



Albanian Development Fund

Habitat Regulations Assessment

Zgosht to Cerenec road scheme; Albania National and Regional Roads Project

80876

OCTOBER 2020

RSK

RSK GENERAL NOTES

Project No.: 80876-01

Title: Habitat Regulations Assessment

Client: EBRD and ADF

Date: October 2020

Office: Bristol

Status: Rev01

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EXECUTIVE SUMMARY

RSK have been commissioned to undertake a Habitats Regulations Assessment (HRA) for the proposed Zgosht to Cerenec Bridge road scheme as part of the Albanian National and Regional Roads Project on behalf of the European Bank for Reconstruction and Development (EBRD) and the Albanian Development Fund (ADF). This assessment is required to meet EBRD's Performance Requirement 6 (PR6): Biodiversity Conservation and Sustainable Management of Living Natural Resources (EBRD, 2014).

The road scheme entails the rehabilitation of an existing road that lies between Zgosht and Cerenec Bridge, located in East Albania, approximately 41 km from Tirana at the closest point, within the municipalities of Bulqizë and Librazhd and the districts of Dibër and Elbasan. The existing Zgosht to Cerenec road spans 47.1 km and is a predominantly unsurfaced two-way road located in a rural, mountainous area. Approximately 13.5 km of the road crosses the western border of the Shebenik-Jabllanicë National Park which is also designated as a Candidate Emerald Site. It is anticipated that the road will facilitate access into the region which will promote opportunities for economic development including tourism.

Whilst a Management Plan has been developed for the Shebenik-Jabllanicë National Park in 2015, a specific plan or citation with clear conservation objectives and a list of designated features has not been developed for this designated Candidate Emerald Site. This Habitat Regulations Assessment therefore utilises the 'values' identified in the Value Assessment and the high-level management objectives presented in the Management Plan for Shebenik-Jabllanicë National Park 2015-2024 (PROGES and Sapienza University of Rome, 2015) as the basis of this HRA.

Screening identified that the Project has the potential to give rise to some likely significant effects to the values of the Shebenik-Jabllanicë National Park / Candidate Emerald Site under each Management Objective, hence an 'appropriate assessment' was undertaken.

Consultation with key stakeholders is a critical stage of the screening process. Due to the current restrictions associated with the COVID-19 pandemic stakeholder consultation was undertaken via the dissemination of a questionnaire to stakeholders for their feedback. The key findings were used to inform the HRA.

A precautionary approach was taken through the HRA as the Project is currently in the early stages of the design phase. The assessment identified that with the diligent application of avoidance and mitigation measures by the Project, none of the impacts identified during screening will affect the integrity of the Shebenik-Jabllanicë National Park / Candidate Emerald Site.

The development and implantation of the Reinstatement and Landscaping Plan will ensure the reinstatement of the physical environment and the progressive rehabilitation and restoration of habitats and vascular plant species. It is anticipated that areas of permanent natural habitat loss will be offset by the Project. ADF is also committed to supporting the managers of the Shebenik-Jabllanicë National Park / Candidate Emerald Site to promote sustainable, low impact ecotourism tourism and natural resources usage initiatives within this designated site to mitigate any indirect impacts to wildlife and habitats arising from facilitated access. ADF will work with managers to finalise a detailed approach prior to construction.

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1 INTRODUCTION

On behalf of the European Bank for Reconstruction and Development (EBRD) and the Albanian Development Fund (ADF), RSK have been commissioned to deliver a Habitats Regulations Assessment (HRA) for the rehabilitation of the road that lies between Zgosht and Cerenec Bridge (hereafter ‘the Project’). The EBRD is considering providing a sovereign loan to the Republic of Albania for the benefit of ADF to finance the Project. This assessment is required as 13.5 km of the road crosses the western border of the Shebenik-Jabllanicë National Park which is also designated as a Candidate Emerald Site.

This report addresses whether the development might have any likely significant effect on any site having statutory designation for wildlife or nature conservation at the European or international level, i.e. any site designated as a special area of conservation (SAC), a special protection area (SPA), or a Ramsar site; collectively known as Natura 2000 sites. For the purposes of this report there is only one site considered in this context, the Shebenik-Jabllanicë National Park / Candidate Emerald Site.

1.1 Project description

The Project is situated in East Albania, approximately 41 km from Tirana at the closest point, within the municipalities of Bulqizë and Librazhd and the districts of Dibër and Elbasan. The existing road currently spans 46.5 km, connects Zgosht and Cerenec and is a predominantly unsurfaced two-way road located in a rural, mountainous area (Figures 1a and 1b).

Road improvement works were undertaken along this section of the road in 2012 by the Albanian Road Authority (ADF, February 2020). These included:

- widening of the road
- widening section (preparation of the carriage way e.g. filling the site with raw material)
- construction of roadside channels and ditches
- construction of the retaining walls
- instillation of streetlamps
- construction of a drainage culverts and structures
- laying of sub-base gravel layer.

According to ADF (February 2020), the road is currently considered to be of an inadequate standard to support existing and predicted levels of vehicle traffic and to meet road safety requirements. The existing Zgosht and Cerenec road supports approximately 325 vehicle units per 3 days and is expected to support 1500 vehicle units per 3 days following completion of the Project. Sections of the road have been heavily impacted by surface water runoff resulting in severe localised erosion due to the poor condition of the current drainage system. The poor condition of the road limits vehicle movement and access across the districts of Dibër and Elbasan, which in turn is limiting economic development within these districts (ADF, February 2020).

The road is currently in the design phase; however, it is anticipated that the Project is likely to entail the following road works:

- localised habitat clearance and topsoil removal within some areas of the working width
- construction of the sub-base and base layers along the length of the entire road
- construction of the asphaltic layers (6 cm thick binder course and 4 cm wearing course layer)
- cleaning and improvements of the existing drainage system (including concrete channels and culverts). Currently some culverts also serve as animal crossings.
- construction of additional concrete retaining walls
- installation of road safety barriers
- bioengineering works to stabilise and protect escarpments
- instillation of traffic signs (i.e. pedestrian and vehicle signage)
- the addition of road markings
- instillation of streetlighting along sidewalks in urban areas at Zgosht and Cerenec
- upgrading existing areas of paving
- constructing new areas of paving in urban areas
- the instillation of pipes for the optical fibre network in urban areas
- the rehabilitation of several bridges.

The road passes along the existing right of way. It is anticipated that the detailed design will consider road safety and environmental issues. However, ADF do not expect that there will be significant alterations or expansions of the current alignment.

1.1.1 The design works

The Project is currently in the early stages of the design phase, hence many of the design details are not finalised. The road designers are however currently undertaking the following improvement measures into consideration:

- pedestrian safety e.g. the inclusion of pavements / sidewalks, lighting, signage in urban environments
- road safety e.g. traffic signage, retaining walls, stabilisation works
- engineering requirements to address erosion issues e.g. maintenance and enhancement of the existing drainage system and stabilisation of escarpments.

The overall length of Zgosht and Cerenec spans 47.166 km. The proposed road works will result in a road width measuring 8 m with asphalted traffic lanes measuring 2 x 3.25 m and gravel shoulders measuring 2 x 0.75 m.

The following road pavement layers have been selected based on the forecast volume of traffic, in particular the percentage volume of heavy goods vehicles, which have a greater damaging effect and determine the overall requirement of pavement thickness:

- surface course: asphalt concrete 40 mm

- binder course: asphalt 60 mm
- base course: crushed stone base 150 mm
- sub-base: granular material 150 mm
- regulating layer: granular material 0-300 mm is already completed.

Where the road passes through hilly or mountainous areas the proposed road, when traversing the sidelong ground, would be supported by a concrete retaining walls, when necessary, on the lower side. On the higher side, the excavated slope would be supported by construction of a concrete retaining walls to the height necessary for stability.

The road is located in mountainous terrain characterised by a steep gradient and loose rockface. To protect the road and vehicle traffic from rockfalls, the rockface within this section of the road will be stabilised using bio-engineering (i.e. terramesh that will support the establishment of vegetation), instead of concrete.

1.1.2 Construction approach

Whilst there is much uncertainty regarding the detailed methods of construction at this stage in the Project development, some key aspects of the approach have been confirmed.

For example, habitats and topsoil will only be cleared within key sections of the working width (or Project Development Area) using graders or bulldozers, jackhammers and trucks. The exact area of habitat clearance beyond the road footprint is uncertain but is likely to be a small area and potentially localised. Small excavators, pneumatic drills, jackhammers and trucks will also be used during grading of the road to remove the existing road surface.

The excavated material (i.e. topsoil and rocky substrate) will be stockpiled and reused for construction and landscape restoration. The stockpile areas will be located near the proposed road alignment and will include temporary waste disposal sites for storing inert materials. Habitats within the stockpile areas will be rehabilitated following use. The exact locations of the stockpiling sites and borrow pits are unknown at this stage in the project development.

Other machinery used to construct a new gravel and asphalt layer include compactors, bitumen spreading machines, asphalt laying machinery, road rollers and brushes.

Public utilities (i.e. telephone, electricity and water) are unlikely to be temporarily disrupted during the instillation of new pipes and cables to the existing network. There is currently no existing underground infrastructure such as telephone cables, electricity cables or piping systems.

The materials used for road construction will be supplied by a licensed company. Contractors will be required to use or buy material from existing asphalt plants, stone quarries and borrow pits operating with valid environmental and other permits and licenses.

Contract provisions shall require that asphalt and hot-mix plants will be located at least 500 m away from the nearest sensitive social and biodiversity receptors.

Equipment and materials will be transported to site using the existing road network. Truck operators will be required to cover or wet truck loads, avoid hauling materials on public roads during the morning peak traffic hour (8:00 am to 9:00 am) and to use alternative routes wherever possible to minimize traffic congestion. The contractor will be required to prepare and submit to the works supervisor and municipality a Traffic Management Plan showing routes and times to be used for materials delivery off and on site. Contractors will prepare a traffic management plan with appropriate measures to control and direct traffic and pedestrians.

The waste materials will be deposited in accordance with the official process and the approach will be approved by the local authorities. Waste management and the location of deposit sites will be confirmed together with the Engineer and ADF's Environmental Unit who will also systematically follow the process during construction, in accordance with the approved ESMP.

Solid waste clean-up will be entrusted to licensed operators, with provisions in their contract to carry out visual inspections for toxic materials before handling and segregating waste fractions as necessary, the use of safety measures to be implemented whilst handling and transporting waste and the disposal of waste at authorized dump sites with approval of the local authorities. The waste disposal site will be at least 100 m away from the road, away from surface waters or in vegetated area. The waste disposal site will be selected in cooperation with the supervisor and the contracting authority. It is preferable to recycle the inert materials or to use the regional landfill.

The contractor will be required to properly organize and cover material storage areas; isolate concrete, asphalt and other works from any watercourses by using sealed formwork; isolate wash down areas of concrete and asphalt trucks and other equipment from watercourses by selecting areas for washing that are not free draining directly or indirectly into any watercourse. The contractor will further ensure proper handling of lubricants, fuel, and solvents by using secured storage; ensuring proper loading of fuel and maintenance of equipment; collecting all waste and disposing to permitted waste recovery facility. Special care must be taken during the bridge rehabilitation works, since this project foresees the reconstruction of several bridges.

Construction works will not be carried out at night (not between 7 p.m. and 7 a.m. or as agreed with the public and authorities). Hence, security fencing and artificial lighting will be erected around machinery and plant at night along the proposed alignment. Water from waterbodies located in the project area and the National Park will not be extracted for construction activities (e.g. drilling) or for consumption by the workforce. Water for civil works will be supplied to the Project area using water trucks / tankers.

Personnel facilities such as a portable office and cabins for storage of personal items and equipment will also be installed within the project area but the exact location will be known when the design is finalised. The power supply to the office will be accessed through the existing network. It is anticipated that the workforce will use existing accommodation located close to the Project. The workforce will be defined once the detailed design is finalised and the Bill of Quantities (BoQ) has been defined and the Project will follow the Gender Diversity Action Plan to promote women's rights and involvement during the construction phase. This will be monitored by ADF during construction.

1.1.3 Habitat restoration

A Reinstatement and Landscaping Plan for the Project will be prepared and implemented by the Contractor. ADF will approve and monitor the implementation of this plan. This plan will provide a clear methodology for the reinstatement of the physical environment within the Project footprint, the working width, borrow pits, stockpiling areas and contractor facility area (i.e. arising from habitat clearance, grading etc) in addition to the progressive rehabilitation and restoration of habitats and vascular plant species within the working width (PDA).

As part of this plan, the Project will develop a planting scheme using vascular plant species of local provenance. This will entail plug planting and seeding along the escarpments and embankments adjacent to the road alignment as part of the bioengineering works.

1.1.4 Operation, monitoring and maintenance

Maintenance road works will be undertaken on an annual basis or when required. The maintenance responsibility of the Zgotsh - Cerenec road after Project implementation lies with the Albanian Road Authority. ADF will be responsible for the monitoring and maintenance work for the first two years of operation including the establishment of the landscaping scheme. This responsibility will then be devolved to the municipalities (namely Librazhd and Bulqizë). ADF will retain a quality assurance role for monitoring the establishment of habitats and species as part of the Reinstatement and Landscaping Plan and Biodiversity Management Plan.

The establishment of the planting scheme, as specified in the Reinstatement and Landscaping Plan and Biodiversity Management Plan, will be monitored for the first five years or until the successful establishment of the vascular plants has been achieved. Over this period, ADF will retain responsibility for closely monitoring the status of the planting scheme and maintenance works (including watering) for the first two years of operation. Any dead vascular plants will be replaced by the Contractor as 'like for like' during the maintenance timeframe and will be monitored by ADF.

Following this period, the municipalities will take over the responsibility for maintenance (including watering) and monitoring work for the following three years, as specified in the maintenance agreement. Over this period, ADF will retain a quality assurance role to ensure that these works are completed by the municipalities and any dead vascular plants will be replaced as 'like for like' during this timeframe.

1.1.5 Schedule

The Project will have a two-year time span from the loan approval. The following main activities are envisaged to be undertaken by ADF:

- finalisation of the detailed design
- procurement of the civil works
- construction and supervision.

It is anticipated that the road works will take six months to complete and the start date will be determined by the Investor according to the procurement process.

1.1.6 ESIA

An Environment and Social Impact Assessment (ESIA) or an Environmental Impact Assessment (EIA) will be prepared by the Designer for the Project to meet national legal requirements. This is expected to be produced for the project by late July 2020. The legal framework for the Environmental Impact Assessment (EIA) procedure in Albania is based on Law No. 8990 on Environmental Impact Assessment approved on January 23, 2003, as amended by Law no.10050, dated 24.12.2008.

