Enerjisa YEKA-2 WPP

Gaia Wind Power Plant: Biodiversity Management Plan

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Gaia Wind Power Plant: Biodiversity Management Plan

0733614

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ACRONYMS AND ABBREVIATIONS

Abbreviation	Description
ABBMP	Adaptive Bird and Bat Monitoring and Management Plan
AoI	Area of Influence
BMP	Biodiversity Management Plan
CAP	Corrective Action Plan
CHA	Critical Habitat Assessment
CH	Critical Habitat
EBRD	European Bank for Reconstruction and Development
EIA	Environmental Impact Assessment
EPC	Environmental, Procurement and Construction (contractor)
ERM	Environmental Resources Management
ESAP	Environmental and Social Action Plan
ESIA	Environmental and Social Impact Assessment
ESMMP	Environmental and Social Management and Monitoring Plan
ESMS	Environmental and Social Management System
E&S	Environmental and Social
GIIP	Good International Industry Practice
H&S	Health and Safety
HSE	Health, Safety and Environment
IAS	Invasive Alien Species
IBA	Important Bird & Biodiversity Areas
IFC	International Finance Corporation
IFI	International Financial Institutions
IUCN	International Union for the Conservation of Nature
KBA	Key Biodiversity Area
KPI	Key Performance Indicator
M&E	Monitoring and Evaluation
MSDS	Material Safety Data Sheet
NG	Net Gain (of biodiversity)
NNL	No Net Loss (of biodiversity)
PBF	Priority Biodiversity Feature
PCFM	Post-construction Fatality Monitoring
SER	Society for Ecological Restoration
WTG	Wind Turbine Generator

KEY DEFINITIONS

Protected area:
Legally protected areas meet the IUCN definition: "*A clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values*." this includes areas proposed by governments for such designation (IFC, 2012).

Natural habitat:
Natural habitats are areas composed of viable assemblages of plant and/or animal species of largely native origin, and/or where human activity has not essentially modified an area's primary ecological functions and species composition (IFC, 2012).

Critical habitat:
Areas identified as critical habitat hold the highest tier of irreplaceable (existing in few places) and vulnerable (at high risk of being lost) biodiversity features (EBRD ESR6, 2024). Critical habitats are areas with high biodiversity value, including (i) habitat of significant importance to Critically Endangered and/or Endangered species; (ii) habitat of significant importance to endemic and/or restricted-range species; (iii) habitat supporting globally significant concentrations of migratory species and/or congregator species; (iv) highly threatened and/or unique ecosystems; and/or (v) areas associated with key evolutionary processes (IFC, 2012). The criteria used by the EBRD's ESR6 to define critical habitat build on and are closely aligned with those used in IFC PS6.

Invasive alien species:
An invasive species is an organism (plant or animal) that causes ecological or economic harm in a new environment. Invasive species may be alien or exotic (not native or indigenous to the particular area, geography or region).

No Net Loss (of biodiversity):
An approach and goal for a development project, policy, plan or activity in which the impacts on biodiversity it causes are balanced by measures taken to avoid and minimize the impacts, to restore affected areas and finally to offset the residual impacts, so that no loss remains.

No net loss (NNL) is defined by EBRD as "The point at which project-related impacts on priority biodiversity features are reduced by avoidance, minimisation and/or reinstatement measures, and offsetting compensates fully for all significant residual impacts – that is to say, no significant net impacts on biodiversity remain" (EBRD ESR6, 2024).

Net Gain (of biodiversity):
An approach and goal for a development project, policy, plan or activity in which the impacts on biodiversity it causes are outweighed by measures taken to avoid and minimize the impacts, to restore affected areas and finally to offset the residual impacts, so that natural environment is left in a measurably better state than it was beforehand.

Net Gain (NG) is defined by EBRD as "...*additional conservation outcomes that can be achieved for the biodiversity values for which the critical habitat was designated. Net gains may be achieved through the implementation of programmes that could be implemented in situ (on*

the ground) to enhance habitat and protect and conserve biodiversity and, where additional mitigation is required, by developing a biodiversity offset" (EBRD ESR6, 2024).

(Biodiversity) Offset:
According to EBRD ESR6 (2024), a biodiversity offset refers to "*Measurable conservation outcomes resulting from actions designed to compensate for significant residual adverse biodiversity impacts*" and "*The goal of biodiversity offsets is to achieve "no net loss" and preferably a net gain of biodiversity on the ground*".

Biodiversity offsets should also be considered a last resort in any mitigation package and should only be attempted with input from credible external experts with relevant experience in their design and implementation.

Mitigation hierarchy:
A tool commonly applied in Environmental Impact Assessments (EIAs) which helps to manage biodiversity risk. The hierarchy of controls that begins with avoidance, then considers minimization or reduction of impacts, followed by restoration actions and finally compensation for biodiversity loss (e.g. through offsetting) as a last resort measure only once all other options have been considered/exhausted.

Priority biodiversity features:
This concept replaces the previous definition of natural habitat used previously by EBRD and adopts a criterion-based approach already used for definition of critical habitat. Priority in all EBRD definitions combines consideration of irreplaceability and vulnerability. Priority biodiversity features (PBF) are a subset of biodiversity that have a high, but not the highest, degree of irreplaceability and/or vulnerability. Although a level below critical habitat in sensitivity, they still require careful consideration during project assessment and impact mitigation (EBRD ESR6, 2024).

Rehabilitation:
A management action that aims to restore a certain level of ecosystem functioning in degraded sites, to reverse negative impacts by repairing and replacing the essential or primary ecosystem structures and functions which have been altered or eliminated by disturbance.

Restoration:
The process of reclaiming habitat and ecosystem functions by restoring the lands and waters on which plants and animals depend. Differs from rehabilitation, in that the goal is to restore the ecosystem or habitat to its former state or better.

1. INTRODUCTION

1.1 BACKGROUND

Environmental Resources Management GmBH (ERM) was contracted by Enerjisa Enerji Üretim A.Ş., (hereinafter "Enerjisa" or "the Client") to conduct the Environmental and Social Impact Assessment (ESIA) for the "GAIA Wind Power Plant Project (hereinafter "the Project or "GAIA WPP").

For financing, Enerjisa Enerji Üretim A.Ş. aims to pursue a Project Finance structure involving potential international and local Lenders. Compliance with the Lenders' requirements is mandatory for projects receiving funding from International financial institutions (IFIs). The ESIA has been prepared in line with international environmental and social standards, including both International Finance Institution (IFC) and European Bank for Reconstruction and Development (EBRD) requirements. In this context, the approach to biodiversity has been guided by the requirements of the EBRD and IFC with the assessment and mitigation hierarchy developed in line with EBRD Environmental and Social Requirement 6 (ESR6).

The findings of the ESIA prepared by ERM prompted the Client to engage ERM to support the preparation of a Biodiversity Management Plan ("BMP") specifically tailored to the Gaia Wind Power Plant. The BMP was developed based on the supplementary biodiversity baseline data and impact assessment provided in the ESIA prepared by ERM (ERM, 2025).

1.2 PROJECT LOCATION AND DESCRIPTION

The GAIA Wind Power Plant Project is planned to be constructed and operated by Enerjisa Enerji Üretim A.Ş. within the borders of Turgut and Kavakçalı Neighborhoods of Muğla Province, Köyceğiz and Ula Districts.

Within the scope of the Project, a total of 20 turbines is planned to be installed each with a capacity of 4.2 MWm/4.2 Mwe. The total installed capacity of the facility will be 84 MWm/84 MWe. The projected annual electricity production is estimated at 257,720,400 kWh/year. The selected wind turbine model for the Project is Enercon E-138 EP3 E2 / IEC S Class. The wind turbine to be used within the scope of the Project has a tower height of 111 meters and a rotor blade diameter of 138 meters. The project layout is shown in Figure 1-1.

The Project will be developed within the borders of Turgut and Kavakçalı Neighborhoods, Köyceğiz and Ula Districts of Muğla Province. The entire Project area is located in the Forest Area according to the Aydın-Muğla-Denizli Planning Region 1/100.000 Scale Environmental Plan. The nearest settlements within a 2 km buffer of Project boundary are:

- Turgut Neighborhood – 1 km north of the Project;
- Kavakçalı Neighborhood – 2 km southwest of the Project boundary.

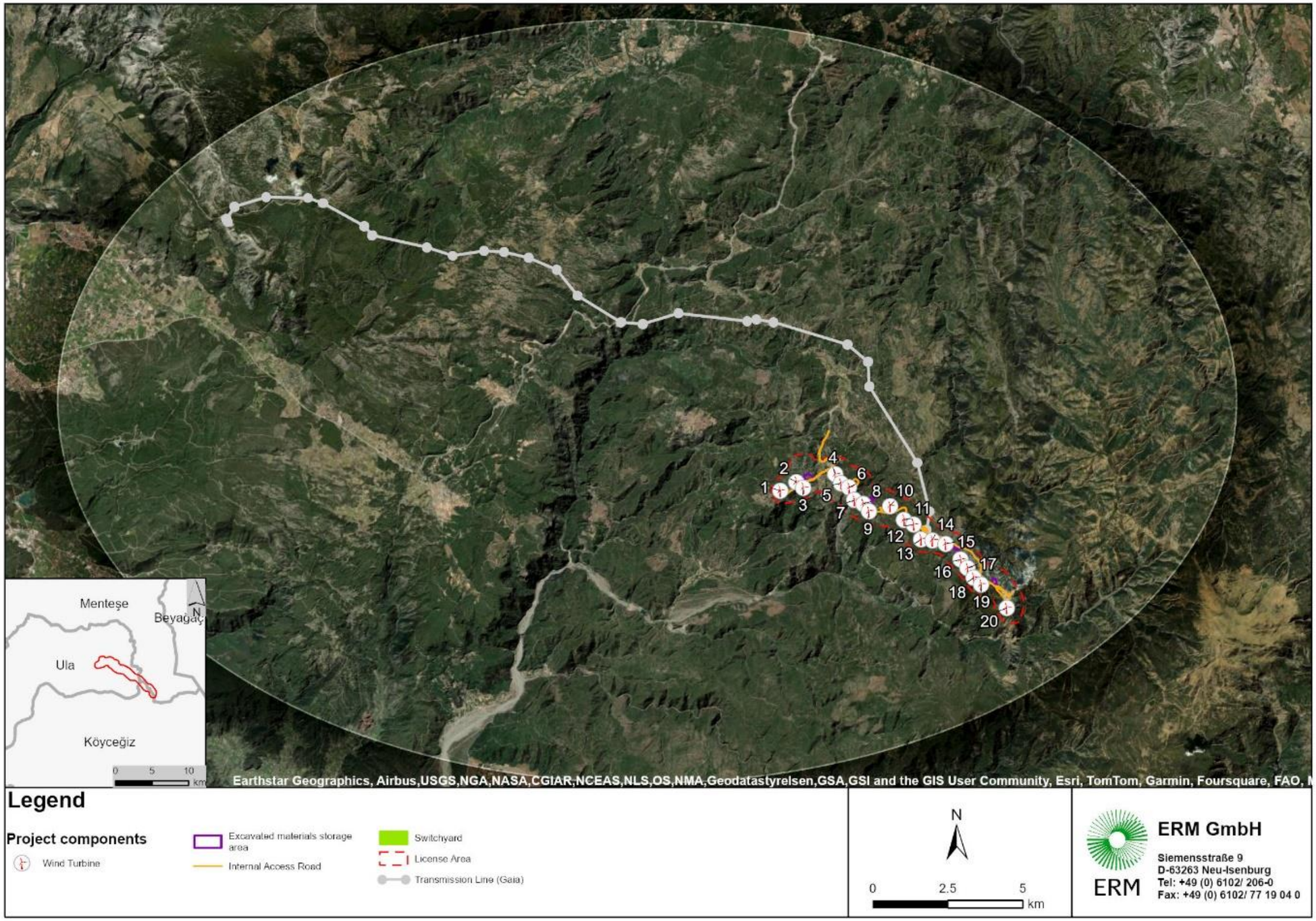


FIGURE 1-1 PROJECT LAYOUT

Source: ERM, using Client data

1.3 PURPOSE AND OBJECTIVES OF THE BMP

This document contains the Biodiversity Management Plan (BMP) for both construction and operational phases (clearly separated in the Plan), and its main purpose is to detail the key biodiversity mitigation and management measures for each project phase, to support a Net Gain (NG) of biodiversity objective for critical habitat and qualifying species, as well as mitigation towards no net loss (NNL) for other Priority Biodiversity Values (PBFs) identified in the supplementary baseline/impact assessment contained in the ESIA by ERM (2025), as per the requirements of EBRD ESR6 and IFC PS6. This is achieved by providing information on the following:

- an overview of the anticipated project impacts on biodiversity (summary information as per the ESIA by ERM, 2025);
- an overview of how the mitigation hierarchy has been followed in the Project design (as per ESIA – ERM, 2025);
- provide clear guidance for the construction and operational phases of the Project in meeting the requirements for managing construction-phase and operational risks and impacts on biodiversity, including compliance with National and International legislative requirements and lenders standards (particularly EBRD ESR6), permits and environmental approval, as applicable; and
- ensure consistency across the development Project site in terms of biodiversity management considerations, for the duration of the construction phase and into the Project's operational phase.

1.4 STRUCTURE OF THE BMP

The BMP has been structured as follows:

- **Chapter 1**: Introduction, Application and Implementation, Review and Updating of the BMP, Legislative Requirements, Permits and Environmental Approval
- **Chapter 2**: Summary of site conditions (biodiversity baseline)
- **Chapter 3**: Biodiversity management strategy (including Net Gain, NG and No Net Loss, NNL)
- **Chapter 4**: Construction-phase BMP
- **Chapter 5**: Operational-phase BMP
- **Chapter 6**: Supplementary and complementary plans
- **Chapter 7**: Annexures (Wildlife shepherding protocol)

1.5 APPLICATION AND IMPLEMENTATION

1.5.1 GENERAL

The BMP is applicable to the construction and operational phases (dealt with separately in two separate chapters of this document – Chapters 4 and 5, respectively) of the Project specifically,

and the ultimate responsibility for its implementation resides with all appointed Contractors (including any sub-contractors and third-party consultants), the Investor and Project Owner.

As a contractual requirement, the Contractors, sub-contractors & suppliers will be required to demonstrate compliance of their activities against the BMP where applicable for their individual Scope of Work (SoW).

1.5.2 MITIGATION HIERARCHY

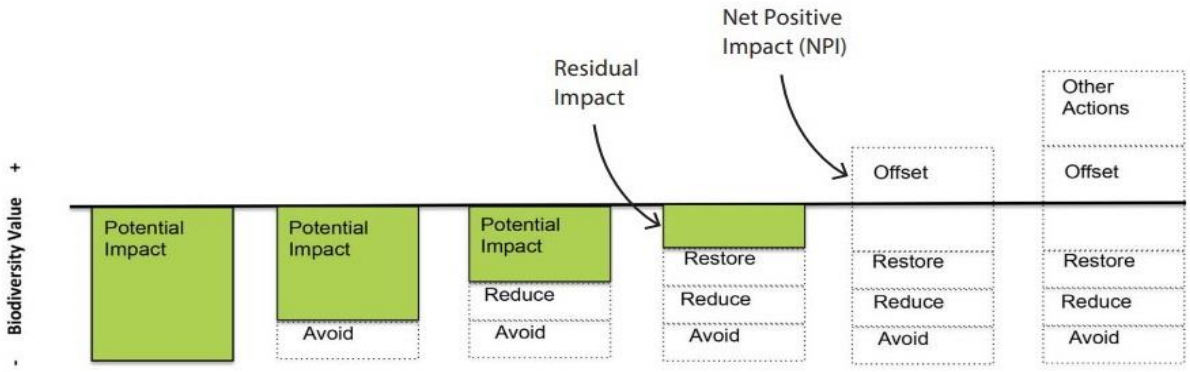
In alignment with EBRD ESR6, IFC PS6 and GIIP, the protection of natural ecosystems and biodiversity is founded on the application of the 'mitigation hierarchy' (see Table 1-1 and Figure 1-2). To avoid and/or reduce impacts to biodiversity, a proactive approach has been adopted to anticipate and avoid risks and impacts where possible. The typical steps in the mitigation hierarchy include:

- Identify and anticipate risks of potential adverse impacts, through analysis and stakeholder engagement;
- Avoid potential adverse impacts, applying an alternatives analysis including a no project scenario;
- Minimize or reduce the impacts, for example by reducing the physical footprint of a project through changes in design of civil works;
- Restore or rehabilitate where possible, for example by providing alternative access to water sources that have been cut off by a project; and
- Compensate or offset remaining and unavoidable impacts.

In the case of particularly sensitive ecosystems, where ecological impacts can be severe, the guiding principle should generally be "anticipate and prevent" rather than "assess and repair".

TABLE 1-1 IMPACT MITIGATION HIERARCHY

Measure	Description
Avoidance	Measures taken to prevent irreplaceable loss of biodiversity or associated ecosystem services. Alternatives include site selection, design and scheduling.
Minimisation	Reduce or minimise the duration, intensity and/or extent of any impact that are not feasibly avoidable. Alternatives include physical controls, operational controls and abatement control.
Restoration	Where disturbance to biodiversity or ecosystem services has occurred, remediation may be possible in the form of rehabilitation and restoration. Alternatives include re-establishing habitat types, re-establishing biodiversity values and re-establishing ecosystem services.
Offset	Offset or compensate for any residual impacts that cannot be avoided, minimised, or remedied on site. These include restoration offsets and averted loss offsets.



Source: Hardner *et al*. (2015)

FIGURE 1-2 THE IMPACT MITIGATION HIERARCHY

1.5.3 ADAPTIVE MANAGEMENT APPROACH

The early identification of key issues, challenges, constraints in the implementation of the Biodiversity Management Plan (BMP), failures of critical actions, and changes in environmental conditions through Monitoring and Evaluation (M&E) is essential for adaptive management. This approach enables site-specific solutions to be developed and adjusted based on real-time data. Adaptive management depends on a structured process of collecting data, evaluating results, and responding accordingly to ensure biodiversity outcomes are continually optimized.

In line with EBRD ESR6 requirements, adaptive management is particularly valuable due to the complexity of predicting long-term impacts on biodiversity. Mitigation and management measures must remain flexible and responsive to evolving conditions and monitoring results throughout the lifecycle of the project. The adaptive management approach not only allows for the modification of previously planned actions within the BMP but also aims to generate new knowledge that contributes to improved biodiversity management in the future. By integrating these learnings, the approach ensures both the best short-term outcomes based on current knowledge and enhanced long-term conservation strategies (see Figure 1-3, below).

