

## Appendix C – Biodiversity Management Plan

Table below covers the Project Biodiversity Management Plan (BMP). The BMP will be an iterative document that will be updated and amended as the project proceeds from loan approval, through pre-construction and into operation. The BMP is a publicly disclosed document.

Action / receptor	Identified Impacts	Mitigation, Management or Monitoring Measure	Timeframe
<b>Action 1</b>  Develop and implement a Habitat Management and Enhancement Plan	Vegetation clearance / Habitat loss  Introduction / spread of INNS	<p>The <b>No Net Loss/Net Gain Strategy</b> will be developed to cover construction, and operation phases of the project, ensuring that habitat loss and vegetation clearance are minimized to the greatest extent possible. The plan delivers and demonstrates Net Gains for Critical Habitat (CH), with calculations based on the EBRD GN6 Quality Hectares approach to ensure habitat replacement and enhancement on a ‘like for like’ basis.</p> <p>Efforts have been made to avoid unnecessary vegetation clearance, with a clear distinction between areas that must be cleared due to reservoir flooding and those that can be preserved through careful planning and mitigation measures. Replanting and the formation of new habitats, in line with the offset strategy, will commence before vegetation removal to ensure that the newly established habitats have time to develop and effectively replace the lost ones.</p> <p>The project has committed to preserving habitats wherever feasible, restricting clearance only to areas essential for reservoir flooding and infrastructure development. The <b>Offset Plan</b> (see chapter 8.6 of Biodiversity Impact Assessment) has been designed to compensate for the unavoidable habitat losses, ensuring the creation and enhancement of equivalent habitats in suitable locations to maintain ecological integrity and biodiversity values.</p> <p>A total of 34.26 ha of terrestrial critical habitat will be lost due to reservoir flooding. Within the remaining, non-flooded expropriated land, riparian woodland loss will be mitigated by converting <i>Robinia pseudoacacia</i> woodland (2.99 ha) and arable land (14.03 ha) into native riparian/gallery woodlands, resulting in a net gain of 8.57 ha of these habitats. To offset 24.41 ha of lost natural habitat, additional land beyond the expropriation zone will be required.</p> <p>Offset &amp; Restoration Strategy:</p> <ul style="list-style-type: none"> <li>• Convert steeper plots to <i>Fagetum moesiace submontanum typicum</i> or <i>Quercetum frainetto-cerris</i> woodland for soil stability.</li> <li>• Use flatter arable land for targeted habitat restoration.</li> <li>• Replace <i>Robinia pseudoacacia</i> with <i>Alnus glutinosa</i>, <i>Populus nigra</i>, and <i>Salix alba</i> to enhance riparian woodland for CH species.</li> <li>• Convert unused, invasive-infested plots into oak/beech woodlands to support biodiversity.</li> </ul> <p>Long-term ecological monitoring is an integral part of the Habitat Management Plan (HMP) and Offset Plan, ensuring the success of habitat restoration efforts. Adaptive management measures will be implemented to address any unforeseen challenges, guaranteeing long-term ecological stability, ecosystem services enhancement, and alignment with sustainable land and water management practices.</p>	Pre-construction phase:  <ul style="list-style-type: none"> <li>• HMP developed and approved: Months 1–6 pre-construction</li> <li>• Habitat restoration initiated: Month 6 onward</li> <li>• Offset land secured and restoration launched: before clearance (Months 6–12)</li> </ul> Operation phase:  <ul style="list-style-type: none"> <li>• Monitoring and adaptive management: Ongoing throughout operation</li> </ul>
	Lake forming / Habitat loss	The aquatic environment will be subject to careful management during both the construction and operational phases of the project, with a focus on minimizing water quality degradation and habitat loss to the greatest extent	Pre-construction (Months 1–6):

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		<p>possible. The No Net Loss/Net Gain Strategy will be adapted to the aquatic environment, ensuring that any impact on critical aquatic habitats is minimized, with measures in place to replace and restore these habitats, enhancing biodiversity and ecosystem services.</p> <p>The Offset Plan (refer to Chapter 8.6 of Biodiversity Impact Assessment) will address the unavoidable loss of aquatic habitats, with a commitment to creating and enhancing equivalent aquatic habitats in suitable locations. The aim is to preserve ecological integrity and ensure that biodiversity values in aquatic ecosystems are maintained.</p> <p>Restoration efforts will focus on stabilizing riverbanks, improving water quality, and enhancing aquatic biodiversity:</p> <p>Reintroducing native fish species and aquatic invertebrates that are important for ecosystem balance.</p> <p>As with terrestrial habitats, long-term ecological monitoring will be central to ensuring the success of the aquatic restoration and offset efforts.