1.2 Current state of knowledge

1.2.1 Overview

RSK were commissioned to undertake a Biodiversity Baseline Assessment for the Project. This information will be used by ADF to inform the development of the ESIA or EIA. This Biodiversity Baseline Assessment comprised the following components:

- literature and data review
- habitat mapping with ground truthing
- botanical and fauna scoping assessment
- rapid, preliminary critical habitat and priority biodiversity feature screening

The findings of the Biodiversity Baseline Assessment (RSK, 2020) were used to inform this HRA.

1.2.2 Shebenik-Jabllanicë National Park

Approximately 13.5 km of the existing Zgosht to Cerenec road crosses the western border of the Shebenik-Jabllanicë National Park (IUCN Category 2; national park category 2). This nationally protected area is also designated as a Candidate Emerald Site (Figure 1.1). A portion of this National Park is also designated as a World Heritage Site, an Important Plant Area and Key Biodiversity Area.

The Shebenik-Jabllanicë National Park is one of 14 National Parks in Albania and was designated in 2008. The park covers 33,928 ha and is located within a mountainous area of East Albania, near the border of Macedonia (Figure 1.2). The majority of the National Park is situated within the Librazhd District of the Elbasan Region, whilst the northern portion of the National Park falls within the Bulqizës District of the Dibër Region. The Shebenik-Jabllanicë National Park overlaps parts of seven communes (i.e. Trebisht and Stebleve in Bulqizës District and Lunik, Librazhd Qender, Hotolisht, Qukes and Rrajcë within Librazhd District) for which the total area is 77,450 ha and the total population is 44,677 inhabitants (PROGES and Sapienza University of Rome, 2015).

The National Park ranges in altitude from 300 to 2,200 m above sea level and supports a diversity of climatic conditions, geological types, landscapes, habitats and species including nationally and globally rare and threatened species. The Shebenik-Jabllanicë National Park is thought to potentially have important habitat linkages with other protected areas nearby in Albania and Macedonia and it is anticipated that the SJNP may potentially form part of a much larger transboundary protected area.

The Shebenik-Jabllanicë National Park, is divided in four sub-zones or protection and administration:

- Central Zone (Zone Qendrore): this zone covers 14,046 ha and includes the main area of natural habitats. This is a high valued area for nature and biodiversity values, and as such is afforded level one protection. Construction would not be permitted within this zone.
- The Sustainable Use Zone (Zone Perdormini Quendrueshon): this zone covers 5,253 ha and serves as a buffer around the central zone. This area predominantly comprises forest and pasture. Seasonal economic activities (i.e. grazing, gathering of medicinal plants, secondary forest products) are authorised in this area in accordance with environmental permits as long as the activities do not affect the ecological integrity of the ecosystem. This zone is afforded level two protection.
- The Recreation Zone (Zone Rekreative): this zone has a surface area of 2,209 ha and includes forests, pastures, meadows and agricultural lands in Letë, Fushe Studë and Stebleva. Key recreational activities are authorised to occur in this zone (i.e. wildlife, cultural and environmental tourism) in accordance with the functions of the protected area. This zone is afforded level three protection.
- The Zone of Traditional use (Zone Perdorimi Traditional): This zone covers 12,420 ha and is designated as an area where traditional and economic activities can be undertaken. This area includes agricultural, water and forest areas around residential centres, mainly used by residents. New activities can only be carried out with environmental permits and, in the case of cultural heritage, with the permission of the Minister of Tourism, Culture, Youth and Sports and the archaeological service. This zone is afforded level 4four protection.

The existing road and proposed Project passes through the border of the zones of traditional use and recreation use (Figure 1.2 (PROGES and Sapienza University of Rome, 2015)). The ground-truthing and botanical scoping assessment undertaken for the Project in June 2020 identified that there are no annex 1 priority habitats located within the Project Development Area (working width) in the western border of the National Park.

The National Park is managed by the National Agency of Protected Areas and the Regional Administration of Protected Areas of Elbasan region. Management is undertaken in accordance with the management and monitoring actions presented in the Management Plan for Shebenik-Jabllanicë National Park 2015-2024 (PROGES and Sapienza University of Rome, 2015). ADF have consulted with the National Agency of Protected Areas who are keen to work with ADF to safeguard the protected area throughout the project development and delivery.

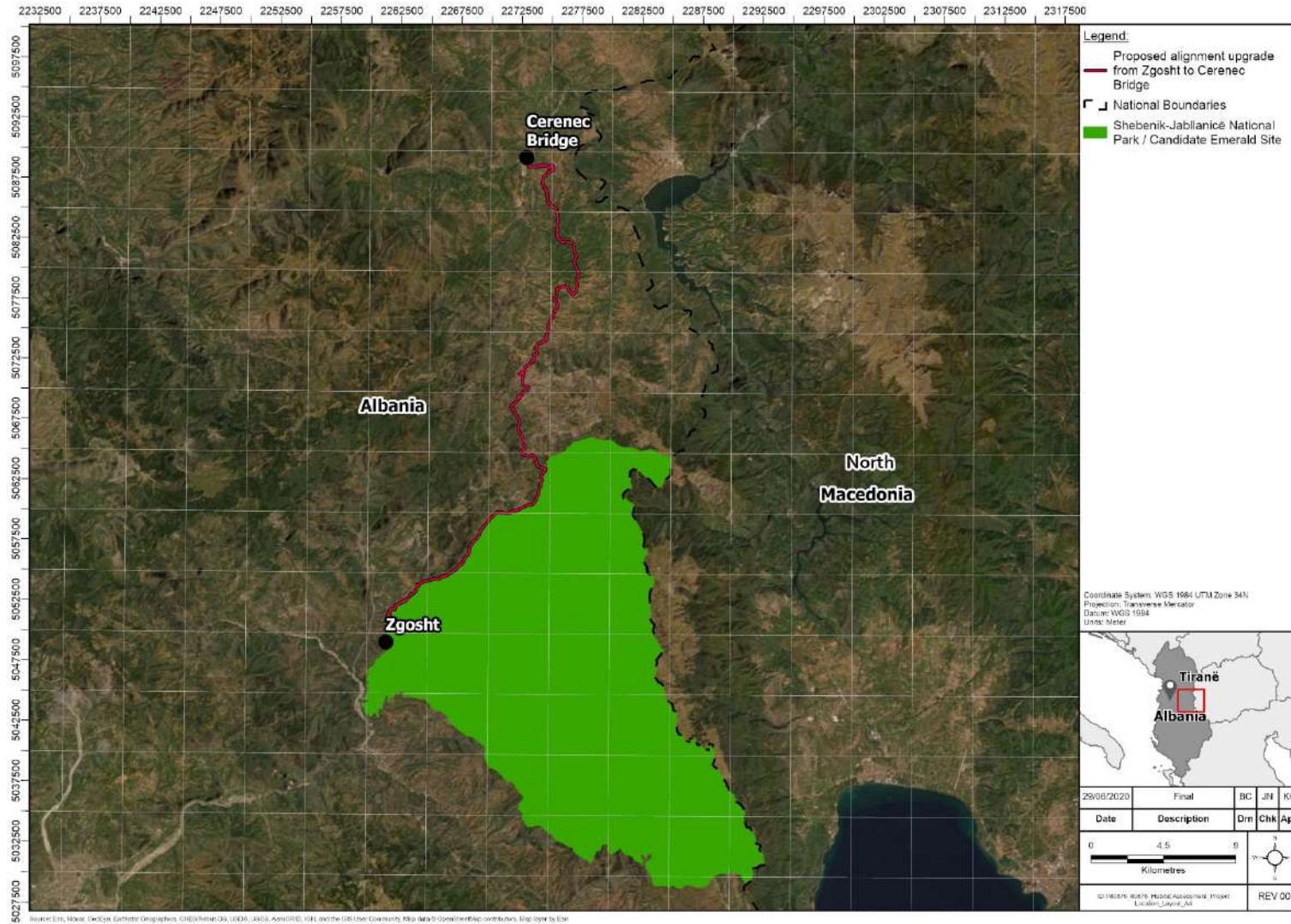


Figure 1.1: Proximity of the Project to the Shebenik – Jabllanice National Park / Candidate Emerald Site

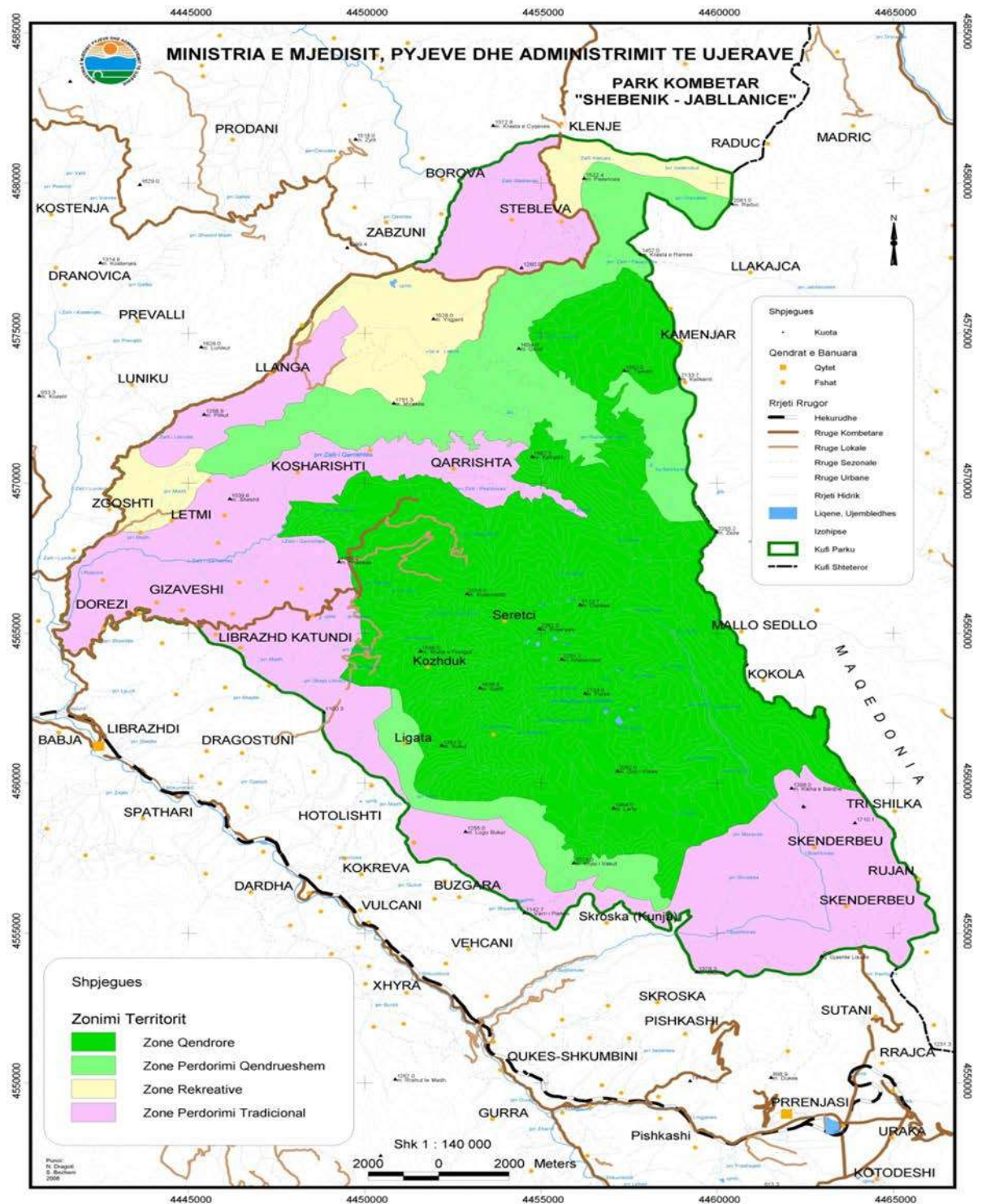


Figure 1.2: Zonation of the Shebenik-Jabllanicë National Park (PROGES and Sapienza University of Rome, 2015)

1.2.3 Priority Biodiversity Features and Critical Habitat-Qualifying Features

As part of the Biodiversity Baseline Assessment (RSK, 2020) screening was undertaken to identify the Priority Biodiversity Features (PBF) for the project. These features are of high conservation importance. The most sensitive biodiversity features are defined as critical habitat which have the highest degree of irreplaceability and vulnerability and as such are of the highest biodiversity value. Not all priority biodiversity features qualify as critical habitat even though they remain of conservation importance. Critical habitat is defined by EBRD PR6 as follows:

1. highly threatened or unique ecosystems
2. habitats of significant importance to endangered or critically endangered species
3. habitats of significant importance to endemic or geographically restricted species
4. habitats supporting globally significant migratory or congregatory species
5. areas associated with key evolutionary processes
6. ecological functions that are vital to maintaining the viability of biodiversity features described in this paragraph.

The assessment identified that the proposed Project is located within critical habitat. A summary of the critical habitat-qualifying features is presented in Table 1.1. Some PBFs and critical habitat-qualifying features have been identified as ‘ecological values’ for the Shebenik-Jabllanicë National Park / Candidate Emerald Site (see Section 2.3). Hence these habitats and species are of high conservation importance for the Project and are the focus of mitigation and offsetting.

Table 1.1: Critical Habitat-qualifying features

EBRD PR6 Criteria	IFC PS6 Criterion Threshold Numbers	Critical Habitat-qualifying Features	Justification
Highly threatened or unique ecosystems	4a	No critical habitat qualifying features	
	4b	Shebenik-Jabllanicë National Park including Rrajce-Shebenik-Jabllanice Important Plant Area	Protected area status Priority Annex 1 Habitat
Habitats of significant importance to endangered or critically endangered species	1a	Balkan lynx European Eel	Balkan lynx meets the threshold Precautionary due to the paucity of data
	1b	Pindus stone loach	Precautionary due to the paucity of data

	1c	Balkan Lynx European Eel	Balkan lynx meets the threshold Precautionary due to the paucity of data
Habitats of significant importance to endemic or geographically restricted species	2	Balkan Lynx Chamois Heldreich's Pine Serpentine false brome Mountain tea	Precautionary due to the paucity of data
Habitats supporting globally significant (concentrations of) migratory or congregatory species	3a	No critical habitat qualifying features	-
	3b	No critical habitat qualifying features	-
Areas associated with key evolutionary processes	N/A	Ancient and Primeval Beech Forests of the Carpathians and Other Regions of Europe	
Ecological functions that are vital to maintaining the viability of biodiversity features described (as critical habitat features)	N/A	Ancient and Primeval Beech Forests of the Carpathians and Other Regions of Europe and waterbodies/courses within the AOA	Precautionary basis assuming the presence of the critical habitat-qualifying species listed above

1.3 The Habitat Regulations Assessment Process

1.3.1 Overview

The Habitats Directive was adopted in 1992 as an EU response to the Bern Convention. It aims to promote the maintenance of biodiversity by requiring member states to take measures to maintain or restore natural habitats and wild species listed in the Directive's annexes at a favourable conservation status through the introduction of robust protection for those habitats and species of European importance.

