 cm thick layer of topsoil where a mixture of native grasses shall be sown. The upstream slope shall be protected with approx. 50 cm thick gabion mattresses laid on geotextile. The gabion mattresses shall be covered by an approx. 15 cm thick layer of topsoil and sown with a mixture of grasses. Stormwater and meltwater from the sown surface of the downstream slope of the dam shall be discharged to a drainage ditch and then to a stilling basin at the downstream station. Stormwater and meltwater from the sown surface of the upstream slope of the dam shall be discharged to the reservoir basin area.

The works performed during the undertaking construction stage shall not generate any negative impacts of a qualitative character. They may only cause short-term, temporary lowering of the water table level during the performance of the necessary excavation drainage. In order to fully eliminate potential contamination of groundwater, all locations designated for servicing vehicles and machines shall be periodically (during the construction period) covered with insulation materials. In the event of an uncontrolled penetration of petroleum derivatives to the soil or earth, appropriate measures shall be taken with the aim of eliminating the pollutants so that groundwater and surface waters are not contaminated. Urban waste-waters shall be collected in tight holding tanks and regularly emptied by authorised entities.

The reservoir is performed within the Goworówka valley area which has been subject to little transformation. In the use structure of the planned reservoir area, greenfields are dominant. In connection with the above, taking into account the good chemical state of this water body and the fact that the reservoir shall be located in an area subject to little anthropogenic transformation and that the aquifer is mostly covered with low permeability soils, short-term water stagnation does not entail a significant risk of polluting groundwater or deterioration of the chemical state of this water body.

In accordance with the general BSW No. 110 characteristics, in Quaternary formations the water-bearing levels occur in the river valley areas, in hydraulic connectivity with aquifers of fissured Palaeozoic-Proterozoic rocks and their eluvial covering layers. Cretaceous deposit formations and older crystalline rocks contain mainly fissured waters to a depth of 200–800 m. In the region of the planned undertaking, in physical and geographic terms located in the southern part of the Upper Nysa Kłodzka Trench, the majority of groundwater is held in Cretaceous deposit formations which exhibit a fissured and porous circulation system. In the Cretaceous aquifer layer, which is the main source of water for the human population, there are two water-bearing levels: upper – made of sandstones and Coniacian and late and middle Turonian fissured sandy marls; and lower – Cenomanian and late Turonian with a similar lithological structure. Both levels exhibit significantly varied hydrogeological conditions and in particular non-uniform formations of permeable layers as well as their varying thickness and degree of tectonic commitment, on which the Cretaceous aquifer level capacity is largely dependent.

Taking into account the hydrogeological conditions of Quaternary deposits within the area of the designed dam and reservoir basin, a continuous groundwater table level has not been determined. Due to the large share of dust fraction in the deposits in question, these are low permeability formations. However, in their floor, there are irregular layers of cobble, stones, boulders and gravels, sometimes with significant loam deposits, where local seepage and collection of waters originating from infiltration of stormwater and meltwater takes place. Late Cretaceous aquifer level in Coniacian formations is insulated from the surface of the ground by a layer of low permeability and non-permeable clay marl eluvial layers. In the subsoil of the dam foreground, there is a thin low permeability layer, which does not constitute sufficient insulation protection against the pressure of groundwater.

According to the Report, groundwater from the first Cretaceous level exhibit II and III quality class and the chemical state of the waters is good. Additionally, the water is not aggressive towards concrete.

As already mentioned above, in the region of the planned “Roztoki Bystrzyckie” dry flood control reservoir, the main reservoir of groundwater with the largest reach is the Cretaceous layer formation. The Report demonstrates that the hazard level for the groundwater of the Cretaceous aquifer utility level in the region of the southern part of the Upper Nysa Kłodzka Trench is low despite a weak insulation of the aquifer owing to a simultaneous lack of contamination sources. The substrate of the reservoir basin across almost the entire surface is made up of low permeability alluvial formations. These are primarily loamy sands, loamy sand-gravel mixes and sandy loams with gravel, stones and boulders. The formation structures vary significantly, and the distribution of stone matter is irregular. Only in their floor part does one find a layer of large boulders, stones and gravels, which may hold waters from seeping stormwater. Such a system of layers constitutes a low permeable substrate, which insulates groundwater held in marls, and that in turn ensures tightness of the reservoir basin. Thus, during periods when the reservoir holds water, no significant increase in the pressure of Cretaceous groundwater is to be expected.

The functioning of the “Roztoki Bystrzyckie” reservoir, in connection with damming-up of Nysa Kłodzka waters in the reservoir and holding of flood waters in its basin, may impact the groundwater table level. In connection with the above, in order to minimise dangers during flood seasons, the water damming-up periods in the reservoir shall be as short as possible. The planned reservoir shall be filled only during floods. The distribution of precipitation and the periods of Nysa Kłodzka freshets dictate that the brunt of the reservoir’s activity shall fall during the summer season. The assessment presented in the Report and the update of March 10th, 2015 demonstrates that the reduced flood waters shall have an occurrence probability of once every 10 years and less, as the reservoir shall not store flood water. The impact on groundwater (to a limited degree) shall be periodic and short-term. The reservoir shall then fill to a maximum level of 2.5 m for approximately 8.3 hours. A significant damming-up of waters in the reservoir which may impact groundwater shall occur under flood flows with an occurrence probability of $p=1\%$, or once every 100 years. Then the water in the reservoir shall reach a maximum level of 8.5 m for approximately 20.0 h. For floods with an occurrence probability of once every 500 years ($p=0.2\%$), the reservoir shall fill to its maximum level of 13.2 m. Due to the character of the planned investment (a dry reservoir), the possible impact on groundwater shall be periodic and short-term.

As a result of surface water damming-up in the vicinity of the flood control reservoir, the hydrodynamic system of groundwater may change. According to the Report, despite the fact that hydraulic connectivity between permeating stormwater in Quaternary deposits and Cretaceous waters has not been determined, local hydraulic connections may occur in marl outcrops as a result of water damming-up in the reservoir basin. Water table variations by approximately 2.0 m may be expected. The natural directions of groundwater flows shall then change (they are currently directed towards the Goworówka River valley). Once the reservoir fills up, the fastest flow rates shall occur in the dam subgrade and at the southern head of the dam. Damming-up of the reservoir shall cause an approximately twofold increase in the water flow rate under the dam and an increase of the water table by approximately 1.0 m downstream of the damming structure. The dammed-up water in the reservoir shall cause flowing around and an increase in the groundwater flow rates at both heads of the dam and, in particular, the southern one. This may lead to a sudden suffusion of the clay-loamy material on the slopes in the region of the heads. Possible suffusion may occur only for a short time during water damming-up in the reservoir. In order to prevent this phenomenon, a tight anti-filtering

membrane has been designed in the subgrade under the dam along its entire length and within the region of the heads (outside the body of the dam).