</p> <p><b>Watercourse crossing design</b> - poorly designed watercourse crossings have the potential to restrict the movement fish (PBF) and riparian species. The ecological design of all watercourse crossing (bridges and culverts) will need to consider the needs of aquatic and riparian species (amphibians, bats, mammals) and facilitate free movement through infrastructure under various flow conditions. This will be achieved through embedded design that meets good international practice and consultation with the design/engineering team (s). such as:</p> <p>Bottomless (or sunk/inverted 30cm below natural bed level to allow natural substrate to be deposited) and aim to maintain natural bank features. A natural bed (substrate) and riparian zone (as opposed to concrete banks) is considered key to facilitating/encouraging.</p> <p>Natural flow depths, widths and velocities (including natural variance and diversity) should be maintained at the culvert inlet and outlet and through the culvert, in order to provide habitat diversity and resting areas for migrating species.</p> <p>The culvert should be designed such that channel form and flow characteristics are consistent with that upstream and downstream. Altered channel forms and severe shading can prohibit the migration of fish and other species, so culvert beds could be designed such that the bed substrate and hydraulics serve to guide fish through the movement of aquatic species and fish.</p> <p>Designs must maintain free movement of riparian mammals, in particular otters and reptiles, between available areas of habitat. Where bridges and culverts are constructed where the road dissects watercourses, these must allow the safe passage of otters during spate conditions.</p> <p>Culverts must be as wide as possible and large enough to allow installation of a dry ledge that is accessible during high water levels. Mammal ledges can be made of solid concrete integral with the culvert or steel that is bolted onto the culvert using metal brackets. Ledges must be at least 500mm wide and be accessible both from the bank and the water by the provision of ramps or groups of large boulders. Ledges must be sited at least 150mm above the appropriate high flood level, allowing 600mm headroom. These can be installed on both sides of the This may involve ledges to be design into the structure.</p>	<p>Design integration and planning</p> <p>Construction Phase (Years 1–2): Culvert and habitat works implementation</p> <p>Operation Phase: Long-term monitoring and adaptive management</p>
<b>Action 2</b>	Bats - Disturbance and displacement; roost loss; increased mortality	Conduct pre-construction roost surveys to identify maternity, hibernation, and transient roosts. Install bat boxes and veteranisation features in adjacent habitats prior to clearance. Restrict tree and building removal to periods	Pre-construction (Months 1–6): Plan

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Develop and implement an Ecological Monitoring Plan (terrestrial)		outside maternity (May–Aug) and hibernation (Nov–Mar). Monitor box occupancy, species activity, and flight routes during construction and operation. Adapt lighting and construction schedules where necessary.	development and baseline surveys
	Birds - Nest disturbance, habitat loss, displacement	Carry out nesting surveys prior to vegetation clearance. If active nests are found (Mar–Aug), delay works until fledging. Install nest boxes and platforms before clearance to provide alternative breeding sites. Monitor nesting success, species diversity, and activity levels.	Construction Phase (Years 1–2): Monthly monitoring April–October  Operation Phase: Biannual monitoring and adaptive management
	Amphibians - Habitat loss and disturbance in wet habitats	Survey temporary and permanent wetland features during peak activity periods. Use drift fences and pitfall traps to prevent movement into active construction zones. Where found, relocate individuals to safe habitats. Enhance amphibian refuges (e.g., shaded moist zones) near created wetland edges.	
	Reptiles - Loss of basking/foraging sites; disturbance	Identify key basking and breeding areas. Clearly demarcate and avoid these zones where possible. Carry out hand searches and move reptiles to suitable habitats prior to vegetation removal. Restore open sunlit areas with dry vegetation piles post-construction.	
	Mammals - Habitat fragmentation, disturbance, vehicle collisions	Record mammal signs (tracks, burrows, scat) to identify high-use areas. Install wildlife crossing signage and speed bumps. Enforce vehicle speed limits. Restrict night driving in sensitive zones. Monitor mammal movement across the landscape and adapt mitigation accordingly.	
	Insects - Habitat degradation, displacement	Monitor pollinator and indicator taxa (e.g., butterflies, dragonflies) across baseline and offset areas. Enhance floral diversity in restored grasslands and riparian buffers. Adjust mowing regimes to favor insect activity periods. Track diversity and abundance trends to assess habitat quality.	