In applying these measures, member states are required to take account of economic, social and cultural requirements, as well as regional and local characteristics.

The directive is built around two pillars: the Natura 2000 network of protected sites and the strict system of species protection. Overall, the directive protects over 1,000 animal and plant species and over 200 so-called 'habitat types' (special types of forests, meadows, wetlands, etc.) that are of European importance that are listed in the directive's Annexes.

- Annex I covers habitats
- Annex II covers species requiring designation of Special Areas of Conservation
- Annex III covers species in need of strict protection

- Annex IV covers species whose taking from the wild can be restricted by European Law.

Article 6 paragraph (3) and (4) state:

‘Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site’s conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public. 4. If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted. Where the site concerned hosts a priority natural habitat type and/or a priority species the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.

An appropriate assessment (or Habitat Regulations Assessment) is required to assess, identify and characterise the Project-related impacts on the integrity, conservation objectives and or biodiversity importance of the candidate Emerald / National Park, as illustrated in Figure 1.3. This assessment should be carried out by a competent authority in accordance with Article 6(3) of the Habitats Directive to assess whether the proposed road scheme will have an adverse impact on the integrity of the Candidate Emerald Site. Site integrity is defined as:

“the coherence of its structure and function across its whole area that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified”

The assessment should follow four main stages as identified by the European Commission Guidance and EBRD PR6 (EBRD 2014) and will require consultation with a range of stakeholders.

The HRA process involves four stages described below:

Stage One: Screening — the process which identifies the likely impacts upon a Natura 2000 site of a project or plan, either alone or in combination with other projects or plans and considers whether these impacts are likely to be significant.

Stage Two: Appropriate assessment — the consideration of the impact on the integrity of the Natura 2000 site of the project or plan, either alone or in combination with other projects or plans, with respect to the site’s structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts.

Stage Three: Assessment of alternative solutions — the process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site.

Stage Four: Assessment where no alternative solutions exist and where adverse impacts remain — an assessment of compensatory measures where, in the light of an assessment of imperative reasons of overriding public interest (IROPI), it is deemed that the project or plan should proceed (Oxford Brookes, 2001).

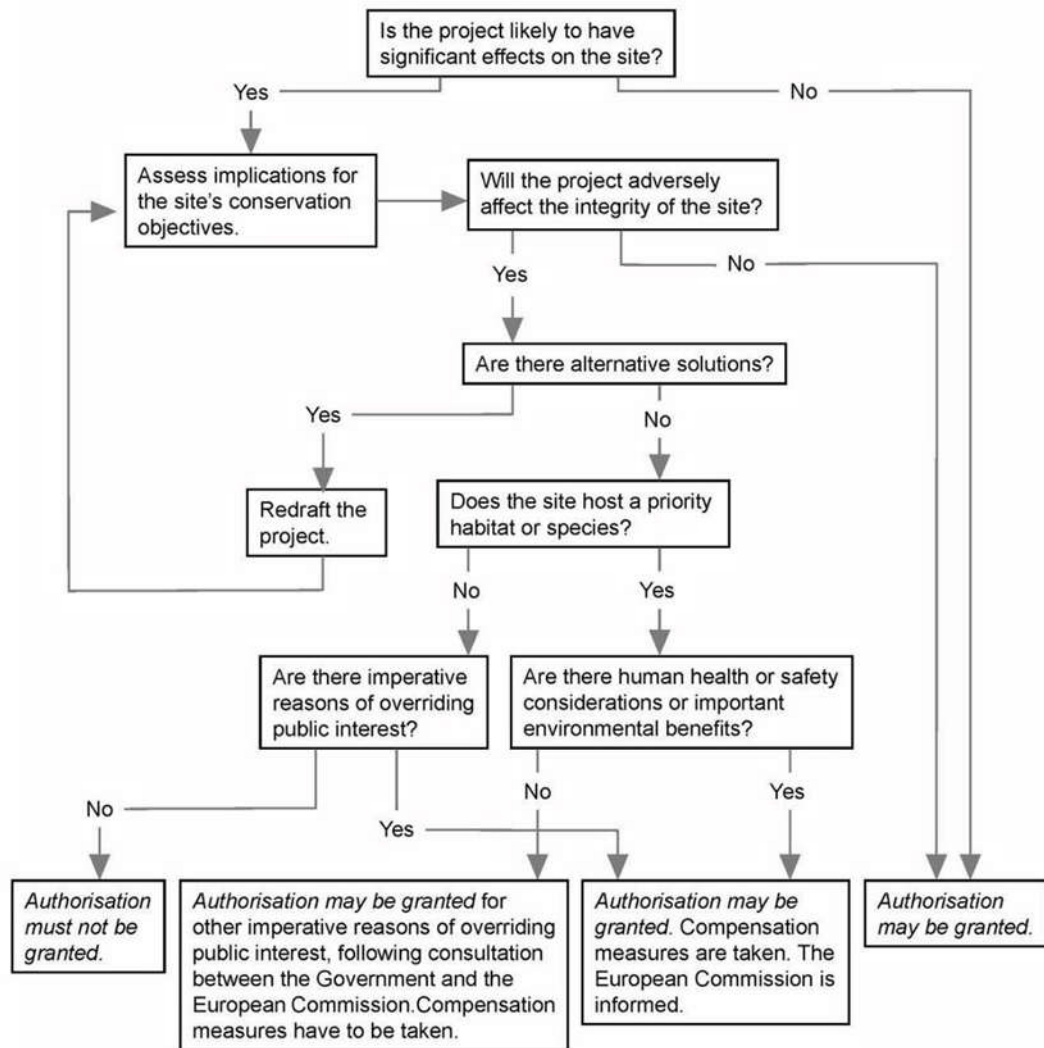


Figure 1.3: Consideration of projects affecting European sites

1.3.2 In combination effects

When undertaking the assessment, the phrase ‘in combination with other plans or projects’ in Article 3(3) refers to cumulative effects caused by the projects or plans that are currently under consideration together with the effects of the project. When impacts are assessed in combination, it can be established whether or not there may be, overall, an impact which may adversely affect the integrity of a Natura 2000 (Oxford Brookes 2001).

2 SHEBENIK-JABLLANICË NATIONAL PARK / CANDIDATE EMERALD SITE

2.1 The Emerald Network and Candidate Emerald Sites

The Shebenik-Jabllanicë National Park is a Candidate Emerald Site (Council of Europe, 2018). The Emerald Network is an ecological network of Areas of Special Conservation Interest, which were established to conserve the species and habitats of the Bern Convention requiring specific protection measures.

The network was launched by the Council of Europe as part of its work under the Convention on the Conservation of European Wildlife and Natural Habitats (or Bern Convention). These habitats and species are listed respectively in Resolution No. 4 (1996) and Resolution No. 6 (1998) of the Standing Committee to the Bern Convention. The Natura 2000 sites are considered as the contribution from the EU member States to the Emerald Network.

The Shebenik-Jabllanicë National Park is one of the 25 sites in Albania included on the updated list of officially nominated Candidate Emerald Sites at the Standing committee 37th meeting held on the 5 to 8 December 2017.

Once a candidate site is officially adopted as an Emerald Network site, the sites are designated and managed at national level by employing measures that contribute to the main objective of the Network.

Management

2.1 The national designation of the adopted Emerald sites will ensure that they are protected from external threats and subject to an appropriate regime for achieving a satisfactory conservation status of the species and natural habitats listed in Resolutions no. 4 (1996) and no. 6 (1998) present on the site, involving, if and where appropriate, management plans, administrative measures and contractual measures;

2.2 The authorities responsible for the implementation of the management measures and their monitoring will be clearly identified;

2.3 Specific short and long-term site objectives will be drawn up for the management of Emerald sites, in compliance with the national/regional conservation objectives of the country, in order to facilitate the monitoring of their implementation and the regular assessment of their achievement;

2.4 National, regional and local stakeholders will be involved, if and where appropriate, in the planning of the management of the sites, as well as in the implementation of the conservation and protection measures foreseen, and in the monitoring of the sites' management.

2.2 Assumptions for the Habitat Regulations Assessment of the Shebenik-Jabllanicë National Park / Candidate Emerald Site

An appropriate assessment should be undertaken if a proposed plan or project is considered to be a risk of or have the possibility to have an effect on a protected habitats site to determine the implications for the site, in view of the site's conservation objectives. These conservation objectives relate to each of the habitats and species for which the site was designated. A significant effect is considered likely if it cannot be excluded on the basis of objective information and it might undermine a site's conservation objectives. An appropriate assessment must consider the direct and indirect effects on the designated features and conservation objectives.

Whilst a Management Plan has been developed for the Shebenik-Jabllanicë National Park in 2015, a specific plan or citation with clear conservation objectives and a list of designated features has not been developed for this designated Candidate Emerald Site. This appropriate assessment (or habitat regulations assessment) therefore utilises the 'values' identified in the Value Assessment and the high-level management objectives presented in the Management Plan for Shebenik-Jabllanicë National Park 2015-2024 (PROGES and Sapienza University of Rome, 2015) as the basis of this assessment.

2.3 Values of the Shebenik-Jabllanicë National Park

The Management Plan for Shebenik-Jabllanicë National Park 2015-2024 (PROGES and Sapienza University of Rome, 2015) identifies the key features of the National Park. The following 'values' have been identified based on ecology surveys and stakeholder consultation:

- high species diversity
- important habitats
- important flora
- important fauna
- socio-economic values
- cultural values.

Many of these values qualify as PBFs or trigger critical habitat (see Section 1.2.3) and as such are of high biodiversity value and conservation significance for the Project and are the focus of mitigation and offsetting as described in the Biodiversity Management Plan (RSK, 2020). These values are described in more detail below.

2.3.1 High species diversity

The Shebenik-Jabllanicë National Park and Candidate Emerald Site supports a high diversity of species including flora, mammals, birds, reptiles, amphibians, fish and invertebrates. This is likely to be attributed to the altitudinal range (from 300 m to 2,200 m above sea level), the diversity of climatic conditions and the geological conditions in this area giving rise to a range of habitat types and microclimates. The continued use of traditional farming techniques in the National Park is also important in promoting species diversity (PROGES and Sapienza University of Rome, 2015).

2.3.2 Important habitats

The Management Plan defines important terrestrial and aquatic habitats as those listed in the Habitat Directive 92/43/CEE (thus important for the conservation of biodiversity in Europe), habitats that are restricted to Albania or with limited distribution, and habitats that support rare or important species described below. These habitats are presented in Table 2.1 and the distribution and coverage of Natura 2000 habitats in the Shebenik-Jabllanicë National Park are illustrated in Figure 2.1.

2.3.3 Important flora

Important plant species are defined by the Management Plan for Shebenik-Jabllanicë National Park 2015-2024 (PROGES and Sapienza University of Rome, 2015) as endemic / restricted range plant species, rare and threatened species listed on the Albanian Red List and the IUCN Red List of Threatened Species (IUCN, 2020) and plant species with economic value. Twenty-six important plant species have been identified for the Shebenik-Jabllanicë National Park / Candidate Emerald Site (Table 2.1).

Table 2.1: Important species of flora of the Shebenik-Jabllanicë National Park / Candidate Emerald Site (PROGES and Sapienza University of Rome, 2015)

Key: NA = Not Assessed; LC = Least Concern, LR = Low Risk; VU = Vulnerable; EN = Endangered)

Scientific Name	Common Name	IUCN Status (2020)	Albanian Red Data List
<i>Agrimonia eupatoria</i>	Agrimony	LC	Not listed
<i>Alkanna scardica</i>	-	NA	LRcd
<i>Alyssum bertolonii</i>	-	NA	LRcd
<i>Anthyllis vulneraria</i> subsp. <i>bulgarica</i>	-	NA	Not listed
<i>Bornmuellera baldaccii</i>	-	NA	EN
<i>Centaurea candelabrum</i>	-	NA	EN
<i>Cistus sintenisii</i> (synonym <i>Cistus albanicus</i>)	-	NA	EN
<i>Dryopteris filix-mas</i>	Common male-fern	LC	Not listed
<i>Festucopsis serpentini</i>	-	LC	VU
<i>Genista hassertiana</i>	-	NA	Not listed
<i>Gentiana lutea</i>	Great yellow gentian	LC	EN
<i>Hypericum perforatum</i>	St. John's-wort	LC	EN
<i>Juniperus communis</i>	Common juniper	LC	VU
<i>Juniperus oxycedrus</i>	Prickly juniper	LC	VU
<i>Lilium albanicum</i>	zambaku shqiptar / Albanian lily	LC	EN
<i>Narthecium scardicum</i>	-	NA	VU
<i>Pedicularis graeca</i>	-	NA	LRcd
<i>Pinus heldreichii</i>	Heldreich's pine	LC	VU
<i>Pinus peuce</i>	Balkan pine	NT	EN

<i>Ramonda serbica</i>	Српска рамонда	LC	VU
<i>Satureja montana</i>	-	NA	VU
<i>Saxifraga scardica</i>	-	NA	VU
<i>Sedum serpentini</i>	-	NA	Not listed
<i>Trifolium pilczii</i>	-	NA	LRnt
<i>Trifolium wettsteinii</i>	-	NA	Not listed
<i>Veronica saturejoides</i> subsp. <i>munellensis</i>	-	NA	VU

2.3.4 Important fauna

Important fauna species includes several iconic mammals which are listed as follows:

- brown bear (*Ursus arctos*) - IUCN LC at the global scale; IUCN VU in the Mediterranean; Albanian Red List VU; listed under CITES Appendix II
- Balkan lynx (*Lynx lynx* ssp. *balcanicus*) – IUCN CR; Albanian Red List CR; listed in Appendix II of CITES; Appendix III of the Bern Convention and strictly protected under the EU Habitats and Species Directive (Annexes II and IV).
- Eurasian otter (*Lutra Lutra*) - IUCN NT; and Albanian Red List VU; listed on Appendix I of CITES, Appendix II of the Bern Convention, Annexes II and IV of the EU Habitats and Species Directives.
- wolf (*Canis lupus*) - IUCN LC and Albanian Red List NT
- wild cat (*Felis silvestris*) - IUCN LC, Albania EN; included on CITES Appendix II, the EU Habitats and Species Directive (Annex IV) and Appendix II of the Bern Convention.
- European roe deer (*Capreolus capreolus*) - IUCN LC; Albanian Red List VU; listed on Appendix III of the Bern Convention
- chamois (*Rupicapra rupicapra*) – IUCN LC; Albanian Red List VU; listed on Appendix III of the Bern Convention. The subspecies *balcanica* is listed on Annexes II and IV of the EU Habitats and Species Directive, and subspecies *tatrica* is listed on Annexes II and IV.