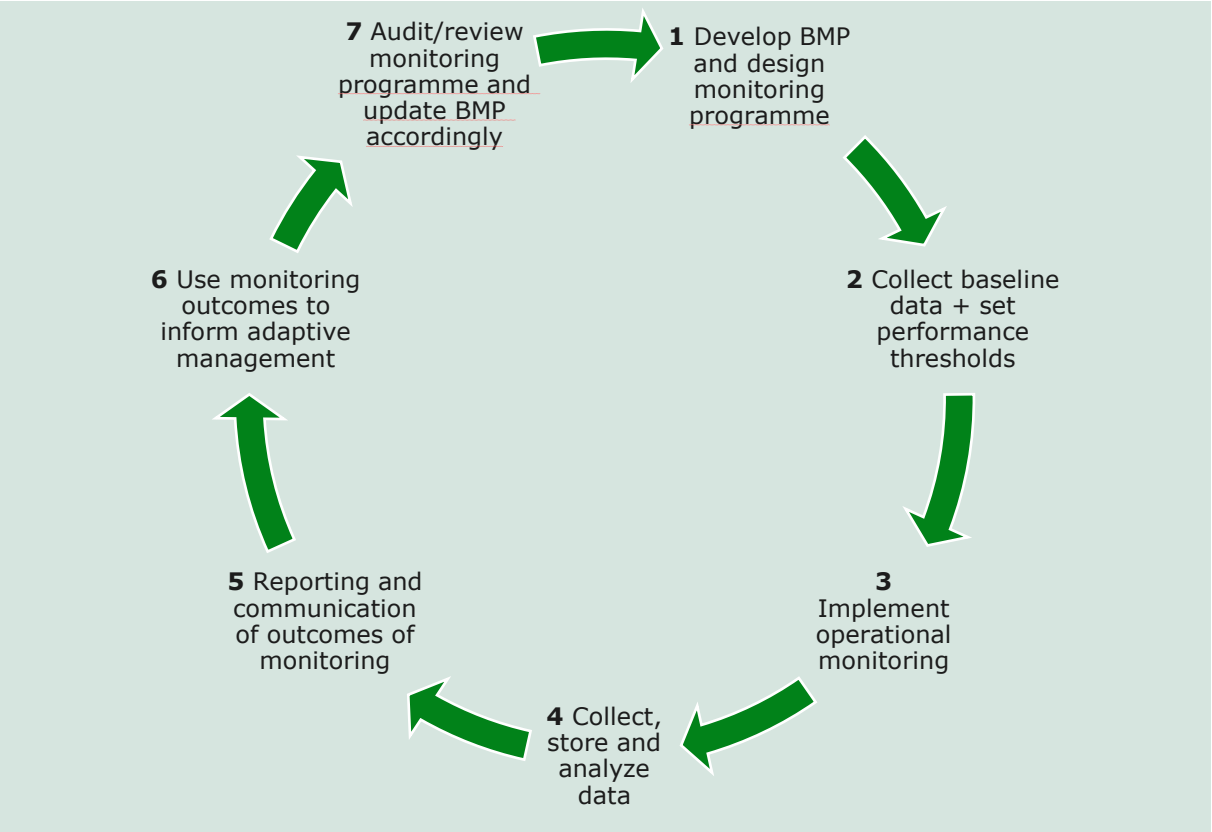


FIGURE 1-3 DIAGRAM SHOWING THE 'ADAPTIVE MANAGEMENT CYCLE'

The following guidelines apply regarding implementing an 'adaptive' approach to biodiversity management:

- **Establish Baselines and Monitoring Protocols**: Establishing baselines and a robust monitoring framework is critical in understanding the biodiversity context and tracking changes over time. This is a core element of EBRD's approach to biodiversity management, ensuring that impacts are measurable and that responses can be adapted.
- **Implement the Precautionary Principle:** The precautionary principle is integral to biodiversity conservation, especially in cases of uncertainty regarding potential impacts. EBRD encourages this approach to avoid irreversible damage to biodiversity and ecosystems, even when data may be incomplete.
- **Engage with Local Communities and Stakeholders**: Stakeholder engagement, including with local communities and experts, is a fundamental part of EBRD ESR6. It ensures biodiversity management strategies are contextually relevant and that they address both local and global biodiversity concerns, benefiting from local knowledge and support.
- **Continuous Review and Updates Based on Monitoring Results**: The principle of adaptive management involves regularly reviewing and updating biodiversity management plans (BMPs) in response to monitoring results and new information. EBRD emphasizes the need for flexibility in management plans to improve outcomes based on data-driven feedback.
- **Integration with the Broader Environmental and Social Management System (ESMS):** EBRD requires that biodiversity management is not handled in isolation but

integrated into the overall Environmental and Social Management System. This ensures that biodiversity considerations are aligned with broader sustainability goals of the project.

- **Regular Reviews and Audits:** Regular reviews and audits of biodiversity management practices are crucial for assessing effectiveness and identifying areas for improvement. EBRD promotes periodic evaluations and adjustments based on these assessments, which are central to adaptive management.

1.6 REVIEWS AND UPDATES TO THE BMP

Changes in the Project may occur due to unanticipated situations. Adaptive changes may also occur during the project life cycle (*as mentioned under 1.5.3*). The BMP, and any associated plans/documents, are therefore intended to be 'living documents' that can be refined and modified as situations change.

The BMP will be regularly reviewed and updated after any change in the context in which the Project operates during the construction phase.

Urgent updates in line with the principle of 'adaptive management' can be the responsibility of the E&S Officer or Biodiversity Specialist (or ECoW: Environmental Clerk of Works, as relevant to the EPC Contractor staff structuring), with support from the E&S Manager, however any material changes to intervention design, the timing of monitoring activities, etc. should be made in consultation with a third-party consultant to ensure accountability.

All changes made to the BMP will be made to the master document and revision numbers and dates provided to track version numbers as part of the Contractor's data and document management system. A summary document should also be produced that summarizes the important changes made to the document for the different version numbers and who authorized these changes.

Note that any fundamental change in the ESIA report conducted by ERM, which represents an ongoing assessment, can result in a material change to the BMP, after the completion of the one-year monitoring period.

1.7 OVERVIEW OF LEGISLATIVE REQUIREMENTS

1.7.1 INTERNATIONAL FINANCING REQUIREMENTS

Since the Project is seeking for international financing, the E&S requirements of relevant financial institutions must be considered throughout the Project development, which require the Project development to adhere to specific E&S requirements which reflect international best practice. The following standards and guidelines detail the performance requirements and mitigation measures that are typically acceptable and considered to represent GIIP:

- EBRD (European Bank for Reconstruction and Development) Environmental and Social Requirements (2024);
- EBRD Environmental and Social Policy (2024);
- EBRD Sub-sectoral Environmental and Social Guidelines (various sectors);
- EBRD ESR6: Biodiversity Conservation and Sustainable Management of Living Natural Resources;

- EBRD ESR3: Resource Efficiency and Pollution Prevention and Control.

A summary of the key requirements for managing biodiversity and ecosystems, as per EBRD ESR6 is presented below in Table 1-2.

TABLE 1-2 SUMMARY OF EBRD ESR6 REQUIREMENTS

Aspect of Biodiversity	EBRD ESR6 requirements
Protected Areas / Internationally Recognized Areas	▪ Identify and assess potential project-related impacts and apply the mitigation hierarchy, so that project impacts will not compromise the integrity, conservation objectives and/or biodiversity importance. ▪ Development is to be legally permitted. ▪ Management plans for protected areas to be reviewed and alignment with any relevant measures. ▪ Consultation with protected areas managers and any affected communities or other relevant stakeholders. ▪ Promote and enhance conservation objectives and effective management of the protected area through additional programmes.
Critical Habitat (CH)	▪ Critical habitat to be undertaken as relevant and informed by the ESIA scoping phase. ▪ No activities to take place in areas of critical habitat unless: ○ No other alternatives in habitats of lesser biodiversity value, ○ Stakeholders are consulted, ○ Legally permitted, ○ No measurable adverse impacts on critical habitat values ○ Project designed to deliver Net Gains (NG) for critical habitat, ○ No net reduction in population of CR/EN species, ○ Appropriate long-term biodiversity monitoring and evaluation program integrated into the project adaptive management program. ▪ Mitigation strategy, including NG, to be described in a Biodiversity Action Plan (BAP) or Biodiversity Management Plan (BMP) where appropriate. ▪ As a last resort, biodiversity offsets may be considered.
Priority Biodiversity Features (PBFs)	▪ Demonstrate that no technically/economically feasible alternatives exist. ▪ Stakeholders consulted. ▪ Project permitted legally. ▪ Appropriate mitigation in accordance with the mitigation hierarchy. ▪ Ensure NNL and preferably NG of biodiversity.
Ecosystem Services	▪ Maintain ecosystem services. ▪ Adverse impacts to be avoided. If unavoidable, measures to minimize impacts and/or restore biodiversity and ecosystem services to be implemented.
Invasive Alien Species (IAS)	▪ Avoid and proactively prevent accidental or deliberate introductions of IAS. ▪ No intentional introduction of IAS. ▪ Identify potential risks, impacts and mitigation options related to accidental release of IAS to the environment. ▪ Control spread of any established IAS.

Source: EBRD ESR6 (2024)

1.7.2 GOOD INTERNATIONAL INDUSTRY PRACTICE

The Contractor is responsible for ensuring that on-site practices align with the requirements of international standards and GIIP. Several guidelines related to renewable (wind) energy

developments and managing of impacts on biodiversity have been considered in preparing this BMP, and these include:

1. "Good Practices for Biodiversity Inclusive Impact Assessment and Management Planning" (Hardner et al., 2015);
2. "A cross-sector guide to implementing the Mitigation Hierarchy" (Ekstrom et al., 2015);
3. "Mitigating biodiversity impacts associated with solar and wind energy development. Guidelines for project developers" (Bennun *et al.,* 2021);
4. Windfarms and Birds: Calculating a theoretical collision risk assuming no avoiding action. (NatureScot, 2000)
5. Recommended bird survey methods to inform impact assessment of onshore wind farms. (NatureScot, 2017)
6. "Post-construction Bird and Bat Monitoring for Onshore Wind Energy Facilities in Emerging Market Countries: Good Practice Handbook and Decision Support Tool" (IFC, EBRD and KfW, 2023);
7. "EUROBATS No. 6: Guidelines for Consideration of bats in wind farm Projects" (Rodrigues et al., 2015); and
8. "Bats and onshore wind turbines: Survey, assessment and mitigation" (NatureScot, 2021)1.8 Critical Habitat Requirements

Based on the assessment undertaken by ERM as part of the biodiversity baseline and impact assessment (contained in ESIA, ERM 2025), critical habitat (CH) was identified within the Project study area investigated for six endemic/restricted-range species of flora. In addition,29 faunal species (bird, bats, land mammals and reptiles), 4 flora species and 3 habitat types are identified as Priority Biodiversity Features (PBFs) in accordance with the approach and requirements contained in EBRD ESR6. For the CH values (amphibian species and flora), a Net Gain (NG) objective is required whilst for the PBFs (fauna, flora, habitats) No Net Loss (NNL) of biodiversity is the required objective and preferably Net Gain (NG) of biodiversity where possible.

Direct and indirect impacts on the CH values and PBFs may occur, as project activities could potentially affect areas adjacent to or functionally connected with key habitats. In line with EBRD ESR6 requirements, careful consideration is therefore essential to minimize such indirect impacts and ensure the protection of CH values and PBFs throughout the project lifecycle, in pursuit of a NG objective for CH and at least NNL for PBF values.

It is recommended that the developer takes proactive steps to ensure that any temporary and permanent infrastructure avoids sensitive areas containing CH and PBFs. Adopting a precautionary approach and following the mitigation hierarchy—prioritizing avoidance, minimization, and, where necessary, rehabilitation—will help prevent significant impacts on these biodiversity features. Regular monitoring should be conducted to assess the effectiveness of these mitigation measures and adapt management approaches as needed, in line with the BMP.

2. SUMMARY OF BIODIVERSITY BASELINE

A summary of the most important aspects of the biodiversity baseline compiled by ERM as part of the ESIA (2025) has been provided below in Table 2-1TABLE 2-1. For detailed information, the reader is directed to the 'Biodiversity Baseline Assessment' contained in the ESIA (ERM, 2025).

TABLE 2-1 SUMMARY OF KEY ECOLOGICAL RECEPTORS AND BIODIVERSITY VALUES FOR THE PROJECT BASED ON THE ESIA

Biodiversity Receptor	**Description of important biodiversity** (from baseline)	**Receptor Sensitivity Rating**	**Driver of Sensitivity**
Protected Areas & Internationally Recognized Areas			
Protected Areas	Not applicable: No protected areas within the AoI	n/a	n.a
Key Biodiversity Areas (KBAs)	Sandras Mountain KBA overlaps with the AoI: 1. KBA qualifies as critical habitat. 2. High endemic plant diversity.	High	KBA is plant species EAAA and qualifies as critical habitat (see below) High endemic plant diversity
Important Bird & Biodiversity Areas (IBAs)	Not applicable: No IBAs identified within the AoI (nearest is >10km away).	n/a	n/a
Ecosystems and Habitats			
Natural habitat	Natural habitats in the AoI include: 1. Black pine (Pinus nigra) woodland - LC, EU priority habitat type and Priority Biodiversity Feature (PBF) for the project 2. Serpentine steppe - EN and PBF for the Project 3. *Pinus brutia* woodland - LC and PBF for the Project 4. Coniferous scrub woodland	Medium - High	Threatened habitats Qualify as PBF
Critical habitat	Sandras Mountain KBA qualifies as critical habitat Qualifying values include: Fauna: 1. *Marmaris Lycia Salamander* (globally EN) – potentially occurring[1] Flora: 2. *Fritillaria sp. nov* (CR-nationally), endemic + restricted range (RR) 3. *Muscari muglaensis* (VU-nationally), endemic + RR 4. *Verbascum ebubekirceylanii* (CR-nationally), endemic + RR 5. *Genista sandrasica* (EN-nationally), endemic + RR 6. *Ornithogalum sandrasicum* (CR-nationally), endemic + RR 7. *Teucrium alyssifolium* (VU-nationally), endemic + RR	High	Critical habitat (selected flora)

[1] Potential CH/PBF species investigated during pre-construction surveys but not confirmed in the field

Biodiversity Receptor	**Description of important biodiversity** (from baseline)	**Receptor Sensitivity Rating**	**Driver of Sensitivity**
Key ecological processes and ecosystem services (e.g., seed dispersal, pollination, primary production, carbon sequestration)	Not applicable: There are no appreciable or key ecological processes or ecosystem services associated with the Project area.	n/a	n/a
Species			
Flora	19 endemic plants, several are restricted-range species, and several nationally threatened plant species: ▪ *Fritillaria sp. nov* (CR-nationally), endemic + restricted range (RR) – new species to science – critical habitat ▪ *Muscari muglaensis* (VU-nationally), endemic + RR – critical habitat ▪ *Verbascum ebubekirceylanii* (CR-nationally), endemic + RR – critical habitat ▪ *Genista sandrasica* (EN-nationally), endemic + RR – critical habitat ▪ *Vinca ispartensis* (CR-nationally), endemic + RR- PBF ▪ *Ornithogalum sandrasicum* (CR-nationally), endemic + RR – critical habitat ▪ *Teucrium alyssifolium* (VU-nationally), endemic + RR – critical habitat ▪ *Alyssum huber-morathii (NT- Nationally)* ▪ *Astragalus dirmilens*is (VU-nationally), endemic + RR – PBF ▪ *Acantholimon ulicinum var. purpurascens* (VU-nationally), endemic + RR – PBF ▪ *Fritillaria carica (NT- Nationally)* ▪ *Cyclamen alpinum,* endemic + RR – PBF ▪ *Muscari bourgaei* (LC-nationally), endemic ▪ *Ranunculus reuterianus* (LC-nationally), endemic ▪ *Corydalis wendelboi subsp. wendelboi* (LC-nationally), endemic ▪ *Alyssum masmenaeum* (LC-nationally), endemic ▪ *Viola heldreichiana* (LC-nationally), endemic ▪ *Centaurea reuterianus var. reuterianus* (LC-nationally), endemic ▪ *Ajuga bombycina* (LC-nationally), endemic ▪ *Alkanna tubulosa* (LC-nationally), endemic	Medium - High	Endemics and nationally threatened species. Critical habitat values Qualify as PBF (Selected species as per column on left)
Birds	Threatened bird species: ▪ European Turtle-dove (*Streptopelia turtur,* globally VU) – breeding, PBF ▪ Red-footed Falcon (*Falco vespertinus*, globally VU) Resolution 6 of Bern Convention (R6), PBF Most frequently observed passerines are of LC. Several species of LC (including raptors, storks, passerines) are identified as PBF based on listing in Resolution 6 of Bern Convention. Relatively low collision risk based on CRM.	Medium	Globally VU species PBF species Low collision risk, likely to be insignificant impact on species population based on PBR

Biodiversity Receptor	**Description of important biodiversity** (from baseline)	**Receptor Sensitivity Rating**	**Driver of Sensitivity**
Bats	Threatened bat species: ▪ Schreiber's Bent-winged Bat (*Miniopterus schreibersii,* globally VU), R6 – high collision risk - PBF ▪ Mediterranean Horseshoe Bat (*Rhinolophus euryale*, globally NT/VU (Eu)), R6 – PBF ▪ Western Barbastelle Bat (*Barbastella barbastellus*, globally NT/ VU (Eu), R6) Other species that also qualify as PBF: ▪ Blasius's Horseshoe Bat (*Rhinolophus blasii*, globally LC/ VU (Eu)), R6 ▪ Greater Horseshoe Bat (*Rhinolophus ferrumequinum,* globally LC), R6 ▪ Lesser Horseshoe Bat (*Rhinolophus hipposideros*, LC), R6 ▪ *Bechstein's Bat (*Myotis bechsteinii*, NT [Eu: VU]), R6 ▪ *Lesser Mouse-eared Bat (*Myotis blythii*, LC [Eu: VU / Med: NT]), R6 ▪ *Long-fingered Bat (*Myotis capaccinii*, VU), R6 ▪ *Geoffroy's Bat (*Myotis emarginatus*, LC), R6 ▪ *Greater Mouse-eared Bat (*Myotis myotis*, LC), R6 ▪ *Greater Noctule Bat (*Nyctalus lasiopterus*, VU [Eu: VU / Med: NT]), not R6 ▪ *Mehely's Horseshoe Bat (*Rhinolophus mehelyi*, VU [Eu: EN]), R6 ▪ *Parti-coloured Bat (*Vespertilio murinus*, LC), R6 Most common species are of LC (e.g. *Pipistrellus pipistrellus)* and these are at high risk of collision.	Medium	Globally VU species present PBF species High collision risk species
Land mammals	All are species of LC, no endemics or restricted-range species. One species qualifies as PBF: ▪ Caracal (*Caracal caracal*, LC), R61	Low	Species of LC PBF species
Herpetofauna	Most are species of LC and not endemic. Endemic, restricted-range and threatened amphibians: 1. Marmaris Lycia Salamander (*Lyciasalamandra flavimembris*, globally EN) – potentially occurring, Critical habitat trigger1 Threatened reptiles: 2. Mediterranean Spur-thighed Tortoise (*Testudo graeca*, VU), R6, PBF One other species qualifies as PBF: 3. *Grass Snake (*Natrix natrix*, LC), R6 – potentially occurring	Medium - High	EN and VU species Critical habitat value PBF species
***Invertebrates**	Potential PBF species, ▪ *Thick Shelled River Mussel (*Unio crassus*-EN), R6-PBF	Low	Species of LC PBF species

Biodiversity Receptor	**Description of important biodiversity** (from baseline)	**Receptor Sensitivity Rating**	**Driver of Sensitivity**
	▪ **Cerambyx dux* (VU European LC Mediterranean)- PBF ▪ **Lucanus busignyi* (VU)- PBF		
***Freshwater fishes**	Streams represent natural biodiversity features but are mostly seasonal and unlikely to support any fish species of conservation importance.	Low	-
Large or congregatory species populations	None.	-	-
Previously unknown species	Flora; ▪ *Fritillaria sp. nov* (CR-nationally), endemic + restricted range (RR)	High	CR national threat status Critical habitat value
Keystone species performing a key ecological role (e.g. key predator, primary producer)	None.	-	-

Table Key:

Species threat status (UCN): CR Critically Endangered, EN = Endangered, VU = Vulnerable, NT = Near Threatened, DD = Data Deficient, LC = Least Concern

PBF = Priority Biodiversity Feature

RR = Restricted-range

R6 = Resolution 6 of the Bern Convention

* Priority Biodiversity Features (PBF) based on desktop assessment only

Source: ESIA (ERM, 2025)

Information Box: Access Road

According to the most up-to-date information received from the Client, an access road has been included in the Project design to provide access to the turbine locations during the construction. This road will facilitate the transport of materials and equipment between the main construction site and individual turbine platforms. The road is already existing but will be widened and improved to facilitate construction access. Based on the information provided by the Client, the road includes several small stream crossings, and these streams are low flow and, in some sections, dry out completely depending on the season.

The ESIA should be updated by conducting supplementary information package comprises the conducting retrospective biodiversity baseline surveys and impact assessments for the section of the access road where no baseline studies were previously conducted. The assessment should identify potential aquatic (fish and benthic invertebrates) species, terrestrial fauna, flora species and habitats of conservation importance and evaluate potential impacts on habitats and watercourses crossed by the access road. Based on information provided by the client, road widening activities have already commenced; therefore, the assessment will be essential to gather ecological data needed to inform and support the design of appropriate compensation and restoration measures for any impacts that may have already occurred.

3. STRATEGY FOR BIODIVERSITY MANAGEMENT

The strategy for biodiversity management considers the biodiversity management priorities and the objectives/targets linked to the ecosystems, habitats and species described in Chapter 2 for the Project.

This considers alignment with the requirements for managing biodiversity contained in EBRD ESR6 and IFC PS6, which in summary are as follows:

- Alignment with protected areas management plans/objectives;
- Application of the mitigation hierarchy;
- Net Gain (NG) of biodiversity for residual impacts to critical habitat and qualifying features/values;
- No Net Loss (NNL) of biodiversity for residual impacts to natural habitat and PBFs;
- Management of invasive alien species;
- Adaptive management and monitoring approach;
- Life-cycle approach to biodiversity management; and
- Management of any cumulative impacts.

The strategy for achieving NG and NNL for residual biodiversity impacts to CH and PBF respectively, in accordance with international best practice standards, including IFC and EBRD, is presented here.