According to the assessment presented in the Report, freshet waters shall be held in the reservoir basin for a short time, so the impact on groundwater status in the direct vicinity of the reservoir shall also be short-term and insignificant. This, inter alia, stems from the fact that this impact, if at all present, shall be periodic and should not be significant as the Cretaceous water level is insulated from the surface by a low permeable and non-permeable layer of clay marl eluvial layers. In connection with the above, changes to the rate of groundwater flows occurring within the reservoir area shall be short-term and shall not be significant for the quantity of BSW outside of the planned structure. It may be ascertained, then, that the effects of flood water damming-up in the reservoir on groundwater is not permanent: it is limited in time and thus does not constitute a hazard to the quality of those waters.

Taking into account the above, it may be considered that the undertaking should not impact the chemical and quantitative state of BGW, and thus shall not contribute to a failure to achieve the environmental objectives assigned to it.

The undertaking in question was assessed and taken into account by the document adopted during a meeting of the Council of Ministers on August 26th, 2014, entitled: "MasterPlan". The assessment performed by an independent consortium demonstrated that the undertaking had no impact on the environmental objectives for the water body within the boundaries of project implementation. The undertaking was included in appendix 2 on List No. 1 "Investments which do not exert a negative impact on the achievement of a good state of waters or which do not deteriorate the state of waters".

Taking into account the above, it may be considered that the undertaking should not impact the chemical and quantitative state of BGW, and thus shall not contribute to a failure to achieve the environmental objectives assigned to it.

The planned undertaking shall not affect the climate or climate changes. The fundamental concerns related to climate changes focus on issues such as emission of greenhouse gasses, direct emissions and indirect emissions associated with power demands and the effectiveness of used solutions.

For larger dam reservoirs permanently holding water, a specific microclimate (air thermal system) is generated above the reservoir and above the area adjacent to it. Such reservoirs affect the easing of extreme phenomena by slightly increasing the temperature and humidity in winter and decreasing humidity and temperatures in summer. An increase in wind speed over the reservoir may reach a few per cent and affects the microclimate above the basin as well as contributes to the occurrence of a water breeze and water circulation in the basin. Concerning the "Roztoki Bystrzyckie" dry reservoir, due to the fact that water shall be held there only for very short periods, none of the aforementioned climate phenomena shall occur and the microclimate in this region shall not change.

A dry flood control reservoir is not a source of greenhouse gas emissions. During the construction stage, as a result of combusting fuels in vehicles and machinery, carbon dioxide shall be emitted, which is a greenhouse gas. During the investment implementation period, similarly to its liquidation, there might be a slight demand for power, associated for example with the functioning of the construction site backyard, staff premises or sanitary units. During the undertaking use stage, portable lights illuminating the objects of the investment in question shall be used during floods or improvements. The dam shall be illuminated by park type street lights, which shall be located along the crest of the dam as well as along the access road to the lower station and the access road to the spillway devices and the utility building. During reservoir standard (day to day) operation, 2 lights shall be turned on by the utility building and 4 lamps shall be turned on near the sluice devices. During the use stage the project does not generate any emissions of gases, dusts, heat, other forms of energy or harmful substances.

During the construction, use and liquidation stage of the planned undertaking there shall be no activities which aim to directly minimise its climate change impact. Indirect actions shall include minimisation of night-time illumination of the dam during the use stage and environmental compensation entailing tree plantings and restoration of forest areas.

At the same time, the planned “Roztoki Bystrzyckie” dry flood control reservoir is one of the elements increasing flood safety for numerous villages located in the Kłodzko Valley and shall not affect the emissions of any contaminants. The investment shall not have an impact on: temperature fluctuations, light radiation, atmospheric pressure, air movement or humidity. In connection with the implementation, use and possible liquidation of the undertaking, there shall be no climate change due to the microscale of the investment in question.

With reference to the impact of the planned undertaking on biodiversity, it was found as follows. In the region of the planned investment, no species or habitats of specific subpopulations genetically different from others found in similar habitats have been found, so there shall be no reduction to genetic diversity in populations. Furthermore, investment implementation shall not result in a decrease to species diversity as it shall not cause extinction of any species within the area of the Kłodzko Valley, or, on a wider scale, Lower Silesia. As the construction of the reservoir in question shall not cause permanent destruction of any type of ecosystem or its elements, and shall only result in small changes within their boundaries, it was determined that the investment would not impact the diversity of ecosystems and landscapes. In connection with the above, it was assessed that the implementation of the investment in question would not impact biodiversity, understood as intraspecies variability (genetic diversity), interspecies variability (diversity of species) and supraspecies variability (diversity of ecosystems and landscapes).

The planned “Roztoki Bystrzyckie” dry flood control reservoir shall be located in the Goworówka River valley on its estuary section. The reservoir basin is primarily used by agriculture. In the vicinity of the planned undertaking, a hilly highland type landscape is dominant, interspersed with valleys of Goworówka and its tributaries. For the landscape, the undertaking implementation period is associated with changes in the structure to the local landscape. The appearance and moving of heavy vehicles, the occurrence of portable construction structures or the erection of given buildings might be seen as directly negative in the visual sense. However, this impact is limited to the investment implementation stage and the area shall be cleared following completion of works.

Artificial water reservoirs created as a result of damming the river valley by a hydraulic structure have a fundamental impact on a change to the river valley’s landscape. The planned reservoir is a dry structure, and the dam under normal operating conditions shall be visible both from the reservoir basin side as well as the downstream side. The earth-fill dam with gently inclined slopes, covered with topsoil and sown with a mixture of grasses, presents the smallest interference in the surrounding area, naturally blending into the valley sides.

In connection with the planned undertaking, the “Report” and its updates analyse four already described design solution scenarios in the form of scenario I, II, III and IV, also in terms of the impact of the investment in question on the landscape. In the impact of the planned undertaking on the landscape, the most significant role is played by the location of the dam, its structure and height.

It is planned to construct the dam at chainage km 0.540 (pursuant to scenario I and II) and at chainage km 0.654 (pursuant to scenario III and IV) of the Goworówka River. The location of the dam according to scenarios I and II is shifted in relation to the location of the dam according to scenarios III and IV by approximately 110.0 m downriver.

Under all scenarios the dam is bow-shaped, which makes it possible to set its heads in the narrow section of the valley, as an earth-fill structure with gently sloping upstream and

downstream sides (gradient: 1:3). The dam slopes shall be turfed. Under scenario I the dam height is 13.5 m, under scenario II – 15.5 m and under scenarios III and IV – 17.2 m.

The location of the dam taken into account by scenarios I and II is more favourable in natural and landscape terms by retaining more riparian forests (less felling). The earth-fill dam with gently sloping turfed sides shall interfere with the surrounding landscape to a lesser extent, as opposed to monolithic reinforced concrete structures. It is even more important as the planned reservoir shall be a dry structure, and the dam under normal operating conditions shall be visible both from the reservoir basin side and the downstream side. During the reservoir use period, in connection with the need to regularly mow the herbaceous plants and self-seeded trees and shrubs along the crest and slopes, the dam shall take a form of an elongated, turfed earth-fill embankment.