The National Park provides habitat for the golden eagle (*Aquila chrysaetos*; IUCN LC; Albanian Red List EN) which is listed by the Management Plan as an important bird of prey. Other bird species are considered as being of importance as they are afforded protection by Appendix II of the Bern Convention as follows:

- red-backed shrike (*Lanius collurio*) – Also listed on Annex 1 of the EU Birds Directive
- common nightingale (*Luscinia megarhynchos*) - Also listed on Appendix II of the Convention on the Conservation of Migratory Species of Wild Animals
- European serin (*Serinus serinus*) - Bern Convention Appendix II.

Two important reptile species inhabit Shebenik-Jabllanicë National Park namely the Hermann's Tortoise (*Testudo hermanni*) and the four-lined snake (*Elaphe quatuorlineata*). These species are listed as Near Threatened by the IUCN Red List of

Threatened Species (IUCN, 2020). The Hermann's tortoise is categorised by the Albanian Red List as Low Risk (LR/nt) and is listed on Annex II of the Bern Convention, Annex II and IV of the EU Habitats Directive, Annex II of CITES and Annex A of EU Wildlife Trade Regulation 338/97. The range of the Hermann's tortoise is extant in nearly all of Albania but is otherwise distributed patchily throughout the Mediterranean. The population is relatively stable in the Balkans, with a more continuous distribution (van Dijk et al. 2004, Bertolero et al., 2011).

The four-lined snake is categorised as Critically Endangered by the Albanian Red List and is listed on Annex II of the Bern Convention and Annex II and IV of the EU Habitats Directive. The four-lined snake has a fragmented distribution that extends across Mediterranean and sub-Mediterranean zones particularly across the Balkan region and central and southern Italy (excluding Sicily). The global population is thought to be in a state of decline (Crnobrnja-Isailovic et al., 2009). This species has a relatively widespread distribution in Albania and inhabits a broad range of habitats including open woodlands and woodland edge habitat, hedgerows, rocky habitat types and agro-pastoral land. The four-lined snake has a large home range (Crnobrnja-Isailovic et al. 2009).

According to the Management Plan, the following important fish species of global conversation importance inhabit waterbodies in the National Park:

- European eel (*Anguilla Anguilla*) - IUCN CR; not listed on the Albanian Red List
- pindus stone loach (*Oxynoemacheilus pindus*) - IUCN VU; not listed on the Albanian Red List
- Mediterranean barbel (*Barbus meridionalis*;) - IUCN NT; Albanian Red List LR/ nt
- South European roach (*Rutilus rubilio*;) - IUCN NT; not listed on the Albanian Red List.

It is important to acknowledge that of these four species, only the European eel has a geographical range that falls within Albania according the IUCN Red List of Threatened Species (IUCN, 2020).

2.3.5 Socio-economic values

The socio-economic values of the Shebenik-Jabllanicë National Park are associated with the sustainable use of ecosystem services e.g. provisioning, regulating and cultural services which are defined as follows:

- Supporting services – services necessary for the production of all other ecosystem services including soil formation, photosynthesis, primary production, nutrient cycling and water cycling.
- Provisioning services – products obtained from ecosystems, including food, fibre, fuel, genetic resources, biochemicals, natural medicines, pharmaceuticals and fresh water.
- Regulating services – benefits obtained from the regulation of ecosystem processes, including air quality regulation, climate regulation, water regulation, erosion regulation, water purification, disease regulation, pest regulation, pollination, natural hazard regulation.

- Cultural services – non-material benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation and aesthetic experiences – thereby taking account of landscape values.

The Management Plan has identified the following socio-economic values for the Shebenik-Jabllanicë National Park:

- tourism in the region is currently limited by access and the poor conditions of the current road network in the region, however tourism, particularly ecotourism associated with the Shebenik-Jabllanicë National Park and tourism associated with the cultural values of the park (described in Section 2.2.6) represents a vital economic opportunity.
- water resources which are of importance to people and wildlife in the region
- traditional farming systems with a potential income generated by the sale of eco-labelled high-quality niche products
- the provision of timber forest products and non-timber forest products for medicinal purposes, fuel, construction, subsistence and sale
- fishing and aquaculture for subsistence and sale.

2.3.6 Cultural values

Important cultural values of the Shebenik-Jabllanicë National Park are listed as follows:

- historical sites e.g. Scanderbeg's staircase and Scanderbeg's table
- natural caves some of which have paintings on the walls (i.e. Glacier, Christ's and the Eremite caves)
- the ancient village of Qutesi and the continued use of traditional skills used for carving of wood products, the manufacture of stone items such as mill stones, construction of stone houses, the manufacture of traditional costumes and the performance of traditional dances.
- the Ethnographic Museum in Librazhd, although substantially damaged, this represents an important local repository of cultural history and knowledge.
- an annual cultural fair held in Stebleve.

Table 2.2: Important habitats of the Shebenik-Jabllanicë National Park / Candidate Emerald Site (PROGES and Sapienza University of Rome, 2015)

Annex I Habitat Type Code	Definition Habitat Directive	Vegetation Communities
-	Important serpentine habitat rich in endemic species	<i>Alyssum bertolonii</i> serpentine communities
4090	Endemic oro-Mediterranean heaths with gorse	<i>Astragalus sirinicus</i> community
8210	Calcareous rocky slopes with chasmophytic vegetation	Vegetation of rocky slopes with <i>Saxifraga</i> sp.pl. And/or chasmophytic species
8140	Eastern Mediterranean screes	Calcareous alpine screes with <i>Drypis spinosa</i>
7230	Alkaline fens	<i>Carex</i> sp.pl. Wetlands (e.g. <i>Carex davalliana</i> , <i>C. flava</i> , <i>C. lepidocarpa</i>)
6520	Mountain hay meadows	<i>Cynosurus cristatus</i> - <i>Trifolium patens</i> meadows
4060	Alpine and Boreal heaths	<i>Erica carnea</i> dwarf heaths
	Important serpentine habitat rich in endemic species	<i>Euphorbia spinosa</i> serpentine vegetation
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates(<i>Festuco-Brometalia</i>)	<i>Festuco-Brometea</i> dry limestone grasslands
-	Important serpentine habitat rich in endemic species	<i>Festucopsis serpentini</i> serpentine rock communities
4060	Alpine and Boreal heaths	<i>Genista hassertiana</i> communities
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	<i>Geranium sylvaticum</i> - <i>Geum rivale</i> forest edge communities
7230	Alkaline fens	<i>Juncus alpino-articulatus</i> and <i>Pinguicula</i> sp. community
5130	<i>Juniperus communis</i> formations on heaths or calcareous grasslands	<i>Juniperus nana</i> communities
6230	Species-rich <i>Nardus</i> grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)	<i>Nardus stricta</i> communities
7230	Alkaline fens	<i>Narthecium scardicum</i> stream-edge vegetation
7230	Alkaline fens	<i>Pinguicula balcanica</i> communities

7230	Alkaline fens	<i>Pinguicola hirtiflora</i> communities
8210	Calcareous rocky slopes with chasmophytic vegetation	<i>Potentilla apennina</i> rock vegetation
3260	Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and Callitricho-Batrachion vegetation	<i>Ranunculus tricophyllus</i> community
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>)	<i>Satureja montana</i> rocky garrigues
-	Important habitat rich in target species	<i>Sesleria coerulans</i> grassland
-	Important habitat rich in target species	<i>Viola magellensis</i> community

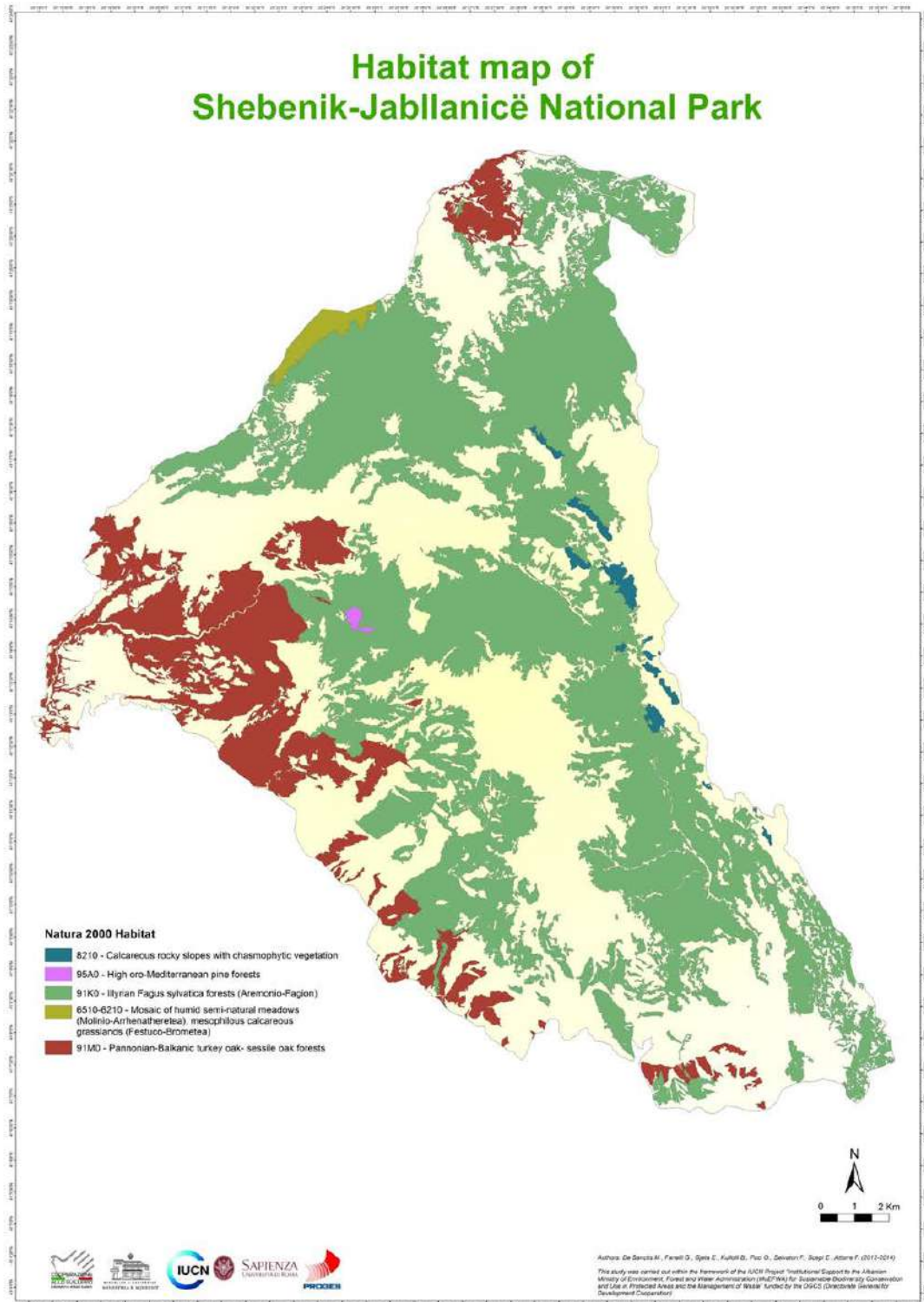


Figure 2.1: Natura 2000 habitat distribution in the Shebenik-Jabllanicë National Park / Candidate Emerald Site (PROGES and Sapienza University of Rome, 2015)

2.3.7 Management objectives

The Vision Statement of the Management Plan for Shebenik-Jabllanicë National Park (SJNP) 2015-2024 is the *“Management of the SJNP will be aimed at preserving its ecological and cultural values, while developing untapped potentials of socio-economic activities directly linked to the sustainable use of the services granted by the Park’s ecosystem”* (PROGES and Sapienza University of Rome, 2015).

The Management Plan identifies two main high-level objectives which are listed as follows:

“Objective 1: Conservation of ecological and cultural values:

- *rangelands (forests, grasslands and aquatic environments)*
- *fauna (wildlife and livestock)*
- *cultural hotspots*

Objective 2: Development of livelihoods based on sustainable use of ecosystem services

- *agriculture and livestock*
- *tourism*
- *fisheries and aquaculture*
- *forest products.”*

These objectives are described in more detail in Table 2.3.

Table 2.3: Management objectives

Objective		Description	
1: Conservation of Ecological Values	Rangelands	Forests	To maintain the current extent and status of deciduous mesophilous forests and coniferous forests and to improve the status of deciduous termophilous forests within the Shebenik-Jabllanicë National Park.
		Grassland	To increase the knowledge of grasslands' conservation state, its capacity to sustainably provide ecosystem services and how these are used by local community.
		Aquatic environments	To develop recommendations to enhance the sustainability of hydropower development in the Shebenik-Jabllanicë National Park. To improve management of wastewater and solid waste in order to reduce pollution to the springs, streams and lakes in the Shebenik-Jabllanicë National Park.
	Wildlife	Mammals, birds, reptiles, amphibians, fish and invertebrates	To improve knowledge on the occurrence of fauna (mammals, birds, reptiles, amphibians, freshwater fish and invertebrates), the conservation status of species of interest and impacts of utilization; and to improve the protection of wildlife

<p><i>2. Development of Livelihoods Based on Sustainable Use of Ecosystem Services</i></p>	Agriculture and livestock	Development of agriculture, livestock breeding and agro-Industry	To develop a line of specific products associated with the Park and reinforced through a geographical labelling system; to strengthen farmers associations; and to reduce the extent of losses of crops and livestock to wildlife.
	Tourism	Development of tourism	To develop a tourism Master Plan for the SJNP; to develop a Park tourism guide; to establish a tourist information centre and to revitalize the ethnographic museum of Librazhd
	Forest products	Development of forest-related economic activities	To identify NTFP species best suited to cultivation; to introduce cultivation of high value and endangered NTFP species; to promote sustainable harvesting techniques for NTFP species; to coordinate local forest plans; and to develop mechanisms for sustainable harvesting of firewood by local communities.
	Water resources	Development of safe supplies of drinking water	To identify and test the quality of all springs in the Park used as sources of drinking water; to develop practices for disinfecting drinking water supplies; and to raise awareness about the importance of safe water supplies for drinking purposes
	Geology and landscapes	Mitigation of geological risks	To identify areas and infrastructure at risk from landslides, soil erosion and flooding; to implement specific measures to mitigate geological risks



3 STAGE 1 SCREENING

3.1 Potential Project-related Impacts

3.1.1 Objective 1: Conservation of Ecological Values (rangelands: forests, grasslands, aquatic environments)

3.1.1.1 Summary of values

- important forests, grasslands, aquatic habitats: Annex 1 habitats, Annex 1 priority habitats, and Natura 2000 habitats are presented in Table 2.2.
- habitats that support a high species diversity.