The strategy considering options for restoration of habitats and biodiversity offsets is also aligned with GIIP in terms of the Business and Biodiversity Offsets Programme (BBOP) principles for designing and implementing biodiversity offsets as well as the guidance for habitat restoration of the Society for Ecological Restoration (SER). The strategy applies to both permanent and temporary impacts on physical habitats and species and defines any compensation/ offset requirements necessary to achieve NG and NNL, where feasible, in line with the mitigation hierarchy.

3.1 STRATEGY FOR NNL FOR PHYSICAL PBF HABITAT LOSS

Biodiversity No Net Loss (NNL) is in simple terms, an approach and goal for a development project, policy, plan or activity in which the impacts on biodiversity it causes are balanced by measures taken to avoid and minimize the impacts, to restore affected areas and finally to offset the residual impacts, so that no loss remains.

For natural habitat and/or habitats that qualify as PBF where residual impacts are anticipated (i.e. loss of natural habitat despite avoidance and minimization), this habitat loss will need to be compensated for as follows:

- For temporary loss due to land take for temporary infrastructure and activities, the strategy for these areas will simply be to restore the habitat to the same type occurring pre-development or better condition where possible.
- Where habitat loss will be permanent (due to permanent infrastructure associated with access roads, turbine pads, etc.), the compensation for permanent natural habitat loss would be dealt with through a traditional habitat offset.

This requires a phased approach to addressing NNL requirements impacting on natural/PBF habitat involving the following:

Step 1: quantify the estimated loss of natural habitat and separate into 'temporary' and 'permanent' loss.

The quantum of habitat loss estimates is indicated in Table 3-1. This includes:

- The storage area is considered a temporary impact, as it will be decommissioned and restored following construction. In contrast, the switchyard, turbine platforms, and access roads represent permanent land take, resulting in irreversible habitat loss. Excluding the temporary impact from the storage area, the total permanent habitat loss is estimated at 68.09 hectares, distributed across four EUNIS habitat types. The most significantly affected habitat is G3.5 – Black pine (*Pinus nigra*) woodland, with a permanent loss of 50.52 ha. This is followed by G3.7 – *Pinus brutia* woodland (3.45 ha), G5.63 – Coniferous scrub woodland (6.90 ha), and E1.B – Serpentine steppe (7.21 ha).The temporary impact associated with the storage area affects 14.75 ha, primarily falling within the G3.5 – Black pine woodland and a negligible portion (<0.01 ha) within G5.63 – Coniferous scrub woodland.

It is important to note that this assessment does not include potential impacts from the Energy Transmission Line (ETL), as field verification of the revised ETL route and associated habitat mapping is still ongoing. Once the baseline data are finalized, ETL-related impacts will be incorporated into the overall habitat loss and mitigation analysis.

TABLE 3-1DIRECT HABITAT LOSSES FROM PROJECT COMPONANTS (EXCEPT ETL)

EUNIS Code	EUNIS Name	Switchyard (ha)	Platform (ha)	Storage Area (ha)	Internal Access Road (ha)	Total Impacted Area (ha)
E1.B	Serpentine steppe	-	6,1	-	1,11	**7,21**
G3.5	Black pine (*Pinus nigra*) woodland	2	34,22	14,75	14,3	**65,27**
G3.7	*Pinus brutia* woodland	-	2,27	-	1,18	**3,45**
G5.63	Coniferous scrub woodland	-	3,8	0,006	3,1	**6,906**

Step 2: set targets required to achieve NNL for loss of natural habitat/PBF habitat using habitat as a proxy and accounting for habitat extent and condition.

Output: calculation of habitat hectares and NNL targets (see below).

Whilst biodiversity offsets should address all residual losses for all affected biodiversity, it is rarely either possible or practical to document and quantify the losses for every component of biodiversity or for all dimensions of structure and function. Most approaches therefore demonstrate no net loss using metrics based on surrogates for the entirety of biodiversity which can realistically be measured (see also BBOP, 2012).

In the absence of a regional or national approach to NG/NNL calculations and target specification in Turkey, the 'habitat hectares' (HH) metric has been used and is widely accepted

internationally, adapted from Parkes *et al.* (2003[2])) and presents such a proxy approach, as it assumes a direct link between habitat condition and habitat suitability (i.e. ability to support) relevant species. Like many biodiversity NNL/NG calculators and systems, it calculates the area and condition of habitats impacted and then predicts the areas and condition of the same type of habitat that would require to be managed to achieve NNL for the associated direct natural/PBF habitat losses. The baseline and future condition score definitions used in this assessment for the offsetting are outlined below in Table 3-2 and represent simplified versions of the criteria in Parkes et al. (2003) widely adopted and used in previous ERM offsetting projects.

Note that all habitat types were considered to be in a near natural state, hence a value of 0.8 was assigned as per Table 3-2.

TABLE 3-2 HABITAT HECTARE CONDITIONS SCORES

Habitat Condition	Definition	Value / Score
Benchmark / Reference Level	Being habitats in a mature condition with only native origin vegetation, a diversity of species of a mature or senescent state; and no sign of human disturbance (such as the presence of waste, vegetation removal).	1
Natural / High	High condition is defined as habitat largely of native origin, and/or where human activity has not essentially modified the primary ecological functions and species composition. Some disturbance is likely present such as selective logging, vegetation removal, waste and minor introduction of invasive species.	0.8
Modified	Moderate condition habitats are areas that may contain a large proportion of plant and/or animal species of non-native origin, and/or where human activity has substantially modified an area's primary ecological functions and species composition	0.6
Degraded	Degraded condition is defined as significant conversion or degradation of the habitat such as the diminution of the integrity of a habitat caused by a major and/or long-term change in land use; or (ii) a modification that substantially minimizes the habitat's ability to maintain viable populations of its native species.	0.2
Impacted	Impacted condition is defined as major conversion whereby little if any natural vegetation remains on the site caused by significant land use change.	0

Permanent habitat losses have been calculated based on the footprint of key project components—internal access roads, turbine pads, and the switchyard—all of which are located within natural habitats. These losses will affect three habitat types (serpentine steppes, Black Pine woodland, *Pinus brutia* woodland), all classified as Priority Biodiversity Features (PBFs):

- The **serpentine steppe** is a rare and structurally intact natural habitat that supports numerous endemic and restricted-range plant species, including some classified as nationally threatened. Due to its conservation importance, even small-scale impacts are considered significant. The project will cause a permanent loss of 7.21 ha, translating to a residual impact of **5.77 HH**. To compensate for this loss, a NNL target of 9.51 HH has

[2] Parkes, D., Newell, G. and Cheal, D. (2003). "Assessing the Quality of Native Vegetation: The 'Habitat Hectares' Approach." *Ecological Management & Restoration* 4 (s1): S29–38. Online at: https://www.forest-trends.org/wp-content/uploads/imported/4assessing-quality-of-native-vegetation-d-parkes-pdf.pdf

been set.This figure includes a risk multiplier[3], reflecting the time and complexity required to restore this habitat type to a condition of comparable ecological integrity.**Black Pine (*Pinus nigra*) woodland** is the most significantly impacted habitat type in the project area, with a total permanent loss of 65.27 ha due to infrastructure such as the switchyard, turbine platforms, storage area, and internal access roads. Black pine woodland in this region is of natural structure and composition, hosting PBF flora and playing an important role in soil stabilization and ecosystem function. The residual impact is calculated at **57.74 HH**. The risk multiplier applied reflects both the degraded baseline condition (due to grazing and drought) and the expected medium-to-high difficulty in achieving full habitat functionality in restored areas.Although covering a smaller footprint (3.45 ha of direct loss), ***Pinus brutia* woodland** is also considered a PBF due to its association with locally endemic and restricted-range plant species, some of which qualify the landscape as Critical Habitat (CH). The calculated residual impact is **3.94 HH**. Given the relative resilience of this woodland type, restoration is expected to be moderately achievable, and this was considered when assigning the restoration risk multiplier.

The storage area, used during construction, represents a temporary impact to black pine woodland of 14.75 ha, which is equivalent to **16.86 HH** taking condition into account (target set to achieve NNL). After construction, this area will be decommissioned and fully restored onsite. Although no offset is typically required for temporary impacts, onsite restoration must achieve at least ecological equivalence or better condition to meet a NNL objective. Restoration efforts must focus on preserving original soil layers, replanting with native species, and ensuring erosion control.

To achieve NNL for the temporary loss, a minimum area of successful restoration must be implemented in accordance with SER standards for structure, composition, and ecosystem function.

- No temporary loss was recorded for Serpentine steppe or *Pinus brutia* woodland.
- Temporary loss for Coniferous scrub woodland (G5.63) was found to be less than 0.01 ha and therefore excluded from quantitative analysis.

[3] A delay/risk multiplier has been factored into the target calculation based on the perceived difficulty of restoration and delays in terms of estimated years until the target condition is met. In the absence of specific guidance or metrics for NNL/NG in Turkey or the region, this was informed by the delay/risk multipliers used in the published DEFRA (Department for Environment Food and Rural Affairs) 'Statutory Biodiversity Metric' for the United Kingdom (DEFRA, 2024). This serves to account for delays in terms of meeting objectives as well as uncertainty in terms of outcomes based on restoration difficulty.

TABLE 3-3 NNL TARGET CALCULATIONS FOR PBF HABITATS

Habitat Type	Classification	Objective: NG or NNL	Physical Area Loss (ha)	Habitat Condition Rating (see Table 3-2)	Habitat Hectares (HH)	Risk Multiplier*	Target Accounting for Multiplier (Habitat Hectares: HH)	NNL Target (HH)
Permanent habitat loss								
Serpentine steppe	PBF (Priority Biodiversity Feature	NNL (No Net Loss)	7.21	0.80 (natural)	5.77	1	5.77	**5.77**
Black pine (*Pinus nigra*) woodland	PBF	NNL	50,52	0.80	40.42	0.7	57.74	**57.74**
Pinus brutia woodland		NNL	3.45	0.80	2.76	0.7	3.94	**3.94**
Temporary habitat loss								
Black pine (Pinus nigra) woodland	PBF	NNL	14.75	0.80	11.8	0.7	16.86	**16.86**

*A delay/risk multiplier has been factored into the target calculation based on the perceived difficulty of restoration and delays in terms of estimated years until the target condition is met. In the absence of specific guidance or metrics for NNL/NG in Turkey or the region, this was informed by the delay/risk multipliers used in the published DEFRA (Department for Environment Food and Rural Affairs) 'Statutory Biodiversity Metric' for the United Kingdom (DEFRA, 2024). This serves to account for delays in terms of meeting objectives as well as uncertainty in terms of outcomes based on restoration difficulty:

Delay/Difficulty of Implementing	Risk Multiplier
<5 years and/or low/easy difficulty level	1
5-15 years and/or medium difficulty level	0.7
>15 years and/or high difficulty level	0.3

Step 3: develop onsite restoration plan to meet NNL target for temporary habitat loss.

Output: onsite restoration plan for temporary habitats impacted.

To meet a NNL requirements for temporary habitats impacted, these will need to rehabilitated or restored to a state and condition (compositionally and structurally similar to the pre-development state) once temporary activities have been completed and temporary site infrastructure decommissioned and removed from the site. No offset is recommended for temporary land take, and rather onsite restoration of habitats will be done (see note below*).

This will require a restoration plan to be developed for post-construction restoration of habitats temporarily impacted by the Project.

***Note on habitat equivalency and Habitat Hectares approach**

Note that the NNL targets defined for habitats are represented as Habitat Hectares (HH) or hectare equivalents that taken into consideration both habitat extent and condition.

In terms of meeting these targets, onsite restoration will need to attain at least equivalency in terms of condition of habitat and where this is not possible, an offset may be necessary to demonstrate NNL.

Step 4: develop compensation measures/offset strategy to meet NNL for permanent habitat loss.

Output: compensation/offset strategy and relevant implementation plan(s).

To meet a NNL requirement for permanently transformed habitat, a biodiversity offset will need to be implemented (appropriate strategy and plan to be compiled to inform this process). Restoration efforts should focus on improving the condition of ecologically similar natural steppe and forest habitats within the project area or its immediate surroundings. These activities will be designed and implemented in line with the habitat hectares approach, ensuring that habitat quality and functionality are enhanced to meet the Project's NNL objectives (see note below*).

***Note on habitat equivalency and Habitat Hectares approach**

Note that the NNL targets defined for habitats are represented as Habitat Hectares (HH) or hectare equivalents that taken into consideration both habitat extent and condition.

For permanent habitat losses that will require compensation through an offset, this will require an assessment of the habitat condition for target offset receiving areas and further estimations of gains in habitat condition likely through restoration actions, so as to determine HH gains and show how the NNL target in terms of HH can be met. This is not a case of simply restoring a certain physical extent of habitat but also requires that condition be taken into account.

In reality, depending on the initial conditions of habitat in areas targeted for compensation/restoration, the physical extent may be significantly larger than the extent impacted by the Project. This will need to be addressed further as part of an **offset strategy** for the Project.

Alternative compensation measures (such as an avoided loss approach to offsetting impacts on habitat) may also be considered, and to this end a formal **offset strategy** will need to be developed for the Project.

Given that biodiversity offsets are still relatively new in terms of their conceptualization and implementation internationally, with consultants and implementers still dealing with many unknowns and complexities around offsets in general, it is recommended that an external biodiversity specialist be consulted on all matters concerning the need and desirability for offsets, and the preparation of any necessary offset strategies and plans.

Note that to address potential habitat fragmentation effects (which are particularly relevant to the linear infrastructure – i.e. access roads), this will be addressed through the offset plan by focusing on linking habitats to improve connectivity during restoration planning.

As part pf the offset strategy, an **offset feasibility study** is recommended to first be undertaken as a precursor to the offset plan to provide the following information:

- a summary of the residual impacts from the Project on critical and natural habitats and quantification of those impacts using a habitat hectares method (for example: Parkes et al., 2003) [COMPLETED in BMP]
- the targets required to deliver biodiversity NNL objectives [COMPLETED in BMP]
- an explanation of the preliminary offset design and strategy to achieve NNL including possible options for doing so and the feasibility of these options;
- identification of potential delivery partners, and likely key stakeholders;
- identification of key roles and responsibilities and preliminary timeframes for delivering the actions set out in the offset strategy;
- outlines the next steps towards developing an offset implementation and management plan.

In the absence of a national biodiversity offset policy in Türkiye, it is recommended that the offset approach and strategy with good international practice as far as possible, particularly the principles, guidelines and methodology contained in the 'Biodiversity Offset Design Handbook' (BBOP, 2012[4]), which is described below in Table 3-4.

TABLE 3-4 SUMMARY OF BBOP GUIDING PRINCIPLES FOR BIODIVERSITY OFFSETS

BBOP Offset Principles and Guidelines	**Recommendations by ERM**
1 Offsets should be 'like-for-like' with trading only permitted within the same land class type	➢ *Offsets to target similar degraded habitats for restoration/creation.*
2 If 'like-for-like' is not possible, offsets should address the same features and habitats within the broader landscape area	➢ *As above.*
3 Environmental contributions for specific programs can be used to substitute for the direct management of biodiversity	➢ *Consultation with relevant authorities required to advise on funding of identified projects/programs.*

[4] BBOP (2012). "Guidance Notes to the Standard on Biodiversity Offsets." Washington, D.C.: Business and Biodiversity Offsets Programme (BBOP). Online at: https://www.forest-trends.org/publications/standard-on-biodiversity-offsets/

BBOP Offset Principles and Guidelines	Recommendations by ERM
4 Incremental loss and fragmentation of biodiversity values is to be avoided	➢ *Addressed through habitat restoration to enhance habitat connectivity.*
5 Management of offset sites can be used to improve biodiversity values however this may not replace actions that are already funded	➢ *Consultation required to advise on existing programs already funded by others.*
6 Areas with existing or potential land uses that are likely to be in conflict with the objectives of biodiversity offsets will need to be avoided (mining, forestry leases).	➢ *Avoid habitat restoration in areas expected to be heavily degraded.* ➢ *This will likely require further stakeholder mapping and consultation.*
7 Offsets to be located in close proximity to the impacted area as possible, such that the gains of offset mitigation are retained in the local area impacted and not transferred elsewhere.	➢ *Habitat restoration and other conservation interventions to target Protected Areas, KBAs, IBAs, etc. where the project is located within or immediately adjacent to these areas.* ➢ *Consultation required to advise on opportunities and confirm approach.*
8 Location of offsets in the landscape that facilitate connectivity with adjacent habitats are considered preferable.	➢ *Consider habitat connectivity and ecological corridors enhancement opportunities when designing offsets and habitat restoration.*
9 Large offset sites that are connected to existing protected areas are also seen as preferable.	➢ *Habitat restoration and other conservation interventions to target Protected Areas, KBAs, IBAs, etc. where the project is located or immediately adjacent areas.* ➢ *Consultation required to advise on opportunities and confirm approach.*
10 Sites similarly used by comparable ethnic groups sharing similar cultural values will be of preference.	➢ *This will likely require further stakeholder mapping and consultation.*
11 Fairness and equity should be ensured for affected stakeholders.	➢ *This will likely require further stakeholder mapping and consultation.*
12 Offsets chosen should be permanent and ongoing in perpetuity.	➢ *Offset design to consider permanency and ensure maintenance and contingency measures are in place.* ➢ *Consultation required to advise on future management of any protected sites under management control.*

Importantly, upon conclusion and acceptance of the initial offset feasibility study and general approach by lenders and other key stakeholders (e.g. protected areas managers / conservation authorities), a detailed **Biodiversity Offset Management and Monitoring Plan (BOMMP**) would need to be developed that contains information regarding:

- Agreement on a final offset option;
- Select and agree on priority offset site(s);
- Agree on offset conditions;
- Baseline assessment of offset site(s) for opportunities (if required);
- Investigate offset implementation partner(s);

- Compile detailed financial costing;
- Investigate and clarify the legal instruments and arrangements for determination and agreement on securing the final offset areas, including delineation of the offset site, how the offset will be declared and designated in terms of Turkish Law;
- Understand the processes and roles of relevant government bodies and engage with them;
- Compile a detailed implementation plan with activities, roles, responsibilities and timeframes for delivering on the offset including short- and long-term management measures;
- Describe contractual arrangements with implementation partner(s);
- Agree on and finalize offset funding arrangements, as well as formulating a clear and transparent accounting and reporting approach and methodology;
- Compile Biodiversity Offset Monitoring & Evaluation Programme;
- Implement offset as per BOMMP; and
- Monitor and evaluate offset.

Since habitat restoration and/or enhancement will be a foundational aspect of the biodiversity offset, a detailed **habitat restoration plan** and programme will need to be compiled and it is recommended that a regional biodiversity expert or qualified ecologist with regional experience in planning and implementing restoration of natural habitats be appointed to assist with the planning and implementation of restoration concerning natural habitats.

It is recommended that any habitat rehabilitation/restoration be aligned with the SER (Society for Ecological Restoration) 'International principles and standards for the practice of ecological restoration'), which provides the most comprehensive and robust international framework available to date for ecological restoration projects. These are contained within the publication of the SER (Gann *et al*., 2019) which can be accessed online from the SER website:

- https://www.ser.org/page/SERStandards/International-Standards-for-the-Practice-of-Ecological-Restoration.htm

The SER guidelines are intended to support the development of ecological restoration plans, assist implementers with achieving intended goals, while addressing key challenges and navigating trade-offs associated with land management priorities and decisions. The SER establishes eight (8) principles that underpin ecological restoration, which serve as a useful guide when designing restoration plans or strategies that consider biodiversity:

1. Engage stakeholders
2. Draw on many types of knowledge
3. Informed by native reference ecosystems, while consulting environmental change
4. Support ecosystem recovery processes
5. Assessed against clear goals and objectives using measurable indicators
6. Seek the highest level of recovery possible
7. Part of a continuum of restorative activities
8. Gains cumulative value when applied at large scales

Step 4: implement restoration and/or offset plan(s).

Output: implementation of restoration/offset activities and interventions.

Step 5: monitor and evaluate the success of restoration/offset interventions and activities and propose corrective actions where necessary based on an adaptive management approach. During this process, it will also be important to confirm the actual footprint of temporary/permanent loss through field surveys, which can then be used to update the quantum of losses and requirements as necessary.

Output: monitoring, evaluation and adaptive response.