In scenario II, the replacement of the spillage device in the form of a reinforced concrete channel running along the body of the dam (scenarios I, III and IV) with two underground pipelines running in the body of the dam shall also reduce the negative impact of this structure on the landscape.

Following the analysis of all four scenarios in terms of the designed location and dam structure, scenario II is the most favourable in terms of the impact of the planned structure on the landscape. Nevertheless, the constructed dam in the form of an earth-fill embankment, 750.0 m long and 15.5 m high, damming the valley and the Goworówka river bed, shall be a dominant and alien element in the natural river valley, further emphasised by internal roads and street lights located along the dam crest.

In the village of Roztoki, in the vicinity of the planned “Roztoki Bystrzyckie” reservoir, there are three listed heritage monuments entered onto the Lower Silesian Province Heritage Protection List: St. Martin’s parish church dating back to 1720-1730, a manor house (currently a house at no. 16) dating back to 1569, reconstructed in the 19th and 20th centuries, as well as a barn next to the manor house dating back to the middle of the 19th century. During the construction, use and liquidation of the undertaking, there shall be no negative impacts or hazards to the aforementioned historic monuments. All of those buildings are located on the west side of national road No. 33 from Kłodzko to the Boboszów-Dolna Lipka road border crossing, whereas the planned reservoir shall be located on the east side of that road. The church is located approx. 0.5 km to the south of the crest of the planned “Roztoki Bystrzyckie” reservoir dam, and the complex of buildings which comprises the aforementioned manor house and the barn is located approx. 0.65-0.70 km to the north west of the reservoir dam. However, before commencing earthworks within the area designated for investment implementation, an opinion on the earthworks should be sought from a relevant heritage conservator. In the opinion of this body, obtaining an opinion from a heritage conservator constitutes a sufficient guarantee that appropriate actions shall be taken during the performance of works in the region of listed buildings or archaeological sites.

The Długopole Zdrój “C” SPA protection zone boundary runs on the east side of the village of Roztoki, and more precisely, by the southern boundary of the reservoir dam and through the middle of its basin. The area of the aforementioned “C” zone lies to the south of that boundary. If a fault associated with breaking of the dam during damming-up of freshet waters in the reservoir basin develops, the “C” zone shall not be affected.

The planned “Roztoki Bystrzyckie” dry reservoir together with three other dry reservoirs: “Boboszów” in the upper section of the Nysa Kłodzka River, “Krosnowice” in the estuary section of the Duna Dolna River, and “Szalejów Górny” in the middle section of the Dusznica Bystrzycka River, are to provide flood protection for the Kłodzko Valley with special consideration for the protection of Kłodzko. The cumulative impact of these reservoirs shall reduce and stretch freshet waves on the Nysa Kłodzka River, and, as a result, shall contribute to a reduced flood risk in the Kłodzko Valley, as well as in the Odra River valley.

Apart from the planned “Roztoki Bystrzyckie” dry flood control reservoir located on the right-bank Nysa Kłodzka tributary, the Goworówka River, the “Boboszków” dry flood control reservoir planned within the scope of a separate investment is another structure which shall affect the hydrological regime of Nysa Kłodzka within the boundary of “*Nysa Kłodzka from the source to Różanka*” BSW (code: PLRW60004121169). That reservoir shall be located upstream of “Roztoki Bystrzyckie” reservoir, directly on the Nysa Kłodzka River, within the vicinity of Boboszków.

In connection with the above, the Report also presents a cumulative environmental impact assessment of the “Roztoki Bystrzyckie” dry flood control reservoir and the “Boboszków” dry flood control reservoir planned within the scope of a separate investment. The “Roztoki Bystrzyckie” dry flood control reservoir is less than 13.0 km away along the course of Nysa Kłodzka from the “Boboszków” dry flood control reservoir. During the construction phase of the “Roztoki Bystrzyckie” reservoir and the “Boboszków” reservoir the cumulative impact on particular land and water animal groups shall not be significant and shall be independent of one another, which shall be associated with both the distance and the local character of these investments.

The reservoirs shall reduce catastrophic size flood waves. The planned reservoirs shall not affect the hydrological regime of the Nysa Kłodzka River for floods significant from the environmental point of view, i.e. with an occurrence probability of once every 10 years and less. A change to the regime of periodic floods in the Nysa Kłodzka Valley caused by the operation of both reservoirs shall not have a significant impact on the state of habitats which exist there and are associated with periodic river flooding. There shall be no cumulative impact on aquatic ecosystems and those dependent on water, nor on the fauna associated with those ecosystems, including fish fauna. Most probably these reservoirs shall not be built at the same time, which shall further ensure there is no cumulative impact.

The planned “Roztoki Bystrzyckie” reservoir shall control the Goworówka River sub-basin covering an area of 34.55 km². The Międzyzylesie Forest District undertook actions aiming at increasing the holding capacity of mountainous areas, protecting slopes against excessive surface flows and guaranteeing the maintenance of appropriate technical state of the existing hydraulic infrastructure. The works predominantly entailed slowing down and reducing the sudden flow of waters in mountain streams and the surface flow. Ponds, flood storage reservoirs, marshlands and flood areas were established. Flood storage reservoirs within the Międzyzylesie Forest District are located outside of the Goworówka sub-basin, which shall be controlled by the planned “Roztoki Bystrzyckie” reservoir. Thus it was found that the impacts of these structures would not accumulate with the impact of the “Roztoki Bystrzyckie” dry reservoir.

The planned “Roztoki Bystrzyckie” dry flood control reservoir is located on the Goworówka River, approximately 8.5 km to the east, approximately 10.3 km to the north and approximately 9.5 km to the west of the border between Poland and the Czech Republic, in a straight line from the dam. During the construction stage, impacts such as emissions of pollutants into the atmosphere or emission of noise shall not affect the air quality or acoustic climate in areas located in the Czech Republic. During the undertaking use stage, the river shall flow freely across the reservoir basin and the sluice device of the dam, apart from short periods of more significant freshets and floods when the flow in the river shall exceed the capacity of the sluice device. The operating principle for dry flood control reservoirs entails capturing major volumes of flood waves in the reservoir basin to reduce freshet waves, and consequently, to limit the destruction of the environment and nature in the Nysa Kłodzka valley downstream of the reservoir. Operation of the reservoir in a “dry” state as well as during accommodation of a flood wave (short river residence time) shall not affect the environment outside of Poland. Furthermore, the Nysa Kłodzka River, starting at the planned reservoir, flows north, which is

an opposite direction to the course of the international border with the Czech Republic, so changes in river water flows shall not cause any trans-border impacts originating in Poland and affecting the environment in the Czech Republic.

Based on the submitted documentation taking into account the impact assessment as well as potential environmental hazards associated with the implementation and use of the investment and indicating a number of necessary actions in order to secure and minimise the potential negative impacts, the body decided to impose conditions on the undertaking determined above in the sentence.

