



Baljuvon – Sari Khosor Road Project BAP

Contract No. 2025.015035

Biodiversity Action Plan, May 2026



Version	Date	Prepared By	Reviewed By	Approved By
Rev01	May 2026	ESIA Team	N. Skinner	N. Skinner



Disclaimer. This Biodiversity Action Plan (BAP) has been developed as part of the Environmental and Social Impact Assessment (ESIA) for the Baljuvon – Sari Khosor Road Project. The BAP is based on the findings of the Critical Habitat Assessment (CHA, May 2026), the ESIA technical surveys delivered between February and May 2026, and the supporting biodiversity baseline studies referenced in the CHA. Where conclusions are based on incomplete data, this is noted in the relevant section.

Abbreviations

BAP	Biodiversity Action Plan
BMP	Biodiversity Management Plan (contractor-level)
BOMP	Biodiversity Offset Management Plan
BSK	Baljuvon – Sari Khosor
CH	Critical Habitat
CHA	Critical Habitat Assessment
CR	Critically Endangered (IUCN Red List)
EAAA	Ecologically Appropriate Area of Analysis
EBRD	European Bank for Reconstruction and Development
EN	Endangered (IUCN Red List)
ESAP	Environmental and Social Action Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
ESR6	EBRD Environmental and Social Requirement 6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources
GIIP	Good International Industry Practice
IBAT	Integrated Biodiversity Assessment Tool
IUCN	International Union for Conservation of Nature
KBA	Key Biodiversity Area
NG	Net Gain
NNL	No Net Loss
NT	Near Threatened (IUCN Red List)
PA	Protected Area
PBF	Priority Biodiversity Feature
PIURR	Project Implementation Unit for Roads Rehabilitation
RDB	Red Data Book of the Republic of Tajikistan (2024)



VU	Vulnerable (IUCN Red List)
WDPA	World Database on Protected Areas

1. Introduction

1.1 Project Background

The Baljuvon – Sari Khosor (BSK) Road Project comprises the rehabilitation and improvement of an existing 56.5 km rural road corridor between Baljuvon town in Khatlon Region and the village of Sari Khosor in the foothills of the south-western Vakhsh (Hazratishoh) range, in the Republic of Tajikistan. The Project is being implemented by the Ministry of Transport through the Project Implementation Unit for Roads Rehabilitation (PIURR) and is financed by the European Bank for Reconstruction and Development (EBRD).

The corridor follows the Shurobdaryo valley through mid-elevation foothill terrain at 800 to 2,000 m above sea level, ending close to the Sari Khosor Natural Park. The route is bordered by Sari Khosor Natural Park at its north-eastern terminus (closest approach of alignment to Park boundary approximately 3.5 km; the State Institution for Specially Protected Natural Territories cites approximately 5 km from the road corridor — see CHA Section 3 and Appendix 2) and the Nureksy State Reserve to the west across the Vakhsh valley (closest approach approximately 3.1 km).

1.2 Purpose of the BAP

This Biodiversity Action Plan (BAP) is the strategic, project-level biodiversity instrument for the BSK Road Project. It is prepared in compliance with EBRD Environmental and Social Requirement 6 (ESR6) and translates the findings of the Critical Habitat Assessment (CHA, May 2026) into a coherent programme of avoidance, minimisation, restoration, offset and monitoring measures that the Project will deliver across pre-construction, construction and operational phases.

The BAP serves four core functions:

- Establish the Project's overall biodiversity strategy and the residual impacts that require management;
- Set the strategic mitigation framework that the contractor-level Biodiversity Management Plan (Annex A) implements operationally;
- Define the Biodiversity Offset Programme required to discharge Net Gain obligations for Critical Habitat-triggering features and No Net Loss obligations for confirmed Priority Biodiversity Features;
- Set the monitoring, evaluation and reporting framework against which biodiversity outcomes will be tracked and reported to the EBRD over the life of the Project.

1.3 Structure of this BAP

The BAP follows the structure recommended by EBRD ESR6 Guidance Note (GN6, 2025) and aligns with Good International Industry Practice (GIIP) precedent for road sector projects in mountainous Central Asia.

Section	Title	Content
Section 1	Introduction	Project context, purpose and structure of the BAP.
Section 2	Legal and regulatory framework	National, international, EBRD ESR6 and GIIP requirements applicable to biodiversity.
Section 3	Project description	Project components, footprint, schedule, activities relevant to biodiversity.

Section 4	Biodiversity values	Summary of the biodiversity baseline including Critical Habitat-triggering features and Priority Biodiversity Features as determined in CHA.
Section 5	Impacts and significance	Construction and operational phase impacts on identified biodiversity features.
Section 6	Mitigation strategy	Strategic application of the mitigation hierarchy; references the contractor-level BMP at Annex A.
Section 7	Residual impacts	Impacts remaining after mitigation; identification of features requiring offset.
Section 8	Biodiversity Offset Programme	Net Gain strategy for CR Pyrus species and No Net Loss strategy for PBFs.
Section 9	Monitoring, evaluation and reporting	Indicators, frequency, responsibility and reporting to EBRD.
Section 10	Roles, responsibilities and resourcing	Governance, expert qualifications and budget.
Annex A	Contractor's Biodiversity Management Plan (BMP)	Operational measures for the construction contractor.
Annex B	Biodiversity Offset Management Plan (BOMP) — framework	Detailed offset design for Pyrus species and PBFs.
Annex C	Sensitive Feature Register	Confirmed feature locations, buffer distances and protocols.

Relationship with the contractor BMP. This BAP is the strategic project-level document. The contractor-level Biodiversity Management Plan (BMP, included as Annex A) is the operational implementation document forming part of the construction tender package. The two documents are aligned: every requirement in the BAP is enforced through the BMP, and every measure in the BMP traces back to a BAP objective. Where the contractor identifies a deviation between this BAP and the operational reality on site, the contractor shall escalate to the Engineer and PIURR rather than proceed unilaterally.

2. Legal and Regulatory Framework

2.1 National legislation

Biodiversity protection in the Republic of Tajikistan is governed by a framework of primary laws, sectoral legislation and technical regulations. The following instruments are directly applicable to the Project and govern the obligations set out in this BAP.

Instrument	Relevance to BSK biodiversity obligations
Law on Environmental Protection (2011)	Framework law establishing the general duty to protect the natural environment and the obligation to compensate environmental damage.
Law on Specially Protected Natural Areas (1994, as amended)	Governs the protected area system. Sari Khosor Natural Park and Nureksky State Reserve are protected under this law. Activities affecting protected areas or their buffer zones require authorisation.
Law on Wildlife (2004, as amended)	Prohibits unauthorised disturbance, capture, injury or killing of wild animals. Applies to all fauna along the corridor regardless of conservation status.
Law on Flora (1997, as amended)	Prohibits unauthorised collection, uprooting, damage or destruction of wild plants, with heightened protection for Red Book species. Translocation of Red Book plants requires prior authorisation from the Committee for Environmental Protection.
Red Data Book of the Republic of Tajikistan (2024)	National list of rare and threatened species afforded legal protection. Both <i>Pyrus tadshikistanica</i> and <i>Pyrus korshinskyi</i> are listed as Critically Endangered in the 2024 edition. At least 20 plant species from the RDB are recorded in the Sari Khosor area within the EAAA.
Water Code of Tajikistan	Regulates use, protection and management of water resources, including water protection zones along the Shurobdaryo and its tributaries.
Land Code of Tajikistan	Governs land use and the obligation to restore disturbed land to a condition suitable for its intended use following temporary acquisition.
Forest Code of Tajikistan	Governs use and protection of forests; cutting of woody species in state forest fund land requires authorisation.