3.2 STRATEGY FOR NG/NNL FOR CH AND PBF SPECIES

Residual impacts on CH/PBF species are expected to be **Minor to Moderate** in terms of significance, taking into account mitigation as per the ESIA recommendations:

- In terms of endemic/restricted-range flora that qualify as CH/PBF, their association with the grassland and forest/woodland habitats that will be directly impacted during construction may results in an expected to be 'Moderate' significance residual impact based on the habitat losses anticipated.
- In terms of bird species that qualify as PBF, population-level impacts are unlikely based on the collision risk modelling undertaken which suggests a low risk of collision, whilst some temporary disturbance of nesting activity during construction activities. Overall, an 'Insignificant to Minor' impact is expected.
- Several bat species qualify as PBF, several of which are typically prone to collision with turbines. A 'Minor' residual impact is possible.
- For herpetofauna, Mediterranean Spur-thighed Tortoise qualify as PBF. Direct habitat loss, fragmentation and general disturbance could result in a 'Minor to Moderate' significance residual impact to herpetofauna species.

In this case, setting targets for NG/NNL is not practically possible as no actual quantification of species residual losses or impacts on populations can be performed.

There are numerous practical challenges to identifying species-specific targets, particularly where information on species populations is scarce (ICF Consulting, 2014[5]). In such situations, the use of habitat and habitat quality as a surrogate or proxy for species targets is generally considered acceptable in terms of GIIP. Habitat is an essential component of biodiversity, and the maintenance or restoration of habitats can have significant positive impacts on species diversity and abundance. Therefore, the identification of habitats and the assessment of their quality can serve as a useful approach to target setting and monitoring, particularly in areas with

[5] According to ICF Consulting (2014), one drawback of the use of species-focused approaches is that in many situations more than one species merits assessment, and since species metrics are normally complex and require a considerable amount of data, the use of metrics for more than a few species is normally impractical. A more logical approach is to define offsetting requirements according to the most sensitive species' needs. Also, if all the species have similar habitat requirements, it may be assumed that offsetting will ensure offset objectives (NNL/NG) will occur for all of them. An alternative approach is to use a species metric for one selected 'umbrella species' (i.e. an indicator species representative of the set of species of high conservation importance) which is considered to be most sensitive to the impacts of development and will therefore require the largest / highest quality offset. However, this requires good knowledge of the various species that may be impacted and high confidence that the umbrella species is indeed representative of the requirements of the other species and the most sensitive and in turn most demanding in terms of offset requirements. Providing numerical targets as opposed to simple presence/absence is challenging given the lack of species-specific population data and the inclusion of some species on a precautionary basis.

limited data on species. However, it is essential to acknowledge that the use of habitat as a proxy for species targets has its limitations[6].

In light of the above, for this Project a rather simplistic but practical approach towards addressing NG/NNL requirements for identified CH and PBF qualifying species of flora / fauna was considered. The focus was on exploring opportunities for how habitat may be improved with improved habitat condition/connectivity and through risk abatement of known key threats/pressures, and ultimately how averting species loss may contribute to NNL/NG in biodiversity. **The concept is that whilst no specific species targets are set, the anticipated trajectory is estimated and through monitoring of conservation actions, contributions of species protection and risk abatement measures towards meeting NNL/NG objectives can be qualified and where possible, roughly quantified (also through expert opinion).**

The approach therefore considered the key habitat requirements, known threats to species and conservation action recommendations of the IUCN, to identify actions and opportunities for contributing to CH/PBF species conservation, also taking into consideration the recommendations for actions derived through stakeholder engagement for the BAP. These are summarized below in Table 3-5.

TABLE 3-5 SUMMARY OF KEY THREATS AND CONSERVATION OPPORTUNITIES BASED ON THE IUCN FOR KEY FAUNAL GROUPS AND FLORA

Group	CH or PBF?	Key Threats (IUCN)	Conservation Opportunities (IUCN)
Reptiles: Mediterranean Spur-thighed Tortoise,	PBF	• Habitat loss • Habitat fragmentation • Road kills • Hunting & trapping • Water pollution	• Habitat restoration and creation • Construction of corridors underneath roads • Pollution control • Monitoring • Education / awareness
Flora: several endemic/ restricted-range plant species	CH, PBF	Species for the Project have not been assessed by the IUCN but likely to be associated with: • habitat loss • habitat fragmentation • human land uses	Not assessed by the IUCN but likely to be associated with: • habitat protection • restoration/creation of suitable natural habitat • monitoring of populations
Birds: various	PBF	• Habitat loss / degradation	• Preservation of breeding / nest sites

[6] Habitat characteristics alone may not be sufficient to fully represent the biodiversity of an area, particularly in areas with high species richness or endemism. Whilst offsets that utilize habitat as a proxy can provide a means to achieve a suitable offset to compensate for direct habitat loss, it is acknowledged that metrics that assess general habitat values and condition as a proxy for informing biodiversity offset and no NNL/NG targets may not provide a reliable basis for safeguarding individual species of high conservation importance. Habitat metrics do not normally consider habitat structure, species dependence on mixes of different habitat types, the management of habitat, existence of predators, pests and diseases and the interactions of several additional factors that influence species presence (ICF Consulting, 2014). Also, threatened species are also likely to have narrow ranges and very specific ecological requirements.

Group	CH or PBF?	Key Threats (IUCN)	Conservation Opportunities (IUCN)
		• Fragmentation of habitat • Land use change • Disturbance • Renewable energy • Powerline collision / electrocution risk • Pollution • Hunting / trapping	• Artificial habitat creation • Improved land/grazing practices • Low-intensity grazing and agriculture • Conversion of cultivated lands to grazing land • Maintain short vegetation in steppe/grassland • Combatting illegal hunting • Buffer zones around nest sites • Improved powerline mitigation • Predator control • Preventing wildfires • Water pollution management, banning of pesticides • Further monitoring and research to establish population trends • Education and awareness • Improving food resources through habitat enhancement/creation
Bats: various	PBF	• Habitat loss • Habitat fragmentation • Disturbance • Renewable energy • Water pollution • Predation • Light pollution	• Habitat protection and management • Habitat restoration/creation • Maintain old trees • Sustainable forestry • Pollution controls (pesticides, insecticides) • Artificial lighting controls • Education and awareness • Monitoring and research

Source: IUCN online threatened species database (https://www.iucnredlist.org)

Overall, species protection and conservation opportunities for CH and PBF species of fauna and flora appear to revolve around the following themes with appreciable overlap between faunal groups/species:

- Habitat protection
- Habitat enhancement and creation
- Enhancing or creating/restoring ecological corridors
- Implementing wildlife corridors
- Sustainable land and natural resource use (forestry and agriculture)
- Pollution prevention and control
- Fire control and prevention / wildfire management
- Illegal hunting controls
- Protection of breeding areas / nest sites (buffers)
- Improving food resources for species
- Predator control

- Controls on disturbance (noise, artificial light)
- Research and monitoring of population trends, threats and risks
- Education and awareness

These key conservation opportunities were therefore considered further to inform management actions in the BMP, and an indication of how each have been integrated into the BMP (where possible) is indicated below in Table 3-6.

TABLE 3-6 SPECIES CONSERVATION OPPORTUNITIES AND HOW THESE ARE INTEGRATED INTO THE BMP

#	Conservation Opportunities/Actions	Integration into BMP
1	Habitat protection	• Access controls during construction • Avoidance planning • Habitat compensation through offset
2	Habitat enhancement and creation	• Onsite habitat restoration post-construction • Habitat compensation through offset
3	Ecological / wildlife corridor restoration/creation	• As above
4	Sustainable land use (forestry/agriculture)	• Outside of Project control (external parties)
5	Pollution prevention/control	• Mitigation measures for water/soil pollution to be implemented during construction, as per mitigation hierarchy (also pollution control plan / spill control plan)
6	Fire control / prevention	• Fire Management Plan to be developed and implemented, especially for the construction phase
7	Illegal hunting controls	• Worker conduct to be strictly monitored and good conduct enforced
8	Protection of breeding areas	• Access controls during construction • Avoidance planning for key breeding areas • Pre-construction wildlife and nest checks with mitigation as needed • Offset strategy for habitats
9	Improving food resources	• Onsite habitat restoration post-construction • Habitat compensation through offset
10	Predator control	• Outside of Project control (external parties)
11	Disturbance controls	• Mitigation for construction and operation (noise, vibration, light, etc.) to be covered under the BMP / other plans
12	Research and monitoring	• Specific monitoring studies proposed to inform adaptive management during construction and operation
13	Education and awareness	• To be integrated into worker/staff awareness and training program for the Project

4. CONSTRUCTION PHASE BIODIVERSITY MANAGEMENT PLAN (BMP)

This Chapter presents the Biodiversity Management Plan (BMP) for the construction phase of the Project. It covers direct, indirect, and cumulative risks to habitats, species, ecosystems, and associated ecosystem services that may arise from construction activities. The plan aligns with relevant international standards including EBRD ESR6 and IFC PS6, and relevant national regulatory requirements.

The construction phase will involve significant ground disturbance and includes both permanent and temporary infrastructure development. Temporary construction components refer to structures and areas used solely during the construction period and will be removed or reinstated to their original condition upon project completion. These components include:

- Construction works,
- Internal access roads,
- Turbines and pads
- Energy transmission lines
- Operation facilities (sub-station, control room)

The construction BMP aims to ensure that all activities during construction are carried out in a manner that avoids, minimizes, and restores biodiversity impacts where possible, and applies mitigation hierarchy principles throughout. The subsequent sections outline the key risks, management measures, monitoring and reporting requirements, and define roles and responsibilities specific to the construction phase.

4.1 IMPACTS/RISKS

Construction related biodiversity impacts, related activities and infrastructure have been conceptualized and discussed in the ESIA (ERM, 2025).

Decommissioning phase impacts are likely be like those of construction phase impacts and have therefore not been assessed separately.

Note that cumulative impacts are addressed in Chapter 8 of the ESIA main report and include cumulative impacts on biodiversity.

The key sources of potential construction related biodiversity impacts include the following:

- Pre-construction activities (surveys, setting out of works)
- Construction mobilization activities and earthworks
- Temporary works
- Vegetation clearing, topsoil removal, general construction activities associated with access roads, turbine pads and the ETL pylons/towers
- Construction workers presence (noise, disturbance)
- Waste management
- Unplanned events such as erosion/sedimentation, flooding, accidental oil/fuel/chemical spills

Construction-phase impacts will primarily be temporary in nature apart from the loss of habitat due to clearing, (e.g. invasive plant species, disturbance due to noise, vibration, light pollution, and emissions), but may still be ecologically significant given the natural and undisturbed condition of the habitats affected.

The ESIA report has identified a total of nine individual biodiversity impacts associated with the construction phase of the project. These impacts were assessed with a focus on biodiversity receptors (habitats, flora, and fauna species) during the construction phase, specifically evaluating the severity of the impact and the associated risks. Impact severity ranged from minor to moderate, with primary concerns focused on habitat disturbance, reduced habitat connectivity, vehicle collisions with fauna species, movement barriers, and pollution and disturbance (dust, noise, light), introduction/spread of invasive alien plants. However, following the application of mitigation measures, residual impacts were generally regarded as 'Low' or 'Minor' across all categories (see Table 4-1 below).

TABLE 4-1 SUMMARY OF CONSTRUCTION-PHASE BIODIVERSITY IMPACTS

Impact	Biodiversity Receptor	CH or PBF?	Impact Significance (with embedded mitigation)	Residual impact (after mitigation)
Impact 1: Physical Destruction/Disturbance of Vegetation and Habitat	Habitats, flora, fauna	Habitats: PBF Flora: CH, PBF	Moderate to Major	Moderate
Impact 2: Reduced Habitat Connectivity	Habitats, fauna	Habitats: PBF Fauna: CH, PBF	Moderate to Major	Moderate
Impact 3: Introduction/spread of Invasive Alien Plants	Habitats, flora	Habitats: PBF Flora: CH, PBF	Minor to Moderate	Minor
Impact 4: Water and Soil Pollution	Habitats, flora, fauna	Habitats: PBF Flora: CH, PBF Fauna: CH, PBF	Minor to Moderate	Minor
Impact 5: Dust Pollution	Habitats, flora	Habitats: PBF Flora: CH, PBF	Negligible – Minor	Insignificant
Impact 6: Disturbance caused by Noise, Light, Vibration	Fauna species: birds, bats, small mammals, reptiles	Fauna: CH, PBF	Minor to Moderate	Minor
Impact 7: Vehicle Collisions with Fauna	Herpetofauna (reptiles, amphibians), and small mammals	Fauna: CH, PBF	Minor	Insignificant
Impact 8: Creation of barriers to faunal species movement	Mainly mammals and herpetofauna (reptiles, amphibians) Birds operationally	Fauna: CH, PBF	Minor	Insignificant
Impact 9: Disturbance/Displacement of Breeding Avian Species	Breeding birds Bats	Birds and bats: PBF	Minor	Insignificant

Source: ESIA (ERM, 2025)

4.2 CONSTRUCTION BMP ACTION TABLE

The management and mitigation measures/actions identified in Section 4.2 for addressing impacts during the construction phase have been expanded upon and structured in the form of a BMP action table that provides the following information:

- **Impact:** The specific biodiversity impact that the mitigation measure(s) relates to.
- **Management/Mitigation Measures:** A description of the management measure/action or mitigation proposed.
- **Management type:** Step of the mitigation hierarchy that the measure can be classified under (i.e. avoid, minimise, restore, compensate/offset).
- **KPI (Key Performance Indicator):** A quantitative compliance indicator or qualitative acceptance criteria used to assess the effectiveness of the management measure/action.
- **Timeline and Frequency:** The timing and frequency for implementing the measure/action.
- **Responsibility:** The individual or team responsible for implementing the management measure/action.

TABLE 4-2 CONSTRUCTION PHASE BMP

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
Impact 1: Physical Destruction/Disturbance of Vegetation and Habitat (including aquatic environment) **AND** **Impact 2: Reduced Habitat Connectivity**	**Restrict activities to construction footprints** • Restrict all construction activities including soil stripping, vegetation clearing, earthworks, access road construction, grading, etc. to the footprint of individual facilities only and as per the approved construction plan. • Avoid, as far as practicable, the placement of both permanent infrastructure and temporary construction components (such as laydown areas, and material storage sites) within or in immediate proximity to ecologically sensitive natural habitats (e.g. woodlands and steppes). Although modified habitats such as arable or fallow land are generally not present within the AoI, efforts must still be made to select areas of lower ecological value within the natural habitat mosaic, avoiding areas that have been identified as host endemic or conservation-significant species (these areas are located particularly in the western half of the wind farm area). Micro-siting should be informed by ecological sensitivity to minimize biodiversity impacts to the greatest extent possible. • Vegetation clearance should be limited strictly to areas necessary for construction. Where feasible, vegetation should be cut to ground level rather than completely stripped to preserve soil and seed banks. • The burning or burial of vegetation (both cleared and in-situ) is to be prohibited. • Adjacent natural habitats particularly woodlands and steppe must be protected through the installation of suitable barrier fencing and clear demarcation as far as practically possible to limit unauthorized access into these areas by construction crews and vehicles. • All temporary construction features, such as excavations, fencing, and stockpiles of soil or materials, must be fully removed upon completion of construction to enable natural habitat recovery and reduce long-term barriers to species movement.	Avoid / Minimise	All activities are restricted to the approved construction areas. Avoidance zones are established where necessary to protect PBF species. Temporary construction infrastructure removed upon completion of works.	During construction	All employees and contractors Health and Safety Manager / Environmental Solution Partner

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
	Manage vegetation clearance • The extent of areas to be cleared are to be clearly demarcated and marked out on the ground using appropriate flatting material as determined by the site manager. • Clearing is to be to be carried out in a sequential manner and in a way that directs escaping wildlife away from clearing and into adjacent native vegetation or natural areas on their own without the need for human intervention as far as possible. • Cleared vegetation may be stockpiled in a manner that facilitates re-spreading or salvaging and does not impede vehicle, livestock or wildlife movement.	Minimise	Vegetation removal limited to essential areas only. Correct stockpiling and management of vegetation.	During construction	All employees and contractors Health and Safety Manager / Environmental Solution Partner
	Fire Management • Prepare and implement a site-specific Fire Management Plan. • Fire management controls to be in place to prevent contributing to potential wildfire risk, particularly during the peak fire season. • Firebreaks around construction sites where fuels/flammable substances are kept is recommended in addition to having basic fire-fighting equipment on hand at all times. • Basic fire-fighting equipment (e.g. fire extinguishers, water tanks, hoses, shovels) must be readily available and maintained in functional condition at all times. • Construction workers must be trained in basic fire prevention and response protocols. • Smoking, open flames, and welding operations must be strictly controlled and only permitted in designated, safe areas. • Regular inspections of fire-prone areas should be conducted to identify and mitigate risks promptly.	Avoid / Minimise	**Fire Management Plan** prepared and implemented. Fire management controls are in place before construction commences. Relevant worker training in fire response implemented.	Prior to construction (plan preparation) During construction (implementation of plan)	Health and Safety Manager / Environmental Solution Partner All employees and contractors
	Soil and erosion management • Develop Soil Management Plan. • Implement relevant construction standards to limit the disturbance and erosion potential for soils (e.g. 'Construction Code of Practice for the Sustainable Use of Soils on Construction Sites' – DEFRA, 2009).	Minimise	**Soil Management Plan** in place. Soil erosion is prevented. Topsoil is retained and used for restoration.	Pre-construction (plan preparation) During construction (implement plan measures)	All employees and contractors Health and Safety Manager / Environmental

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
	• Avoid compaction of soils, for example though excessive vehicle tracking, and rip soils where compacted to allow for vegetation regrowth. • Topsoil and subsoil excavated during road construction is to be retained and stockpiled separately for rehabilitation purposes and/or used to construct perimeter earth berms as necessary to control drainage where relevant. Topsoil and subsoil are not to be mixed during the earthworks. • Disturbed fertile topsoil will be covered and protected with vegetation, mulch, or erosion-resistant /wind-proof material. • Measures to prevent erosion from excavated areas and soil stockpiles will be implemented. • Ensure that topsoil is returned and used in rehabilitation/habitat restoration as close to the site where it was originally removed (i.e. within a distance of 200 m or less) and not transported to and used in another location.		Topsoil stockpiles are appropriately managed.		Solution Partner
	Wildlife pre-construction surveys[7] • Pre-construction wildlife surveys should be conducted systematic day and night of the project area prior to construction activities (within a minimum of 1 weeks / 7 days prior to any clearing activities). Surveys must include the inspection of potential microhabitats such as under rocks, logs, soil crevices, or construction materials where amphibians may be sheltering. Any individuals found should be gently relocated to nearby suitable habitat to ensure their protection from construction-related impacts. • A targeted herpetofauna survey must be conducted prior to construction, with particular focus on detecting the presence of the Marmaris Lycia Salamander (*Lyciasalamandra flavimembris*), a globally Endangered species.	Avoid / Minimise	**Pre-construction wildlife survey program** developed. (Already met)	Construction (completed already)	Biodiversity Specialist Health and Safety Manager / Environmental Solution Partner

[7] No individuals of *Lyciasalamandra flavimembris* (EN) were observed during any of the surveys. The *Anatololacerta pelasgiana* was observed at several turbine and access road locations, with a total of 15 individuals recorded in May, 13 in June and 4 in July. Detected individuals were safely relocated to suitable nearby habitats outside the active construction footprint, while others were allowed to move away naturally. The *Testudo graeca* was observed in low numbers, with 7 individuals recorded in May, 5 in June and 2 in July, and each was relocated to undisturbed habitats to prevent mortality. The presence of *Caracal caracal* was not confirmed during field surveys in May and June. However, in July 2025, a camera-trap monitoring programme was initiated to determine the potential occurrence of the species in the wider forest landscape, and four camera traps were installed at strategic points within and around the project area. No dead or injured fauna, nests, eggs or breeding sites were identified during any of the survey periods.