Following the performance of the environmental impact analysis, including an impact assessment on Natura 2000 sites, it was found that the investment in question – taking into account the actions determined above – shall not have a significant negative impact on any Natura 2000 site and shall not have a significant negative impact on the cohesion of Natura 2000 network.

The planned works shall be performed in a continuous system. From the nature point of view, this is more beneficial than performance of works solely beyond the vegetative/breeding season, as it shall significantly reduce the time during which equipment, machines and humans are present in the area – from approximately 6-7 years to 3-3.5 years. Moreover, the probability of occurrence of high water levels during performance of works increases with extending the time during which the works are performed. However, a significant condition is for the works to commence beyond the animal breeding season (condition of clause I.2.1), which is to prevent animals from starting to breed in the area subject to the investment – migrating birds arriving from their wintering grounds shall find works in progress, and that shall give them time to find new nesting and feeding grounds, whereas species present in the area in question throughout the entire year shall move to areas away from the works after their commencement and there they shall be able to breed.

According to the submitted documentation, in the region of the planned investment, 9217 pieces and groups of trees and shrubs have been catalogued. Despite the fact that no natural monuments were found, some of the catalogued pieces are sizeable (so-called “specimen” trees). The planned felling entails approximately 500 trees and shrubs including 2 “specimen” trees. Furthermore, plants shall be removed from forest areas spanning approximately 5.77 ha. The removal of plants is associated with the need to set the dam body and relief devices, construction of the downstream and upstream station and internal access roads to the dam, liquidation of sections of Goworówka and Nowinka Stream slopes and construction of new Goworówka and Nowinka bed sections. In order to minimise the negative impact of these actions on the natural environment, conditions defined in clause I.2.2 and I.2.3 were imposed. The condition of clause I.2.2 was imposed in order to reduce the negative impact of the undertaking on animal species, and in particular birds during the breeding season [almost all bird species in Poland are subject to species protection pursuant to the *Regulation of the Minister of the Environment of October 6th, 2014 on protection of animal species (Journal of Laws of 2014, item 1348)*, in relation to which defined prohibitions apply, such as the prohibition to destroy habitats or breeding havens where the animals breed, rear the young, rest, migrate or feed]. The condition under clause I.2.3 was imposed due to the fact that within the scope of the investment tree felling shall be performed involving trees with trunk circumferences exceeding 100 cm, which are a good habitat for bats and saproxylic insects, e.g. the Great capricorn beetle *Cerambyx cerdo* and the Hermit beetle *Osmoderma eremita* – these species are protected by virtue of the aforementioned *Regulation of the Minister of the Environment on protection of animal species*, in relation to which prohibitions defined in the aforementioned resolution apply (inter alia, the prohibition to destroy habitats or breeding havens where the animals breed, rear the young, rest, migrate or feed). Trees designated for felling may constitute bat refuge sites during autumn migrations or may be used as breeding

colonies or hibernation sites (no breeding colonies were found in the researched area). Furthermore, despite the fact that at the stage of the procedure aiming to obtain a decision on environmental conditions no sites of the aforementioned beetles were found within the catalogued trees, they may become inhabited by these species by the time the investment begins. If tree habitation by the aforementioned species is confirmed, the Investor should obtain a separate permit from an appropriate body to perform actions prohibited with respect to these species pursuant to Article 56 of the *Environmental Protection Act*, and if such a permit is obtained – the works shall be performed taking into account the conditions prescribed in the permit.

The conditions of clause I.2.4 and I.2.5 were imposed due to fish fauna protection – the indicated dates in the condition for the performance of works take into account the breeding and spawning season of Brook lamprey *Lampetra planeri* (its presence cannot be ruled out in the downstream sections of Nowinka and Goworówka), which lasts from March 1st to May 30th. Lamprey is a species mentioned in Annex II to the *Council Directive 92/43/EEC of May 21st, 1992 on the conservation of natural habitats and of wild fauna and flora (OJ EU L 92.206.7, OJ EU-sp.15-2-102 as amended)* and protected by virtue of the aforementioned *Resolution on protection of animal species*, hence the necessity to interrupt works during its breeding season. The indicated optimal dates for performance of works in the watercourse, that is June 1st – September 15th, also takes into account the breeding and spawning season of River trout *Salmo trutta*, which is not a species subject to species protection, but nevertheless a significant element of the aquatic ecosystem.

The condition of clause I.2.6 was imposed in order to ensure required specialist supervision over the watercourse works. This shall prevent unfavourable impact stemming from lack of specialist natural knowledge. The task of an ichthyologist shall be to indicate a correct method for performing works, and then to control the correctness of their performance, observe the behaviour of fish fauna and ensure that adequate actions are taken in situations which are a hazard to fish fauna. Furthermore, clauses I.2.7 and I.2.8 indicate the manner for performing works associated with the construction of new sections of Goworówka and Nowinka beds, sluice devices and regulatory works. Meeting the obligations stemming from these clauses is aimed to limit the losses to local fish fauna populations during the works performance stage. Conditions of clause I.2.9-I.2.11 oblige one to introduce habitat elements, the presence of which shall improve the fish fauna habitation conditions at the investment use stage. The presence of stones and gravel enriches the structure of the bottom, which shall increase the diversity of microhabitats in the watercourse.

The construction site backyard shall be located within the area of plot No. 208, Roztoki precinct, within which there are no habitats or species subject to protection, there are no tree stands or shrubs, and it is more than 100 m away from surface waters, which meets the requirements as set forth in clause I.2.12 of the present decision.

Alternative construction site backyard locations which also meet all the aforementioned conditions are indicated in the documentation, that is plot No. 205/3 and/or 207, Roztoki precinct. Such a construction site backyard location shall eliminate its negative impact on valuable natural areas.

The condition of clause I.2.13 was imposed to minimise the area occupied in connection with the investment implementation and thus to limit the destruction of topsoil and herbaceous plants and to reduce the scope of tree and shrub felling.

The condition of clause I.2.18 aims to restrict the penetration of contaminants to the soil and to the aquatic environment.

The condition of clause I.2.19 was imposed to limit the storage of earth within the area of the investment and to minimise the number of loading, unloading, and transit operations.

The condition of clause I.2.20 aims to protect the soil, the established low greenery layer and the seed bank, and to ensure the possibility of its subsequent use to create topsoil.

The condition of clause I.2.21 aims to protect high greenery and constitutes the fulfilment of the obligations stemming from Article 82 of the *Environmental Protection Act*. The need to carry out works by hand within the scope of root clumps aims to protect the roots primarily against mechanical damage. Meeting of the remaining obligations is to protect high greenery designated to be retained against damage by equipment and against unfavourable changes stemming from excessive soil compaction in their immediate vicinity.