3.1.1.2 Potential Project-related impacts during the Construction Phase

Likely significant effects on these ecological values may result from:

- habitat loss
- habitat fragmentation and edge effects
- adverse change in surface water hydrology and water quality
- adverse changes in air quality
- loss of rare or threatened vascular plant species.

The proposed Project is currently in the early stages of the design phase and many of the design details are not finalised, hence a precautionary approach to this stage 1 screening. Based on consultation with ADF, it has been assumed that 5 m of habitat will be permanently removed and a further 5 m of habitat will be temporarily lost both sides of the existing Zgosht and Cerenec road during construction. This is precautionary and allows for construction works that may occur outside of the road footprint e.g. benching, the construction of retaining and receiving walls, the installation of new drainage culverts, pipes, ditches and cables and bridge repair works. Considering this, the proposed Project will result in likely significant effects arising from the permanent loss of 1.2 ha of forest and the temporary loss of 3.30 ha forest habitats from within the Shebenik-Jabllanicë National Park. These areas of habitat loss are likely to be refined and reduced following finalisation of the Project design. The Project is not expected to result in the loss of grassland and aquatic habitats from the National Park.

Habitat clearance for the Project will result in habitat minor fragmentation. Residual fragments may be vulnerable to further degradation caused by edge effects (e.g. altered environmental conditions). Edge effects are major drivers of change in many fragmented landscapes, but the effects are often highly variable (Laurance et al., 2007). Significant likely effects from habitat fragmentation and edge effects may contribute to the degradation of remnant habitats within the western border of the National Park.

Habitat clearance will result in the loss of common plant species and may potentially result in the removal of important plants. The occurrence of important plant species presented in Table 2.1 within the clearance zone is unknown and requires further targeted botanical survey work to confirm their presence / likely absence. If present, it is

anticipated that only a few individuals of each species would be cleared, which is unlikely to have substantial adverse impact on the abundance and / or distribution of the national or global populations of these species over one or more generations and is highly unlikely to threaten the long-term viability of these populations or any populations dependent on it.

Fugitive dust emissions, measured as particulate matter of varying particle size (e.g. PM₁₀ and PM_{2.5}), will be generated by habitat clearance, grading and earthwork activities. Significant dust emissions are also expected to result from the use and upgrade of the existing unsurfaced road. An accumulation of dust on leaves can block stomata and thereby impact impairing the biological fitness of plants. Prolonged smothering can result in the mortality of an individual plants leading to localised habitat degradation over time. Fugitive dust emissions may result in significant likely effects on forests in close proximity to the Project Development Area (PDA).

There are no major tributaries or standing waterbodies located within the PDA that lies within the Shebenik-Jabllanicë National Park / Candidate Emerald Site. Several very small ephemeral alpine creeks may potentially be redirected or culverted during the construction phase to reduce current erosion impacts, potentially resulting in likely significant effects on surface hydrology in the PDA which may potentially result in significant likely impacts to aquatic habitats in the National Park.

Accidental spills of hazardous substances (i.e. diesel fuel, asphalt, oil and bitumen) and grey-water or septic systems (i.e. portaloos) may potentially contaminate and adversely impact receiving aquatic and terrestrial habitats (including forests) resulting in injury or mortality to plants, habitat degradation or loss and lethal and sub-lethal effects on aquatic biota.

Likely significant effects from changes to surface water quality caused by suspended sediment loading generated by earthwork activities during the construction phase (e.g. habitat clearance, grading, stockpiling, extraction and the use of unsurfaced access roads). Waterbodies located nearest to the Project area are more vulnerable to the risk during construction. However, the quality of downstream water bodies (i.e. small alpine streams, creeks and pools) located within Shebenik-Jabllanicë National Park may also be adversely affected. Suspended sediments may smother emergent and riparian vegetation causing a reduction in biological fitness and mortality in severely impacted areas. The deposition of sediments in aquatic environments may result in the localised loss of benthic habitats and macrophytes which are smothered by sediment if unmitigated. Increased nutrients and turbidity from sediment runoff can also lead to the formation of blue-green algal blooms (Conley et al., 2009) which can impair water quality and adversely affect some aquatic flora.

High levels of sediment-laden runoff may smother terrestrial flora, resulting in injury or mortality to plants, resulting in localised forest degradation within Shebenik-Jabllanicë National Park, closest to the PDA. The magnitude of impacts is likely to be higher during the winter months in periods of high rainfall. Sediment-laden runoff from the construction site is expected to result in significant likely effects to forest habitats in the Candidate Emerald Site.

3.1.1.3 *Potential Project-related impacts during the Construction Phase*

Likely significant effects from operation phase for objective 1 have been identified from:

- change in surface water quality
- facilitated access and in-migration.

Likely significant effects from sediment loading in aquatic environments are likely to be smaller during the Operation Phase due to the proposed repaired and enhancement works to the existing road drainage system, but there is still the potential for spills of hazardous and non-hazardous compounds and runoff from roads leading to the contamination of water sources affecting downstream aquatic habitats. Nutrient, sediment, heavy metal and petroleum hydrocarbon loads can adversely change the quality of receiving waters resulting in significant likely effects on aquatic habitats. Heavy metals can result from worn tires, exhausts, worn engine parts, brake linings and rust. Heavy metals are toxic to aquatic life and can potentially contaminate ground water. Road salts can also produce high sodium and chloride concentrations in ponds, lakes, and other aquatic habitats. This can cause adverse changes to water chemistry (USEPA website downloaded 2019).

Similarly, likely significant effects from fugitive dust emissions described in section 3.1.1.2 are likely to be smaller during the operational phase due to the construction of the asphaltic layers.

It is anticipated that the proposed road works will increase access to the Shebenik-Jabllanicë National Park. This may lead to a rise in influx of visiting people and tourists to the Park and in-migration to the region and an increase the exploitation of natural resources (i.e. trees, woody shrubs, grasses and herbs). Forest are likely to be targeted for timber collection and non-timber forest products. The road construction may also stimulate urban development and agro-pastoral activities within the Project area, leading to indirect loss of forest habitats. These activities may increase pressure on natural resources, particularly in areas of high biodiversity.

3.1.2 Objective 1: Conservation of Ecological Values (wildlife)

3.1.2.1 Summary of values

- important fauna presented in Section 2.3.4.
- indicator mammals, birds, reptiles, amphibians, fish and invertebrate species presented in Table 6.1 (Appendix 1).

3.1.2.2 Potential Project-related impacts during the construction phase

Mammals

Important mammal species includes several iconic mammals which are listed as follows:

- brown bear
- Balkan lynx
- Eurasian otters
- grey wolf
- wild cat
- European roe deer

- chamois
- Indicator fauna species known to inhabit the Shebenik-Jabllanicë National Park / Candidate Emerald Site are presented in Table 6.1.

Likely significant effects from the construction phase associated with important and indicator mammal species have been identified from:

- habitat loss
- barrier to movement.
- disturbance caused by increased noise and vibration levels
- disturbance from artificial light spill
- elevated noise and vibration emissions
- adverse changes to air quality
- adverse changes to water quality
- accidental vehicle / machinery collisions.

Vegetation clearance during construction will result in the minor loss of natural habitats (i.e. forests / woodlands and thickets) that have the potential to support important mammal species and may form part of their ranges.

The predominant noise and vibration emissions generated during the pre-construction and construction phase will be generated by sources such as vehicle traffic, plant vehicles, pneumatic drills, jackhammers and machinery (i.e. excavators / grader and vibratory rollers). Construction noise emissions will be relatively localised, temporary and generated over a 2-year period. Unfamiliar and/or loud noise and vibration emissions are known to evoke a flight reaction in fauna. Mammals are also known to experience stress, reduced biological fitness and decreased breeding success on exposure to noise (Francis and Barber, 2013). Chronic stress can increase species' susceptibility to diseases, pathogens and parasites (Dhabhar, 2002; Sapolsky et al., 2000). High noise and vibration levels may also compromise hearing by damaging inner-ear structures, provided that the acoustic energy is within an animal's sensory range and the animal is close to the source (Barber et al., 2010). Disturbance from construction activities may result in temporary displacement of important mammal species from habitats in the western periphery of the National Park. However, large ranging carnivore species and crepuscular / nocturnal species (i.e. brown bears, grey wolves, European roe deer, badgers and wild cats) may still cross key passable sections of the construction site on the existing Zgosht and Cerenec at night once activities have ceased. Likely significant effects on important and indicator mammal species are expected from Project-related noise and vibration emissions.

Some sections of the existing Zgosht and Cerenec road that are characterised by steep sided retaining walls and rock faces are already considered to act as a barrier to the movement of some fauna species across the road. The physical presence of the workforce and construction activities e.g. asphalt instillation during the construction phase, may further compound this barrier effect and serve as a barrier to the movement of fauna along other sections of the excising road.

Construction activities (i.e. habitat clearance, earth works, excavating and levelling works etc) present a risk of accidental fauna collisions with vehicles and machinery resulting in injury or mortality to some small mammals, but this is unlikely to pose a risk to important fauna species which are highly mobile and large ranging. Night working during the construction phase is not permitted and would increase the risk of vehicle collisions with moving nocturnal fauna and crepuscular mammals (i.e. grey wolves, European roe deers and wildcats), which are less likely to be seen by drivers and may be startled by vehicle headlights.

Project construction will not be undertaken at night. Artificial lighting will only be used to light an equipment compound (if used) and the plant / machinery storage area located within or near the footprint of the road for security reasons. It is anticipated that the resulting light-spill will be localised and temporary. Light-spill is known to cause disturbance to crepuscular (fauna that are active primarily during dawn and dusk) and nocturnal species. Artificial light spill can cause a range of behavioural changes such as altered feeding patterns in wildlife. Light-spill may affect the circadian rhythms and cycles of activity of nocturnal, crepuscular and diurnal species, including disruption of seasonal acclimatisation, disruption of predator-prey relationships, increased prey intake and altered reproduction behaviour (Gaston et al., 2013; Longcore and Rich, 2004). Many species use lightscapes (e.g. moonlight) as cues for movement around their environment and altering these lightscapes by light pollution may disrupt these movements by disorienting the animal (Gaston et al., 2013). This can potentially result in physiological stress and thereby reduced biological fitness. It is expected that artificial lighting may result in the localised displacement of important mammal species from within the National Park / Candidate Emerald Site.

Fugitive dust emissions (e.g. PM₁₀ and PM_{2.5}) and combustion emissions air pollutants (i.e. SO₂, CO, NO_x, particulate matter and VOCs) will be generated during the Construction Phase which will be short term, localised and staged over two years. Combustion emissions are likely to be less of a risk to fauna during the construction phase compared to dust emissions, due to limited vehicle and machine usage within the PDA. The magnitude of impacts to fauna arising from the inhalation of these dust emissions and air pollutants is dependent on the quantity, composition, respiratory rates and health of fauna. Emissions can cause irritation and impairment of respiratory functions, skin irritation and vision impairment of fauna. Potential impacts may be cumulative in nature. Pollutants could also be ingested (for example when deposited on plants or fruit which is then consumed) and then adversely affect the health of fauna. Likely significant effects on important and indicator mammal species are expected from Project-related dust and combustion emissions.

Several small ephemeral alpine streams and creeks may potentially be redirected or culverted during the construction phase potentially resulting in the loss of water resources for important mammal species. Suspended sediments generated by site preparatory works and construction activities may adversely impact water resources used by mammal species resulting in smothering of benthic habitat and eutrophication over time. There is also risk of surface and groundwater contamination through accidental spills or seepages of hazardous substances (i.e. diesel fuel, oil, bitumen etc) and grey-water or septic systems (i.e. portaloos) during construction resulting in the contamination of water resources for important and indicator mammal species. This would be detrimental to the health of fauna if ingested and may compound the impact of habitat loss. Likely significant

effects to the water resources of important mammal species is considered to be precautionary.

Birds

Important bird species identified by the Management Plan are listed as follows:

- golden eagle
- red-backed shrike
- common nightingale
- European serin.
- Other indicators bird species of conservation importance for the National Park are presented in Table 6.1.

Likely significant effects from the construction phase to important and indicator bird species have been identified from:

- habitat loss
- adverse changes to surface water quality
- disturbance caused by increased noise and vibration levels
- disturbance from artificial light.

Golden eagles utilise a wide range of habitat types including forests, grasslands, shrubland and rocky areas (i.e. inland cliffs), particularly in mountainous areas. Nesting predominately occurs on cliff ledges, or where absent, golden eagles nest in large trees or artificial structures (Ferguson-Lees and Christie, 2001). The clearance of forest habitats during construction may potentially result in minor habitat loss of the golden eagle and nesting habitat for indicator bird species.

High-quality habitats for red-backed shrikes are characterised by a mosaic of habitat types such as grassland, agro-pastoral land, tree plantations, forests, shrubland, hedgerows etc (BirdLife International, 2017a). Habitat clearance during construction may result in minor habitat loss for red-backed shrikes.

The European serin is also associated with a mosaic habitat in lowland to lower montane environments. Habitat types include broadleaf and coniferous woodland, maquis slopes with pine woodland, mixed woodland types, open agricultural areas, orchards, vineyards, tree plantations, parks and gardens, ravines and gorges with trees and shrubs (BirdLife International, 2015). Habitat clearance during construction may result in minor habitat loss for the European serin.