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
	Surveys will be carried out in spring using the Visual Encounter Survey (VES) methodology, which is considered standard for amphibian assessments. According to the IUCN, this species typically inhabits rocky limestone outcrops and is often associated with maquis scrub and pine woodlands—habitats that are present within the Project Area, particularly within natural pine forests (70,07 ha) and scrub woodland (27,05 ha) If the presence of *Lyciasalamandra flavimembris* is confirmed (through direct observation or suspected activity) within the construction zone, specific protection measures must be developed. These should include microhabitat preservation, species-specific exclusion protocols, and where necesrelocation strategies to suitable nearby habitats to minimize construction-related risks. **Update after pre-construction surveys:** Pre-construction/early construction field were undertaken during May, June and July 2025 within the construction phase of the Gaia Wind Power Plant by Ekogen firm. Details are provided in footnote 7.				
	Flora pre-construction surveys[8] • Pre-construction population assessments must be undertaken for all CH and PBF flora species identified within the Project area. These assessments should determine the population size, distribution, and vulnerability of each	Avoid / Minimise	**Pre-construction flora survey program** developed. (Already met)	Pre-construction (completed already)	Biodiversity Specialist / Botanist

[8] Field observations confirmed the continued presence of several endemic and threatened flora species previously identified in pre-construction baseline studies. Populations were revisited at known coordinates, and both in-situ and ex-situ conservation measures were implemented to ensure the protection of these species from construction impacts. In disturbed areas, topsoil removal, seed collection and seed scattering were applied to support natural regeneration. During May, June and July 2025, the following endemic and

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
	species, with particular emphasis on the newly described plant species, *Fritillaria* sp. Nov. (nationally CR). • Based on the findings of the pre-construction assessments for flora, measures to avoid or minimize impacts to species based on confirmed locations are to be implemented and results of monitoring including photographs are documented in the monthly field inspection forms. **Update after pre-construction surveys:** Flora monitoring studies for the Gaia Wind Power Plant were conducted as part of the construction phase biodiversity monitoring programme during May, June and July 2025. Surveys were carried out by Ekogen. Details are provided in footnote **8.**				Health and Safety Manager / Environmental Solution Partner
	Aquatic environment surveys • An access road has been included within the Project footprint, which crosses a partially seasonal stream that is dry during certain periods and has low flow during others. As no baseline biodiversity surveys have been conducted along this section, the aquatic and riparian ecological characteristics of the stream remain unknown. Since road widening works have already commenced, retrospective baseline surveys should be carried out to characterize the existing biodiversity features. The ESIA should be updated, or a supplementary biodiversity assessment should be undertaken. These studies should cover:	Minimise	**Survey programme for access road developed**	During construction	Biodiversity Specialist Health and Safety Manager / Environmental Solution Partner

threatened flora species were monitored and managed through seed collection and translocation measures: *Fritillaria ozgeana, Verbascum ebubekirceylanii, Vinca ispartensis, Ornithogalum sandrasicum, Genista sandrasica, Muscari muglaensis, Astragalus dirmilensis, Teucrium alyssifolium, Acantholimon ulicinum var. purpurascens, Alyssum huber-morathii, Ajuga bombycina, Fritillaria carica, Cyclamen alpinum.*
Seeds were collected on 3th of July from populations located mainly along the T6–T10 turbines and access roads between elevations 1,150–1,360 m a.s.l., within serpentine steppes and limestone habitat and *Pinus nigra* forest clearings.
All collected seeds were packaged, labelled and prepared for submission to the Seed Gene Bank following ex-situ conservation procedures, while seed scattering and translocation were completed at suitable adjacent microhabitats.

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
	○ Fish and benthic macroinvertebrate sampling to assess potential species presence and habitat conditions; ○ Riparian and aquatic vegetation surveys to identify habitat types and potential CH/PBF flora species; ○ Assessments for invertebrates, herpetofauna, mammals, and avifauna along the access road and adjacent habitats. • Based on the findings of the retrospective assessments for the aquatic environment, measures to restore or compensate for any impacts on aquatic habitats and species, particularly within the partially seasonal stream crossing, will be developed and implemented.				
	Wildlife-friendly fencing and barrier prevention • Where construction barrier fencing is necessary, install permeable fencing to allow for unimpeded small mammals and herpetofauna movement. • Avoid placing impermeable fences, except temporarily to protect reptiles/small mammals from entering construction areas. • Reduce the suitability of construction/work areas for key species, such as earthen embankments, bare slopes and temporary topsoil stockpiles, by covering or containing piles of soil, fill, brush, rocks and other loose materials and covering or hydroseeding soil stockpiles and slopes that are to be left temporarily open/exposed for an extended period of time (e.g. exceeding one week). • Prevent the establishment of active nests during the primary bird nesting season on standing plant and temporary facilities and structures by closing opening and vents and checking equipment before operation. • Any temporary excavations, fences or stockpiles of soil and materials must be removed from site once construction is complete.	Minimise	Permeable fencing installed (where needed). No unnecessary barriers installed. Temporary facilities removed after construction is completed. Wildlife controls implemented as required.	Pre-construction During construction	All employees and contractors Health and Safety Manager / Environmental Solution Partner

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
	Seasonal restrictions and species protection for herpetofauna • It is recommended to relocate the species Mediterranean Spur-thighed Tortoise (*Testudo graeca*), which was detected in the field. Additionally, if the species is identified within the project area, translocation (relocation) efforts should be carried out. If the presence of the PBF species *Natrix natrix* is confirmed during field surveys, this species should also be translocated to suitable habitats outside the construction zone. • During the breeding season of herpetofauna (February 15 – April 15), all interventions within or adjacent to permanent flowing aquatic habitats should be avoided to the extent possible, and any essential construction activities in these areas should be minimised and carefully scheduled. Where work in aquatic environments is unavoidable, a qualified biologist must carry out a Visual Encounter Survey (VES) prior to the commencement of works, in order to inspect the habitat for the presence of adult amphibians or eggs, larvae, juveniles, where possible. If individuals are detected, they must be carefully collected using appropriate tools (e.g. hand nets or scoops) and relocated to a nearby, ecologically suitable habitat to prevent mortality or disturbance. • The formation of temporary water bodies (e.g. pools or puddles) within construction zones should be prevented, as such features may attract breeding amphibians, particularly frogs. The destruction of eggs or larvae that may result from later construction activity would cause direct losses to local populations. Proactive measures must therefore be taken to avoid the creation of such aquatic microhabitats.	Avoid / Minimise	**Pre-construction wildlife survey program** developed. Pre-construction wildlife surveys completed. Wildlife safely relocated where necessary. Wildlife controls implemented as required.	Pre-construction (completed) During construction	Biodiversity Specialist Health and Safety Manager / Environmental Solution Partner

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
	Update after pre-construction surveys: Pre-construction/early construction field were undertaken during May, June and July 2025 within the construction phase of the Gaia Wind Power Plant by Ekogen firm. Details are provided				
	Restoration of habitats temporarily disturbed • Prepare and implement a post-construction habitat restoration plan for all temporary construction areas that intersect with natural habitats. This plan should evaluate options for passive natural recovery and/or in active/assisted restoration (or a combination of the two) depending on the habitat type characteristics and known responses from literature/case-study examples. • All temporarily disturbed areas within serpentine steppes and *Pinus nigra* woodlands must be subject to restoration post-construction. • Maintain the original soil layering and do not mix topsoil and subsoil layers. • Reinstate soils in the reverse order (subsoil, then topsoil). • Ensure that topsoil is returned and used in habitat restoration in the same general area of the site where it was originally removed (i.e. within a distance of 200 m) and not transported to and used in another location. • Soil erosion features will be stabilised via backfilling as appropriate. • Protect the reinstated bare soil surface with a physical barrier, such as a thin layer of mulch or geotextile/erosion control matting. • Avoid compaction of soils, for example though excessive vehicle tracking, and rip soils where compacted to allow for vegetation growth. • Where lands will be returned to agricultural production, no further requirements are recommended beyond soil reinstatement and basic landscaping to return the surface to pre-construction conditions.	Restore	**Onsite Habitat Restoration Plan** developed. Habitat restoration plan implemented to specification.	During construction (plan preparation) Post-construction (implementation of restoration plan, details regarding timing to be defined in the habitat restoration plan)	All employees and contractors Biodiversity Specialist Health and Safety Manager / Environmental Solution Partner

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
	• Identify indigenous species for planting and suitable sources for seed and plants as appropriate (preferably using seed of local origin as far as possible, and only supplement with other seed where locally sourced seed is unavailable). • Identify commercial sources of seed / plants from local nurseries for example. • Encourage rapid re-vegetation through re-seeding using rapid growing, indigenous runner grasses that will form a secondary grassland habitat (meadow or pasture), with species selection using native/indigenous plants only (no exotic species) and using only a compatible species mix informed by the local soil and climate characteristics. • Direct seeding by broadcasting seed or hydro-seeding is recommended to immediately stabilise areas that are bare of vegetation cover within 2 months of the completion of works in these areas. • Care must be taken to utilise appropriate species for revegetating trenches where cables/pipelines have been buried (avoid selecting deep rooting plants/trees for example that could damage buried cables/pipes). • Temporary fencing or other appropriate barriers are to be erected where necessary to prevent entry to the area implemented in the short to medium term, to prevent livestock overgrazing and allow vegetation re-growth in order to stabilise the soil surface. • Control invasive and alien plant species that may colonise the reinstated habitat in accordance with the measures in this BMP.				
	Habitat restoration/compensation for habitats permanently destroyed • Post-construction survey to verify the extent of natural habitats transformed due to the Project, to confirm which temporary disturbances can be remedied/restored and which areas are permanently lost die to the development. Update the quantum of natural habitat loss and refine targets for NNL where necessary.	Restore / Compensate	Post-construction habitat verification survey completed. **Biodiversity offset strategy and plan** developed. Habitat compensation/restoration plan developed.	Post-construction (detailed timeframes to be defined in offset/habitat restoration plan)	Biodiversity Specialist External consultants Health and Safety Manager / Environmental Solution Partner All

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
	• Develop and implement a habitat restoration/compensation plan (or offset) for PBF qualifying habitats: Serpentine steppe, Black pine (*Pinus nigra*) woodland, *Pinus brutia* woodland towards meeting NNL of biodiversity for the relevant natural habitats that are PBF. (See NNL strategy in Section3.1) • Propagation and future reintroduction of CH and PBF species should be planned based on ecological suitability and restoration targets. In particular, in-situ and ex-situ conservation strategies must be developed for the following Critical Habitat (CH) qualifying plant species: *Fritillaria sp. nov., Muscari muglaensis, Verbascum ebubekirceylanii, Genista sandrasica, Ornithogalum sandrasicum,* and *Teucrium alyssifolium*; and the following Priority Biodiversity Feature (PBF) species: *Astragalus dirmilensis, Vinca ispartensis, Acantholimon ulicinum var. purpurascens,* and *Cyclamen alpinum*. As an initial step, seed collection during appropriate phenological periods will be conducted and submitted to the Turkish Seed Gene Bank for long-term conservation. For *Cyclamen alpinum*, tuber translocation should be undertaken during March–April from potentially impacted populations to secure, ecologically suitable sites outside the project impact zone. • Monitor the success of habitat restoration/compensation and impelment aftercare and adaptive management measures as necessary. • Monitor fauna and flora within restored / enhanced habitats to inform NNL/NG for CH and PBF flora and fauna species in particular.		Offset / Habitat compensation implemented to specification.		contractor and subcontractors
	Monitoring studies • Monitoring protocols must be established to track the survival, health, and population dynamics of both in-situ and translocated species.	Minimise	**Monitoring protocols for species** developed. Monitoring of protected/threatened plant species implemented.	During construction Post-construction 1 Monitoring protocols to track	All employees and contractors Biodiversity Specialist

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
	• Monitor the success of habitat restoration/compensation and implement aftercare and adaptive management measures as necessary. • Monitor fauna and flora within restored / enhanced habitats to inform NNL/NG for CH and PBF flora and fauna species in particular.		No reduction in flora populations. Adaptive measures implemented, informed by monitoring, as necessary,	species translocation: during construction 2 Monitoring of the success of restoration measures: post-construction (after implementation with precise timing and frequency of monitoring to be defined in the offset/restoration plan but ideally annually or every 1-2 years over several years post-implementation to track success and inform adaptive measures until restoration is deemed successful in meeting targets/objectives) 3 Monitor fauna/flora in restored habitats - to coincide with annual/1-2 year habitat monitoring until	External consultants Health and Safety Manager / Environmental Solution Partner

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
				target/objective met for the restoration (to be defined in detail in the habitat restoration plan)	
	In-situ and Ex-situ Conservation of CH and PBF Flora Species • For a total of 6 Critical Habitat qualifying plant species (*Fritillaria sp. nov., Muscari muglaensis, Verbascum ebubekirceylanii, Genista sandrasica, Ornithogalum sandrasicum, and Teucrium alyssifolium*) and 4 PBF species (*Astragalus dirmilensis, Vinca ispartensis, Acantholimon ulicinum var. purpurascens, and Cyclamen alpinum*) both in-situ and ex-situ conservation strategies must be designed and implemented. • Undertake a programme with targeted actions to identity and conserve protected/threatened flora species in areas to be impacted by construction activities prior to any land/habitat clearing occurring, as follows:	Minimise	Implementation of a Protected and Threatened Flora Conservation Programme (completed already)[9] Monitoring of protected/threatened plant species implemented. No reduction in flora populations.	During construction (collection and translocation – completed already) Post-construction (post-translocation monitoring, for at least three consecutive years)	All employees and contractors (Ekogen) Biodiversity Specialist Health and Safety Manager / Environmental Solution Partner

[9] The steps below summarise the process undertaken to identify, protect and monitor CH/PBF flora species during pre-construction and early construction phases:
a. Expert Identification: Flora specialists from Ekogen Halk Sağlığı Çevre Danışmanlık were appointed by Enerjisa to conduct pre-construction and construction-phase ecological supervision.
b. Survey Locations and Timing: Survey areas were defined in coordination with construction sequencing to ensure all clearance areas were surveyed prior to ground disturbance. Phenological windows for each key species (e.g. *Fritillaria ozgeana, Verbascum ebubekirceylanii*) were used to determine optimal survey timing.
c. Survey Execution and Findings: All identified individuals of key plant species were georeferenced, photographed, and assessed for viability. The majority of populations were located along road corridors and turbine pads prior to clearing.
d. Protection and Translocation Measures: Depending on species and location, the following measures were applied:
- Collection of viable seeds for submission to the Aegean Agricultural Research Institute Gene Bank (Ege Tarımsal Araştırma Enstitüsü Gen Bankası);
- Ex-situ and in-situ translocation of bulbs or individuals to safe receptor habitats within the same elevation and soil profile;
- Topsoil stripping and storage for later spreading over rehabilitation areas to facilitate natural recolonization.

e. Receptor Site Identification: Suitable receptor sites were selected within or adjacent to the project boundary, verified for soil composition, aspect, and drainage conditions consistent with the original habitat.
f. Monitoring and Reporting: Monthly monitoring of translocated individuals and seed dispersal zones has been conducted since May 2025. Monitoring results and photographs are documented in the monthly field inspection forms submitted to Enerjisa.
This process ensured that all pre-construction flora works were completed and verified before any earthworks commenced, in alignment with EBRD and DKMP requirements.

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
	○ Identify and appoint relevant local experts (i.e. Ekogen) to undertake pre-construction surveys and implement relevant in situ/ex situ flora conservation activities; ○ Undertake focused pre-construction surveys of locations identified where conservation important flora (i.e. CH and PBF species) may be found (i.e. Serpentine steppe, limestone habitats, *P. nigra* forest clearings), with timing of surveys aligned with the construction programme to pre-emt land clearing and habitat destruction; ○ Based on the individual plant species found that stand to be impacted, develop actions to collect seed and/or translocate live plants (species-specific); ○ Collected seed to be packaged, labelled appropriately and submitted to the Seed Gene bank for long-term preservation; ○ Translocate live plants and scatter seed (as per individual species requirements) to pre-identified and agreed plant receiving areas; and ○ Undertake monitoring of translocated plants for at least three consecutive years post-translocation. ○ Implementation of these measures has already been completed (with the exception of the post-translocation monitoring planned for future) and has been reported in the relevant monthly construction monitoring reports. A summary of the completed actions is included as footnote 9.				

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
	Update after pre-construction surveys: Seed collection and translocation of CH and PBF species were undertaken during pre/ early construction in 3th of July 2025. All collected seeds were submitted to the Turkish Seed Gene Bank and translocation were completed. Details are provided in footnote 8.				
Impact 3: Introduction/Spread of Invasive Alien Species (IAS)	**IAS management and monitoring plan** • Develop and implement an Invasive Alien Species (IAS) control plan covering both flora and fauna species, including seasonal monitoring and control/eradication as necessary (informed by monitoring). • Use the initially uncovered soil for covering the construction area in order to avoid the development of Invasive Alien Species Plans (IAPs). • Prohibit the general access of vehicles, construction workers and machinery and storing of soils to natural areas outside of the construction zone to avoid the dispersion of IAP species within these habitats.	Minimise / Restore	**IAS monitoring and management plan** and program in place. IAS monitored and removed/controlled as necessary.	Pre-construction (IAS plan preparation) During and after construction (implementation of IAS plan)	All employees and contractors Biodiversity Specialist Health and Safety Manager / Environmental Solution Partner
Impact 4: Water and Soil Pollution	**Spill prevention and waste management** • Waste and Wastewater Management Plan developed [COMPLETED: ERM]. • Spill Response Plan developed [COMPLETED: ERM]. • Spill prevention plan and equipment in place, with training. • Secure chemical storage areas, implement spill response plans, and manage waste properly and according to national regulations. • Design and construct all watercourse crossings to maintain natural flow conditions and avoid channel degradation. Crossing structures should be designed considering flood events and peak flow capacity, using adequately sized box culverts or similar structures that fully span the width of the channel without obstructing flow or altering the natural streambed.	Avoid / Minimise	**Waste and Wastewater Management Plan** in place [COMPLETED: ERM]. **Spill Response Plan** in place [COMPLETED: ERM]. No spills. Proper chemical/fuel storage implemented. Waste properly managed and disposed of.	Pre-construction (plan preparation) During construction (implementation of plan)	All employees and contractors Health and Safety Manager / Environmental Solution Partner

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
	• Crossing design shall aim to minimise erosion, scouring, and sedimentation during both construction and operation. Temporary diversion or dewatering, if required, must include appropriate erosion-control and sediment-trap measures. • Mixing any chemical substances, that is used in the construction area, in waterbed and/or aquatic ecosystems will be prohibited. Excavation materials will not be dumped onto streambed. • Any contamination of water resources will be avoided through pollution control measures and pollution response measures including training in use of and deployment of spill kits. • During the construction and operation phases, no water shall be used from the natural water resources within the project site, prior receiving permit from the relevant authority. • The use of sediment traps to reduce sedimentation yields minimize the effects of downstream aquatic shall be considered. • Minimising construction activities, uncontrolled removal of vegetation, forming of waste dumps; and deposition any material, including temporary stores within the riparian buffer zone (50m) along the banks of water courses. • Rapid establishment of soil cover and vegetation at site and use of covered wagons to reduce dust drift. • Any contamination of water resources will be avoided through pollution control measures and pollution response measures including training in use of and deployment of spill kits.				
	Regular inspections and emergency response training • Conduct regular equipment inspections for leaks and ensure personnel are trained for spill responses.		Regular inspections carried out. Training completed. No major spills reported.	During construction	All employees and contractors Health and Safety Manager / Environmental Solution Partner

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
Impact 5: Dust pollution	**Air quality management** • Air Quality Management Plan to be developed [COMPLETED: ERM] • Reduce the risk of fugitive dust emissions through implementing a suitable dust/air quality management plan	Avoid / Minimise	**Air Quality Management Plan** developed [COMPLETED: ERM]. Regular inspections carried out. Training completed.	Pre-construction (plan preparation) During construction (implementation of plan)	All employees and contractors Health and Safety Manager / Environmental Solution Partner
Impact 6: Disturbance Caused by Noise, Light, Vibration	**Visual and Light Management** • Temporary working areas will be designed to be as small as practicable and areas chosen for the storage of materials will avoid areas of high visual impact. • In order to protect the existing species of bats, it is necessary to reduce the intensity of construction works in the period from dusk to dawn (in the period April-October), when the activity of bats is at its highest. During this period, artificial lighting should be restricted only to the construction works zone, with the possibility of encasing the floodlights by protective lids in order to prevent the diffusion of light. • Aim lights away from any adjacent sensitive habitats. Use of directional lighting to reduce light spill and prevent light increases in adjacent sensitive habitats such as bushes and wooded habitats. • Use low intensity lights where possible. • Staff and visitors must be warned not to disturb birds, especially during the nesting period where nesting activity occurs particularly in natural wooded habitats on the site or surrounds. • Enforce good conduct by construction workers, including prohibition of hunting, trapping, fishing, and general harassment of wild animals. • Collect and remove waste products and litter from work areas that could attract wildlife to these areas.	Avoid / Minimise	Wildlife controls in place. Lighting controls implemented.	Pre-construction (plan preparation, controls in place) During construction (implementation of plan/measures)	All employees and contractors Health and Safety Manager / Environmental Solution Partner
	Noise Management • Develop Noise and Vibration Management Plan [COMPLETED: ERM].		**Noise and Vibration Management Plan** in place [COMPLETED: ERM].		