The condition of clause I.2.22 aims to protect butterfly species identified within the reservoir basin, that is Dusky large blue *Phengaris nausithous* and Scarce large blue *Phengaris teleius*. These species figure in Annex II to the Habitats Directive and in the *Regulation on protection of animal species*. Investment implementation shall entail partial destruction of habitats of these species (which requires a permit for exemption from prohibitions of the *Environmental Protection Act*) – out of 10 sites, one site shall be completely destroyed and fragments of meadows at 3 other sites shall be destroyed, too. Mowing during the dates as indicated in the conditions is to prevent primarily the growth of host plants of the aforementioned butterfly species, which is to facilitate species specimens moving to meadow sections where the host plant is present and which shall not be destroyed in connection with investment implementation. The scope of a phytosociologist's obligations indicated in condition I.2.23 is to serve the protection of natural habitats identified within the scope of the planned investment, including in particular habitat *91E0, where the largest number of species protected by virtue of the *Regulation on protection of plant species* were identified. Fencing off swathes of habitats shall prevent their accidental damage during the performance of works. Due to the fact that a swathe of riparian habitat which lies in the fork of Goworówka, Cieszycza and Bielica watercourses is the most valuable area within the boundary of the planned undertaking, the phytosociologist's supervision over the works which might affect the state of its maintenance is necessary and shall include in particular identification of trees and shrubs designated for felling. Furthermore, the phytosociologist's supervision over the implementation of the investment in question is to ensure the correct and most effective manner for the execution of actions associated with the restoration of a fertile soil layer.

Due to the fact that the works are to be performed in a continuous manner, i.e. also during breeding and migration of reptiles and amphibians, which lasts from approximately March 1st to approximately August 31st, the construction site should be protected against their entry (conditions of clause I.2.24 and I.2.25). At the same time this condition shall limit the death rate of small animals from other groups.

The condition of clause I.2.26 was imposed to improve the habitat conditions for amphibians – the accumulating water shall increase the diversity of habitats and shall constitute an additional habitation site for amphibians.

The guidelines set forth in clause I.3.1 and I.4.1 aim to protect chiropteran fauna, including species which exhibit acute photophobia – their meeting shall limit light pollution in the investment area, which shall reduce the negative impact on migration corridors used by bats.

The condition of clause I.2.27 was imposed to protect the watercourse beds against mechanical damage by equipment. It also aims to protect living organisms in watercourses against accidental killing/destruction and unfavourable changes to physical and chemical parameters (activation of bottom sediments, increased suspension concentration) and biological parameters (destruction of breeding sites, feeding sites and refuges).

The conditions of clause I.2.28 and I.2.29 are to facilitate the entry of desired species of herbaceous plants on the area subject to the works (and in particular in stream valleys), by removal of invasive plant species and supporting the growth of native plant species.

Protection of the earth surface together with the soil and land formations entails preventing and counteracting unfavourable changes (degradation, devastation), and in the event of damage or destruction – restoration of the correct state. One of the geomechanical transformation factors of the surface layer of earth leading to its degradation is movement of heavy equipment (vehicles, cranes, machinery) and storage of structural elements directly on the surface of soil. Compaction of soil by heavy equipment results in an increase of its density, which reduces the voids between soil particles and causes the soil to partially or entirely lose its absorptive qualities. That is why the construction site backyard and all access roads which shall be used by machines and vehicles should be paved with concrete slabs on a subcrust layer and machinery and vehicles should move only over designated access roads and the construction site backyard. Meeting the conditions defined in clause I.2.14-I.2.17 shall contribute to minimising the negative impact of works performed during the construction stage of the undertaking on the soil environment.

The impact on the soil and aquatic environment during the performance of construction works may be associated with penetration of contaminants, including petroleum derivatives. As a result of the construction site backyard operation, sanitary sewage shall be generated and collected in portable sanitary devices and in holding tanks. In order to protect the soil and aquatic environment and to exclude the possibility of contaminant penetration (and in particular petroleum derivatives) to the aquatic environment and to the soil, the conditions defined in clause I.2.31-I.2.36 were imposed.

Works associated with the construction of the reservoir may cause short-term, temporary, local decreases of the water table level caused by the need to carry out necessary drainage during earthworks and construction works. That is why the body decided to impose the condition defined in clause I.2.37.

During undertaking implementation, difficulties associated with emission of pollutants may appear. Possible emissions shall be of a local character, limited to the duration of the construction works. Emission of vehicle exhaust fumes and dust may occur both at the construction site as well as access roads leading to the area designated for the construction. Emission of gaseous contaminants by means of transport shall be mainly limited to the construction site, the backyard and access roads. Delivery and assembly of elements shall be performed using heavy transport as well as construction works machinery and devices. In the opinion of the body, taking into account the scope and type of works (typical construction and assembly works), one can state that the associated emissions shall not cause a permanent, significant impact in the areas within their impact reach. During the construction works, fugitive emissions may appear during earthworks and vehicular transport (dust emission from the surface of access roads).

Use of the dam shall not constitute a source of pollutants into the atmosphere.

Acoustically protected structures located nearest to the dam are multifamily residential buildings located approx. 150 m and 240 m from the base of the dam. Two detached houses shall be located slightly further away from the base of the dam, approximately from 240.0 to 280.0 m away. The source of noise during investment implementation shall be heavy equipment works, construction works and transportation. The emission of noise shall be mainly associated with the construction of the dam. The construction of that structure shall take place in a continuous manner, and thus the work of machinery as well as carrying soil there and back shall also be continuous. The remaining earthworks, construction works and demolition works shall be performed in different locations and at different times. As a result, the emission of noise in given regions of the planned undertaking outside of the dam construction site shall be local and short-term. The construction works and earthworks shall be performed solely during the day. All machinery with the exception of cranes shall perform works at ground level, so noise dampening by the soil shall play a large part in the propagation of noise. The terrain formation

shall be a significant element limiting the propagation of noise from the dam construction site. The works shall be performed in a river valley, and its slopes on both sides of the Goworówka valley shall constitute natural sound screens limiting the propagation of noise. Numerous forest complexes in the dam construction region shall also constitute a certain type of natural screens limiting the propagation of noise.

The dam and its use do not constitute a hazard to the acoustic climate, as they are not sources of noise. Only the operation of auxiliary structures (e.g. roads, railway) may constitute a source of noise emission. That noise is generated by mechanical vehicles moving along national road No. 33 from Kłodzko to the Boboszków-Dolna Lipka road border crossing via the Międzylesie Mountain Pass. That road is approximately 400.0 m to the west of the base of the planned dam. The second source of traffic noise is international significance rail route No. 276, from Wrocław to the international border with the Czech Republic in Lichkov, and then to Prague, which runs approximately 700.0 m from the planned dam. A less significant source of noise affecting the acoustic climate in this region is the vehicle traffic along the Roztoki – Goworów district road and seasonal agricultural works. In connection with the above, traffic noise from the aforementioned roads and rail does not constitute a hazard to the acoustic climate in the vicinity of the planned investment.

The constructed service roads shall not be loaded with traffic, so beyond the works performance periods, the acoustic climate shall not deteriorate. The conditions of clause I.2.38-I.2.42 were imposed in order to restrict the difficulties within the scope of the undertaking's impact on the acoustic climate and emissions of pollution to the atmosphere.

The conditions listed in clause I.2.43.-I.2.44 were imposed in order to ensure correct management of wastes generated during the investment implementation stage.