2.2 Ratified international agreements

Tajikistan is a Party to a number of international environmental agreements relevant to the BSK Project. The provisions of these agreements are reflected in national legislation; the Project complies with both.

Agreement	Application to BSK
Convention on Biological Diversity (CBD, 1992)	Tajikistan acceded 1997. Underpins the precautionary approach, in-situ and ex-situ conservation duties applied throughout this BAP.
Convention on International Trade in Endangered Species (CITES, 1973)	<i>Malus sieversii</i> is CITES-listed; translocation, propagation and any movement of plant material under the Offset Programme will comply with CITES procedures.

Convention on the Conservation of Migratory Species (CMS, 1979)	Several PBFs are CMS-listed (Egyptian Vulture, Saker Falcon, Bearded Vulture). The BAP applies CMS guidance on collision and electrocution risk to project linear infrastructure.
Bern Convention on the Conservation of European Wildlife and Natural Habitats	Cited in the CHA for habitat classification (C3.55 and C3.62 river gravel bank habitat types treated as PBFs).
Ramsar Convention	No Ramsar sites within the EAAA. Convention principles applied to riparian and wetland habitats along the Shurobdaryo.
Aarhus Convention	Public participation and access to information provisions inform the stakeholder engagement set out in Section 10.

2.3 EBRD Environmental and Social Requirement 6

The Project is financed by the EBRD and is required to comply with the EBRD Environmental and Social Policy (2024). ESR6 — Biodiversity Conservation and Sustainable Management of Living Natural Resources — is the lender standard governing this BAP.

ESR6 establishes the following obligations relevant to BSK:

- Mitigation hierarchy: avoidance, minimisation, restoration and offset, applied in strict sequence.
- Natural habitats: significant conversion or degradation is to be avoided wherever a feasible alternative exists; where it is unavoidable, mitigation and restoration measures appropriate to the value of the affected habitat are required.
- Critical Habitat: in habitat meeting any of the five ESR6 criteria, the Project shall demonstrate (i) no measurable adverse impact on the values for which the area was designated, (ii) Net Gain for biodiversity over the life of the Project, and (iii) a robust, long-term monitoring programme.
- Priority Biodiversity Features: in non-critical habitat, the Project shall apply the mitigation hierarchy and achieve No Net Loss of PBFs.
- Protected and internationally recognised areas: the Project shall recognise, respect and not adversely affect the integrity of legally protected and internationally recognised areas, and shall consult their managers.
- Monitoring and adaptive management: outcomes shall be measured against defined indicators with adaptive management triggered by underperformance.

The Critical Habitat Assessment (May 2026) determined that the BSK corridor triggers Critical Habitat under ESR6 paragraph 14(ii)c (important national concentration of CR species) for two field-confirmed Critically Endangered wild pear species: *Pyrus tadshikistanica* and *Pyrus korshinskyi*. A Net Gain obligation therefore applies to both species. Eighteen further species are confirmed as Priority Biodiversity Features (six from the IUCN Red List, thirteen from the national Red Data Book, with additions and upgrades from the May 2026 surveys), with two riparian habitat PBFs (C3.55 and C3.62). These features carry a No Net Loss obligation. The Sensitive Feature Register at Annex C lists each feature and its applicable management measures.

2.4 Good International Industry Practice

This BAP is informed by and aligns with the following GIIP references:



- IFC Performance Standard 6 (2012) and accompanying Guidance Note GN6 (2019). PS6 is the substantive equivalent of EBRD ESR6 and the methodological reference for Critical Habitat assessment and Net Gain accounting.
- Cross-Sector Biodiversity Initiative (CSBI) — A Cross-Sector Guide for Implementing the Mitigation Hierarchy (2015). Provides the operational sequence applied in Section 6.
- Business and Biodiversity Offsets Programme (BBOP) — Standard on Biodiversity Offsets (2012). Applied to the Net Gain and No Net Loss accounting in Section 8.
- EBRD/IFC GIIP for linear infrastructure in mountainous terrain, including the European Bank guidance for road sector projects in Central Asia.
- IUCN/SSC Plant Translocation Guidelines (2013). Applied to the wild *Pyrus* translocation protocols within the Offset Programme.



3. Project Description

The BSK Project consists of the rehabilitation of the existing 56 km road corridor between Baljuvon and Sari Khosor. The full project description is set out in the ESIA; this section summarises only those elements material to biodiversity.

3.1 Project components

- Carriageway rehabilitation along the existing 56 km alignment;
- Geometric improvements at selected curves (estimated 2 to 5 % of length subject to design optimisation);
- Bridge and culvert renewal or replacement at watercourse crossings on the Shurobdaryo and tributaries;
- Drainage improvements and slope stabilisation works;
- Construction-phase ancillary works: lay-down areas, temporary access tracks, worker camps and borrow areas. Locations to be confirmed in the contractor's mobilisation submissions.

3.2 Project footprint and direct impact zone

The carriageway and engineered right-of-way (RoW) follow the existing alignment. This BAP carries an interim Project Direct Impact Zone (DIZ) defined as the alignment plus a 100 m lateral buffer. The DIZ is the area used for direct impact accounting (residual habitat loss quantification and the mitigation hierarchy avoidance step). It is not an Ecologically Appropriate Area of Analysis.

3.3 Schedule

Construction is expected to commence following lender approval of the ESIA package and the contract award procedure. The schedule is constrained by the seasonal restrictions established in this BAP and the contractor BMP, in particular the November to February in-river works exclusion period for Amu Darya trout (*Salmo trutta oxianus*) spawning.

4. Biodiversity Values

The biodiversity baseline for the BSK Project is established in full in CHA (May 2026) and the supporting technical surveys referenced therein. This section summarises the features that carry obligations under this BAP. The Ecologically Appropriate Areas of Analysis (EAAAs) within which each feature is assessed are set out in CHA Section3 and are not repeated here.

4.1 Critical Habitat-triggering features

CHA determines that the BSK corridor triggers Critical Habitat under EBRD ESR6 paragraph 14(ii)c (important national concentration of Critically Endangered species) for two species, both Critically Endangered on the IUCN Red List and in the Red Data Book of the Republic of Tajikistan (2024):

Species	Status	Range	BSK records	CH trigger
<i>Pyrus tadshikistanica</i>	CR (IUCN / RDB)	Tajikistan endemic; restricted to the Darvaz Mountains at 1,300–1,600 m with very small, fragmented populations.	6 mature individuals confirmed at km 11, 15, 29, 34 and 48 of the alignment (Botanical Survey, May 2026, Table 1). Approximately 2 % of the closest documented national reference population (Boboev, 2022).	Para 14(ii)c — important national concentration of a CR species. Para 14(ii)b just above threshold on reproductive units (>5). Para 12(iii) reinforced via inclusion in BGCI / Kulob Botanic Garden Darwin Initiative project ref. 31-017.
<i>Pyrus korshinskyi</i>	CR (IUCN / RDB)	Central Asian restricted range, concentrated in the Vakhsh–Hazrati Shoh axis; small, fragmented populations.	16 mature individuals confirmed at km 16, 37, 43 and 47 of the alignment (Botanical Survey, May 2026, Table 1).	Para 14(ii)c — important national concentration of a CR species, on the same precautionary basis.