In Europe, the common nightingale occupies the following habitat types: edge-habitat associated with broadleaf woodland, undergrowth-rich pinewoods and dry maquis; lowland open woodland characterised by scrub and dense coppice stands, bordering waterbodies; cultivated land with establish hedgerows, gardens and parklands (BirdLife International, 2017b). Habitat clearance during construction may result in minor habitat loss for common nightingales. Likely significant effects to golden eagles, red-backed shrikes, European serins, common nightingale and nesting indicator bird species from habitat loss are considered as a precautionary approach until the presence of these species in the western periphery of the National Park is validated.

Soil erosion from construction activities has the potential to cause sedimentation and eutrophication of receiving waters. The continued ingestion of sediment laden water or eutrophic water resources may potentially adversely affect the biological fitness of important and indicator bird species over time.

Noise emissions generated during the pre-construction and construction phase by sources such as vehicle traffic, plant vehicles, pneumatic drills, jackhammers and other machinery will be relatively localised, temporary and generated over a 2-year period. The impact from noise generated by Project construction could potentially be significant within 1 km of the construction site. It is anticipated that ground vibration generated during construction will be relatively more localised and nuisance level vibration impacts are expected to be perceptible within 200 m of the construction site.

Noise and vibration emissions are likely to cause disturbance to important and indicator bird species. Disturbance is likely to result in the displacement of individual birds but can potentially result in the displacement of the local population which may affect total food supply, foraging efficiency and energy expenditure due to flight (Riddington et al 1996.) Disturbance varies depending on the magnitude, duration, location and predictability of the source and susceptibility to this disturbance depends on the season, species, forage availability and weather conditions. Species are usually more susceptible during spring and autumn passage as they have not had time to become habituated to anthropogenic affects. Data on predicted noise and vibration levels are not available and therefore a precautionary approach has been taken. Likely significant effects on important and indicator bird species are expected from noise disturbance.

Project construction will not be undertaken at night. Artificial lighting will only be used to light the equipment compound (if installed) and the plant / machinery storage area, located within or near the footprint of the road for security reasons. It is anticipated that the resulting light-spill will be localised and temporary. Light-spill is known to cause disturbance to some species of bird and can cause a range of behavioural changes such as altered feeding and roosting patterns. This can potentially result in physiological stress and thereby reduced biological fitness over time. Likely significant effects on important and indicator bird species from artificial lighting are considered on a precautionary basis.

Reptiles

The Management Plan has identified the following two important reptiles:

- Hermann's tortoise
- four-lined snake
- Indicator reptile species are listed in Table 6.1.

Likely significant effects from the construction phase to important and indicator reptile species have been identified from:

- habitat loss
- accidental vehicle / machinery collision.

The Hermann's tortoise is known to inhabit oak forests and marquis habitats and the four-lined snake is known to inhabit woodlands, woodland-edge habitat and rocky habitats. Vegetation clearance during the Construction Phase will result in the loss of forest habitats which may offer potentially suitable habitat for the Hermann's tortoise and four-

lined snake. Likely significant effects from habitat loss are considered as a precautionary approach until the presence of these species in the western periphery of the National Park is validated.

There is a risk of accidental vehicle and machinery collisions with reptiles during forest clearance resulting in the injury or mortality of individuals. There is also a risk of accidental vehicle and machinery collisions with important and indicator reptile species attempting to cross the road and basking amongst the verges or on the edge of the road. The risks are greater during the early morning when the ambient temperature is lower reptiles are less mobile. If present, it is anticipated that only a few individuals would be cleared, which is unlikely to have substantial adverse impact on the abundance and / or distribution of the national or global populations of these species over one or more generations and is highly unlikely to threaten the long-term viability of these populations or any populations dependent on it.

Fish

According to the Shebenik-Jabllanicë Management Plan, the following fish species inhabit waterbodies in the National Park:

- European eel
- Mediterranean barbel
- pindus stone loach
- South European roach
- Mediterranean trout (*Salmo trutta macrostigma*) - IUCN NA; Albanian Red List EN
- Topmouth gudgeon (*Pseudorasbora parva*) – IUCN LC; not listed on the Albanian Red List
- rainbow trout (*Oncorhynchus mykiss*) – IUCN NA; not listed on the Albanian Red List
- Chub (*Squalius cephalus* (synonym *Leuciscus cephalus*)) – IUCN LC; not listed on the Albanian Red List
- gudgeon (*Gobio gobio*) - IUCN LC; Albanian Red List Low Risk/ nt
- colchic spined loach (*Cobitis satunini* (synonym *Cobitis taenia*)) – IUCN LC; Albanian Red List Low Risk/ cd
- nase (*Chondrostoma nasus*) – IUCN LC; Albanian Red List Low Risk/ cd
- *Barbus cyclolepis* – IUCN LC; not listed on the Albanian Red List
- stone loach (*Barbatula barbatula*) – IUCN LC; Albanian Red List Low Risk/nt
- bleak (*Alburnus alburnus*) – IUCN LC; not listed on the Albanian Red List.

Only European eel, pindus stone loach, Mediterranean barbel and South European roach are directly described as important wildlife by the Management Plan's Assessment of Values, the remaining species are described as indicator species. Of these fish species, only the European eel has a geographical range that falls within Albania according to the IUCN Red List of Threatened Species (IUCN, 2020).

Likely significant effects from the construction phase to these fish have been identified from:

- habitat loss
- hydrological changes
- adverse changes to surface water quality

There are no major tributaries or standing waterbodies located within the PDA of the existing Zgosht and Cerenec road in the National Park. Several small ephemeral alpine streams and creeks may potentially be redirected or culverted during the construction phase to reduce current erosion impacts potentially resulting in likely significant effects to important and indicator fish species from habitat loss and changes in surface hydrology. Likely significant effects from habitat loss are considered as a precautionary approach until presence of potential habitats for important fish species i.e. European eel, pindus stone loach, Mediterranean barbel and South European roach species within the PDA can be validated.

It is anticipated that the main risk to the surface water quality of aquatic receptors during construction is suspended sediments prior to mitigation generated by site preparatory works and construction activities. Sediment loading is likely to be caused by water erosion of disturbed areas during periods of rain resulting in sediment laden runoff and fugitive dust emissions. Waterbodies located nearest to the Project area in the National Park are more vulnerable to the risk of being impacted during construction, but downhill streams and waterbodies may also be adversely impacted in the National Park.

The deposition of sediments in aquatic environments may result in the localised loss of benthic habitats. Suspended sediments may impair the gill functions of fish and in turn adversely impact their biological fitness over time. Increased nutrients and turbidity from sediment runoff can also lead to the formation of blue-green algal blooms (Conley et al., 2009) and eutrophication (Webster et al., 2001) resulting in indirect habitat loss for fish.

There is also a risk of surface and groundwater contamination through accidental spills or seepages of hazardous substances (i.e. diesel fuel, oil, bitumen etc) and grey-water or septic systems prior to mitigation during construction. The contamination of receiving aquatic environments would be detrimental to the health of important fish species.

Amphibians

The Shebenik-Jabllanicë Management Plan does not consider amphibians with the designated site's Assessment of Values. However, the following four amphibian species have been reportedly recorded in the National Park / Candidate Emerald Site and are considered in the Park's management actions:

- *Bombina variegata* – IUCN LC; Albanian Red List LRcd; Appendix II of the Bern Convention and on Annexes II and IV of Natural Habitats Directive.
- fire salamander (*Salamandra Salamandra*) – IUCN LC; Albanian Red List Data Deficient; listed on Appendix III of the Bern Convention
- *Rana graeca* – IUCN LC; Albanian Red List LRnt; listed on Annex IV of the EU Habitats Directive and Appendix III of the Bern Convention

- *Ichthyosaura alpestris* - IUCN LC; Albanian Red List Data Deficient; listed on Appendix III of the Bern Convention.

Likely significant effects from construction phase for these amphibian species have been identified from:

- habitat loss
- change in surface water quality and hydrology
- accidental vehicle / machinery collision.

Several small ephemeral alpine streams and creeks may potentially be redirected or culverted during the Construction Phase resulting in the loss of amphibian habitat in the National Park. Amphibians (i.e. frogs, newts and toads) may also use refugia along the existing road verge for shelter. Repair works to the drainage system and the clearance of vegetation from the road verge may potentially result in the loss of habitat and changes in hydrology for these amphibian species. Likely significant effects to amphibians from habitat loss are precautionary.

Suspended sediments generated by site preparatory works and construction activities may adversely impact aquatic habitats used by amphibians resulting in smothering of benthic habitat and eutrophication over time. Accidental spills of hazardous and non-hazardous materials also pose a threat to the water quality leading to the contamination of aquatic habitats for amphibians.

There is also a risk of accidental vehicle and machinery collision with amphibians during vegetation clearance and within the PDA during wet weather at sections of the road with good habitat connectivity either side, resulting in injury and / or the mortality of individual amphibians. It is anticipated that only a few individuals would be effected, which is unlikely to have substantial adverse impact on the abundance and / or distribution of the national or global populations of these species over one or more generations and is highly unlikely to threaten the long-term viability of these populations or any populations dependent on it.

Invertebrates

- stag beetle (*Lucanus cervus*)

Likely significant effects from the construction phase for the stag beetle has been identified from:

- habitat loss and degradation

The stag beetle is classed as a saproxylic invertebrates and as such is dependent on dead or decaying wood (or dependent on other organisms that are themselves dependent on dead wood). The larvae of the stag beetle develop over a 4 to 5-year period in moist decaying wood either (i.e. old tree stumps, the base of rotting fence posts) on or below the soil surface (Nieto, 2010). It is anticipated that construction will entail the clearance of 4.58 ha (permanent and temporary) of forest habitats from within the National Park. At present the level of scoping assessment does not allow for a detailed understanding of whether deadwood habitat suitable for this beetle is present within the construction footprint. Hence, likely significant effects from habitat loss and degradation are considered as a precautionary approach until presence of potential habitat can be confirmed or denied.

- *Caliaeschna microstigma*

Likely significant effects from the construction phase for *Caliaeschna microstigma* has been identified from:

- habitat loss and degradation
- adverse change to surface water quality

The dragonfly *C. microstigma* inhabits stony brooks and small rivers which are partly shaded, predominantly in hilly or mountainous regions (Kalkman, 2010). Several small ephemeral alpine streams and creeks may potentially be redirected or culverted during the construction phase. Likely significant effects from habitat loss are considered as a precautionary approach until presence of potential habitat for *C. microstigma* can be validated.

Accidental spills of hazardous and non-hazardous substances may potentially contaminate and adversely impact receiving aquatic habitats for *C. microstigma*.

Changes to surface water quality caused suspended sediment loading generated by earthwork activities during the construction phase may degrade aquatic habitats used by *C. microstigma* through smothering emergent and riparian vegetation and benthic habitats. Increased nutrients and turbidity from sediment runoff can also lead to the formation of blue-green algal blooms (Conley et al., 2009) which can impair water quality through eutrophication.

3.1.2.3 Potential Project-related impacts during the Operation Phase

Mammals

Likely significant effects from operation phase for mammals have been identified from:

- risk of accidental vehicle collision
- barrier to fauna movement
- adverse air quality impact from combustion emissions
- elevated noise and vibration levels
- facilitated access and in-migration.

The risk of accidental vehicle collision is expected to increase during operation due to the significant increase in vehicular traffic and is likely to result in the injury or mortality of individual important mammal species that attempt to cross the road. It is anticipated that the road will also serve as a barrier to the movement of important mammal species during operation and prevent individuals from accessing suitable habitat located outside/ inside of the Shebenik-Jabllanicë National Park.

Air quality combustion emissions generated by vehicle activity are likely to be elevated during the operation phase compared to construction phase, as vehicle traffic increases.

Noise and vibration emissions during operation will predominantly be generated by vehicle traffic using the Zgosht and Cerenec road. The predicted extent is unknown; however, noise and vibration emissions are likely to be of lower levels during operation than construction. It is expected that these emissions will result in the continued

displacement of important mammal species from habitats near the road but is unlikely to significant impact important mammal species elsewhere in the National Park.

There will be no significant likely effect of artificial light spill on important mammal species as artificial lighting will not be installed along the section of the road that passes along the Shebenik-Jabllanicë National Park / Candidate Emerald Site.

The proposed roadworks will facilitate access to the Shebenik-Jabllanicë National Park / Candidate Emerald Site. Project-induced in-migration and an influx of tourists to the National Park may lead to increased levels of disturbance to important mammal species and poses a risk to habitat quality (i.e. degrading and fragmenting habitats through unsustainable natural resource collection, trampling, poor waste management etc). Increased natural resource collection (i.e. fruits, herbs and timber) may degrade fauna habitat quality and may increase conflict with wildlife for remaining resources, including important mammal species.

Birds

Likely significant effects from operation phase for birds have been identified from:

- elevated noise and vibration levels
- facilitated access and in-migration.

Noise and vibration emissions during operation will predominantly be generated by vehicle traffic using the Zgosht and Cereneç road. The predicted extent is unknown; however, noise and vibration emissions are likely to be of lower levels during operation than construction. It is expected that these emissions will result in the continued displacement of some sensitive bird species from habitats near the road but is unlikely to significant impact bird species elsewhere in the National Park.

It is anticipated that the artificial lighting will not be installed along the section of the road that traverses the Shebenik-Jabllanicë National Park / Candidate Emerald Site.

The proposed roadworks will facilitate access to the Shebenik-Jabllanicë National Park / Candidate Emerald Site. Project-induced in-migration and an influx of tourists to the National Park may lead to increased levels of disturbance to important and indicator bird species and poses a risk to the quality of breeding bird habitats (i.e. degrading and fragmenting habitats through unsustainable natural resource collection, trampling, poor waste management etc).

Reptiles

Likely significant effects from operation phase for reptiles have been identified from:

- accidental vehicle collision
- barrier to movement.

The risk of accidental vehicle collision also increases during operation due to the significant increase in vehicular traffic and is likely to result in the injury or motility of individual important and indicator species that attempt to cross the road. It is anticipated that the road will serve as a barrier to the movement of reptile species and prevent individuals from accessing suitable habitat located outside/ inside of the Shebenik-Jabllanicë National Park.

Fish

Likely significant effects from operation phase for fish have been identified from:

- adverse changes in surface water quality
- facilitated access and in-migration.

Likely significant effects from sediment loading in aquatic environments are likely to be minimal during the operation phase due to the proposed repaired and enhancement works to the existing road draining system, but there is still a risk of a major accidental spill of hazardous (i.e. fuel) or non-hazardous substances during transportation leading to contamination of aquatic habitats used by important and indicator fish species. Combustion emissions will increase during operation due to the increased volume of vehicle traffic. These pollutants may adversely affect the water chemistry of aquatic habitats used by fish.