Maintenance-free operation of the new structure shall increase safety and eliminate the risk of human error.

By the passage of the gas pipeline across the Goworówka River and the Nowinka Stream, during laying thereof, cofferdams (made using sand-filled bags) shall be performed in the beds of these watercourses on the upstream and downstream sides. Water shall be pumped from the upstream station to the downstream station. Under the cover of the cofferdams, the existing gas pipeline shall be demolished and a new gas pipeline shall be laid approximately 2.0 m below the bottom of both watercourses. Once these works are complete, the bottom and banks of the watercourses shall be protected using paving stone and the cofferdams shall be demolished. Reinforcing the bottom and banks of the watercourse beds shall entail a section of approx. 30.0 m.

Prior to commissioning the gas pipeline, leak tests and resistance tests shall be performed. Two types of test agents are permitted: air and water. If water is used as the test agent, it shall be taken from the river and after the test the same quantity shall be discharged back to the river. During the test, physical and chemical elements of the ecological state shall not alter. Prior to discharging waters from the tests into the Goworówka and Nowinka watercourses, sediments shall be removed from the waters by delivering the water via a pipeline or ditch to a pump sump or by mechanical cleaning.

The condition indicated in clause I.3.2 was imposed in order to eliminate the possibility of contaminants penetrating into the soil and aquatic environment.

The need to maintain the minimum acceptable flow indicated in clause I.3.2 aims to:

- minimise unfavourable changes to biological processes in the river downstream of the dam,
- maintain a quantity of water in the river ensuring protection of biological balance.

The condition of clause I.4.2 was imposed due to the identified occurrence of the tectonic dislocation phenomenon and the resistance of the earth-fill dam to orogenic movements. Furthermore, the earth-fill dam with gently inclined slopes covered with topsoil and sown with

a mixture of grasses presents the smallest interference in the surrounding area, naturally blending into the valley sides. Under significant freshets, water shall be held in the reservoir (the reservoir basin). Outflow of water from the reservoir basin shall be controlled by two openings (main and emergency) at the inlet to the sluice devices. The main (large) opening shall be equipped with a closing hatch; there shall be no hatch on the emergency (small) opening. Once the reservoir is filled (following passage of a flood wave), the hatch on the main opening shall be closed and outflow from the reservoir shall only take place via the emergency opening, which shall make it significantly slower and this should protect against landslides from reservoir basin slopes. The water level in the reservoir which may lead to landslides from the slopes within the reservoir basin applies to floods with a probability of occurring once every 100 year or less. The reservoir dam has been designed so that landslides do not occur in its immediate vicinity. In connection with the above, the aforementioned condition was imposed. The condition imposed by clause I.4.3 minimises the possibility of a fault and provides an option for emergency control in the event of a fault.

The width of the main tunnel set forth by clause I.4.4 reflects the width of the Goworówka river bed along the section where the dam body shall be built. Such a solution shall make it possible to shape a bed in the channel similar to the natural Goworówka river bed and thus to ensure correct conditions for aquatic organisms living there.

In order to adjust the width of the Goworówka river bed bottom to the natural width of the river section subject to the dam body construction, the condition defined in clause I.4.5 was imposed. Maintaining the bottom width of the moved Goworówka river bed upstream and downstream of the dam (similar to the present width of the natural bed), as referred to in clause I.4.6, shall ensure the flow of water similar to that in the original river bed along these sections.

Due to the fact the Investor, pursuant to Article 75 Par. 3 of the *Environmental Protection Act* of April 27th, 2001 (Journal of Laws 2013, item 1232 as amended) is obliged to take actions aiming to repair the caused damages, the conditions for the performance of environmental compensation identified in part II.1 were determined. It is not an environmental compensation in the meaning of Article 35 of the *Environmental Protection Act*.

A negative impact associated with the investment in question shall be the felling of trees and shrubs as a result of which approx. 2.41 ha of habitat 9170 – Galio-Carpinetum and Tilio-Carpinetum oak-hornbeam forests and approx. 3.36 ha of habitat *91E0 – riparian mixed forests of willow, poplar, alder and ash tree (*Salicetum albo-fragilis*, *Populetum albae*, *Alnion glutinoso-incanae*) and alder forests on percolating mires shall be destroyed. In connection with the above, an obligation defined in clause II.1.1 was imposed, that is the performance of plantings across the total area of not less than 16 ha. The aim of the compensation is – apart from planting an appropriate number of trees and shrubs – also, in the longer period, an improvement to the habitation conditions and creation of new habitats for animal species which lose their habitats in connection with the felling in question. This also aims to attempt to recreate the destroyed habitats; that is why the plantings should comprise species found in the habitats. The areas given in the aforementioned condition take into account limitations identified in the Report associated with the area of the land which belongs to the Investor and with accessibility to sites correct in terms of habitat.

Compensation activities indicated in clause II.1.2 shall make it possible to increase the area of meadow habitats also constituting habitats for butterfly species referred to in Annex II to the Habitats Directive and the aforementioned *Resolution on protection of animal species*. In accordance with the information contained in the update submitted on March 10th, 2015, according to the practice adopted by the Investor, the reservoir lands shall be purchased and the arable lands shall change into meadows and pastures, which is in line with the objectives of the indicated compensation actions.

The compensation actions defined in clause II.1.3 aim to recreate the breeding area of White-throated dipper *Cinclus cinclus* – a species protected under the aforementioned *Resolution on protection of animal species* – which shall be destroyed in connection with investment implementation.

The obligation to carry out compensation actions defined in clause II.1.4 was imposed as in connection with investment implementation, as a result of tree felling, bat habitation sites shall be lost. Meeting the condition in question shall increase the number of refuge sites for bats, both within green areas as well as within the dam itself. The shafts in question shall play dual roles – they shall illuminate the watercourse along the section under the dam and at the same time shall house additional bat chambers.

The conditions defined in clause II.2.1-II.2.4 aim to control the progress and effectiveness of the proposed compensation actions.

The condition of clause II.2.5 aims to control the function of the tunnel located in the dam which is to be used by ichthyofauna (not only fish fauna) for migration. It is to ensure unobstructed passage through the ichthyofauna migration channel within the Goworówka Stream following investment implementation.

The condition of clause II.2.6 was imposed as during the environmental inventory conducted for the needs of the Report for the investment in question, invasive plant species were identified within the Goworówka and Nowinka Stream valleys, in the form of Impatiens *Impatiens spp.* and Sosnowsky's hogweed *Heracleum sosnowskyi*.

The conditions of clause I.2.27, II.1.5 and II.2.7 were imposed in order for this body to obtain information on the manner and scope of actions referred to in the items indicated in these conditions. Furthermore, the monitoring results – if they indicate such a need – may form the basis for implementation of additional minimising or compensating actions.

The obligation to monitor the stability of the earth-fill structure, groundwater and surface waters referred to in the Report stems from the currently binding legal regulation and aims to monitor the technical state of the structure from the start of the construction works.