Implication. Net Gain is the required outcome for both species under ESR6. Avoidance via micro-realignment is to be tested first at each chainage cluster (km 11, 15, 16, 29, 34, 37, 43, 47, 48). Translocation of mature wild pear trees is a last-resort response and carries low success probability — particularly so for *P. tadshikistanica* given Boboev's (2022) finding of vegetative-only reproduction in the closest documented reference population. The Biodiversity Offset Programme (Section 8) is the principal instrument for discharging the Net Gain obligation.

4.2 Priority Biodiversity Features

The following features are confirmed as Priority Biodiversity Features (PBFs) under EBRD ESR6 and carry a No Net Loss obligation under this BAP.

Species PBFs — IUCN Red List

Scientific name	Common name	IUCN status	BSK status
<i>Vormela peregusna</i>	Marbled Polecat	VU	Habitat present; likely; not field-confirmed in May 2026.

<i>Aquila heliaca</i>	Eastern Imperial Eagle	VU	Wide-ranging; foraging range overlap with EAAA.
<i>Tulipa praestans</i>	(no common name)	VU	Red Book; further surveys committed in BMP.
<i>Tulipa anisophylla</i>	(no common name)	VU	Red Book; further surveys committed in BMP.
<i>Ovis vignei</i> (incl. ssp. <i>bochariensis</i>)	Urial / Bukhara Urial	VU / CR (ssp.)	Wide-ranging; cliff and rocky habitat in upper Shurobdaryo.
<i>Columba eversmanni</i>	Yellow-eyed Pigeon	VU	Habitat present; passage species.
<i>Circus macrourus</i>	Pallid Harrier	NT	Two individuals confirmed at Point 1 (38.32458 N, 069.68871 E; km 1.5) during May 2026 bird survey. Corridor habitat is not core breeding or wintering habitat; corridor records interpreted as transient passage. Bern Convention Annex 1.

Species PBFs — national Red Data Book (Tajikistan, 2024)

The following species are listed in the national Red Data Book and assessed as PBFs on a precautionary basis. Where the species is also on the IUCN list above (Urial), the national listing reinforces the obligation.

Scientific name	Common name	BSK status / record (May 2026 surveys)
<i>Dorcus sewertzowi</i>	Ground-dwelling beetle	Habitat present (woodland litter, dead wood).
<i>Afarsia avinovi</i>	Endemic butterfly	Habitat present; restricted range.
<i>Acosmeryx naga</i> (<i>hissarica</i>)	Hawkmoth	Taxonomic note: ssp. not considered valid by all authorities; precautionary inclusion.
<i>Hyles apocyni</i>	Hawkmoth	Habitat present.
<i>Gypaetus barbatus</i>	Bearded Vulture	Cliff-face habitat; foraging range overlap.
<i>Neophron percnopterus</i>	Egyptian Vulture	6 active corridor nests confirmed (May 2026 survey): one at km 2–4 within the works zone, three at km 30, two at km 34. A further two nests at km 36 are treated as provisional pending further confirmation.
<i>Falco cherrug coatsi</i>	Saker Falcon	Wide-ranging; CMS-listed.
<i>Falco pelegrinoides</i>	Barbary Falcon	One cliff-face individual recorded at survey Points 7 (Stage 1) and 10 (Stage 2).
<i>Ursus arctos isabellinus</i>	Tien Shan Brown Bear	Wide-ranging; habitat marginally present.

Scientific name	Common name	BSK status / record (May 2026 surveys)
<i>Lutra lutra</i>	Eurasian Otter	Signs confirmed near Shahidon village in the upper Shurobdaryo, approximately 300 m downstream of an active bridge construction site (May 2026 survey, corroborated by LEK interviews).
<i>Lynx lynx isabellinus</i>	Eurasian Lynx	Wide-ranging.
<i>Panthera uncia</i>	Snow Leopard	Wide-ranging; range overlaps Wide-Ranging Species EAAA.
<i>Ovis vignei bochariensis</i>	Bukhara Urial	Wide-ranging; also IUCN-listed (above).
<i>Malus sieversii</i>	Wild Apple	EN (national RDB); CITES; 2 sites confirmed along the alignment (km 9 and km 12, May 2026 survey).
<i>Aegypius monachus</i>	Cinereous Vulture	NT IUCN, VU national. Added as PBF under para 12(iii): one confirmed active corridor nest at km 2–4, against a national breeding population estimated at 40–50 pairs.
<i>Pseudopus apodus</i>	European Glass Lizard	EN nationally. One first active-season corridor record (May 2026).
<i>Allium suworowii</i>	Anzur Onion	Precautionary inclusion as PBF pending confirmation of national RDB status against the 2024 edition. One population confirmed between km 33 and km 34 (Muhammadsoleh, May 2026). If confirmed as CR or EN nationally, Section14(ii)c will be re-tested against this population at the next CHA iteration.

Habitat PBFs

CHA identifies two riparian habitat types as PBFs based on their functional role within the Shurobdaryo system, despite the species mix in the BSK corridor varying from the Bern Convention reference notes:

- C3.62 — Unvegetated river gravel banks (Bern habitat classification).
- C3.55 — Sparsely vegetated river gravel banks (Bern habitat classification).

In addition, although classic lowland tugai is unlikely at the elevations of the corridor (1,200 to 2,000 m), the fragmented riparian scrub and bankside willow-poplar growth along the Shurobdaryo provides supporting habitat for confirmed PBF species (notably Eurasian Otter and Amu Darya trout). It is protected through the bankside clearance minimisation and riparian reinstatement measures in the contractor BMP.

Migratory species — Amu Darya trout spawning aggregation

The Shamsiddinov (2023) aquatic survey confirms that Amu Darya trout (*Salmo trutta oxianus*) undertake autumn upstream spawning migrations in the Shurobdaryo, across all four sampling points within the project corridor. While global population data are insufficient to test the 1 % threshold for Critical Habitat under ESR6 paragraph 14(iii), the spawning aggregation is a regular, cyclical biological event concentrated in the river corridor and is treated as a PBF. An in-river works exclusion period of November to February applies as a firm construction constraint (see BMP Section 6.2).

4.3 Protected and internationally recognised areas



Three legally protected or internationally recognised areas are spatially relevant to the Project. None lies within the project footprint.

Site	Category	Distance alignment to	Relevance to BSK
Sari Khosor Natural Park	National Park (Category II equivalent)	approx. 3.5 km NE of alignment terminus	Key sessile-plant habitat; anchors the Hazratishoh-foothill woodland complex from which the CH-triggering Pyrus and PBF Malus populations are drawn.
Nureksy State Reserve (Zapovednik)	Strict reserve (Cat Ia equivalent)	approx. 3.1 km W of alignment across the Vakhsh	Wide-ranging mammals (Snow Leopard, Markhor, Urial). Falls within the Wide-Ranging Species EAAA.
Dangara Massif Key Biodiversity Area	KBA (BirdLife / IUCN)	approx. 20 km SW of alignment	Outside the 10 km Cliff-Face Raptor EAAA. Inside the 50 km Wide-Ranging Species EAAA: relevant for Snow Leopard, Saker Falcon and Eastern Imperial Eagle connectivity.