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
	• In order to reduce the levels of noise, equipment which is not being used must be turned off. Lights are also to be turned off when not needed. • The EPC Contractor is obliged to monitor and keep in proper working condition all installed equipment, devices and work resources. • Monitoring: monthly noise measurement with adequate phonometers. • Limit construction activities to day-time hours to limit impacts to any nocturnal species as far as possible, otherwise limit night-time activities to only essential works so as to reduce disturbance. • Maintain vehicles and equipment in good working condition. • Use noise minimizing technology where possible. Examples include noise barriers and mufflers on construction equipment.		Noise controls implemented. Construction period restrictions implemented. Noise levels monitored.		
	Blasting Management • Develop Noise and Vibration Management Plan [COMPLETED: ERM]. • Use low-intensity, small-charge, controlled blasting to reduce vibration amplitude and noise. • Avoid multiple simultaneous detonations during blasting (if required). Stagger charges to reduce overall energy release.		**Noise and Vibration Management Plan** in place [COMPLETED: ERM]. Noise controls implemented. Construction period restrictions implemented. Noise levels monitored.		
Impact 7: Vehicle Collisions with Fauna	**Vehicle speed controls** • Limit vehicle speed on site for construction vehicles and vehicles accessing the site (set speed limit at 30 km/hr). • Place calming measures such as speed humps for vehicles as necessary. • Install warning signs along the roads to alert drivers to potential faunal crossings where appropriate.	Avoid / Minimise	Speed limits enforced. Traffic calming measures in place. Collisions with wildlife avoided.	During construction	All employees and contractors Health and Safety Manager / Environmental Solution Partner
	Worker conduct and wildlife controls • Train workers on good conduct and enforce regulations to prevent hunting, trapping, or disturbing wildlife. • Implement the temporary fencing off of ditches, trenches and capping of pipes at	Avoid / Minimise	No incidents of wildlife harassment or illegal hunting, etc. Training / education programs implemented.	Pre-construction (controls in place, training) During construction	All employees and contractors Health and Safety Manager /

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
	nighttime to prevent wildlife movement onto the construction site. • Any excavations are not to be left open overnight, alternatively they will need to be securely covered or a means of escape for any animals that may become trapped will be provided, such as a wooden board or earthen ramp. • All open excavations are to be checked for the presence of animals each morning and immediately prior to backfilling of open excavations/trenches. • Any injured animals are to be transported carefully but efficiently to a local vet for treatment as soon as possible.		Onsite wildlife controls implemented.	(implementation of measures)	Environmental Solution Partner
	Restricted vehicle movement and activity • Limit worker/staff and vehicle access to the authorized construction site only. • Place appropriate limits on the number of vehicle movements to and from the construction site. • Use existing access roads or upgrade existing roads wherever possible before considering any new access road construction. • Restrict vehicles to the use of only authorized access roads. • Restrict activities to day-time hours where possible when visibility is good and potential fauna collisions with vehicles can be more easily avoided • To reduce the risk of collision with wildlife resulting in injury/mortality, it is proposed to limit construction works during the breeding season for ground-breeding birds.	Avoid / Minimise	No unauthorized vehicle movements. Construction activities restricted as far as possible.	During construction	All employees and contractors Health and Safety Manager / Environmental Solution Partner
Impact 8: Creation of Barriers to Faunal Movement	**Wildlife-friendly fencing and barrier prevention** • Same suite of mitigation measures as for 'Impact 2: Reduced Habitat Connectivity' apply here as well, as these will also mitigate barrier impacts.	Minimise	Permeable fencing installed. No unnecessary barriers installed. Temporary facilities removed after construction is completed. Wildlife controls implemented.	During construction	All employees and contractors Health and Safety Manager / Environmental Solution Partner
	Wildlife shepherding protocol • Wildlife shepherding protocol (see Annexure A) to be implemented where construction takes place, to check areas to be worked in prior to construction and remove or shepherd wildlife found on the construction site to safety in				

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
	adjoining natural habitat (where these animals cannot safely exit the construction site by themselves).				
Impact 9: Disturbance/Displacement of Breeding Avian Species	**Breeding Bird Nesting Protection Measures** • Consider appropriate preventive/protective buffer zones for breeding/nesting birds (those identified as nesting on site where active nests have been identified). A conservative buffer distance of at least 200 m is recommended (aligned with Tolvanen et al., 2023 and NatureScot, 2022). • Where possible avoid site clearance during the main bird breeding season (breeding season for species is typically the spring months to early summer, from April - June). See in impact description for possible breeding birds to consider. • Where not possible, "Ecological Clerk of Works" (ECoW) to prepare the environmental documentation on delivery of ecological requirements to site before construction activities commence in order for contractors to meet key development milestones. The ECoW will monitor that site-based construction activities are delivered in accordance to relevant laws and Project commitments. • Fence and/or demarcate work areas to minimize effects of vegetation clearance on possible ground and tree nesting birds. • Prevent the establishment of active nests during the primary bird nesting season on standing plant and temporary facilities and structures by closing opening and vents and checking equipment before operation. • Illegal activities such as hunting of wildlife or collecting of forest species is to be discussed with construction workers and such activities are to be prohibited with penalties/fines mechanism in place for indiscretions. • Avoid blasting during the breeding/nesting seasons of sensitive fauna (e.g. March–July for birds, spring emergence period for reptiles and amphibians). Schedule blasting during midday hours, when nocturnal and crepuscular species are less active.	Avoid / Minimise	Buffer zones established around identified nests. No clearance during peak breeding season. Sensitive zones visibly protected. No bird nesting on structures. Blasting schedules aligned with sensitive periods. Awareness raised and no incidents reported.	During construction	All employees and contractors Health and Safety Manager / Environmental Solution Partner Biodiversity specialist

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
	Bat Protection • Adjust construction schedules for night-time activities to avoid sensitive periods when bats are most active. Limit activities to daytime hours as far as possible. • In order to protect bat species, it is considered necessary to reduce the intensity of night-time construction works in the period from dusk to dawn (for the 3-month period June-August which is in order to protect bat species, it is considered necessary to reduce the intensity of night-time construction works in the period from dusk to dawn for the 3-month summer period which is considered the period of peak bat activity in the region and based on the baseline monitoring results). • For night-time activities, where it is not possible to restrict these, implement proper lighting protocols to minimize disturbance, such as preventing light spill outside of construction areas through use of directional cowls, directing light away from any adjacent natural habitats.	Avoid / Minimise	Reduced night activity; compliance with activity window. Directional lighting installed; adjacent habitats protected. Works restricted to daytime hours.	Pre-construction (finalize construction schedules) During construction (implement controls)	All employees and contractors Health and Safety Manager / Environmental Solution Partner Biodiversity specialist

4.3 MONITORING ACTIONS FOR CONSTRUCTION PHASE

The following table outlines the monitoring plan and program for monitoring of the implementation of the biodiversity management and mitigation measures in section 4.3 and Table 4-2, for the construction phase. This includes pre- and post-construction monitoring but excludes the operational phase which is addressed in Chapter 5.

The purpose of these monitoring activities is to ensure that residual impacts are controlled and that the mitigation measures/actions have been effective in terms of their implementation and to advise on any changes or adaptive measures necessary.

For each monitoring activity listed, the table provides the following information:

- **Reference number:** The identification code (ID) for the monitoring activity.
- **KPI (Key Performance Indicator**): Regulatory limit values or qualitative acceptance criteria to be met.
- **Metric:** How will performance against the KPI/target be measured.
- **Timing:** When monitoring will take place.
- **Frequency:** How often will the monitoring activity take place.
- **Monitoring measure:** The monitoring activity and measure used to quantify that the KPI / target has been achieved.
- **Responsibility:** The person or team responsible for conducting the monitoring activity.

TABLE 4-3 MONITORING ACTIONS FOR THE CONSTRUCTION PHASE INCLUDING PRE- AND POST-CONSTRUCTION

Reference Number	KPI (with target)	Metric	Timing	Frequency	Monitoring measure	Responsibility
PRE-CONSTRUCTION MONITORING						
CBMP-1	All (100%) of pre-construction wildlife and flora surveys have been completed prior to construction works commencing.	Number of surveys complete compared to required number	Before construction	Once-off	• Pre-construction survey reports • Audit	All contractor and subcontractors Health and Safety Manager / Environmental Solution Partner
CBMP-2	Species-specific translocation completed prior to vegetation clearance	Number of individuals translocated per species	Before construction / Post-relocation	Once-off (per site clearance event)	• Relocation report • Field log • Photographic evidence	Health and Safety Manager / Environmental Solution Partner Biodiversity Specialist
CBMP-3	Collection and storage of target species' seed/tubers completed as per phenological schedule	No. of tubers relocated and percentage survival rate Percentage of target species collected; Seed bank documentation	Before construction	Once-off	• Collection records; Submission certificates (e.g. Seed Gene Bank)	Health and Safety Manager / Environmental Solution Partner Biodiversity Specialist
CBMP-4	All (100%) of temporary works are demarcated and established in appropriate areas as per the site plan.	Percentage of work areas demarcated prior to construction	Before construction	Once-off	• Site inspection (visual assessment) • Audit	All contractor and subcontractors Health and Safety Manager / Environmental Solution Partner
CBMP-5	Training requirements have been identified and a training schedule is kept current.	Training schedule available or not	Before construction / During construction	Prior to commencing work on site	• Audit • Training needs assessment and training matrix	All contractor and subcontractors Health and Safety Manager / Environmental Solution Partner
CONSTRUCTION MONITORING						
CBMP-6	All (100%) of employees accessing the site have received the necessary induction and generic training (and any specialized training) as required.	Percentage of employees having received training	During construction	Prior to commencing work on site	• Audit • Induction / training register	All contractor and subcontractors Health and Safety Manager / Environmental Solution Partner
CBMP-7	The spread and introduction of IAS on the construction site has been actively controlled.	Extent or percentage cover of the site by IAS	During construction	Weekly	• Site inspection (visual assessment) • IAS survey and report	All contractor and subcontractors

Reference Number	KPI (with target)	Metric	Timing	Frequency	Monitoring measure	Responsibility
						Health and Safety Manager / Environmental Solution Partner
CBMP-8	100% avoidance of adjacent natural habitats outside of the construction zone.	Extent (area) of natural habitats	During construction	Daily	• Site inspection (visual assessment) • Audit	All contractor and subcontractors Health and Safety Manager / Environmental Solution Partner
CBMP-9	No stripping / clearing (zero %) of natural vegetation (e.g., woodland / forest / steppe) takes place outside of the authorized construction footprint.	Extent (area) of natural vegetation	During construction	Daily	• Site inspection (visual assessment) • Audit	All contractor and subcontractors Health and Safety Manager / Environmental Solution Partner
CBMP-10	Zero spill / contamination incidents.	Number of incidents reported	During construction	Daily	• Site inspection • Audit	All contractor and subcontractors Health and Safety Manager / Environmental Solution Partner
CBMP-11	Zero incidents of non-compliance.	Number of incidents reported	During construction	Daily	• Audit • Non-compliance register	All contractor and subcontractors Health and Safety Manager / Environmental Solution Partner
CBMP-12	All (100%) of stockpile areas agreed in advance of works within approved areas only.	Number of stockpiles within agreed locations	During construction	Weekly	• Site inspection (visual assessment) • Photographic evidence • Stockpiles map	All contractor and subcontractors Health and Safety Manager / Environmental Solution Partner
CBMP-13	No uncontrolled surface runoff or soil erosion.	Number of erosion incidents Extent of soil erosion	During construction	Daily	• Site inspection (visual assessment) • Photographic evidence • Incident reporting	All contractor and subcontractors Health and Safety Manager / Environmental Solution Partner
CBMP-14	Rehabilitation and/or restoration plan(s) prepared prior to completion of works.	Plan prepared	Prior to completion of construction works	Once-off	• Rehabilitation/restoration plan(s) • Audit	All contractor and subcontractors

Reference Number	KPI (with target)	Metric	Timing	Frequency	Monitoring measure	Responsibility
						Health and Safety Manager / Environmental Solution Partner
CBMP-15	Success of restored habitats for target flora and fauna	Success rate of the translocations and species survival	During construction/ post-construction and operation	Annually	• Site inspection (visual assessment) • Photographic evidence • Audit	Health and Safety Manager / Environmental Solution Partner Biodiversity Specialist
CBMP-16	Fire control measures implemented across all active construction sites in accordance with Fire Control Plan	Percentage of sites with equipment and firebreaks in place Fire Control Plan available	During construction	Monthly	• Site inspection • Fire safety checklist • Fire drill records, • Training attendance sheets	All contractor and subcontractors Health and Safety Manager / Environmental Solution Partner
CBMP-17	Wildlife-friendly fencing installed in sensitive areas	Percentage of fencing compliant with permeability standards	During construction	Weekly	• Site inspection (visual assessment) • Photographic evidence • Audit	Health and Safety Manager / Environmental Solution Partner Biodiversity Specialist
CBMP-18	Noise and vibration levels maintained below disturbance thresholds	Number of exceedances of dB thresholds	During construction	Monthly	• Noise monitoring logs • Vibration assessments	All contractor and subcontractors Health and Safety Manager / Environmental Solution Partner
POST-CONSTRUCTION MONITORING						
CBMP-19	100% of temporary works have been decommissioned, removed and these areas closed once construction has been completed.	Extent (area) of temporary works	After completion of works	Once-off	• Site inspection (visual assessment) • Photographic evidence • Audit	All contractor and subcontractors Health and Safety Manager / Environmental Solution Partner
CBMP-20	Post-construction habitat reinstatement completed to a suitable standard (e.g., surfaces stable with no evidence of erosion, >90% vegetation cover achieved and maintained).	Percentage vegetation cover	Within 2 months of completion of works	Once-off	• Site inspection (visual assessment) • Photographic evidence • Habitat/vegetation survey and mapping • Audit	All contractor and subcontractors Health and Safety Manager / Environmental Solution Partner
CBMP-21	100% native plants used in recultivation / revegetation.	Percentage or number of native vs exotic plants	Within 2 months of completion of works	Once-off	• Site inspection (visual assessment) • Photographic evidence • Species list • Audit	All contractor and subcontractors

Reference Number	KPI (with target)	Metric	Timing	Frequency	Monitoring measure	Responsibility
						Health and Safety Manager / Environmental Solution Partner
CBMP-22	Success of restored habitats for target flora and fauna	Species survival and colonization rates (%)	After completion of works	Annually (first 2 years)	• Ecological monitoring reports • Vegetation surveys	Health and Safety Manager / Environmental Solution Partner Biodiversity Specialist

4.4ROLES AND RESPONSIBILITIES

The ultimate responsibility for implementing the construction phase BMP rests with the developer, however specific technical tasks and measures will be delegated to the EPC Contractor and any relevant subcontractors, as well as independent experts likely to be involved in BMP implementation and monitoring. Key roles and responsibilities are outlined in Table 4-4 below for the construction phase.

TABLE 4-4 ROLES AND RESPONSIBILITIES

Role	Overall responsibilities	Specific responsibilities
Construction Site Manager	• Ensure qualified personnel and resources are allocated for the implementation of the Construction Phase BMP. • Approve sub-plans, procedures, and contractor selections related to biodiversity management.	• Final approval of the Construction Phase BMP and relevant subcontractor plans. • Act on major non-conformities based on Health and Safety Manager / Environmental Solution Partner input and monitoring outcomes. • Oversee implementation of corrective actions when needed.
Health and Safety Manager / Environmental Solution Partner	• Ensuring that the BMP is kept up to date and appropriate to the nature and scale of the Project • Ensuring that the BMP is implemented effectively. • Collecting, organizing and reviewing monitoring data and performance monitoring reports provided by the specialized contractor(s) and providing summary results of such reports to Management, to stakeholders and to the Lenders.	• Ensuring that action/measures and monitoring activities directly under Enerjisa responsibilities are carried out timely and adequately according to this Management Plan requirements. • Addressing Non-Conformances through the definition of Preventive/Corrective actions proposing to Management, if necessary, amendments and/or updates to this Management Plan and issuing plan revisions. • Bringing major Non-Conformances immediately to the attention of Management.
EPC Contractor, subcontractors	• Effective execution of the specific tasks assigned in conformity with the BMP and with contractual arrangements. • Respect of EHS requirements. • Agree with the timing and logistics of the monitoring activities.	• Provide relevant monitoring data and monitoring reports to as indicated in this plan. • May propose changes and integrations to the monitoring activities included in the Management Plan. The proposed changes shall be evaluated and approved by HSE and Sustainability Manager and by Management.

Role	Overall responsibilities	Specific responsibilities
All employeesand contractors	• Comply with environmental management requirements. • Report any activities which are causing unnecessary biodiversity issues.	• Give evidence that the relevant mitigation measures identified in the current biodiversity management plan are being properly considered, implemented and monitored during execution of the works.
Biodiversity Specialist	• Consulted with on an ad hoc basis, as required, to assist with implementing key measures of the BMP.	• Support with implementing plans and programs according to the BMP. • Assist with developing supporting plans and protocols. • Onsite training on implementation of the BMP and supporting plans and protocols. • Adhoc support onsite or remotely via phone/email as necessary.

4.5COMPLIANCE AND REVIEW

The Corporate Biodiversity Specialist (CBS) leads all on-site biodiversity activities (monitoring, mitigation, protection) with the contracted Biodiversity Consultant. During construction, the Consultant submits monthly progress reports to the CBS. The Biodiversity Management Plan (BMP) is adaptive and will be updated by the CBS based on site findings. Where required, a Biodiversity Action Plan (BAP) will be prepared and, once issued, it will also be updated adaptively.

4.5.1 SITE INSPECTIONS

- The Biodiversity Consultant conducts routine inspections and monitoring in line with the BMP and keeps written records on site and in the project archive.
- Daily visual checks are undertaken on active work areas to confirm the integrity of no-go areas/buffers and the effectiveness of biodiversity controls specified in the BMP.
- Monthly CBS reviews are carried out during construction to evaluate monitoring results against the KPIs in Section 4.4 and to issue BMP/BAP updates where needed.

4.5.2 BIODIVERSITY COMPLIANCE

The following definitions shall apply in relation to the classification of Biodiversity Occurrences during construction phase:

- Biodiversity Near Miss: An occurrence that, if not controlled, could affect protected/priority species or habitats.
- Biodiversity Incident: An occurrence that results in actual impact on protected/priority species or habitats.

4.5.3 BIODIVERSITY NON-COMPLIANCE: A DEVIATION FROM BMP/BAP REQUIREMENTS OR APPROVED ECOLOGICAL METHODS.AUDITING

- Internal monthly audits and external bi-monthly audits are undertaken during construction.

- Audits follow protocols aligned with the BMP and include field verification and review of monitoring data. Findings are communicated to Project management.
- A final close-out audit is conducted within one month of completing construction activities. Any required updates are incorporated into the BMP/BAP.

4.5.4 MANAGEMENT OF NON-COMPLIANCE AND ADAPTIVE UPDATE

All near misses, incidents and non-compliances are entered in the Biodiversity Incident and Action Log within the adaptive BMP. Required measures are defined using the controls and methods already set out in the BMP and—if issued—the BAP; responsibilities and target dates are recorded. The CBS verifies implementation and may require temporary suspension of relevant activities until controls are effective. Once closed, the BMP/BAP is updated and re-issued.

4.6 REPORTING REQUIREMENTS

The following reporting requirements apply for the EPC Contractor:

- Incident reporting;
- Emergency response reporting;
- Records of annual emergency response training exercises;
- Biannual reports on KPIs and performance trends;
- Monthly reports of relevant training activities completed and attendance registers to be maintained;
- Daily/Weekly/Monthly reports of site inspection activities;
- Audit reports;
- Inspection logs and status of non-compliances.

4.7 RECORD KEEPING & DOCUMENT CONTROL

A record-keeping system shall be used to control all records and documents so that they are:

- Easy to retrieve and identify and are maintained in an orderly fashion;
- Current, accurate, legible, and dated, and that the dates should include revision dates when appropriate;
- Relevant/applicable and satisfy regulatory and/or legislative requirements; and
- Retained for a specified time period – Retention of records may be regulated by legislative or regulatory policies;

Records are to be kept of all required activities and incidents, which must be readily available for inspection at any time and which are to include the following:

- All permits and licenses;
- Register of relevant environmental legislation;
- Register of relevant environmental consents;
- All incidents reported;
- Internal and external audit reports and corrective action plans;
- Site inspection reports;
- Monitoring reports;
- Records of successful and unsuccessful implementation of mitigation measures;
- Site inductions;

- Training records;
- Tool box meetings and other training records of attendance;
- MSDS (Material Safety Data Sheets).