	Plants / Habitats - Vegetation loss, INNS spread, habitat change	Survey plant communities pre-construction. Post-clearance, monitor species richness and cover in offset areas. Track and map any INNS outbreaks, applying early-stage manual or chemical control. Assess habitat quality against baseline targets using condition scoring. Replant or reseed areas not meeting benchmarks.	
<b>Action 3</b>  Develop and implement Freshwater Ecology Monitoring and Plan		<p>Rivers and streams are of high conservation value and are classified as CH according to EBRD criteria, due to the presence of TSM.</p> <p><b>PBF fish species:</b></p> <ul style="list-style-type: none"> <li>• Balkan Loach (<i>Cobitis elongata</i>)</li> <li>• Spined Loach (<i>Cobitis taenia</i>)</li> <li>• Balkan Barbel (<i>Barbus balcanicus</i>)</li> </ul> <p><b>TSM fish hosts likely include:</b> Common Bleak, Minnow, Roach and Chub.</p> <ul style="list-style-type: none"> <li>• Common Bleak</li> <li>• European Stone Loach</li> <li>• Minnow</li> <li>• Roach</li> <li>• Chub</li> </ul> <p>The <b>Freshwater Ecology Monitoring Plan</b> will cover monitoring of aquatic species and habitats, included retained riverine habitats upstream and downstream of the dam, and created open water habitats resulting from the</p>	<p>Pre-construction (Months 1–6): Baseline continuation and planning</p> <p>Construction Phase (Years 1–2): Routine and event-based monitoring</p> <p>Operation Phase: Annual monitoring and adaptive response</p>

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		<p>impoundment. This monitoring <b>plan will be delivered in conjunction with the WEMMP</b> (particularly Actions 3) will involve pre-construction, construction and operations phase monitoring.</p> <p>The monitoring will enable <b>the potential construction and operations phase impacts</b> to be assessed against the baseline for aquatic receptors (fish, invertebrates and TSM).</p> <p>Monitoring during Phase 1 operation (flood reduction) will also be used to define the baseline for future assessment of Phase 2 operation (flood reduction and irrigation). There will be a focus on notable/sensitive species including PBF fish, TSM and TSM hosts</p> <p>Methods will follow that described in Section5 of the Biodiversity Impact Assessment. The monitoring programme will include existing sites (to continue the baseline) and the addition of new sites as required, informed by the final project design and construction methodology, including construction zones, river diversion methods, and permanent and temporary roads / watercourse crossings.</p> <p>Monitoring sites will be selected strategically such that monitoring is capable of identifying adverse impacts. The plan will set out survey locations, monitoring periods and monitoring duration, as well as trigger values for adaptive management in response to unexpected adverse impacts.</p> <p>In line with the WEMMP, aquatic monitoring will follow a routine annual programme, with additional event-based monitoring as required (e.g. associated with sediment flushing).</p> <p>Where monitoring indicates a decline in species abundance / diversity adaptive management would be employed. This may include stocking of fish and/or artificial stocking of mussels on the gills of host fish.</p>	
<p><b>Action 4</b></p> <p>Develop and implement an Introduction / Spread of Invasive and Non-Native Species (INNS) Management Plan</p>	Introduction / spread of INNS	<p>For the <b>Introduction / Spread of Invasive and Non-Native Species (INNS)</b>, an <b>Invasive Species Management Plan (ISMP)</b> will be developed, addressing both aquatic and terrestrial invasive species throughout construction and operation phases of the project. The ISMP will be an integral part of the broader Habitat Management Plan and will focus on the identification, monitoring, and control of invasive species to prevent their spread and mitigate potential ecological impacts.</p> <p>Key invasive species identified in the project area include:</p> <p><b>Aquatic species:</b></p> <ul style="list-style-type: none"> <li>Chinese Pond Mussel (<i>Sinanodonta woodiana</i>),</li> <li>Topmouth Gudgeon (<i>Pseudorasbora parva</i>),</li> <li>Prussian Carp (<i>Carassius gibelio</i>).</li> </ul> <p><b>Terrestrial species:</b></p> <ul style="list-style-type: none"> <li>Bastard Indigo (<i>Amorpha fruticosa</i>),</li> <li>Common Ragweed (<i>Ambrosia artemisiifolia</i>),</li> <li>Black Locust (<i>Robinia pseudoacacia</i>), which dominates specific habitat areas classified as <i>Robinia pseudoacacia</i> woodland.</li> </ul> <p><b>Construction Phase:</b></p> <p>Implement stringent biosecurity measures, including mandatory cleaning and inspection of equipment and materials before entering the site.</p>	<p>Pre-construction (Months 1–6): Plan development and baseline INNS surveys</p> <p>Construction Phase (Years 1–2): Implementation of biosecurity and control measures</p> <p>Operation Phase: Monitoring, control, and habitat restoration</p>