The Project shall consult the managers of Sari Khosor Natural Park and Nureksy State Reserve in accordance with ESR6 prior to mobilisation, and shall not adversely affect the integrity of the values for which they are designated. Consultation records are filed under the ESIA stakeholder engagement programme.



5. Impacts and Significance

Impact significance is assessed against CHA and the supporting technical surveys, using the matrix and methodology set out in the ESIA. The following table summarises construction- and operation-phase impacts on the identified biodiversity values.

Code	Receptor / feature	Key impact	Pre-mitigation significance	ESR6 driver
CH-1	<i>Pyrus tadshikistanica</i> (CR)	Potential direct loss of mature individuals (km 11, 15, 29, 34, 48) through clearance for road widening, drainage, or batter slope; indirect loss through soil disturbance, dust deposition and altered local hydrology. The two mature <i>Pyrus tadshikistanica</i> individuals at km 29 and km 34 are to be retained in situ: each tree stands within close proximity of the existing carriageway, and the design will incorporate a localised lateral alignment adjustment at both chainages to keep the trees and their immediate rooting zone outside the engineered Right-of-Way and any temporary works footprint. These two retention commitments are recorded as confirmed in-design avoidance outcomes and supersede the “direct loss” characterisation at km 29 and km 34 for this row.	Significant	Net Gain required (ESR6 CH)
CH-2	<i>Pyrus korshinskyi</i> (CR)	Direct loss of mature individuals (km 16, 37, 43, 47) through clearance; indirect loss through soil disturbance and altered local hydrology.	Significant	Net Gain required (ESR6 CH)
PBF-1	<i>Malus sieversii</i> (EN, CITES)	Direct loss of individuals at km 9 and km 12 through clearance; indirect impacts as for <i>Pyrus</i> .	Significant	NNL required (ESR6 PBF)
PBF-2	Egyptian Vulture (RDB)	Disturbance / abandonment of confirmed active nest at km 2–4 within the works zone if construction proceeds during breeding season (March–September).	Significant	NNL required (ESR6 PBF)
PBF-3	Cinereous Vulture (NT/VU)	Disturbance of one confirmed active corridor nest at km 2–4 (against national population of 40–50 pairs).	Significant	NNL required (ESR6 PBF)
PBF-4	Barbary Falcon (RDB)	Disturbance to cliff-face individual; risk of nest abandonment if cliff blasting is required.	Moderate	NNL required (ESR6 PBF)
PBF-5	Eurasian Otter (RDB)	Disturbance to confirmed holt activity near Shahidon (300 m downstream of active bridge works); risk of mortality via in-river works during sensitive periods.	Significant	NNL required (ESR6 PBF)



PBF-6	Amu Darya trout spawning aggregation (migratory PBF)	Direct mortality of spawning adults and destruction of redds if in-river works proceed during November to February spawning window.	Significant	NNL required (ESR6 PBF) — exclusion window enforced
PBF-7	European Glass Lizard (RDB, EN national)	Mortality during vegetation clearance and earthworks.	Moderate	NNL required (ESR6 PBF)
PBF-7a	Allium suworowii (precautionary, pending RDB status)	Direct loss of confirmed population between km 33 and km 34 through clearance.	Moderate	NNL required (ESR6 PBF); subject to escalation if status confirmed as CR / EN nationally
PBF-8	Wide-ranging mammals (Snow Leopard, Lynx, Brown Bear, Urial)	Disturbance and potential barrier effects; collision risk during operation. Habitat marginal within DIZ.	Low to Moderate	NNL required (ESR6 PBF)
PBF-9	Pallid Harrier (NT)	Transient disturbance to passage individuals; no breeding or wintering habitat affected.	Low	NNL required (ESR6 PBF)
PBF-10	Red Book invertebrates (4 species)	Loss of habitat through vegetation clearance; precautionary assessment.	Moderate	NNL required (ESR6 PBF)
PBF-11	Habitat PBFs (C3.55 / C3.62 river gravel banks)	Direct loss at bridge / culvert renewal sites; sediment loading from earthworks.	Moderate	NNL required (ESR6 PBF)
GEN-1	Riparian scrub and bankside willow-poplar (supporting habitat)	Direct loss at bridge / culvert works; indirect loss via dust, runoff, fuel and lubricant spills.	Moderate	Mitigation in BMP; riparian reinstatement
GEN-2	Soundscape / nightscape	Construction noise and lighting affecting nocturnal species in adjacent habitats; particularly the deer farm at km 35 and known otter activity near Shahidon.	Moderate	BMP dust, noise, light controls



GEN-3	Invasive species introduction	Risk from vehicles, imported topsoil, hydroseeding mixes.	Low to Moderate	BMP invasive species controls
GEN-4	Hunting / poaching / collecting	Indirect impact via workforce access and worker conduct.	Moderate	BMP Worker Code of Conduct, induction
OP-1	Operational phase – increased access	Improved road increases human access to upper Shurobdaryo valley; possible cumulative impacts on hunting pressure, firewood collection.	Moderate (cumulative)	Adaptive management; PIURR monitoring



Note. Quantitative impact magnitudes (ha of habitat lost, number of individuals at risk) will be confirmed. The Sensitive Feature Register (Annex C) will be updated accordingly and the impact significance reviewed at Rev02 of this BAP.

6. Mitigation Strategy

6.1 Application of the mitigation hierarchy

All biodiversity management on the BSK Project follows the mitigation hierarchy in strict sequence. The Project shall not proceed to a lower level without demonstrating in writing — and with the agreement of the Ecologist of Record — that the higher level has been genuinely considered and is not achievable.

Step	Principle	Application to BSK
1. Avoid	Do not affect biodiversity values where any alternative exists. Tested first for all CH-triggering and PBF features.	Design-team micro-realignment review at each of the nine Pyrus chainage clusters (km 11, 15, 16, 29, 34, 37, 43, 47, 48); riparian no-go buffer zones (15 m main river, 10 m tributaries); seasonal exclusion periods (November–February in-river, March–September cliff raptor nests); avoidance of confirmed Egyptian Vulture and Cinereous Vulture nest sites at km 2–4 via works scheduling. Confirmed in-design avoidance at km 29 and km 34: the two mature <i>Pyrus tadshikistanica</i> trees at these chainages stand immediately adjacent to the existing road and will be retained in situ through a localised lateral alignment adjustment at both locations, designed to keep the trees and their immediate rooting zone outside the engineered Right-of-Way and any temporary works footprint. This commitment is to be reflected in the final design drawings and tender documents.
2. Minimise	Limit and reduce impacts that cannot be avoided.	Clearance confined to approved engineered RoW; dust, noise, light controls (BMP Section 7.7); erosion and silt controls at all watercourse crossings; construction traffic confined to designated routes; pre-clearance ecological inspection of every section before machinery enters.
3. Restore	Rehabilitate temporarily disturbed areas and any habitat features that can be replaced in situ.	Native seed mix reinstatement (BMP Section 8.1); riparian margin restoration (BMP Section 8.2); borrow area rehabilitation to stable, vegetated landform; translocation of Red Book plants in the works footprint where feasible — applied as a last-resort measure for Pyrus given low success rates.
4. Offset	Where residual impacts on CH features and PBFs remain after avoidance, minimisation and restoration, achieve Net Gain (CH) or No Net Loss (PBF) through a defined Biodiversity Offset Programme.	Section 8 of this BAP; framework BOMP at Annex B; partnership and propagation arrangements at Section 8.2.