The construction BMP will be regularly reviewed and updated by the E&S Officer/CBS after any change in the context in which the Project operates during the construction phase.

Urgent updates in line with the principle of 'adaptive management' can be the responsibility of the E&S Officer/CBS, however any material changes to intervention design, the timing of monitoring activities, etc. should be made in consultation with a third-party consultant to ensure accountability.

Any and all changes made to the BMP will be made in the master document and revision numbers and dates provided to track version numbers as part of the EPC Contractor's data and document management system. A summary document should also be produced that summarizes the important changes made to the document for the different version numbers and who authorized these changes.

A copy of the documents / folders shall be kept at the Site offices for the duration of the works and will be available at all times for review.

5. OPERATIONAL PHASE BIODIVERSITY MANAGEMENT PLAN (BMP)

This Chapter presents the Biodiversity Management Plan (BMP) for the operational phase of the Project. The BMP for the operational phase of the project will address the management of potential impacts on biodiversity (namely to species and habitats) that may occur during the operation and maintenance of the GAIA Wind Power Plant.

Operationally, the BMP shall apply to the following components of the Project:

- Operation and maintenance of the Project, and
- Maintenance of access roads.

Note also that maintenance activities are included in the operational phase, noting that wind farms typically have relatively low maintenance and servicing requirements (Bennun et al., 2021).

The operational phase BMP aims to ensure that all suitable measures are in place prior to and during wind farm operation that seek to avoid, minimize, and restore biodiversity where possible, and applies mitigation hierarchy principles throughout to manage residual impacts.

5.1 IMPACTS/RISKS

Biodiversity impacts, associated activities, and infrastructure for the operational phase of the wind farm have been assessed in detail in the ESIA prepared by ERM (2025).

While the construction phase poses more acute and direct threats to biodiversity, the operational phase carries its own set of risks, including bird and bat collisions with turbines, disturbance from ongoing maintenance activities, and potential barriers to faunal species movement for example.

While the significance of impacts varies across biodiversity receptors, the overall inherent risk during operation is considered Minor to Moderate, particularly risk of impact related to collision and displacement effects for avifauna (birds, bats). However, following the application of mitigation measures, residual impacts were generally regarded as 'Low' or 'Minor' across all categories (see Table 5-1 below).

Impacts such as physical destruction or disturbance of vegetation have been discussed under construction and are therefore not relevant to the operational phase (impacts 1 – 5 in the table below are not relevant to operation).

TABLE 5-1 SUMMARY OF OPERATIONAL PHASE BIODIVERSITY IMPACTS

Impact	Biodiversity Receptor	CH or PBF?	Impact Significance (with embedded mitigation)	Residual impact (after mitigation)
Impact 1: Physical Destruction/Disturbance of Vegetation and Habitat	N/A (construction phase only)			
Impact 2: Reduced Habitat Connectivity				
Impact 3: Introduction/spread of Invasive Alien Plants				

Impact	Biodiversity Receptor	CH or PBF?	Impact Significance (with embedded mitigation)	Residual impact (after mitigation)
Impact 4: Water and Soil Pollution				
Impact 5: Dust Pollution				
Impact 6: Disturbance caused by Noise, Light, Vibration	Fauna species: birds, bats, small mammals, reptiles	Fauna: CH, PBF	Insignificant - Minor	Insignificant
Impact 7: Vehicle Collisions with Fauna	Herpetofauna (reptiles, amphibians), and small mammals	Fauna: CH, PBF	Insignificant - Minor	Insignificant
Impact 8: Creation of barriers to faunal species movement	Mainly mammals and herpetofauna (reptiles, amphibians) Birds operationally	Fauna: CH, PBF	Minor	Insignificant
Impact 9: Disturbance/Displacement of Breeding Avian Species	Breeding birds Bats	Birds and bats: PBF	Minor - Moderate	Insignificant - Minor
Impact 10: Avian Species Collisions with Wind Turbines	Birds Bats	Fauna: CH, PBF	Minor - Moderate	Insignificant - Minor
Impact 11: Avian Species Collisions with Energy Transmission Lines	Birds	Fauna: CH, PBF	Minor - Moderate	Insignificant - Minor

Source: ESIA (ERM, 2025)

5.2 OPERATIONAL BMP ACTION TABLE

The management and mitigation measures/actions identified in Section 5.2 for addressing impacts during the operational phase have been expanded upon and structured in the form of a BMP action table that provides the following information:

- **Impact:** The specific biodiversity impact that the mitigation measure(s) relates to.
- **Management/Mitigation Measures:** A description of the management measure/action or mitigation proposed.
- **Management type:** Step of the mitigation hierarchy that the measure can be classified under (i.e. avoid, minimise, restore, compensate/offset).
- **KPI (Key Performance Indicator):** A quantitative compliance indicator or qualitative acceptance criteria used to assess the effectiveness of the management measure/action.
- **Timeline and Frequency:** The timing and frequency for implementing the measure/action.
- **Responsibility:** The individual or team responsible for implementing the management measure/action.

TABLE 5-2 OPERATIONAL PHASE BMP

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
Impact 6: Disturbance caused by Noise, Light, Vibration	**Controls on visual/light and noise disturbance** • Implement lighting systems that minimize attraction to bats, as certain types of lighting can draw them closer to turbines. • Utilize lighting only when essential. • Use appropriate lighting at the sub-station and any access doors to turbine towers that minimises ecological and physiological effects on wildlife and also limits attraction of insects e.g. use of long-wavelength (warm white, orange, red and infra-red) light instead of short-wavelength (UV, cool white, blue and green LEDs)[10]. • Prevent accumulation of surface water (pooling, creation of puddles after rainfall that can attract insects/bats) near the WTGs by ensuring a level turbine pad surface is created.	Minimise	Use of ecologically sensitive lighting systems verified. No artificial light spill into adjacent natural habitats. No pooling observed near WTGs. Wildlife controls in place. Lighting controls implemented.	Post-construction Operation	Operator
Impact 7: Vehicle Collisions with Fauna	**Vehicle speed controls** • Restrict maintenance activities as far as possible to day-time hours when visibility is good to reduce risk of vehicle collisions with wildlife. • Restrict vehicle use to the internal access roads only. • Limit vehicle speed on site for vehicles accessing the site (set speed limit at 30 km/hr). • Install warning signs along the internal roads to alert drivers to potential faunal crossings where appropriate. • Any injured animals are to be transported carefully but efficiently to a local vet for treatment as soon as possible.	Avoid / Minimise	Speed limits enforced. Traffic calming measures in place. No collisions with wildlife.	Operation	Operator
	Worker conduct and wildlife controls • Avoid attracting animals to the site by minimizing lighting as far as possible,	Avoid / Minimise	No incidents of wildlife harassment or illegal hunting, etc.	Operation	Operator

[10] According to the research of Longcore et al. (2018), filtered yellow-green and amber LEDs are recommended and predicted to have lower ecological and physiological effects on wildlife (compared with high pressure sodium lamps, while blue-rich lighting would have greater effect). Also, as a general rule insects are more sensitive or attracted to short-wavelength (UV, cool white, blue and green LEDs) than long-wavelength light which is recommended (warm white, orange, red and infra-red).

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
	discouraging dumping of any food waste apart from through approved means. • Collect and remove waste products and litter that could attract wildlife to these areas. • To prevent impacts on any ground breeding birds that may try and establish themselves at the operational site, prevent them from breeding in the relevant areas in the first place. Suitable visual deterrents, such as colored ribbons attached to poles/sticks that move in the wind, may be used to scare ground-breeding birds before the start of the breeding period. • Prevent the establishment of active nests during the primary bird nesting season on facilities and structures by closing openings and vents and checking vehicles and maintenance equipment before operation. • Examine equipment and plant stored on site before use in site maintenance, particularly after rainfall events when reptile and amphibian movements occur more often, to ensure use will not harm individuals that might be seeking temporary refuge under vehicles for example.		Training / education programs implemented. Onsite wildlife controls implemented.		
Impact 8: Creation of Barriers to Faunal Movement	**Habitat restoration/compensation for habitats permanently destroyed** • Habitat restoration/compensation plan to be developed and implemented (as per Impact 1 for the construction BMP), that takes into account compensating for reduced natural habitat connectivity. • Implement appropriate monitoring, maintenance and aftercare of natural habitats restored as part of the habitat restoration/compensation plan (covered under the construction phase BMP).	Restore / Compensate	Habitat compensation/restoration plan developed and implemented to specification. Monitoring and maintenance undertaken for restored habitats.	Post-construction Operation	Operator
	Wildlife-friendly fencing and barrier prevention • Ensure that no new impermeable fences are implemented at the site. • Maintain the integrity of any fences. • If operational monitoring results show that any site fences present a physical barrier to faunal movements, consider measures to improve	Minimise	Permeable fencing installed and maintained. No unnecessary barriers installed.	Operation	Operator

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
	permeability of fencing, such as the use of tunnels, or replacement of fencing in strategic positions using other materials with appropriate spacing to allow animals to pass through unrestricted.				
	Wildlife controls • Access controls to be implemented to limit access to areas of high biodiversity sensitivity (natural steppe/woodland habitat) outside of the operational facilities. • No additional clearance of vegetation and habitat to be permitted beyond that approved during the construction phase. • Minimize artificial lighting during any night-time maintenance operations.	Avoid / Minimise	Access controls implemented. Restrictions on additional activities. Appropriate lighting design.	Operation	Operator
	Wildlife shepherding protocol • Wildlife shepherding protocol (see **Annexure A in Chapter 7**) implemented where animals found on the site cannot safely exit the site by themselves.	Minimise	Wildlife shepherding protocol implemented when necessary.	Operation	Operator
Impact 9: Disturbance/ Displacement of Breeding Avian Species	**Operational Noise and Light Control to Minimize Faunal Disturbance** • Utilize low-noise wind turbine designs that minimize operational noise, emissions, especially during periods of peak bird activity. • Employ noise control technologies such as sound barriers, insulation and absorption materials around turbine components to reduce noise propagation.	Avoid / Minimise	Low-noise turbine specs verified. Operational noise below threshold. Noise reduction systems installed and performance monitored.	Operation	Operator
	Operational Biodiversity Monitoring and Adaptive Management • Monitor bird and bat populations to assess behavioral impacts, breeding success, and activity levels. • Set ecological thresholds and implement adaptive management actions based on monitoring data. • Adaptive management may include habitat enhancement or creation to support displaced species.	Avoid / Minimise	Monitoring programs implemented and maintained. Adaptive actions triggered when thresholds are exceeded. Habitat enhancement areas implemented if needed. Roost monitoring records maintained, disturbance.	Operation	Operator

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
	• Monitor bat roosts within a 2 km radius during maternity and migration periods (April–October).				
Impact 10: Avian Species Collisions with Wind Turbines	**Post-Construction Monitoring and Adaptive Management** • Prepare and implement an Adaptive Management Plan for avifauna that includes operational bird and bat monitoring (PCFM aligned with good international practice). This will build on/adapt the approach taken for Enerjisa's established YEKA framework, including: 1. PCFM Protocol for bird and bats, that includes monitoring of the effectiveness of mitigation measures 2. Turbine Shut-down-on-demand (SDOD) / Curtailment Protocol 3. Biodiversity Action Plan (BAP), as needed	Avoid / Minimise	**ABBMP** developed. **PCFM program** in place and active. Fatality thresholds defined and tracked. Adaptive management measures implemented in response to thresholds exceedance.	Operation	Operator
	Operational Lighting and Turbine Design to Minimize Attraction and Disorientation • Use of long-wavelength lighting (e.g., red, orange) instead of short-wavelength (UV, blue) light. • Lighting should only be used when essential and be directional to avoid light spill into natural habitats. • Avoid continuous or pulsating red lights on turbines, which are known to attract night-migrating birds.	Avoid / Minimise	Wildlife-sensitive lighting installed. No light spill to natural habitats. No insect attraction observed near turbines	Operation	Operator
	Operational Modifications to Reduce Bat Collision Risk • Adjustment of turbine cut-in speeds will be implemented as an adaptive operational mitigation measure, triggered by the results of the Post-Construction Fatality Monitoring (PCFM) programme for birds and bats. At this stage, no fixed cut-in speed commitment is established. If monitoring identifies significant collision risk or mortality exceeding species- or site-specific thresholds defined in the Adaptive Bird and Bat Monitoring and Management Plan (ABBMMP), the following measures will be applied:	Avoid / Minimise/ Manage	Cut-in speed protocols applied seasonally as necessary. Smart curtailment active during peak bat periods, as needed. No surface water pooling at turbine bases.	Operation	Operator

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
	○ Application of turbine shutdowns or increased cut-in speeds during high-risk periods. ○ 6 m/s during peak activity (July–October) and 5.5 m/s during moderate activity (April–June, November–December); no curtailment required outside these periods unless triggered by monitoring results. ○ Final parameters (cut-in speed values, duration, and affected turbines) will be determined and periodically reviewed based on validated PCFM data, species behaviour, and ABBMMP recommendations. • All implemented curtailment actions and their effectiveness will be documented and reported annually as part of the operational biodiversity monitoring programme. • Avoid water pooling near turbines to prevent insect attraction and subsequent bat foraging behavior around blades. • Consider Smart Curtailment techniques that factor in weather, temperature, and bat activity.				
	Habitat Management Around Turbines • Vegetation management should aim to reduce prey availability for raptors and discourage bird use of the area around turbines as hunting or perching sites.	Minimise	Vegetation height maintained below 30 cm. No bird perching structures near turbines. No prey species attraction around turbine bases.	Operation	Operator
Impact 11: Avian Species Collisions with Energy Transmission Lines	**Transmission Line Design and Construction Measures** • Design and operational mitigation measures for the Energy Transmission Line (ETL) will be implemented in coordination with TEİAŞ, which holds final authority over line design and construction. Enerjisa will carry out early consultation with TEİAŞ to discuss and recommend feasible mitigation measures in	Avoid / Minimise / Manage	Early consultation meetings with TEİAŞ completed before ETL commissioning Operational bird monitoring implemented along the ETL to identify potential	Pre-Operation	Operator

Impact	Management/Mitigation Measures	Mitigation Type	KPI	Timeline and frequency	Responsibility
	line with IUCN (2022) and Raptor Protection Slovakia (2021) guidance. Direct modification of TEİAŞ tower, line or pylon designs is not under Enerjisa's control; therefore, mitigation will focus on trigger-based actions informed by Post-Construction Fatality Monitoring (PCFM) once the ETL becomes operational. If PCFM identifies significant collision or electrocution risks, Enerjisa will recommend and support TEİAŞ to implement bird flight diverters (BFDs) at identified hotspots (e.g. open habitats, ridges, valleys), anti-perching/nesting devices combined with alternative nesting platforms, and safe conductor spacing/insulation where feasible. Vegetation in the ETL servitude area will be maintained at low height to minimise raptor foraging and perching opportunities. • Mitigation measures (e.g. BFDs, nesting platforms) implemented by TEİAŞ if triggered by PCFM evidence of bird collisions or electrocution.		collision/electrocution hotspots. Vegetation kept low along ETL corridor to deter raptor foraging.		
	Operational Monitoring and Adaptive Management • An Adaptive Bird and Bat Monitoring and Management Plan (ABBMMP) should be developed and implemented in line with international good practice, particularly the) Good Practice Handbook on Post-Construction Fatality Monitoring (PCFM) (IFC, EBRD, KfW, 2023). • Conduct PCFM for birds along the ETL to identify high-risk segments, as per the ABBMP. • Implement adaptive management measures (e.g., additional diverters or deterrents) based on monitoring outcomes. • Remove animal carcasses near transmission lines within 48 hours to avoid attracting scavenger birds. Where feasible, suitable carcasses may also be used in carcass persistence trials in line with PCFM. • Update mitigation as needed following completion of bird/bat-specific ETL surveys	Avoid/ Minimise/ Manage	**ABBMP** developed. **PCFM program** in place and active. Post-construction fatality monitoring initiated along ETL. Adaptive management measures implemented as needed. Carcasses removed within 48 hours of detection. Adaptive measures reviewed annually based on carcass monitoring data.	Operation	Operator

5.3 MONITORING ACTIONS

The following table outlines the monitoring plan and program for monitoring of the implementation of the biodiversity management and mitigation measures in section 5.3 and Table 5-2, for the operational phase.

The purpose of these monitoring activities is to ensure that residual impacts are controlled and that the mitigation measures/actions have been effective in terms of their implementation and to advise on any changes or adaptive measures necessary.

For each monitoring activity listed, Table 5-3 provides the following information:

- **Reference number:** The identification code (ID) for the monitoring activity.
- **KPI (Key Performance Indicator**): Regulatory limit values or qualitative acceptance criteria to be met.
- **Metric:** How will performance against the KPI/target be measured.
- **Timing:** When monitoring will take place.
- **Frequency:** How often will the monitoring activity take place.
- **Monitoring measure:** The monitoring activity and measure used to quantify that the KPI / target has been achieved.
- **Responsibility:** The person or team responsible for conducting the monitoring activity.

TABLE 5-3 MONITORING ACTIONS FOR OPERATIONAL PHASE

Reference Number	KPI (with target)	Metric	Timing	Frequency	Monitoring measure	Responsibility
OPERATIONAL MONITORING						
OBMP-1	100% avoidance of adjacent natural habitats outside of the maintained area.	Extent (area) of natural habitats	During maintenance activities	Once-off	• Site inspection (visual assessment)	Operator
OBMP-2	Monitor avian and bat collision incidents.	Post-construction fatality monitoring based on surveys	During operation	Monthly	• Annual monitoring report • Audit	Operator
OBMP-3	Biannual (spring and Autumn migration periods) monitoring report for birds and bats compiled as per the ABBMP requirements.[11]	Monitoring report available or not	During operation	Biannual	• Biannual monitoring report	Operator
OBMP-4	Appropriate adaptive management implemented as required and informed by operational monitoring.	Adaptive management actions register available or not Number of adaptive management actions implemented	During operation	Informed by operational monitoring	• Annual monitoring report • Records of actions • Site inspection (visual assessment) • Audit	Operator
OBMP-5	ABBMMP review and updates	Annual review of the ABBMP with updates as necessary.	During operation	Annual	• Audit	Operator

[11] An Adaptive Bird and Bat Management and Monitoring Plan (ABBMMP) will need to be developed in alignment with the requirements of IFC PS6 and informed by the (IFC, EBRD and KfW, 2023) which is considered GIIP by the IFC/EBRD as co-authors of the handbook. The ABBMMP will be specific to managing risks to avifauna during the operational phase of the Project, namely in terms of risk of collision with turbines, and will contain the following:

- Summary of baseline and key operational impacts to birds and bats,
- Identification of target species based on consideration of several criteria as per NatureScot guidance and IFC, EBRD and KfW (2023) PCFM handbook,
- Development of fatality thresholds for birds based on the results of the Collision Risk Assessment and PBR analysis,
- Fatality thresholds for bats will be defined if possible although there are constraints on population-level data that could support this,
- Develop Post-construction Fatality Monitoring (PCFM) program for the Project operational phase, aligned with the guidelines in the handbook from IFC, EBRD and KfW (2023) and national permitting conditions (where relevant),
- Development of an adaptive management framework and decision-tree with key responsive actions and interventions (such as shut-down on demand protocol, turbine curtailment under certain conditions, habitat management, other soft-options) triggered by monitoring outcomes (PCFM) and exceedances of fatality thresholds,
- Timeframes, roles and responsibilities,
- Review and update requirements, and
- Reporting framework.

Key deliverable: Adaptive Bird and Bat Management and Monitoring Plan (ABBMMP) for operational phase, in alignment with IFC PS6, EBRD ESR6 and GIIP (IFC, EBRD and KfW, 2023).

5.4ROLES AND RESPONSIBILITIES

The ultimate responsibility for implementing the operation phase BMP rests with the wind farm operator, however specific technical tasks and measures may be delegated to independent external experts likely to be involved in BMP implementation and monitoring.