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		<p>Regular monitoring of aquatic and terrestrial habitats to detect new occurrences of invasive species and apply rapid response measures where needed.</p> <p>Mechanical and chemical control methods for terrestrial invasive plants, with preference for manual removal in sensitive habitats.</p> <p>Ensure construction workers are trained on invasive species identification and reporting procedures.</p> <p><b>Operation Phase:</b></p> <p>Long-term monitoring programs to track changes in invasive species populations and effectiveness of control measures.</p> <p>Adaptive management strategies based on monitoring results, including the introduction of biological control agents where feasible.</p> <p>Restoration of degraded areas with native vegetation to enhance habitat resilience and reduce the likelihood of re-invasion.</p> <p>The implementation of these measures aims to minimize the ecological impacts of invasive species, ensuring habitat quality is maintained and biodiversity is safeguarded in the long term. The success of the ISMP will be evaluated through regular ecological assessments and adaptive management approaches.</p>	
<p><b>Action 5</b></p> <p>Develop and implement a Sensitive Site Clearance Strategy</p>	<p>Direct habitat loss/change (adverse, local)</p> <p>Degradation of Terrestrial Habitat</p> <p>Habitat degradation</p> <p>Disturbance and displacement of Fauna Species (terrestrial mammals, bats, birds, reptiles, amphibians, insects etc.)</p> <p>Introduction / spread of invasive / non-native species (INNS)</p> <p>Accidental killings and injury as a direct impact of vegetation clearance</p> <p>Loss (Increased mortality) and disturbance/displacement of Bat species</p>	<p>Develop and implement this Sensitive Site Clearance Strategy covering the pre-construction, construction, and operation phases of the dam project. The preparation and implementation of the Sensitive Site Clearance Strategy will be undertaken by a suitably qualified ecologist. Site clearance methodology will be species dependant, seasonal and informed by local biodiversity specialists. The Sensitive Site Clearance Strategy will include mitigation measures aimed at minimizing land take within the construction boundary:</p> <p><b>Pre-construction Phase:</b></p> <p>Prior to any vegetation clearance pre-construction checks and translocation of individuals (all species) are to be carried out by an ecologist during initial vegetation removal / ground clearance. Additionally, compensation measures for nesting birds and roosting bats will be implemented prior to vegetation clearance.</p> <ul style="list-style-type: none"> <li>For <u>birds</u> nesting compensation will be implemented prior to any felling activities commencing through the provision of a suitable quantity of nest boxes / platforms to be placed on suitable habitat, e.g., pylons, trees, structures. The nest boxes and platforms should be sited in the direction of adjacent habitats and be targeted to the species preferences onsite.</li> <li>Similarly for <u>bats</u> a series of Roost compensation measures will be implemented as part of the ecological mitigation strategy for the dam project. Roost compensation will be targeted to the roosting preference of bat species present onsite. For both crevice and cavity dwelling species bat boxes will be installed within adjacent retained habitats prior to any vegetation clearance commencing. Additionally, where feasible confirmed bat roosts located during the pre-felling inspections will be translocated to within adjacent retained woodland habitat. Whereas, for woodland specialists veteranisation will be prescribed to compensate for the loss of potential roost features within trees as a result of successional growth delay in the mitigation planting. Veteranisation will be implemented within targeted areas of adjacent retained woodland to the proposed reservoir, as advised by a bat ecologist prior to implementation</li> </ul> <p>Additionally, before undertaking any vegetation clearance construction areas and tree protection zones should be demarcated prior to the start of the construction activities in order to reduce the area of vegetation to be cleared and protect retained habitats from incursions. Temporary demarcation could be provided by highly visible wooden</p>	<p>Pre-construction (Months 1–6): Plan preparation, baseline surveys, and early compensation works</p> <p>Construction Phase (Years 1–2): Phased clearance, timing restrictions, and mitigation implementation</p> <p>Operation Phase: Monitoring, adaptive measures, and progressive habitat restoration</p>

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		<p>sticks (50 cm high) planted into the ground and /or flagging tape, while a more permanent fencing solution can be sought for areas of sensitivity.