6.2 Operational implementation — Contractor's BMP (Annex A)

The detailed operational measures implementing this BAP are set out in the **Contractor's Biodiversity Management Plan (BMP)**, reproduced as Annex A. The BMP is a contractor tender document; it sets contractor obligations on:



- Pre-clearance ecological inspection and the Pre-Clearance Certificate procedure (BMP Section5.1);
- No-go zone and buffer establishment with physical demarcation (BMP Section5.2);
- Camp, borrow area and plant siting away from sensitive habitats (BMP Section5.3);
- Seasonal and timing restrictions (BMP Section 6) — including the November–February in-river works exclusion, the 1 March–30 September bird nesting restriction for confirmed cliff-nesting raptor sites, and the April–June calving season restriction at the Bukhara Deer breeding facility at Dashtaro village (km 35)
- Construction phase mitigation measures (BMP Section7) — vegetation clearance, aquatic habitat protection, Red Book plant translocation, wildlife encounter procedures, prohibition of hunting and collecting, invasive species controls, dust / noise / light controls;
- Reinstatement and revegetation (BMP Section8);
- Roles, training and biodiversity induction (BMP Section3 and Section7.6).

6.3 Strategic mitigation matrix

The following matrix sets out the strategic mitigation actions, with their timeframes, responsibilities and indicators. Operational detail is in the BMP (Annex A).

Pre-construction phase

ID	Action	Timeframe	Responsible	Indicator / output
P1	Design review of micro-realignment options at each Pyrus chainage cluster (km 11, 15, 16, 29, 34, 37, 43, 47, 48), to test in-design avoidance. In-design avoidance is already committed at km 29 and km 34, where the two mature <i>Pyrus tadshikistanica</i> trees, standing close to the existing carriageway, will be retained through a localised lateral alignment shift at each location. The Design Review Report shall record these two retentions as confirmed outcomes, document the realignment geometry on the final drawings, and define a protective fenced exclusion buffer around each retained tree for the construction phase (extent specified in the BMP).	Before tender finalisation	Design team; PIURR; Ecologist of Record	Design Review Report, recording realignment decisions and justification where avoidance is not feasible.
P3	Detailed pre-construction botanical survey of the corridor, including a 5 km contextual buffer around each May 2026 record, to confirm the full Pyrus, Malus and Allium population at the design RoW resolution.	Before contractor mobilisation	Botanist (independent), PIURR contract	Survey report, georeferenced individual register, updated Sensitive Feature Register.
P4	Pre-construction holt survey of the upper Shurobdaryo for Eurasian Otter, focused on the 5 km reach upstream and downstream of confirmed Shahidon signs.	Before contractor mobilisation, March–April	Mammalogist (independent)	Survey report, georeferenced holt register, buffer protocol.

P5	Pre-construction raptor nest survey of cliff faces within 1 km of corridor, focused on confirmed Egyptian Vulture, Cinereous Vulture and Barbary Falcon territories.	Before contractor mobilisation, March–April	Ornithologist (independent)	Nest register with chainage references and breeding-season exclusion buffers.
P6	Stakeholder consultation with managers of Sari Khosor Natural Park and Nureksy State Reserve.	Before contractor mobilisation	PIURR	Consultation record; correspondence held in ESIA stakeholder engagement file.
P7	Establishment of the Biodiversity Offset Programme governance and partnership arrangements (Section 8).	Before contractor mobilisation	PIURR; ESIA team	BOMP (Annex B); partnership agreement(s) executed.

Construction phase

ID	Action	Timeframe	Responsible	Indicator / output
C1	Operational implementation of the BMP measures (Annex A Section5–8).	Throughout construction	Contractor (overall); Ecologist of Record (supervision); PIURR (oversight)	Monthly biodiversity compliance reports.
C2	Implementation of seasonal restrictions: November–February in-river works exclusion; 1 March–30 September cliff-raptor nest buffer at confirmed nesting sites; April–June calving season restriction at the Bukhara Deer breeding facility (km 35).	Throughout construction	Contractor; Engineer	Works programme records; deviation requests recorded under BMP Section6.6.
C3	Implementation of Pyrus avoidance / micro-design measures at confirmed individuals; translocation as a last-resort response under the BMP Red Book translocation protocol (Section7.3).	At each Pyrus chainage cluster	Contractor's Ecologist; specialist arboriculturist where translocation invoked	Pre-Clearance Certificates; translocation logs; survival monitoring.
C4	Otter and aquatic species in-river works method statement (BMP Section7.2.1) and silt controls (Section7.2.2).	All in-river works	Contractor; Ecologist of Record	Turbidity monitoring records at downstream control points; method statement compliance.
C5	Worker biodiversity induction and toolbox talks (BMP Section7.6); enforcement of Worker Code of Conduct.	Continuous	Contractor; Engineer	Induction records; zero hunting / poaching incidents.

Operation phase

ID	Action	Timeframe	Responsible	Indicator / output
O1	Operational monitoring of confirmed Pyrus and Malus individuals retained adjacent to the road, against the BOMP success criteria.	Annually for 5 years post-completion; thereafter as set in BOMP	PIURR; Botanist (independent)	Annual monitoring reports; survival and recruitment indicators.
O2	Operational monitoring of raptor nest occupancy and Amu Darya trout spawning along the corridor.	Annually for 5 years post-completion	PIURR; Ornithologist / Aquatic biologist	Annual reports.
O3	Implementation of the operational Biodiversity Offset Programme to discharge the Net Gain and No Net Loss obligations.	From completion onwards, over the life of the offset (minimum 20 years, see Section 8.4)	PIURR with partner organisations	BOMP annual reports; mid-term and final evaluation.
O4	Monitoring of cumulative impacts — particularly increased human access into the upper Shurobdaryo valley and associated pressures.	Annually for first 10 years of operation	PIURR	Cumulative impacts monitoring report; adaptive management triggers.

7. Residual Impacts

Residual impacts are those remaining after avoidance, minimisation and restoration measures have been applied. For the BSK Project, the principal residual impacts and their offset requirements are as follows.