Pursuant to § 119 of the Regulation of the Minister of the Environment of April 20th, 2007 on technical conditions for hydraulic structures and their location (Journal of Laws No. 86, item 579), hydraulic structures are equipped as required with control and measurement devices facilitating observation and measurements of:

- 1) movement and deformation of the hydraulic structure, its subgrade and adjacent area;
- 2) stresses in the hydraulic structure;
- 3) levels and pressures of groundwater and filtration processes occurring in the hydraulic structure, its subgrade and heads;
- 4) upstream and downstream water levels, as well as water levels on the main tributaries;
- 5) changes to bottom and banks;
- 6) occurrence of ice;
- 7) meteorological phenomena.

Thus, the applicant, in order to ensure the dam safety control as required by the regulations, shall perform control-measurement sections equipped with surface benchmarks, deep slab benchmarks (earth benchmarks, benchmarks on concrete structures) and observation piezometers in the dam body. The dam shall be equipped with control-measurement devices to conduct monitoring of vertical movement (subsidence) of the subgrade and body of the dam and discharge devices, measurement of filtration pressure under the dam body, measurement of the volume of any waters filtering through the dam body and measurement of the water table level in the reservoir basin and water levels at the downstream Nysa Kłodzka River station. According to the regulation by the Minister of the Environment of August 17th, 2006 *on the scope of water management instructions* (Journal of Laws No. 150, item 1087), a list of measurement devices associated with water management located on the water device as well as

the principles of performing measurements and observations shall be defined in the water management instruction. The regulation also defines the notice procedure concerning the occurrence of consequences of dangerous incidents on the water device. A water study and a water management instruction is necessary to obtain a water permit for special use of surface waters via damming structures. The water management instruction draft is approved by the body in charge of issuing the water permit. Thus, the body did not introduce the provisions pertaining to the principles of observation, measurements, monitoring of the groundwater table and earth-fill structure stability or monitoring the state of dam subgrade and structure in terms of the possibility of leaks of waters held in the reservoir during the period of freshets, as the obligation to perform these observations stems from the applicable legal regulation, and the responsibility in this scope lies with the body issuing the water permit.

In the opinion of this body, taking into account the conditions defined in Article 82 Par. 2 of the EPA Act, the data on the undertaking possessed at the time of issuing the decision on environmental conditions make it possible to exhaustively assess the environmental impact of the undertaking and there is no need to perform an environmental impact assessment of the undertaking within the scope of the proceedings to issue the decision as referred to in Article 72 Par. 1 of the EPA Act. Those data made it possible to exhaustively and comprehensively assess its impact on the environment, including the cumulative impact with other undertakings, and define the conditions for implementing the undertaking. According to the assessment, there are no significant negative impact accumulations. The planned undertaking is located outside the boundaries of protected areas referred to in Article 6 of the *Environmental Protection Act*, including outside of Natura 2000 sites. The proceedings underway for the undertaking in question analysed the possibility of occurrence of a potential impact of the planned undertaking on areas requiring special protection due to the occurrence of plant and animal species and their habitats or natural habitats subject to protection, including Natura 2000 sites as well other nature protection forms. The collected evidence made it possible to assess all potential impacts of the undertaking on the environment, including Natura 2000 sites, assess the significance of the impacts, propose adequate minimising measures and propose adequate solutions within the scope of actions compensating negative impacts which equally minimise the impact of the undertaking on the environment. Therefore, in the opinion of this body, the data on the undertaking possessed at the time of issuing the decision on environmental conditions make it possible to exhaustively assess the environmental impact of the undertaking, so, under clause III of the present decision, this body did not impose an obligation to perform an environmental impact assessment of the undertaking within the scope of the proceedings to issue the decision as referred to in Article 72 Par. 1 of the EPA Act.

During the proceedings on issuing the decision in question, the body allowed all evidence which might have contributed to a correct determination of the case, and the determination was made on the basis of the entire evidence collected during the proceedings, by which the body met the requirements of Article 75 § 1 and Article 80 of the *Administrative Procedure Code*.

In the event of a collision with sites of plant, animal or fungus sites protected pursuant to resolutions of the Minister of the Environment: of October 9th, 2014 on protection of plant species (*Journal of Laws of 2014, item 1409*), of October 6th, 2014 on protection of animal species (*Journal of Laws of 2014, item 1348*), and of October 16th, 2014 on protection of fungus species (*Journal of Laws of 2014, item 1408*), in relation to which bans apply as defined in the aforementioned resolutions, prior to commencing the works the Investor should obtain a separate permit from the appropriate body for actions prohibited in relation to these species, in accordance with Article 56 of the aforementioned *Environmental Protection Act*, and once that permit is obtained – the works are to be conducted taking into consideration the conditions stemming from the permit.

In the light of the above, I rule as in the sentence.

Information

The parties may lodge an appeal against the present decision to the General Director for Environmental Protection via the Regional Director for Environmental Protection in Wrocław within 14 days of decision delivery.

Regional Director for Environmental Protection in Wrocław, Michał Jęcz
[an illegible signature and a round stamp of the RDEP in Wrocław]

Copies to:

1. Tomasz Wróblewski
“HYDROPROJEKT Wrocław” Sp. z o.o.
Wybrzeże Wyspiańskiego 39, 50-370 Wrocław
2. Parties to the proceedings via an announcement in accordance with Article 49 of the *Administrative Procedure Code*
3. File.

The applicant is exempt from stamp duty pursuant to Article 7 Subpar. 3 of the Stamp Duty Act of November 16th, 2006 (Journal of Laws 2014, item 1628 as amended).

[stamp of the Regional Directorate for Environmental Protection in Wrocław with contact details]

Appendix to the decision by the Regional Director for Environmental Protection in Wrocław of December 18th, 2015, ref. No.: WOOŚ.4233.1.2015.AW.23, for the undertaking entitled: “Construction of “Roztoki Bystrzyckie” – a dry flood control reservoir on the Goworówka Stream, near Roztoki, Międzyzylesie Municipality, Lower Silesian Province”.

1. Undertaking objective

The subject-matter of the undertaking is the construction of “Roztoki Bystrzyckie” – a dry flood control reservoir in the estuary section of the Goworówka River with the maximum flooding area of 50.4 ha and holding capacity of approximately 2.9 million m³. The reservoir dam shall cross the Nysa Kłodzka valley at chainage km 0.540 of the river (from its estuary into Nysa Kłodzka), in the region of the Roztoki village, Międzyzylesie Municipality.

That reservoir, together with three other dry reservoirs: “Boboszków” in the upper section of the Nysa Kłodzka River, “Krosnowice” in the estuary section of the Duna Dolna River, and “Szalejów Górny” in the middle section of the Dusznica Bystrzycka River, is to provide flood protection for the Kłodzko Valley with special consideration for the protection of Kłodzko. The planned “Roztoki Bystrzyckie” dry flood control reservoir would control 94% of the Goworówka River sub-basin spanning the total surface area of 34.55 km².