</p> <p><b>Construction Phase:</b>  <u>Timing of construction</u> activities should avoid critical life stages for species, such as breeding, migration and hibernation periods. It is recommended from a precautionary and best-practice approach that any habitat, structures or buildings cleared during construction follows the following:</p> <ul style="list-style-type: none"> <li>For <u>birds</u> vegetation clearance should be undertaken outside of the breeding bird season (March – August inclusive). If works do occur in the breeding season, the area should be thoroughly checked for bird nests by a competent ecologist no more than 48hrs before any clearance. If nests are found in the area to be cleared, works should be delayed until the breeding attempt has naturally concluded, i.e., fledged chicks</li> <li>Whereas for <u>bats</u>, vegetation clearance or demolition should be undertaken while avoiding critical life stages for bats. Specifically, the maternity (between Late April and Early August) and hibernation (October to March) periods. If winter vegetation clearance / demolition cannot be avoided trees and building that are marked for felling or demolition will be inspected prior during the respective survey seasons. Any roosts that are discovered will need to be excluded and compensated for prior to the hibernation. Additionally, during these periods any new ground disturbance activities will also be limited. In those cases where due to technical or operational reasons the suggested construction restriction periods cannot be fulfilled, additional measures shall be applied, such as the use of additional monitoring by competent bat ecologist to ensure that there are roosts for bats in an area prior to work in these sensitive areas or sub-areas.</li> </ul> <p>Site clearance will be phased to target the central area of vegetation clearance, extending to the site peripheries to displace species evenly and effectively into neighbouring habitats. Throughout every phase of the project the ECoW will be consulted to ensure that every effort is sought to minimise disturbance and impacts to adjacent retained habitat. Furthermore, any new areas of construction to be assessed through conducting baseline surveys before any commencement of construction activities (e.g. disused quarries or new/proposed infrastructure not currently part of the design).</p> <p>In addition to the above the following will also be actioned as part of the Sensitive Site Clearance Strategy:</p> <ul style="list-style-type: none"> <li>– If spreading of invasive / non-native species is observed, an appropriate eradication program will be developed and implemented. an appropriate eradication program will be developed and implemented.</li> <li>– Conduct awareness among employees and contractor working on site about the protected species/habitats. Awareness and on-site training will be provided to employees and contractors about the protected species/habitats potentially present in the area, as well as avoidance and mitigation measures. Specific protocols or procedures will be developed and constantly monitored in the event any wildlife is encountered.</li> <li>– Proposed sediment traps will be micro sited through consultation with the ECoW and biodiversity specialists.</li> </ul>	

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		<ul style="list-style-type: none"> <li>– Areas cleared during construction for temporary use will be progressively restored, in accordance with agreement with landowner. (e.g., aiming production of a stable vegetative cover to minimize erosion, dust and spreading of invasive / non-native species).</li> <li>– Artificial lighting, where required, will be restricted to the site compound and areas of current construction work.</li> <li>– Avoid the creation of barriers, such as big lights that could significantly impede bats passage to move around the project area.</li> </ul> <p><b>Aquatic Habitats:</b></p> <p><u>Timing of construction</u> activities in river should avoid critical life stages for species, such as spawning. The fish species in the project area are typically gravel-bed summer spawners.</p> <p><u>Species Translocation</u> - where instream works or dewatering are required, they will be carried out under the supervision of a suitably qualified Ecological Clerk of Works (ECoW) with a freshwater ecology and fisheries specialism and experience of overseeing construction activities in or near water. The ECoW role will involve overseeing the dewatering process and fish translocation to move fish from impacted areas. This would involve managing the drawdown rate, based on the abundance of fish, through liaison with the fish translocation team. Fish translocation would take place prior to dewatering in order to move fish from impacted areas to suitable habitat elsewhere. Netting and/or electric fishing techniques would be used, under the appropriate Serbian licenced and consent.</p> <p><u>Impoundment</u> – prior to reservoir impoundment, TSM will be translocated to suitable sites upstream or downstream of the reservoir. This will be done under the appropriate Serbian licence, by a suitable qualified mussel specialist.</p>	
<p><b>Action 6</b></p> <p>Develop and implement a Pollution Control Strategy</p>	<p>Degradation / pollution of habitats</p> <p>Pollution, noise, and light that cause indirect habitat degradation</p> <p>Disturbance and displacement of birds, bats and terrestrial fauna.</p> <p>Accidental killings and injury from the collision with the vehicles</p> <p>Introduction / spread of invasive / non-native species (INNS)</p>	<p>Implement a <b>Water Quality Management Plan</b> to prevent pollution from construction runoff, accidental spills, and operational discharges. Measures will include sediment traps, silt fences, and regular water quality monitoring for parameters such as temperature, dissolved oxygen, and turbidity. During operation, special attention will be given to managing water releases to prevent thermal pollution from dam discharge, ensuring temperature regulation to match natural river conditions and protect aquatic life.