Key roles and responsibilities are as follows:

TABLE 5-4 ROLES AND RESPONSIBILITIES

Role	Overall responsibilities	Specific responsibilities
Project Manager /Deputy Project Manager	• Ensure continued implementation of the Operation Phase BMP and allocation of necessary resources. • Review monitoring results and take decisions on adaptive management interventions based on risk and performance.	• Final approval of this Management Plan and subcontractors' plans/procedures for the Project. • Oversee the implementation of corrective measures in response to exceedances (e.g., bat/bird fatality thresholds).
Health and Safety Manager / Environmental Solution Partner	• Coordinate biodiversity management and operational monitoring activities. • Liaise with regulatory agencies, lenders, and stakeholders as required. Maintain records of compliance, fatalities, and monitoring results.	• Implement Post-Construction Fatality Monitoring (PCFM) for birds and bats in line with international best practice (e.g., IFC, EBRD, KfW, 2023). • Initiate adaptive responses such as smart curtailment or shutdown-on-demand where trigger thresholds are exceeded. • Ensure reporting requirements are met. • Ensuring that action/measures and monitoring activities directly under • Addressing Non-Conformances through the definition of Preventive/Corrective actions proposing to Management, if necessary, amendments and/or updates to this Management Plan and issuing plan revisions. • Bringing major Non-Conformiances immediately to the attention of Management.
All employees and maintenance contractors	• Maintain awareness of operational biodiversity risks and mitigation protocols.	• Report any wildlife sightings, fatalities, or issues to Project Manager or Environmental Solution Partner. • Follow good conduct guidelines to avoid disturbance to fauna (e.g., noise, lighting, access to sensitive areas).

Role	Overall responsibilities	Specific responsibilities
Biodiversity Specialist	• Operate the wind farm in accordance with the BMP and environmental management requirements. • Provide expert input for post-construction monitoring, adaptive management decisions, and species-specific measures.	• Record wildlife incidents (e.g., bat or bird collisions) and report them to the HSE Manager. • Ensure compliance with operational mitigation measures. • Assist with developing Scope of Works and Terms of Reference for operational bird/bat monitoring implementation. • Design and implement ABBMMP (Adaptive Bird and Bat Management and Monitoring Plan). • Analyse PCFM data, update species risk profiles, and recommend mitigation responses. • Support training and capacity building for operational teams. • Ad-hoc support onsite or remotely as necessary.

5.5 COMPLIANCE AND REVIEW

Post-construction, quarterly checks will be undertaken in accordance with EBRD guidelines to verify restoration/mitigation performance and interim success criteria.

5.6 REPORTING REQUIREMENTS

The following reporting requirements apply for the operator:

- Incident reporting (wildlife fatalities, habitat degradation, etc.);
- Emergency response reporting;
- Biannual monitoring reports for birds and bats (as per ABBMMP);
- Monthly summaries of maintenance inspections;
- Annual adaptive management progress and KPI tracking reports;
- Audit reports;
- Inspection logs and status of non-compliances.

5.7 RECORD KEEPING & DOCUMENT CONTROL

A record-keeping system shall be used to control all records and documents so that they are:

- Easy to retrieve and identify and are maintained in an orderly fashion;
- Current, accurate, legible, and dated, and that the dates should include revision dates when appropriate;
- Relevant/applicable and satisfy regulatory and/or legislative requirements; and
- Retained for a specified time period – Retention of records may be regulated by legislative or regulatory policies;

Records are to be kept of all required activities and incidents, which must be readily available for inspection at any time and which are to include the following:

- Operational permits, licenses, and approvals;
- Register of relevant environmental legislation;
- Register of relevant environmental consents;
- Collision monitoring reports (birds and bats);
- ABBMMP and Post-Construction Fatality Monitoring (PCFM) outputs;
- Training logs and refresher records;
- Equipment inspection and maintenance logs;
- Records of any curtailment or adaptive management actions;
- Updated habitat restoration/compensation monitoring results.

As with the construction phase, version control and summary of revisions must be maintained, with a change log authorized by the operator or designated Biodiversity/Environmental Officer.

6. SUPPLEMENTARY / COMPLEMENTARY PLANS

The construction and operation BMP (see Chapters 4 and 5 respectively) has highlighted a number of complementary / supplementary plans or programs required to implement the necessary management actions for the construction and operation phases. Specifically, these are identified in Table 4-2 (construction BMP action table) and Table 5-2 (operational BMP action table).

The plans and programs are indicated below in Table 6-1, together with recommended timeframes to develop these.

TABLE 6-1 SUPPLEMENTARY AND COMPLEMENTARY PLANS REQUIRED

#	Plan / Program	Relevance	Project Phase	Status	Timeframe to develop
1	**Noise and Vibration Management Plan**	Noise and vibration management	Construction	Being developed: ERM	Prior to construction
2	**Air Quality Management Plan**	Dust / air quality management	Construction	Being developed: ERM	Prior to construction
3	**Resource Efficiency and Pollution Prevention Plan**	Pollution prevention and control	Construction	Being developed: ERM	Prior to construction
4	**Waste and Wastewater Management Plan**	Pollution prevention and control	Construction	Being developed: ERM	Prior to construction
5	**Spill Response Plan**	Pollution prevention and control	Construction	Being developed: ERM	Prior to construction
	Hazardous Materials Management Plan	Pollution prevention and control	Construction	Being developed: ERM	Prior to construction
6	**Fire Management Plan**	Fire control	Construction	Not yet developed	Prior to construction
7	**Soil Management Plan**	Soil and stockpile management	Construction	Not yet developed	Prior to construction
8	**Invasive Alien Plant (IAP) control plan**	Control of Invasive/Alien Plant species	Construction	Not yet developed	Prior to construction
9	**Protected and Threatened Flora Conservation Program**	Program to manage/conserve protected/threatened flora (CH and PBF species)	Pre-construction	Not yet developed	Prior to construction
10	**Pre-construction wildlife survey program**	Program and schedule to inform wildlife surveys pre-construction	Pre-construction	Not yet developed	Prior to construction
11	**Pre-construction flora survey program**	Program and schedule to inform flora surveys pre-construction	Pre-construction	Not yet developed	Prior to construction
12	**Monitoring protocols for species**	Protocols to monitor species and populations during and after construction to inform adaptive management	Construction	Not yet developed	Prior to construction
13	**Onsite Habitat Restoration Plan (temporary areas)**	Plan to inform onsite habitat restoration post-construction	Post-construction	Not yet developed	During construction
14	**Biodiversity Offset Feasibility Study and Strategy**	Investigate feasibility of an offset and identify potential offset sites, document overall strategy to achieve NNL/NG	Post-construction	Not yet developed	During construction

#	Plan / Program	Relevance	Project Phase	Status	Timeframe to develop
15	**Biodiversity Offset Management and Monitoring Plan (BOMMP)**	Biodiversity offset implementation plan, including management and monitoring requirements	Post-construction	Not yet developed	During construction
16	**Adaptive Bird and Bat Monitoring and Management Plan, including PCFM (Post-construction Fatality Monitoring)**	Monitoring and management plan for avifauna (birds, bats) during operation, including fatality threshold setting, PCFM program and schedule, adaptive measures	Operation	Not yet developed	Prior to operation

7. ANNEXURES

7.1 ANNEXURE A. WILDLIFE SHEPHERDING PROTOCOL

7.1.1 PURPOSE

The main purpose of this protocol is to assist with the handling and shepherding of wildlife that may interact with the construction site during the construction phase of the wind power plant project. There are many situations where it may be necessary to restrain and handle wildlife by hand and many species of animals are capable of inflicting serious injury to themselves or those handling them, therefore it is of the utmost importance that handlers be familiar with the correct handling and restraint techniques during the transfer of animals away from the construction site, where necessary.

7.1.2 KEY REFERENCES

This protocol has been based largely on the following documents:

- Ottawa, 2015. *Protocol for wildlife protection during construction.* August 2015. Available online at: Protocol for Wildlife Protection during Construction (ottawa.ca)
- WCS, 2021. *Guidelines for the safe handling of wildlife and wildlife products during counter-wildlife trafficking enforcement operations in Asia*. January 2021. Available online at: Microsoft Word - Enforcement operations wildlife safety guidelines_20.11.2021.docx (cites.org)
- WWF, 2021. *Translocations and animal handling.* September 2021. Available online at: network_standard_en_translocations_animal_handling_vsep2021.pdf (panda.org)
- CH2M Hill Engineers Inc., 2017. *Wildlife Handling Guidelines.* December 2017. Available online at: wildlife_handling_guidelines.pdf (ca.gov)
- Department of Biodiversity, Conservation and Attractions, 2017. *Standard Operating Procedure: Hand restraint of wildlife*. Government of Western Australia. Version 1.1. October 2017. Available online at: SOP - SCB for TSSC (dpaw.wa.gov.au)
- Emniyet Genel Müdrülüğü, 2020. HAYDİ (Hayvan Durum İzleme) Application. A mobile application used in Türkiye to report cases of animal abuse, injury, or wildlife in need of urgent assistance. The application directly connects with law enforcement and relevant authorities to ensure rapid response.

7.1.3 WILDLIFE HANDLING AND SHEPHERDING PROTOCOL

7.1.3.1 GENERAL GUIDELINES ON WILDLIFE ENCOUNTERS

- Do not harm any wildlife.
- Stop work immediately if any protected species are seen in or near the work site. Take a photograph, if possible, to confirm the sighting, and contact the E&S Officer/CBS (biologist/ecologist).
- Make sure to maintain a safe distance from the animal and encourage it to move away from the work area with loud noises, arm waving, clapping, or a push broom. Contact the E&S Officer/CBS or a veterinarian for assistance if needed.
- Construction staff should refrain from handling or attempting to contain wildlife unless the animal is in immediate danger or injured and cannot be rescued by trained personnel.

- However, it is probable that wildlife will be encountered during the construction process at some stage. After dark, the wildlife may come back to the area in search of the habitat that once existed. By managing the site correctly, it will lessen the likelihood of wild animals re-entering, and daily checks of the site before commencing any activity will reduce the possibility of injury to any creatures that have strayed in during the night.
- Animals should always be approached in a calm and quiet manner.
- If an animal is entrapped, measures shall be taken to free the animal if feasible or work with construction crews to free the animal while complying with Project safety regulations, and released a safe distance away from the Project into appropriate habitat.
- If injured or orphaned wildlife are encountered and cannot be handled safely by construction staff or ecologists, cases should immediately be reported to the relevant authorities. In Türkiye, this can be done via the HAYDİ (Hayvan Durum İzleme) mobile application, which directly alerts the police and the Directorate of Nature Conservation and National Parks for rapid intervention.

7.1.3.2 HANDLING WILDLIFE

- If the animal cannot be easily freed, or the animal is too large or dangerous for monitors to handle, construction staff shall contact and work with animal control or other qualified party to obtain assistance for the animal as soon as possible.
- Entrapped and/or released wildlife shall be documented in daily monitoring reports.
- Hand restraint is stressful for animals and so it is essential that handling time is kept to a minimum. Animals should be transferred into holding bags as soon as possible.
- The handler must know where and how to grasp the animal. When restraining an animal by hand, the force applied and technique should be appropriate for the species in question. The animal needs to be grasped firmly enough to prevent struggling, but gently enough to avoid the risk of suffocation or damaging limbs.
- Handling animals does not always go as planned so it is necessary to be sensitive, responsive and adaptable. Prolonged, stressful restraint should not be performed and signs of stress should be considered (see Table 6-1). Other forms of restraint (e.g. anaesthesia) may then become be more suitable to help prevent injury to the animal and handler.
- When capturing/relocating animals, cover larger animals with a towel or blanket and place in a cardboard box and/or hessian bag, place smaller animals in a cotton bag, tied at the top.
- After removal of the individuals from the construction zone, the area that will be disturbed adjacent to natural habitats during construction and at project specific locations should be fenced off appropriately to exclude re-entry by wildlife.
- Where encountered, reptiles and amphibians will be collected prior to construction and moved to a suitable natural habitat outside of the construction area by suitably trained and experience staff, far enough away from the construction zone to limit the chance of them immediately re-entering the construction area.
- When provoked, snakes typically will seek refuge or attempt to flee, only resorting to defending themselves when they have no other option. If a snake is found in the work area, it should be gently herded out to a safe location. Species considered to be dangerous or poisonous/venomous (such as snakes) are to be handled by experienced and trained professionals only.

TABLE 7-1 TYPICAL SIGNS OF ANIMAL STRESS PER FAUNAL GROUP

Animal Group	Signs of Stress
Birds	• Vocalisation • Excessive struggling • Defecation • Increase in heart rate • Panting/heat stress
Reptiles and Amphibians	• Excessive struggling • Gaping of the mouth • "Swimming" in the air (turtles/tortoises) • Panting/heat stress • Self-biting
Mammals	• Vocalization • Clenching of teeth • Self-biting • Attempts to escape • Increase in heart rate • Panting/heat stress • Animal is limp or closes its eyes • Aggression • Urination/defecation • Excessive struggling • Cyanosis (bluing) of the nose and/or lips
Macropods	• Vocalisation • Attempts to escape • Teeth grinding • Excessive licking • Increase in heart rate • Panting/heat stress • Excessive salivating

Source: Department of Biodiversity, Conservation and Attractions (2017)

- Where encountered, reptiles and amphibians will be collected prior to construction and moved to a suitable natural habitat outside of the construction area by suitably trained and experience staff, far enough away from the construction zone to limit the chance of them immediately re-entering the construction area.
- When provoked, snakes typically will seek refuge or attempt to flee, only resorting to defending themselves when they have no other option. If a snake is found in the work area, it should be gently herded out to a safe location. Species considered to be dangerous or poisonous/venomous (such as snakes) are to be handled by experienced and trained professionals only.
- Assess the animal to determine the most suitable hand restraint method (see table 6-2). Determining the most suitable hand restraint method for a species will depend on a number of factors.
- A post-clearing report from the ecologist must be compiled that records the details of key actions taken and details of the species, sex, age, general health and numbers removed/relocated, the date, the relocation areas selected and estimated effectiveness and success of rescue and relocation efforts as well as any complications and further recommendations.

TABLE 7-2 SUITABLE HANDLING METHODS FAUNAL GROUP

Animal Group	One-handed hold	Two-handed hold	Three-finger hold	Pistol grip	Tail grab	Scruffing	Cupping	Ringers hold	Reverse ringers hold
Birds	✓(small)	✓(medium to large)	✓	X	X	X	✓(small)	✓(small)	✓(small)
Amphibians	✓	✓	X	X	X	X	✓	X	X
Snakes	X	✓	✓	X	✓	X	X	X	X
Lizards	✓ (small to medium)	✓	✓(small to medium)	X	✓(large)	X	✓(small)	X	X
Crocodiles	X	✓	X	X	✓	X	X	X	X
Turtles	X	✓	X	X	X	X	X	X	X
Bats	✓(small)	✓(medium to large)	✓	X	X	X	✓(small)	X	X
Macropods	X	✓	✓(small to medium)	✓(small to medium)	✓	X	X	X	X
Rodents	✓(small)	✓	✓(small to medium)	X	X	✓(small, 2nd hand to support with large)	✓(small)	✓(small)	X
Mammals	✓(small to medium)	✓(small to medium)	✓(small to medium)	✓(small to medium)	✓(medium to large)	X	✓(small)	✓(small)	X

Source: Department of Biodiversity, Conservation and Attractions (2017)

Approved methods to be used include:

One-handed hold, which is suitable for small birds, amphibians, small to medium lizards, small bats, small rodents and small mammals. It involves the whole animal being restrained in a single hand, using the thumb and index finger to restrain the head.

Two-handed hold, which is most suitable for any medium-sized animal. Both hands are used to hold the animal, usually one to restrain the head and the other to support the body and control the legs/tail. The head is held away from the body, and particularly the face, of the handler.

Three-finger hold, suitable for small to medium mammals, reptiles and birds. It is used to restrain the head of an animal and can be useful for poisonous/venomous snakes for example. The thumb and middle finger are placed on either side of the head and the index finger placed on top of the head.

Pistol grip, is a variation of the three finger hold and is suitable for small to medium mammals and is useful for pacifying agitated animals. The ring and little fingers are placed under the chin, with the middle and index finger going over the head to cover the eyes and the thumb going behind the head to restrict head movement. This is best done while the animal is still in the bag and then exposing the head once the animal is restrained. For smaller animals, just the index finger over the head is adequate to cover the eyes.

Tail grab, suitable for macropods, snakes (caution is required with certain venomous and large muscular snakes), large lizards (with caution to avoid tails breaking off) and medium/large mammals. It involves grabbing the base of the tail where it is thick and muscular and lifting the animal off the ground directing the legs away from the handler. The animal can then be placed into an appropriate handling bag.The animal should not be restrained in this manner for extended periods of time without supporting the body. Care should be taken to minimise the risk of spinal injury when using this technique. DO NOT use this hold for rodents as it may cause detachment of the tail sheath.

Scruffing, is suitable for small to medium rodents and small mammals. Using the thumb and index finger, the loose skin on the scruff of the neck is grasped. For medium sized

animals the other hand is required to support the body. This technique is not suitable for species with delicate skin.

Cupping, is suitable for most small birds, amphibians, small to medium lizards, small bats and small rodents. It involves the whole animal being enclosed in one or two hands. Not suitable for species that may bite, sting or scratch hands.

Ringers hold, is suitable for small birds and can also be used on small rodents and mammals. This is generally a one-handed bird restraint method which involves the animal being caged in the fingers with the head protruding between the thumb and index finger or between the index finger and middle finger. The non-dominant hand is usually used to hold the animal.

Reverse ringers hold, is suitable for small birds, but only for those that do not have sharp beaks as the head is not properly restrained. It is a one-handed bird restraint method in which the bird is grasped with its back and closed wings against the palm of the hand, with the head facing downward towards the handler's wrist.

7.1.3.3 AVOIDING INJUDRY AND DISEASE

- Injuries caused by animals, either domestic or wild, can lead to severe infections and can even spread diseases.
- It is essential to receive medical care right away if you have been attacked or harmed by a wild or domesticated animal.
- Many animals have defence mechanisms or delicate structures which need to be considered when handling them. Some guidance on avoiding injuries:
- Skin: Skin is an important organ. Damage to the skin of an animal leaves it susceptible to possible bleeding and infection. Some species such as the secrete a toxic substance from their skin whilst other amphibians have very delicate skin that is permeable enough to allow the absorption of chemicals therefore clean, moist hands are required when handling.
- Tail: The tail of some reptiles can cause injury if not restrained. A defence mechanism of some reptiles (e.g. skinks, geckoes) is tail autonomy which involves the dropping and later regrowing of the tail. The loss of the tail in some species results in a loss of the animal's fat reserves and therefore decreases their chance of survival. Some rodents have fragile tails that can be broken or the skin sheath removed if roughly handled or handled by the tail.
- Feathers: Damage to, severe loss or disruption of the feathers may impact the bird after release and reduce the ability to fly as well as its ability to regulate its temperature.
- Teeth/Beak: Any animal with teeth and/or the ability to open its mouth widely is capable of inflicting a bite. Many species will try and bite to defend themselves and it is therefore important to have control of the head at all times.
- Wings: Some species of bird have wings which they may use as defence (e.g. swans, pelicans) and if a handler is hit, injury can result.
- Talons/Claws: For species whose claws/talons are their main defence (e.g. birds of prey), it is important to have control of these first.
- Legs: Some species utilise their powerful legs in response to being handled. Legs cannot only cause injury to the handler but also to the animal if not controlled properly. For example macropods can traumatise their spines if allowed to kick out with their hind legs while being held by the tail. Some species such as storks and waders have long delicate legs which will require careful handling.

- Venom glands: Some species are venomous and use their venom to protect themselves (e.g. venomous snakes, toads, invertebrates).
- Always carry a first aid kit in your vehicle and be aware of your own safety and the safety of others as well as the animals when handling.
- Maintaining hygiene is very important and precautions must be taken to prevent the risk of cross infection between animals and from animals to humans. Sick or injured animals require higher hygiene considerations due to the possibility of zoonosis.
- Personnel must take precautions to minimise the risk of disease transmission to protect themselves, their families and the public"
- All materials and equipment used in the capture, holding transport and manipulation of animals must be cleaned and maintained in a way that minimises the assessed risk of disease transmission.
- Contaminated equipment must be disinfected between animals and between locations where the equipment is used.
- All dead animals will be handled only while wearing gloves.

7.1.4 USEFUL EQUIPMENT

Useful equipment for wildlife encounters:

- Work gloves;
- Other personal protection equipment (PPE) may include:
    - Long sleeve clothing: to reduce the risk of cuts and scratches to the arms and legs
    - Goggles/face mask/safety glasses: to protect eyes from animals with long beaks or animals which secrete substances
    - Gloves (leather): can be useful for animals with sharp claws, teeth and spines or venom glands. Their use is a personal choice as they can decrease tactile sensation.
    - If the animal is venomous, additional PPE is required for removal
- Push broom for gently redirecting small mammals, reptiles, or amphibians;
- Clean (uncontaminated) towels or blankets and containers such as plastic boxes, cat carriers, and a large bin or garbage can for capturing and transporting injured or orphaned wildlife.

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