2. Scope of works and basic technical parameters of the undertaking

2.1. The dam

The dam, located at chainage km 0.540 of the river (from its estuary into the Nysa Kłodzka River), with the crest at an elevation of 422.0 m AMSL and with periodic damming-up of water of up to approximately 14.5 m, has been designed as an earth-fill structure, which primarily stems from the determined occurrence of tectonic dislocations in the region of that structure.

The dam body construction is designed with the following technical parameters:

- max. dam height – 15.5 m,
- crest elevation – 422.0 m AMSL,
- dam length – 750 m,
- crest width – 6.0 m,

- gradient of upstream and downstream slopes – 1:3 (gentler slope gradients shall increase the dam body, and thus improve safety of the structure set on tectonic faults).

The dam shall be bow-shaped, which shall make it possible to rest its heads in a narrow cross-section of the valley and at the same time capture and lead the Nowinka Stream waters to relief devices at a safe distance from the upstream slope.

2.2 Relief devices

The relief devices have been designed in the form of two independent systems: sluice devices and spillway devices.

The sluice devices have been designed in the form of a reinforced concrete tunnel (width: 11.40 m) run under the body of the dam, split into three channels with the following widths: 1 x 4.0 m and 2 x 1.70 m with the main tunnel in the largest channel and the other two for the emergency and communication tunnel, which provides access to the service chamber located within the inlet to the sluice devices. The use of an emergency tunnel makes it possible to take one channel out of operation for refurbishment and inspection purposes, whilst maintaining the other sluice operational. Under normal circumstances, waters flowing along the Goworówka River shall flow through the 4.0 m wide main tunnel. The width of the new Goworówka river bed bottom shall be 6.0 m upstream of the dam and 7.0 m downstream of the dam.

Spillway devices have been designed in the form of two Ø3.60 m diameter pipelines run along the right head of the dam. The inlet to the spillway devices located at chainage km 0.200 of the dam axis shall be equipped with two spillways, through which flood waters shall be fed via a common channel to the pipelines. The aforementioned devices have been designed to be located at different heights (the lower part shall constitute the main spillway and the upper one – the emergency spillway), which shall improve the reduction of the reservoir also for the control flow of flood waters. Grates shall be installed directly in front of the pipelines to stop floating elements. The outlet from the pipelines shall be in the form of a dampening chamber and an energy dissipation channel equipped with baffle piers dampening the energy of the water flowing out of the pipelines.

The river bed feeding the waters to the reservoir shall remain in its natural form, and the reservoir basin, which shall fill up periodically, during freshets, shall be normally used as meadows and pastures. The river shall flow freely across the reservoir basin and the sluice device until the flow exceeds the capacity of the sluice device – then, the spillway device shall also be used to discharge water from the reservoir.

2.3 Works associated with regulation and relocation of watercourse beds

As part of regulation and relocation of Goworówka river and Nowinka stream beds, the following works are planned:

- relocation of the upper section of the Goworówka River bed. The new 6.0 m wide river bed shall be constructed along a length of approximately 81.5 m;
- relocation of the Nowinka Stream bed along the 200 m section colliding with the planned dam. The new 3.0 m wide river bed shall be constructed along a length of approximately 226.0 m;
- regulation of an approximately 274 m long section of the Nowinka Stream between the estuary into the Goworówka Stream and the end of the relocated section;
- relocation of the lower section of the Goworówka river bed, as a result of which a new 148 m long and 7.0 m wide (bottom) river bed section shall be constructed;
- regulation of a 65.0 m lower section of the Goworówka River, downstream of the relocated section.

Furthermore, the new Goworówka river bed shall also include the construction of a 115.5 m long section, running across the dam body in the form of a tunnel.

To sum up, the relocation and regulation shall apply to the original Goworówka river bed sections (approximate length: 410.0 m) and Nowinka stream bed sections (approximate length: 500.0 m). Relocation of the aforementioned stream sections primarily includes protecting the bank slopes and bottom with heavy stone rip-rap laid on geotextile. The rip-rap in the upper sections of bank slopes shall be covered with sand and topsoil and sown a mixture of native grasses. In terms of relocating the Goworówka river bed along the lower section, the right bank shall be protected with a retaining wall, the left bank shall have the form of a slope protected with paving stone and the bottom shall be protected with heavy rip-rap laid on geotextile. The lower section of the Goworówka River is very important from the point of view of reservoir safety, as the waters discharged by sluice devices shall be fed into that bed. The regulation works shall not include the bottom of the Goworówka river bed along the lower section or the bottom and the left bank of the Nowinka Stream along the section between the estuary into the Goworówka Stream and the end of the relocated section.

2.4 Development of the upstream and downstream station

At the upstream station, the scope of works includes: clearance of the area following the works associated with relocating the Goworówka river and Nowinka stream beds and construction of an access road to the upstream station. The beds of these watercourses shall be regulated, the trees and shrubs standing there shall be removed, and the area shall be levelled.

At the downstream station, the scope of works shall include clearance of the area along the relocated Goworówka River section which shall be regulated. Trees and shrubs shall be removed from this area and it shall be levelled.

2.5. Reservoir basin development

The planned works within the reservoir basin area shall be associated with relocating the overhead 20kV MV power line outside of the reservoir basin and with reconstructing the G200 1.6 MPa underground gas pipeline in order to adapt the gas pipeline for operation under water damming conditions in the reservoir.

The said reconstruction shall entail demolition of the existing gas pipeline running across the basin and laying a new section, in line with the existing one. The new gas pipeline shall be laid along an 830.0 m long section, parallel to the existing gas pipeline, 5.0-6.0 m away from its axis to the east.

2.6 Moving the municipality road

The southern end of the structure of the planned dam shall overlap with a small section of a municipality dirt road. It shall be necessary to move that part outside of the boundary of the dam body along an approximately 240.0 m long section.

Furthermore, the design includes internal roads leading to:

- the downstream station of spillway devices (410 m long) along the western slope of the dam body,
- the upstream station of spillway devices (approximately 660 long) along the eastern slope of the dam body, which shall make it possible to transport the wastes and wood stopped by the grates of the inlet to the sluices after every flood freshet,
- the spillway devices and the utility building (480 m long) on the north side of the dam,
- the road along the crest of the dam (740 m long).

Additionally, lighting of the dam and of the access road is planned using park style lanterns.

2.7 The utility building

The utility building with an approximate area of 150 m² shall be located by the right head of the dam. This shall be a ground floor building split into two zones: the first shall house office space, staff areas and sanitary premises, and the other shall comprise utility, technical and storage areas.

2.8 Control and measurement devices

The dam shall be equipped with control and measurement devices to conduct:

- monitoring of vertical movement (subsidence) of the subgrade and dam body as well as discharge devices,
- measurements of filtration pressure under the dam body,
- measurements of the volume of waters possibly filtering through the dam body,
- measurements of the water table level in the reservoir basin and water levels at the downstream station of the Nysa Kłodzka River.

Additional installation of staff gauges is also anticipated. These gauges may be equipped with water level sensors and included in the automatic monitoring system.