</p> <p>Develop and enforce best practices for <b>handling hazardous materials</b>, including proper storage, transportation, and disposal to minimize the risk of accidental spills. Training programs will be conducted for construction and operational staff to ensure compliance with environmental standards and emergency response procedures.</p> <p>Implement <b>erosion and sediment control measures</b>, such as vegetative buffers and soil stabilization techniques, to prevent sedimentation that can degrade water quality and aquatic habitats.</p> <p>Establish a <b>continuous monitoring</b> and reporting system to track potential sources of pollution and habitat degradation, allowing for timely intervention and adaptive management strategies.</p> <p>Habitat degradation, including the infestation of invasive species, is a significant concern and is addressed under <b>Action 1</b> of this Biodiversity Action Plan.</p> <p><b>Noise generated by heavy machinery and transport, air pollution from dust and emissions</b> will be mitigated by measures such as noise barriers and dust suppression techniques.</p>	<p>Pre-construction (Months 1–6): Planning, baseline water quality testing</p> <p>Construction Phase (Years 1–2): Implementation of control measures and ongoing monitoring</p> <p>Operation Phase: Discharge management, noise/dust control, routine checks</p>



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		<p><b>Avoid storage of large quantities/volume of waste</b> by removing frequently/regularly any food waste or similar attractants for animals, especially carnivores.</p> <p><b>Significant noise and human activity should be limited</b> as much as possible to reduce potential disruption of terrestrial and riparian fauna.</p> <p>Employees must be <b>restricted from engaging in hunting</b> while on duty.</p> <p><b>Vehicle movement will be restricted to the existing roads (including haul roads)</b> that connect the Project site with the surrounding areas. Off-road driving will be prohibited to avoid any unnecessary disturbance of natural vegetation.</p> <p>Keep vehicles clean. This includes <b>not leaving food, lubricants, antifreeze, oils, or hydrocarbons in vehicles</b>. Some animals are attracted by them.</p> <p>Restriction in the form of <b>speed limits and animal crossing signs</b> on the access road and enforce speed limit along the site access road; if necessary, install speed bumps and noise stripes on straight sections of the access road.</p> <p>Prior to construction operatives will be trained on the code of conduct and care for wildlife through a series of routine <b>toolbox talks</b> that will be delivered to all operatives working in proximity to sensitive habitats. As part of these toolbox talks specific protocols or procedures will be developed and constantly monitored in the event any wildlife is encountered.</p>	
<p><b>Action 7</b></p> <p>Develop and implement an Aquatic Enhancement Plan</p>	Habitat fragmentation and species displacement	<p>Approximately 5.3km of lotic riverine aquatic habitats upstream of the proposed dam (Zone 1) will be replaced by stillwater (lentic) habitats. Aquatic habitats within the proposed reservoir inundation area (based on 145m water level) are:</p> <ul style="list-style-type: none"> <li>• Littoral zone of inland surface waterbodies (EUNIS code C3) – 1.3 ha</li> <li>• Surface running water (EUNIS code C2) – 5.3km, comprising</li> <li>• Epipotamal streams (EUNIS code C2.31)</li> <li>• Sparsely vegetated river gravel banks (EUNIS code C3.55)</li> </ul> <p>Loss-gain analysis (<b>Error! Reference source not found.</b>) has calculated the river loss (~5.3km) to equate to 3.18 Quality Hectare Units.</p> <p>The loss of these riverine habitat will be offset, according to Quality Hectares approaches, through delivery of the actions set out in the Aquatic Enhancement Plan. Actions will be delivered upstream and downstream of the proposed dam. Opportunities in the vicinity of the dam (i.e. within the expropriation area and upstream catchment) will be prioritised, however Srbijavode has identified significant areas of ecologically-connected (via river/riparian corridor) land adjacent to River Tamnava (immediately downstream of the Ub-Tamnava confluence to upstream of the Kolubara River) to deliver offsite aquatic enhancement downstream of the dam (Appendix <b>Error! Reference source not found.</b>).</p> <p>It should be noted PWMC Srbijavode manages water and water land in the Republic of Serbia, in accordance with the Law on Waters. Water land includes riverbeds, riverbanks, embankments, access roads, and other elements necessary for the use, protection, and maintenance of water facilities. This land is classified as public water property and cannot be privately owned. The law clearly stipulates that "Srbijavode" has the right to carry out works related to the construction, maintenance, and use of water infrastructure, as well as the implementation of flood protection measures. If these activities require the temporary use of private land, this is permitted (even</p>	<p>Pre-construction (Months 1–6): Connectivity assessments and design of fish pass/e-flow regime</p> <p>Construction Phase (Years 1–2): Installation of enhancement measures</p> <p>Operation Phase: Monitoring and adaptive management of connectivity and flow</p>