The proposed roadworks will facilitate access to the Shebenik-Jabllanicë National Park / Candidate Emerald Site. Project-induced in-migration and an influx of visitors to the National Park may lead to increased fishing activity may stimulate the commercial development of fishing and aquaculture thus increasing pressure on aquatic resources. Over-exploitation of fish stocks could potentially reduce fish diversity, abundance and breeding success which may be detrimental to the populations of important and indicator fish species with the National Park.

Amphibians

Likely significant effects from operation for amphibians have been identified from:

- adverse changes in surface water quality
- air quality impacts from elevated combustion emissions
- accidental vehicle collision
- barrier to movement.

Likely significant effects from sediment loading in aquatic environments are likely to be minimal during the operation phase due to the proposed repaired and enhancement works to the existing road draining system, but there is still a risk of a major accidental spill of hazardous (i.e. fuel) or non-hazardous substances during transportation leading to contamination of aquatic habitats used by amphibians.

Combustion emissions generated by vehicle activity are likely to be significantly elevated in close proximity to the Project during the operation phase compared to construction phase due to the substantial increase in vehicular traffic volumes. Air pollutants (i.e. SO₂, CO, NO_x, particulate matter and VOCs) can cause irritation and impairment of respiratory functions, skin irritation and vision impairment of fauna. Amphibians such as newts have particularly sensitive skin and as such the increase in combustion emissions could potential adversely impact the biological fitness of individual amphibians, particularly those located in close proximity to the road.

The risk of accidental vehicle collision also increases during operation due to the significant increase in vehicular traffic and is likely to result in the injury or motility of individual amphibian species that attempt to cross the road. It is anticipated that the road will serve as a barrier to the movement of amphibians and prevent individuals from

accessing suitable habitat located outside / inside of the Shebenik-Jabllanicë National Park.

Invertebrates

Likely significant effects during operation for stag beetles have been identified from:

- Facilitated access and in-migration

It is expected that the development of the new road will facilitate access to the National Park and other settlements adjacent to the Project. This may stimulate forestry and agro-pastoral activities in the National Park including the increased levels of timber harvesting and dead wood collection in forest habitats, resulting in the indirect loss and degradation of habitat for stag beetles. The predicted extent of Project-related in- is difficult to predict at this stage in the Project development.

Likely significant effects during operation for *Caliaeschna microstigma* has been identified from:

- Adverse changes to water quality

Likely significant effects from sediment loading in aquatic environments are likely to be minimal during the operation phase due to the proposed repaired and enhancement works to the existing road draining system, but there is still a risk of a major accidental spill of hazardous or non-hazardous substances during transportation leading to contamination of aquatic habitats.

3.1.3 Objective 2: Development of livelihoods based on sustainable use of ecosystem services

3.1.3.1 Summary of socio-economic values

- tourism associated with nature and cultural heritage values of Shebenik-Jabllanicë National Park the represents a vital economic opportunity
- water resources which are of importance to people and wildlife in the region
- traditional farming systems with a potential income generated by the sale of eco-labelled high-quality niche products
- the provision of timber and non-timber forest products for medicinal purposes, fuel, construction, subsistence and sale
- fishing resources and aquaculture for subsistence and sale.

Cultural heritage values of Shebenik-Jabllanicë National Park are listed as follows:

- historical sites e.g. Scanderbeg's staircase and Scanderbeg's table
- natural caves some of which have paintings on the walls (i.e. Glacier, Christ's and the Eremite caves)
- the ancient village of Qutesi and the continued use of traditional skills and practices.
- the Ethnographic Museum in Librazhd
- the annual cultural fair held in Stebleve.

3.1.3.2 Potential Project-related impacts during the Construction Phase

The development of agriculture, livestock breeding and agro-Industry

There will be no adverse direct likely significant effects on the development of agriculture, livestock breeding and agro-Industry in the Shebenik-Jabllanicë National Park / Candidate Emerald Site. Agro-pastoral activities in the Park are undertaken for subsistence reasons. The commercialisation of these activities is currently limited by farm sizes, access to capital and access to markets. Farmers are also losing livestock and crops to wildlife. The managers of the National Park are focused on supporting farmers with the commercial development of produce that avoids conflict with the Park's natural and cultural values e.g. the develop a line of specific products associated with the Park. The proposed Project will facilitate access and the transportation of produce to key recipients in the region and thus the Project's aims aligns with this objective.

The development of tourism opportunities

There will be no adverse direct likely significant effects on the development of tourism. Tourism in the region of the Project is currently limited by access and the poor conditions of the current road network. However according to the Management Plan, the Shebenik-Jabllanicë National Park offers a variety of tourist attractions associated with ecotourism and the cultural values of the National Park. The National Park's managers are keen to promote tourism and the development of additional tourist attraction within the Shebenik-Jabllanicë National Park boundary. The proposed Project will increase access to the Park and thus the Project's aims aligns with this objective.

The sustainable and permitted development of forest related economic activities

Harvesting timber and the collection of non-timber forest produce (NTFP) in the Shebenik-Jabllanicë National Park may not be sustainable and may be undertaken in areas that are currently forbidden. Management actions are focused on promoting the cultivation of selected NTFP species, and on developing sustainable harvesting practices.

Project-related in-migration is expected to initially occur during the Construction Phase with the mobilisation of the workforce. This poses the risk of a minor increase in natural resource collection by the work force if unmitigated however, in-migration is unlikely to significantly increase until the proposed road works have been completed and the road is in operation. Hence the Project is not perceived as conflicting with this objective during the Construction Phase.

The development of safe supplies of drinking water

Likely significant effects from the construction phase to drinking water supplies identified from:

- changes to surface water quality.

Uncontrolled and unsafe extraction of drinking water in the Shebenik-Jabllanicë National Park currently poses a risk to people and wildlife. Management actions are focused on water quality testing, the development of safe water drinking practices and awareness raising.

It is anticipated that the Project will not have any adverse impact to ground water sources of the National Park.

There are no major tributaries or standing waterbodies located within the PDA in the National Park. Several small ephemeral alpine streams and creeks may potentially be adversely impacted by sediment loading during construction prior to mitigation. If ingested this could adversely impact the health of individuals and require medical intervention.

Accidental spills of hazardous substances (i.e. diesel fuel, asphalt, oil and bitumen) and grey-water or septic systems (i.e. portaloos) may potentially contaminate receiving aquatic resources used by people. If ingested this could also adversely impact the health of individuals and require medical intervention.

Geological risks

Likely significant effects from the construction phase to the Candidate Emerald Site from:

- soil erosion

Landslides, floods and soil erosion have been identified by the Management Plan as an issue in the Shebenik-Jabllanicë National Park. Management actions are focused on identifying areas and infrastructure at risk from landslides, soil erosion and flooding in order to implement specific measures to mitigate these risks. Prior to mitigation, there is a risk of soil erosion and localised, small scaled landslides during construction due to the presence of exposed escarpments along road verges and the poor-quality of the existing road drainage system resulting in likely significant effects on the physical landscape.

3.1.3.3 Potential Project-related impacts during the Operation Phase

The development of agriculture, livestock breeding and agro-Industry

There will be no adverse direct likely significant effects on the development of agriculture, livestock breeding and agro-Industry in the Shebenik-Jabllanicë National Park / Candidate Emerald Site.

The development of tourism in the Shebenik-Jabllanicë National Park

There will be no adverse direct likely significant effects on the development of tourism and the Project is considered to have beneficial effect.

The sustainable and permitted development of forest related economic activities

Likely significant effects from operation to the sustainable and permitted development of forest related economic activities are identified from:

- facilitated access and in-migration.

The Project will facilitate access into the Shebenik-Jabllanicë National Park / Candidate Emerald Site. This may stimulate urban and agricultural development in the area, leading to increased authorised and unauthorised harvest rates and of timber and NTFP in this protected area. Hence there is indirect likely significant effects on the sustainable and permitted development of forest related economic activities within this Candidate Emerald Site.

The development of safe supplies of drinking water

There will be no adverse direct likely significant effects on sources of drinking water in the Shebenik-Jabllanicë National Park / Candidate Emerald Site during operation due to the repaired road drainage system which will be fit for purpose and the bioengineering works.

Geological risks

There will be no likely significant effects on the geological stability associated with the operating road in the National Park due to the repair and upgrading of the road drainage system, the construction of additional concrete retaining walls and bioengineering works to stabilise and protect escarpments. Hence the Project is considered to have beneficial effect.

3.1.4 In combination effects

Stakeholder engagement, including with the ADF and local communities, has identified a number of existing or planned activities within the project area and wider region which are presented in Figure 1.1 and Table 3.1. Cumulative impacts from the operational phase of the road and the proposed projects described below are likely to exacerbate likely significant effects on the values of the Candidate Emerald Site.

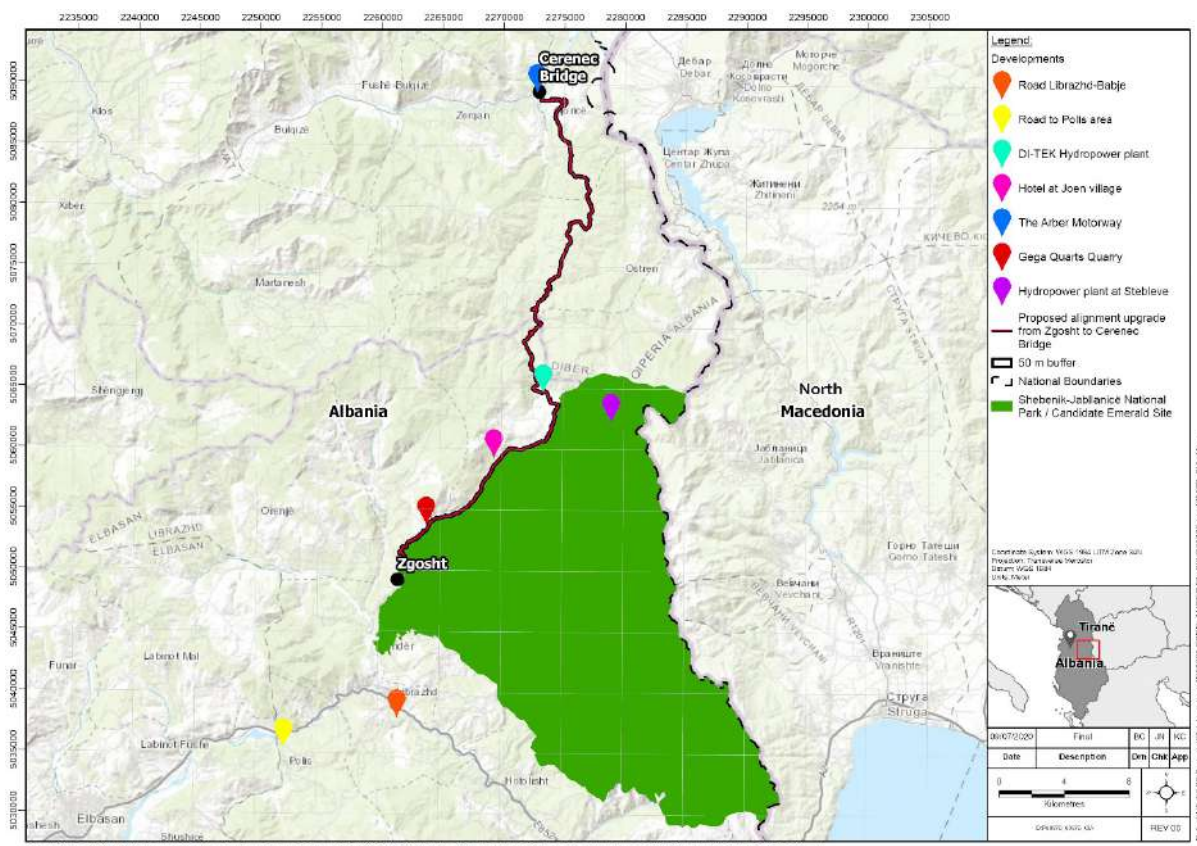


Figure 3.1: Existing or planned activities within the project area and wider region

Table 3.1: Existing or planned activities within the project area and wider region

Project / activity	Description
The Arber Motorway in Diber prefecture	This 26.8 km long, two-lane highway is currently under construction and is intended to link Tirana with the isolated Dibra region on the Macedonian border. Once operational, it will shorten travel times from 4 hours to 1.5 hours. The Arber Motorway will intersect with the Zgosht to Cerenec road at Cerenec bridge
Librazhd – Polis road	ADF are involved in the upgrade of this 3.2 km road segment, which is to the south-southwest of the Zgosht to Cerenec road
Librazhd - Babje road	ADF are involved in the upgrade of this 6.4 km road segment, which is to the south-southeast of the Zgosht to Cerenec road
DI-Tek Hydro Power Plant (HPP)	This is an existing HPP near Borove with an adjacent fish farm. This project appears to be within or immediately adjacent to the Zgosht to Cerenec road working width (depending on the final detailed design).
Drini HPP	This new HPP is currently under construction near Stebleve and is anticipated to be operational within one year.
Hotel expansion at Joen village (near Stebleve)	This existing hotel / restaurant has plans to expand with the development of an additional 24 rooms, a swimming pool, a snow-skating runway and a zipline.
Gega quartz quarry at Lunik village	This existing quarry is approximately 150 m from the Zgosht to Cerenec road and is owned by the same enterprise as the DI-TEK HPP. It opened in 2018 and the materials produced at the quarry are transported to a metallurgical factory at Elbasan.

Roads Projects

Construction of the Arber Motorway commenced in 2014 but was paused due to the reallocation of funds towards disaster relief. The project website indicates that project completion is due in 2022 which would indicate that the construction phase of the Arber Motorway could potentially closely precede or overlap with construction of the Zgosht to

Cerenec road. Assuming the Arber Motorway is eventually constructed in entirety, both it and the Zgosht to Cerenec road would be operational at the same time.

The two local road upgrade projects (Librazhd to Polis and Librazhd to Babje) are part of a larger investment programme for the rehabilitation of Albania's regional and local road network, funded in part by the ADF. The construction timeframe for these upgrades is currently unknown but, as with the Arber Motorway, it is assumed that they would be operational at the same time as the Zgosht to Cerenec road at some point in the future.