Code	Receptor	Pre-mit.	Mitigation	Residual	Offset
CH-1	Pyrus tadshikistanica (CR)	Significant	Design avoidance + translocation as last-resort + Offset Programme	Moderate to Significant (translocation survival uncertain; vegetative-only reproduction limits seed-based recovery)	Net Gain (ESR6 CH)
CH-2	Pyrus korshinskyi (CR)	Significant	Design avoidance + translocation as last-resort + Offset Programme	Moderate to Significant	Net Gain (ESR6 CH)
PBF-1	Malus sieversii (EN)	Significant	Design avoidance + translocation + Offset	Moderate	NNL (ESR6 PBF)
PBF-2	Egyptian Vulture	Significant	Seasonal restriction + nest buffer	Minor (if seasonal restriction observed)	NNL — confirmed via monitoring
PBF-3	Cinereous Vulture	Significant	Seasonal restriction + nest buffer	Minor (if seasonal restriction observed)	NNL — confirmed via monitoring
PBF-4	Barbary Falcon	Moderate	BMP Section6.3 nesting season exclusion + Section7.8 dust, noise, light controls near cliff face	Minor	NNL
PBF-5	Eurasian Otter	Significant	Pre-construction holt survey + in-river works method statement + buffer	Minor to Moderate	NNL — confirmed via monitoring
PBF-6	Amu Darya Trout spawning	Significant	Firm November–February exclusion	Minor (if exclusion observed)	NNL — confirmed via monitoring
PBF-7	European Glass Lizard	Moderate	BMP Section7.4 wildlife encounter procedures + clearance protocol	Minor	NNL
PBF-7a	Allium suworowii	Moderate (precautionary)	BMP Section6.5 March–May botanical inspection + translocation before clearance	Minor to Moderate	NNL — confirmed via post-clearance survey; subject to

Code	Receptor	Pre-mit.	Mitigation	Residual	Offset
					re-assessment if status confirmed as CR / EN
PBF-8	Wide-ranging mammals	Low–Moderate	BMP general measures; operational monitoring	Minor	NNL
PBF-9	Wide-ranging raptors	Low–Moderate	BMP general	Minor	NNL
PBF-9a	Pallid Harrier (passage)	Low	BMP general construction-disturbance and habitat-protection measures	Negligible	NNL – confirmed through monitoring
PBF-10	Red Book invertebrates	Moderate	BMP Section 5.3 camp / borrow siting; vegetation clearance protocol	Minor to Moderate	NNL confirmed via survey completion
PBF-11	Habitat PBFs (C3.55 / C3.62)	Moderate	Bridge / culvert method statements; silt controls; riparian reinstatement	Minor	NNL confirmed via post-works survey



8. Biodiversity Offset Programme

8.1 Purpose and design principles

A Biodiversity Offset Programme is required to deliver:

- Net Gain for the two CH-triggering CR *Pyrus* species — *Pyrus tadshikistanica* and *Pyrus korshinskyi* — under ESR6;
- No Net Loss for the confirmed PBFs where residual impacts after mitigation remain moderate or significant — notably *Malus sieversii* and the habitat PBFs (C3.55 / C3.62).

The Programme will be designed and implemented in accordance with the BBOP Standard on Biodiversity Offsets (2012), the IUCN/SSC Plant Translocation Guidelines (2013), and EBRD ESR6 Guidance Note 6 (2025), and in alignment with Good International Industry Practice for wild fruit-tree conservation in Central Asia.

8.2 Building on existing in-area conservation infrastructure

Active conservation infrastructure for wild fruit-tree species, including both BSK CH-triggering *Pyrus* species and the confirmed *Malus sieversii* PBF, is already present within the BSK project area and its immediate surroundings. This infrastructure provides a working pipeline of seed collection, ex-situ propagation, household-scale sapling distribution, and supporting community livelihood and forest restoration activities, operated by a partnership of national and international conservation organisations and the local forestry departments. Notably, propagation nurseries are co-located with the BSK *Pyrus* chainage clusters — including a nursery in Shahidon village (Baljuvon district), the same village where the May 2026 BSK botanical survey field-confirmed an active *Pyrus tadshikistanica* individual.

The Offset Programme is therefore designed to:

- Build on and complement existing in-area conservation effort, rather than initiate stand-alone work; this delivers higher conservation gain per unit of project investment, reduces the time-lag between impact and offset realisation, and aligns with EBRD ESR6 partnership principles.
- Be operated through one or more recognised partners — botanic gardens, conservation NGOs and / or scientific institutions — with demonstrated technical capacity in ex-situ propagation of CR / EN Central Asian wild fruit trees, established nursery infrastructure, and active engagement with the local communities and forestry departments in Baljuvon and Shahidon districts. The partner(s) shall be selected via procurement under PIURR with EBRD non-objection.
- Operate on the averted-loss and habitat-improvement principles set out in BBOP, applied to a defined offset receiving area within the Hazratishoh-foothill woodland complex from which the impacted *Pyrus* and *Malus* populations are drawn — typically within or adjacent to Sari Khosor Natural Park and / or Dashti-Jum Reserve, with the precise location confirmed in the BOMP based on suitability assessment.

In specifying methodology and infrastructure, the BAP draws on the published technical performance of comparable in-area programmes (see Section 8.3.1 below). The selection of partner(s) is, however, kept open: the Programme is procured against a methodology specification rather than appointed to a named organisation.

8.3 Programme components

8.3.1 Reference performance from in-area programmes

Published reporting from existing in-area programmes provides the technical performance reference for setting Offset Programme targets and multipliers. The most pertinent indicators are:

Indicator	Reference value	Implication for Programme
Seed viability — <i>Pyrus tadshikistanica</i> (CR)	≈ 14 % (50 viable of 350 collected, drought year 2025)	Drought-sensitive species; many fruits develop empty seed.
Seed availability — <i>Pyrus korshinskyi</i> (CR)	≈ 1,030 seeds collected, single field season	Substantially more robust than <i>P. tadshikistanica</i> .
Seed-to-sapling propagation rate (mixed target species, three nurseries)	61.5 % (18,692 propagated of 30,372 sown)	Across 12 wild and cultivated target species at KBG, Shamsiddin Shohin and Baljuvon nurseries.
Year-1 growth — <i>P. tadshikistanica</i> and <i>M. sieversii</i>	Up to 60 cm in additional height in first growing season	Strong early growth; comparable to <i>P. avium</i> and <i>P. granatum</i> .
Year-1 growth — slower-growing companion species	10–20 cm (<i>A. vavilovii</i> , <i>J. regia</i> , <i>M. alba</i>)	Slower-establishing species; longer monitoring window required.
Sapling mortality — extreme drought year	Replacement protocols in place; survival assessed annually in autumn	Climate-resilience contingency required in Programme budget.

Source. Performance indicators drawn from published reporting of an in-area Critically Endangered tree-species conservation programme operating in Sari Khosor and adjacent subdistricts (2024–2026). The figures are reproduced here as the technical reference for setting Offset Programme targets and multipliers; they do not pre-commit the Programme to a particular partner.

8.3.2 Operational components

Component	Description	Indicator / measurable outcome	Timeline
O.1 — Ex-situ propagation	Seed collection from BSK corridor populations (local provenance), processed through stratification and sown at established nurseries in or adjacent to the project area. For <i>P. tadshikistanica</i> , vegetative propagation methods (cutting, grafting) shall be developed and applied in parallel given the species' documented vegetative-only reproduction in the closest comparable reference population (Boboev, 2022). The seed-to-sapling target rate is ≥ 60 % across all target species over a rolling three-year average, reflecting demonstrated in-area performance.	Indicator: number of viable saplings produced per species; rolling three-year propagation rate ≥ 60 %.	Years 1–3 of offset
O.2 — Translocation of mature individuals (last-resort)	Where avoidance through micro-realignment is not feasible, mature trees within the works footprint will be translocated under specialist arboriculturist supervision and the IUCN/SSC Translocation Guidelines (2013). Survival is uncertain — particularly for <i>P. tadshikistanica</i> — and not relied upon as the primary offset mechanism.	Indicator: ≥ 50 % survival at two years for translocated individuals (target, not a compliance threshold).	Coincident with construction