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		<p>without the owner's consent), provided that appropriate compensation is given and a decision is issued by the competent authority.</p> <p>This legal framework ensures that PWMC Srbijavode can feasibly implement activities related to the improvement of erosion control, sediment management and aquatic habitats without procedural obstacles. It should be noted that despite this legal framework in Serbia that permits Srbijavode to undertake riparian works, any proposals and subsequent works will need to be screened against the requirements of PR5 (Land Acquisition, Involuntary Resettlement and Economic Displacement) and any social mitigation required, associated to change of use in the riparian zone and social impacts implemented.</p> <p>Appendix <b>Error! Reference source not found.</b> shows the river lengths available upstream and downstream of the proposed dam where riparian improvements could be made under Srbijavode's aforementioned riparian rights. The extent of the land available to Srbijavode for offsite habitat offset is provided in Appendix <b>Error! Reference source not found.</b>; this includes a total of approximately 32.4 hectares (10.30 ha, 18.29 ha, and 3.85 ha in the Brović, Piroman and Veliko Polje sub-municipalities respectively) of land located immediately adjacent to the Tamnava River; the total length of river channel within this zone is approximately 10km.</p> <p>To inform the Loss-Gain analysis for riverine habitats and inform the draft Aquatic Enhancement Plan, the following Tasks have been proposed, or are completed:</p> <ol style="list-style-type: none"> <li>1. PWMC Srbijavode to map areas within 10, 20, 30km from the project area and areas within the Ub to Sava watershed closest to the project (within their ownership and jurisdiction). <ul style="list-style-type: none"> <li>• <b>Timescale:</b> Pre-disclosure</li> <li>• <b>Status:</b> Completed - The extent of the riparian land and river channel available to Srbijavode for offsite enhancement is provided in Appendix A.9. This land/river channel is additional to available land with the expropriation area and in the vicinity of the proposed dam, which will be investigated further as part of detailed design and in advance of construction.</li> </ul> </li> <li>2. Undertake a review of mapped areas, confirmation of availability and desktop based, high-level, suitability assessment. Defining prioritisation for future on-site survey to determine suitability. <ul style="list-style-type: none"> <li>• <b>Timescale:</b> Pre-disclosure</li> <li>• <b>Status:</b> Completed – a desk-top review of the river habitat within the offsite land parcels (Appendix A.9) has been undertaken. The land is located adjacent to River Tamnava between the river channel (~10km in total) and the flood embankment. This land is predominant a mix of meadows, grassland and shrubs, with patches of broadleaved woodland. Some of this area was visited as part of the aquatic biodiversity / otter surveys; they are subject to anthropogenic impacts such as mowing, fly-tipping of house-hold and agricultural litter, and proliferation of invasive species (e.g. black locust <i>Robinia pseudoacacia</i> and tree of heaven <i>Ailanthus altissima</i>).</li> <li>• Based on current information (note follow up site visits are planned – see below), areas of the river channel are considered suitable to deliver the proposals in the Aquatic Enhancement Plan, specifically riparian improvements and litter removal. Riverine / riparian habitat enhancement / creation in these areas will be designed and implemented in conjunction with the terrestrial/riparian habitat enhancement and creation (see BMP Action 1). River / riparian habitat types will confirmed, and enhancement opportunities mapped, along with the current condition of the habitats during the proposed site visits and ground-truthing (see below).</li> </ul> </li> </ol>	

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		<p>3. Undertake walkover surveys of riverine / riparian habitats within the offset areas. Opportunity mapping and suitability assessment of the land within the offset areas to deliver the measures in the Aquatic Enhancement Plan will be undertaken.</p> <ul style="list-style-type: none"> <li>• <b>Timescale:</b> During-disclosure period</li> <li>• <b>Status:</b> To be completed. This task will involve walk over surveys to a) characterise the riverine EUNIS categories present, to align with the baseline studies and b) assess the condition of the riverine/riparian habitats, which will feed into the site selection process (i.e. identification of the most suitability areas to deliver aquatic enhancements). This opportunity mapping will inform the draft Aquatic Enhancement Plan. Data collected will feed into an update of the riverine Loss-Gain analysis (see Task 4 below).</li> </ul> <p>4. Develop draft methodology for riverine offset based on the selected areas and requirements set out in the ESIA (mitigation needed in each of the selected areas) with timeline for offset implementation and cost estimate.