Component	Description	Indicator / measurable outcome	Timeline
O.3 — In-situ population reinforcement and household-scale distribution	Planting of ex-situ-propagated saplings into (a) the defined offset receiving area within the Hazratishoh-foothill woodland complex, and (b) household home gardens and orchards in BSK corridor villages where this contributes to the species' conservation status and to community ownership of the Programme. Household-scale distribution is established in-area as a practical and culturally accepted methodology and provides resilience against drought losses in any single receiving area.	Indicator: ≥ 70 % planted-sapling survival at 5 years (averaged across sites); documented contribution to the local <i>Pyrus</i> / <i>Malus</i> population. Replacement of drought-lost saplings to maintain establishment numbers.	Years 2–5 of offset
O.4 — Habitat improvement at offset receiving area	Active management of the receiving area — grazing management, fire-risk reduction, removal of competitor / invasive species — to improve habitat condition for the wild fruit-tree community. The Programme shall develop and apply alfalfa / sainfoin sowing and similar soil-fertility and fodder measures where relevant, drawing on established in-area approaches.	Indicator: increase in mid-elevation woodland and shrubland extent in the receiving area at 5 and 10 years, measured by remote sensing.	Years 1–10 of offset
O.5 — Capacity-building, knowledge transfer and gender-inclusive participation	Co-investment in nursery infrastructure, propagation protocols, and local taxonomic / horticultural capacity. Includes training of community trainers (ToT model) and household-scale beneficiaries. Programme participation targets shall include ≥ 50 % women across non-apiculture activities (recognising that beekeeping is predominantly male in the region) and explicit inclusion of vulnerable groups. Plans, methods and outcomes shall be published in peer-reviewed or grey literature accessible to other operators in the region.	Indicator: training participation data disaggregated by gender; at least one published protocol or technical report per CH species over the offset period.	Years 1–10 of offset
O.6 — Long-term stewardship arrangement (layered instruments)	Legal stewardship of the offset receiving area secured through a layered combination of (a) recognition within the Sari Khosor Natural Park management plan and / or the Dashti-Jum Reserve management plan, (b) the relevant subdistrict-level forest restoration management plan, where one is in force or in preparation, and (c) a project-specific conservation agreement with the relevant PA authority or forestry department. The layered approach reduces single-instrument failure risk over the minimum 20-year offset horizon.	Indicator: executed stewardship agreement(s); offset area recognised in at least two of the three instrument types above.	Year 1 of offset

8.4 Loss and gain accounting

Quantitative loss–gain accounting is set out in the framework BOMP at Annex B and refined when the design RoW and the partner-led suitability assessment are complete. The accounting follows BBOP and EBRD ESR6 GN6 (2025).

8.4.1 Multipliers — rationale

Multipliers applied per impacted mature individual reflect species risk, genetic non-substitutability, translocation success uncertainty, time-lag between impact and offset realisation, and the empirical performance of in-area propagation under drought-year conditions. The floors set below are minimum values; the BOMP may apply higher multipliers where the partner-led suitability assessment so indicates.

Feature	Floor multiplier	Rationale
<i>Pyrus tadshikistanica</i> (CR)	1:15	Highest-risk multiplier in the Programme. Justification: (i) Tajikistan endemic with very small and fragmented populations; (ii) vegetative-only reproduction observed in the closest comparable national reference population (Boboev, 2022), making each mature individual a non-substitutable component of the local genetic resource; (iii) low and variable seed viability in drought years ($\approx 14\%$ observed in 2025); (iv) absence of a quantitative global population estimate, requiring a precautionary approach (ESR6 GN6, 2025); (v) low translocation success likelihood for mature individuals.
<i>Pyrus korshinskyi</i> (CR)	1:10	High-risk multiplier. Justification: (i) CR on IUCN Red List and national RDB; (ii) small, fragmented populations centred on the Vakhsh–Hazrati Shoh axis; (iii) substantially better seed availability than <i>P. tadshikistanica</i> (1,030 seeds collected in a single 2025 field season), supporting a lower multiplier than the floor for <i>P. tadshikistanica</i> ; (iv) low translocation success likelihood for mature individuals.
<i>Malus sieversii</i> (EN, PBF)	1:10	PBF multiplier. Justification: (i) EN on national RDB and CITES-listed; (ii) loss-of-genetic-diversity risk through habitat loss; (iii) successfully propagated at three in-area nurseries with strong year-1 growth performance (≤ 60 cm) — supporting a multiplier lower than the <i>P. tadshikistanica</i> floor but consistent with the PBF / NNL obligation.
Habitat PBFs (C3.55 / C3.62)	Area-based, $\geq 2:1$	Habitat-area accounting in hectares. Floor of 2:1 reflects functional uncertainty in restoration of river gravel bank habitat to pre-disturbance condition and the time-lag to functional recovery.

8.4.2 Net Gain and No Net Loss demonstration

The Programme demonstrates Net Gain (CH species) and No Net Loss (PBFs) through:

- Counts of impacted mature individuals of each CH species and PBF, against the Sensitive Feature Register (Annex C);
- Production of viable saplings at the applicable floor multiplier or higher (above), planted into the offset receiving area and into household-scale sites, with documented year-5 survival and year-10 condition;



- Habitat-area accounting for the habitat PBFs (C3.55 / C3.62) and supporting riparian habitat against the area-based multiplier;
- Quantified contribution to the local Pyrus / Malus / Allium population at year 5 and year 20 — that is, demonstration that the in-situ population at the receiving area is, at year 20, materially larger than the population that existed at the start of the offset, after accounting for the impacted individuals.

8.5 Programme governance, duration and continuity

The Biodiversity Offset Programme is governed under the BOMP (Annex B), which will be approved by PIURR and submitted to EBRD for non-objection prior to contractor mobilisation. The Programme operates on a minimum 20-year horizon from the start of offset implementation, with mandatory five-yearly evaluations and adaptive management triggers tied to the indicators set out in Section 8.3.

Continuity beyond initial partner engagement. Where the Offset Programme builds on or contracts with a partner whose own funding cycle is shorter than the 20-year offset horizon, the BOMP shall set out a continuity arrangement covering (i) transition of operational responsibility, (ii) preservation of ex-situ collections and nursery infrastructure (notably any nurseries co-located with BSK Pyrus chainage clusters), (iii) preservation of accumulated technical protocols and provenance records, and (iv) ongoing PIURR funding commitment over the offset horizon. The continuity arrangement is a condition of partner engagement and is part of the PIURR procurement specification.

9. Monitoring, Evaluation and Reporting

9.1 Monitoring programme

The monitoring programme tracks performance against the mitigation measures and the offset indicators. It is structured around three phases — pre-construction baseline, construction-phase compliance, and operation-phase outcome — with defined indicators, frequencies, responsibilities and reporting cadences.