</p> <ul style="list-style-type: none"> <li>• <b>Timescale:</b> During-disclosure period</li> <li>• <b>Status:</b> To be completed. Based on the findings of Task 3. The Loss-Gain analysis for riverine habitats will be updated using the Quality Hectare approach.</li> </ul> <p>5. Finalisation of the draft Aquatic Enhancement Plan, including riverine offset calculation using Quality Hectares approaches. The draft Aquatic Enhancement Plan (inc. offset) will be submitted to Lenders for approval. Note that whilst the draft of the Aquatic Enhancement Plan (inc. offset) will demonstrate that PR6 compliance can be achieved, this iteration of the document will focus on the offsite areas. Opportunities in the expropriation zone and upstream of the proposed dam will be completed post-financing as part of the detailed design; this will be implemented in a coordinated way with the of sediment control measures proposed for upstream rivers.</p> <ul style="list-style-type: none"> <li>• <b>Timescale:</b> During-disclosure period</li> <li>• <b>Status:</b> To be completed, based on Tasks 1-4 set out above.</li> </ul> <p>6. Finalisation of the Aquatic Enhancement Plan, including riverine offset calculation using Quality Hectares approaches. This final draft of the Aquatic Enhancement Plan (inc. offset) will include all agreed commitments and be submitted to Lenders for approval. This will include elements located in the vicinity of the dam, expropriation area and upstream, as well of offsite measures on the Tamnava River.</p> <ul style="list-style-type: none"> <li>• <b>Timescale:</b> Pre-construction</li> <li>• <b>Status:</b> To be completed, based on Tasks 1-5 set out above</li> </ul> <p>Construction activities will be phased to minimize disruption, and temporary habitat refuges will be provided.</p> <p>The construction of the dam will result in the physical separation of the river, leading to population fragmentation of aquatic species. Similarly, the formation of a larger water body will alter habitats for terrestrial species, potentially causing displacement and fragmentation of their populations. One of the proposed management measures to mitigate these impacts includes the <b>mitigation of downstream barriers to migration</b> to enhance connectivity along the remaining river length. Improving fish passage and this increasing connectivity for fish in the lower River Ub. This could be achieved by fish passage improvements / creation of a fish pass at redundant</p>	

Action / receptor	Identified Impacts	Mitigation, Management or Monitoring Measure	Timeframe
		<p>weir (formerly for the purpose of a fishery) that is acting as a barrier to all fish species (see Figure 13 Section 5.1.2).</p> <p><b>Riparian enhancement and buffer strips</b> - to help offset the described losses in river habitat, degraded sections of river habitat will be identified and improved. These measures can be implemented through Srbijavode's aforementioned riparian rights, both upstream and downstream of the proposed dam. This may be achieved by restricting cutting/mowing with a defined buffer of the river to enable natural re-vegetation of the riparian zone and through the use of fencing to restrict access for grazing up to the water's edge. Access to water for grazing would be via designated fenced locations. Upstream enhancement will be implemented in a coordinated way with the of sediment control measures proposed for upstream rivers. These include:</p> <p>Double living wicker – Five braids at a distance of 5-10m. Up to 90 braids to be planted. Success will be assessed through monitor braid and bank stability.</p> <p>Afforestation in/or adjacent to the river.</p> <p>Ilofilters (forest grass belts) and improved agricultural practices and prohibition on poor agricultural practices (including buffer strips) to reduce bank erosion and sediment ingress.</p> <p>The <b>removal of solid waste (including plastics and fly-tipped material)</b> will be removed at key locations where it forms around logjams. The benefit of removing natural material (logjams) will be assessed by a suitable qualified freshwater ecology. The reservoir itself will also likely collect solid water that will be removed and disposed of cleansing downstream section of the River Ub.</p> <p>Aquatic enhancement will also be delivered through improved hydrological conditions during drought, that offer more resilient for aquatic habitats. This will be achieved by delivery of a sustainable E Flow, included the Serbian minimum flow in summer which will be higher than baseline in dry years. Drought is something that has been previously hindered the River Ub, suffering extreme droughts— the E Flow will help maintain continuous flow and favourable conditions over a longer stretch downstream of the dam. Given the significant rise in pollution levels downstream, especially beyond the city of Ub, maintaining the e-flow will also contribute to improving the water quality / chemical status of the River Ub downstream through increase dilution, compared to baseline.</p> <p><b>Species Monitoring</b> programs (BMP Action 2) will assess species movement and habitat use, adjusting mitigation measures as needed to optimize connectivity and minimize displacement effects.</p>	