ID	Indicator	Location	Frequency	Responsible	Output
M1	Pyrus and Malus individual register: location, condition, recruitment, mortality	Each individual confirmed in May 2026 + any new individuals from pre-construction survey	Annually pre-, during, and 5 years post-construction; then 5-yearly to year 20	Botanist (independent)	Annual monitoring report; survival, recruitment, condition
M2	Confirmed corridor raptor nests (Egyptian Vulture, Cinereous Vulture, Barbary Falcon)	Egyptian Vulture nests at km 2–4, km 30, km 34 (plus km 36 if confirmed); Cinereous Vulture nest at km 2–4; Barbary Falcon cliff-face territory at km 34; any new nests identified pre-mobilisation or in-construction	Annually, March–April, pre-, during, and 5 years post-construction	Ornithologist (independent)	Annual report; occupancy, breeding success
M3	Eurasian Otter activity in the upper Shurobdaryo	Reach upstream and downstream of Shahidon	Annually, spring and autumn, pre-, during, and 5 years post-construction	Mammalogist (independent)	Annual report; sign abundance, holt occupancy
M4	Amu Darya Trout spawning activity	Spawning sites in upper corridor	Annually, October–November, pre-, during, and 5 years post-construction	Aquatic biologist	Annual report; spawning aggregation indicators
M5	Habitat PBFs (C3.55 / C3.62) at bridge / culvert renewal sites	Each affected reach	Pre-works, post-works year 1, year 3, year 5	Habitat ecologist	Recovery report; condition indicators
M6	Turbidity / sediment loading at downstream control points	Control points downstream of each in-river works site	During in-river works; daily	Contractor; Engineer (audit)	Construction environmental report
M7	BMP compliance — no-go zone integrity, Pre-Clearance	Whole corridor	Monthly during construction	Contractor's Ecologist; Engineer;	Monthly BMP compliance report



ID	Indicator	Location	Frequency	Responsible	Output
	Certificates issued, induction records, deviation requests			PIURR Environmental Officer	
M8	Offset Programme — components O.1–O.6 indicators	Offset receiving area	Annually for first 5 years; 5-yearly thereafter to year 20	PIURR; Offset Programme partner(s)	BOMP annual report; mid-term and final evaluation
M9	Cumulative impacts — access pressure, hunting / collection in upper valley	Upper Shurobdaryo valley	Annually for 10 years post-completion	PIURR	Cumulative impacts report

9.2 Reporting to EBRD

Reporting to the EBRD follows the cadence set in the Project's Environmental and Social Action Plan (ESAP) and the EBRD Project Monitoring Reports:

- Quarterly construction-phase E&S monitoring reports — including BMP compliance and any biodiversity incidents;
- Annual biodiversity monitoring report — consolidating the M1–M9 indicators above, prepared by an independent monitoring consultant;
- BOMP annual report — offset programme progress, prepared by the offset partner(s) and PIURR;
- Mid-term evaluation at offset year 5; final evaluation at offset year 20.

9.3 Adaptive management

Where monitoring indicates that performance is materially below the indicators set in Section 8 and Section 9.1, the Project shall implement adaptive management measures in consultation with the EBRD and Ecologist of Record. Triggers, escalation procedures, and contingency measures are set in the BOMP.

10. Roles, Responsibilities and Resourcing

10.1 Project governance

Role	Responsibility
PIURR	Project Implementation Unit for Roads Rehabilitation — owner-side implementation and overall accountability for BAP and BOMP delivery.
EBRD	Lender; review and non-objection to BAP, BOMP and the contractor BMP; receives monitoring reports.
Engineer / Supervision Consultant	Day-to-day supervision of contractor compliance with the BMP; verification of Pre-Clearance Certificates, deviation requests and monthly compliance reporting.
Contractor	Operational implementation of the BMP (Annex A); appointment of qualified Contractor's Ecologist; delivery of BMP commitments under the construction contract.
Contractor's Ecologist	On-site biodiversity supervision; issuance of Pre-Clearance Certificates; species identification and field decisions under the BMP.
Ecologist of Record (independent)	Senior independent biodiversity advisor to PIURR; reviews BMP performance; signs off translocation protocols; advises on adaptive management.
Offset Programme partner(s)	Recognised botanic garden(s), conservation NGO(s) or scientific institution(s) selected via procurement to deliver propagation, in-situ restoration and capacity-building under the BOMP.
Independent Monitoring Consultant	Annual independent biodiversity monitoring report to the EBRD.
Sari Khosor NP / Nureksky Reserve authorities	Consulted as adjoining protected area managers; potential partners in the offset receiving area arrangement.

10.2 Expert qualifications

Independent specialists engaged under this BAP shall hold the following minimum qualifications:

- Botanist — graduate degree in botany or plant ecology; documented experience with Central Asian flora including Rosaceae and CR plant species; fluency in Russian and Tajik desirable.
- Mammalogist — graduate degree in zoology / mammalogy; documented experience with Eurasian Otter or comparable Mustelidae survey methods.
- Ornithologist — graduate degree in zoology / ornithology; documented experience with cliff-nesting raptor surveys in Central Asia.
- Aquatic biologist — graduate degree in aquatic ecology; documented experience with salmonid spawning survey methods.
- Arboriculturist (translocation) — recognised arboricultural qualification; documented experience with mature broadleaf translocation under stress conditions.

10.3 Budget

Indicative budget allocations for the BAP and BOMP are set out in the ESIA budget annex and the offset partner agreement. The principal cost categories are:



- Pre-construction surveys (P3–P5) — botanical, mammal, raptor;
- Contractor BMP implementation — captured in the construction contract;
- Ecologist of Record and Independent Monitoring Consultant fees over the construction and operation phases;
- Biodiversity Offset Programme — propagation, planting, habitat improvement, stewardship, capacity-building and partner-organisation fees over the 20-year offset horizon;
- Contingency for adaptive management.

Detailed cost build-up is presented in the BOMP at Annex B.



Annex A — Contractor's Biodiversity Management Plan (BMP)

The Contractor's BMP — currently Annex 8 of the ESIA — is incorporated by reference into this BAP and reproduced in full as Annex A. The BMP is the operational, contractor-facing implementation document and forms part of the construction tender package.

Action required before mobilisation: The BMP shall be updated to reflect CHA Rev02 — including the Critical Habitat determinations for *Pyrus tadshikistanica* and *Pyrus korshinskyi*, the additions and upgrades to the PBF list, and the Sensitive Feature Register at Annex C of this BAP. The updated BMP shall be issued for Engineer and PIURR approval before any vegetation clearance, ground disturbance or earthworks commence in any section of the corridor.



Annex B — Biodiversity Offset Management Plan (BOMP) — framework

The BOMP will be developed as a standalone document and submitted to PIURR and the EBRD for approval before contractor mobilisation. The framework structure is:

- Programme purpose, objectives and ESR6 alignment
- Partner selection and governance arrangement
- Offset receiving area — site selection, suitability assessment, legal arrangement
- Loss–gain accounting per BBOP and EBRD ESR6 GN6 (2025)
- Operational components O.1–O.6 (Section 8.3) — detailed methods, schedules, budgets
- Monitoring, evaluation, reporting and adaptive management
- Stewardship and exit arrangements



Annex C — Sensitive Feature Register

The Sensitive Feature Register is the field-level register of confirmed biodiversity features along the BSK corridor, used by the contractor's Ecologist for pre-clearance inspection and for issuing Pre-Clearance Certificates. The Register is maintained as a live document under PIURR control and updated as additional surveys and design data become available.

Each entry records: feature ID, scientific name, status (CH / PBF / general), chainage / coordinates, applicable buffer distance, applicable seasonal restriction, mitigation cross-reference (BAP and BMP section), and ESR6 obligation (NG / NNL).

Initial entries — derived from CHA and the May 2026 botanical and ornithological surveys — are to be populated in the live Register before contractor mobilisation. The Register is reproduced (in part) in Section 4 above and is held in full as a project-controlled spreadsheet under PIURR.