Construction of the Arber Motorway and, to a lesser extent, the local road upgrades are likely to lead to habitat loss and degradation. It will also result in increased vehicle traffic through the region and could potentially result in additional fragmentation of fauna habitat / barriers to fauna movement (in the particular, the Balkan lynx) and accidental vehicle / machinery collisions with important fauna resulting in injury or mortality. As part of the ESIA, ADF will establish a systematic environmental and social assessment process to identify any residual environmental and social cumulative impacts arising from these road developments.

Hydropower Plant

The existing hydropower plant near Brove also operates an adjacent fish farm. The business is currently finalising the construction of a restaurant to sell fish to domestic and international tourists, which are anticipated to increase with the upgrade of the Zgosht to Cerenec road. It was noted in the botanical scoping assessment undertaken as part of the Biodiversity Baseline Assessment (RSK, 2020) that the watercourse diversion and water drawdown associated with the development of the HPP has impacted on the habitat type 92A0 - *Salix alba* and *Populus alba* galleries. Impacts from the road widening undertaken previously (as the first stage of this Project) were also observed during the survey, in relation to water quality impacts due to the placement of waste rock and other inert material near to the watercourse. Further construction works associated with the Project could compound these impacts outside of the National Park.

Tourism Development

One of the objectives of the Project is to facilitate tourism in this remote, mountainous part of Albania. By improving access, particularly to the Shebenik-Jabllanicë National Park, it is anticipated that numbers of tourists (both domestic and international) visiting the area will increase and this has been taken into consideration in the traffic modelling and proposed project design.

One proposed tourism development identified during the stakeholder engagement meetings is the expansion of an existing hotel / restaurant at Joen village near Stebleve. The proposed expansion will include the development of an additional 24 rooms, a swimming pool, a snow-skating runway and a zipline. The stakeholder engagement meetings also indicated that additional tourism facilities such as horse riding were proposed for the region but insufficient details were provided for these to be included in the cumulative impact assessment.

Unchecked tourism poses a risk to habitat quality and species diversity in the National Park and Candidate Emerald Site. Habitat degradation and disturbance arising from increased noise and human activity arising from tourist activity has the potential to cause

disturbance and displacement of wildlife particularly within proximity to the Shebenik-Jabllanicë National Park.

Albania's waste management infrastructure is limited, and much household waste is not appropriately disposed (Lico et al 2015). Littering within the PDA in the National Park does not appear to be an issue currently, due to limited access except by local community member, however this could change with an influx of people. Plastic waste can have detrimental effects on the biological fitness of wildlife and / or result in the mortality of individuals if ingested. Chlorinated plastic can release harmful chemicals into the surrounding soil, which can then seep into groundwater, causing potentially harmful effects to the aquatic environment and species dependant on it. Poor waste management may also attract pest species (i.e. vermin) which in turn may result in the displacement of natural wildlife and act as vectors of disease. These impacts could result from Project-related tourist in-migration if not properly managed.

Protected areas have great potential for the development of sustainable tourism; they can improve the socio-economic status of the local communities while contributing to biodiversity conservation. The IUCN is committed to continuing to support the Albanian authorities in the development of sustainable tourism in protected areas, including visitor management planning, development of soft tourism infrastructure, and capacity building for interpretation and visitor management (IUCN, 2016).

Quartz Quarry

The existing Gega quartz quarry is located at Lunik. It is located approximately 150 m from the Zgosht to Cerenec outside of the National Park, and presumably the existing Zgosht to Cerenec road is used to transport the stone to Elbasan for processing. It is considered likely that the key potential impacts from the quarry on biodiversity relate to noise and dust. In combination effects are with likely to arise from fugitive dust emissions to smother plants and habitats in the vicinity of the construction works. Where the road is close to the existing quarry, the risk of cumulative dust impacts is considered possible.

3.1.5 Screening Matrix

A summary of this screening stage is presented in Table 3.1 and Table 3.2.

3.2 Conclusion

The proposed Project has the potential to give rise to some likely significant effects on the Shebenik-Jabllanicë National Park and Candidate Emerald Site, hence an Appropriate Assessment is required.

Table 3.2: Screening Matrix: Objective 1 - Conservation of ecological values

Summary of potential Project-related Impacts	Values of the Shebenik-Jabllanicë National Park / Candidate Emerald Site													
	Rangelands		Wildlife											
	Important Habitats Biodiversity hot spots	Important Amphibian Species	Important mammal species	Important bird species	Important reptile species	Important fish species	Important Invertebrate species							
Project Phases C= construction O = operation	C	O	C	O	C	O	C	O	C	O	C	O	C	O
Habitat loss and degradation	✓		✓		✓		✓		✓		✓		✓	
Habitat fragmentation and edge effects	✓													
Barrier to movement				✓	✓	✓				✓				
Loss of rare or threatened vascular plant species (Important Plant Species)	✓													
Invasive alien species introduction / transfer														
Hydrological changes	✓										✓			

Summary of potential Project-related Impacts	Values of the Shebenik-Jabllanicë National Park / Candidate Emerald Site													
	Rangelands		Wildlife											
	Important Habitats Biodiversity hot spots		Important Amphibian Species		Important mammal species		Important bird species		Important reptile species		Important fish species		Important Invertebrate species	
Project Phases C= construction O = operation	C	O	C	O	C	O	C	O	C	O	C	O	C	O
Adverse change to water quality	✓	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓
Air quality impacts from elevated dust / combustion emissions	✓			✓										
Elevated noise and vibration emissions				✓	✓	✓	✓	✓						
Facilitated access and Project-related in-migration		✓				✓		✓		✓		✓		✓
Disturbance from artificial light spill					✓		✓							
Accidental vehicle / machinery fauna collisions			✓	✓		✓			✓	✓				

Table 3.3: Screening Matrix: Objective 2 - Development of livelihoods based on sustainable use of ecosystem services

Summary of potential Project-related Impacts	Values of the Shebenik-Jabllanicë National Park / Candidate Emerald Site									
	The development of agriculture, livestock breeding and agro-Industry		The development of tourism		The sustainable and permitted development of forest related economic activities		The development of safe supplies of Drinking water		Geological risks	
Project Phases C= construction O = operation	C	O	C	O	C	O	C	O	C	O
Adverse change to surface water quality							✓			
Soil erosion, sediment loading									✓	
Facilitated access and Project-related in-migration						✓				

4 STAKEHOLDER CONSULTATION

4.1 Approach

Consultation with key stakeholders is a critical stage of the screening process. Due to the current restrictions associated with the COVID-19 pandemic a questionnaire was prepared and disseminated to stakeholders in June 2020 by ADF for their feedback. A copy of the stakeholder consultation questionnaire is presented in Appendix 2. Key stakeholders are listed as follows:

- National Agency for Protected Areas
- Regional Agency for Protected Areas Agency
- Protection and Preservation of Natural Environment in Albania (PPNEA)
- Albanian Society for the Protection of Birds and Mammals (ASPBM)
- Albanian Ornithological Society (AOS)
- University of Tirana
- Institute of Nature Conservation
- Albaglobal
- EcoAlbanis
- biodiversity Specialist

4.2 Key findings

The following terrestrial habitats were identified by stakeholders as being most at risk from project activities:

- 8201 - Calcareous rocky slopes with chasmophytic vegetation
- 91k0 - Illyrian *Fagus sylvatica* forests (Aremonio-Fagion)
- 91M0 - Pannonian-Balkan turkey oak- sessile oak forests
- 92A0 – *Salix alba* and *Populus alba* galleries

Of these habitats, only one habitat is listed by the Management Plan for Shebenik-Jabllanicë National Park 2015-2024 as being of conservation importance for the National Park, namely the Annex 1 habitat 8210 calcareous rocky slopes with chasmophytic vegetation.

Respondents were concerned about localised habitat clearance and topsoil removal within some areas of the working width and the impact that this would have on these habitat types. It was recommended that as part of the habitat restoration measures, the soil layers of any set aside topsoil are not mixed during the removal and temporary storage and that the soil layers are reinstated in the same order during restoration to avoid adversely affect the soil composition and chemistry and thus promoting the natural habitat regeneration. This was highlighted as being of importance for beech and oak forest restoration. Respondents were also concerned about the risk of further habitat loss and degradation caused by poor waste management and stockpiling. For example,

during the previous road works gravel remains were observed as being deposited on the sides of the road all over the existing vegetation and sometimes even on river/stream flows. Respondents recommended that strict rules and procedures, in accordance with Albanian legislation, are put in place to manage these risks.

The following aquatic habitats were listed by respondents as most at risk from project activities:

- alpine rivers and their ligneous vegetation with *Salix elaeagnus*
- watercourses of plain to montane levels with *Ranunculion fluviantis* and Callitricho-Batrachion vegetation

Whilst these aquatic habitats are not specifically acknowledged by the Management Plan for Shebenik-Jabllanicë National Park 2015-2024 (PROGES and Sapienza University of Rome, 2015) as being of high value for the National Park, the management plan does list a number of important fish species which are likely to inhabit aquatic habitats.

The following project activities were listed as being potentially of concern in relation to aquatic habitats:

- sedimentation of watercourses leading to increased turbidity and a reduction in dissolved oxygen
- extraction of water from watercourses for use during construction
- extraction of other natural materials (e.g. gravel) from watercourses for use during construction
- changes of water courses
- road diversions

Respondents recommended sediment trapping as a potential mitigation tool. The hydrological system (streams and river) near to Cerenec was also highlighted as being of high interest but lack current data. Fish monitoring prior to, during and after construction of the road was recommended in order to provide sufficient quantitative and qualitative data to guide the development and implementation of the Biodiversity Management Plan and a monitoring programme. The following fish species were identified as being most at risk from project activities:

- *Salmo faroides*
- European eel
- pindus stone loach
- *Chondrostoma ohridanus*
- *Cobitis ohridana*
- ohrid stone loach (*Barbatula sturanyi*)
- *Eudontomyzon stankokaramani*

Of these, European eel and pindus stone loach are listed as important fish species for the National Park by the Management Plan for Shebenik-Jabllanicë National Park 2015-2024 (PROGES and Sapienza University of Rome, 2015).

Mammals most at risk from project activities were identified as:

- brown bear

- Eurasian badger
- bats

The brown bear is listed as an important fauna species for the National Park by the Management Plan for Shebenik-Jabllanicë National Park 2015-2024 (PROGES and Sapienza University of Rome, 2015).

Respondents raised concerns regarding impacts to existing wildlife corridors due to habitat fragmentation caused by increased vehicle traffic restricting fauna movements, particularly regarding the brown bear population, as well as Eurasian badgers. Respondents suggested that wildlife corridors should be maintained and monitored. The construction of artificial corridors should be considered where appropriate.

The protection of bat species, their flyways and roosts were a key issue for some respondents. Bats are highly protected, and the renovation of bridges along the existing road could impact them as they use bridges for roosts. The use of surveys, the following of protocols, and the implementation of bat friendly material under and within bridges were recommended as potential mitigation strategies.

Several bird species were identified by respondents as being most at risk from project activities (i.e. included ducks, owls, eagles and falcons) including the following species which are classed as important bird species by the Management Plan for Shebenik-Jabllanicë National Park 2015-2024 (PROGES and Sapienza University of Rome, 2015):

- European turtle-dove
- golden Eagle
- levant sparrowhawk
- Eurasian stone curlew
- European honey-buzzard

Of particular concern to respondents was the potential impact on breeding birds. As such, it was recommended that preconstruction breeding bird surveys should be undertaken and avoid habitat clearance in areas of confirmed breeding / nesting sites.

The indirect impact of the road through an increase of in-migration and visitors to the area was highlighted as a concern by respondents. One factor in the concern was the risk of fires started by tourists and it was suggested that there should be investments in fire safety and surveillance. Similar suggestions were made for shepherds who still use the practice of burning pastures. A broader recommendation with regards to tourism was to strengthen environmental education programmes.

Another indirect impact that concerned respondents was the potential increase in illegal, environmentally damaging activity in the region as a result of better access. Activities such as quarrying and logging were highlighted and there were concerns that increased human activity in the area would lead to an increase in human / wildlife conflicts.

A general concern with regards to wildlife protection in the area was a lack of data. This was suggested by respondents for a variety of fauna and flora. Respondents suggested that having strong data records would be important in any approach to conservation.

5 APPROPRIATE ASSESSMENT

5.1 Assumptions

The Project is currently in the early stages of the design phase, hence many of the design details are not finalised. Furthermore, an Environmental Impact Assessment (EIA) or Environmental and Social Impact Assessment (ESIA) and the Environmental and Social Action Plan is not scheduled to be developed for the Project until late-July 2020. Hence a precautionary approach has been taken to this appropriate assessment.

5.2 Avoidance and Mitigation Measures

A summary of the avoidance and mitigation measures are presented in Appendix 3 and a more detailed account is presented in the Biodiversity Management Plan (RSK 2020).

5.3 Assessment of Project-related impacts on the integrity of the site

5.3.1 Objective 1: Conservation of ecological values (rangelands: forests, grasslands, aquatic environments)

Construction will result in the permanent loss of 1.28 ha of forest habitats and the temporary loss of 3.30 ha forest habitats from within the Shebenik-Jabllanicë National Park. The total extent of Shebenik-Jabllanicë National Park is 33,928 ha. Hence the proportion of temporary and permanent habitat loss during the Construction Phase is very small relative to the total area of the National Park 0.0038% and 0.0097% respectively.

A Reinstatement and Landscaping Plan will be prepared for the Project and implemented by the Contractor. ADF will approve and monitor the implementation of this Plan. This plan will provide a clear methodology for the reinstatement of the physical environment and the progressive rehabilitation and restoration of habitats and vascular plant species within the PDA. As part of this plan, the Project will develop a planting scheme using vascular plant species of local provenance. This will entail plug planting and seeding along the escarpments and embankments adjacent to the road alignment as part of the bioengineering works. Areas of permanent natural habitat loss will be offset in accordance with the Biodiversity Management Plan (RSK, 2020). Mitigation measures presented in Appendix 3 will minimise Project-related water quality impacts generated during the construction phase.

With these mitigation measures in place there will be no adverse effects on the integrity of the Candidate Emerald Site from the loss of important habitats.

5.3.2 Objective 1: Conservation of ecological values (wildlife)

5.3.2.1 Mammals

Likely significant effects to important and indicator mammal species have been identified from habitat loss, barrier to movement, disturbance caused by increased noise and vibration levels, disturbance from artificial light spill, adverse changes in air quality,

adverse changes in water quality and accidental vehicle / machinery collisions during Project construction. Likely significant effects from the operation phase have been identified as arising from the risk of accidental vehicle collision, barrier to fauna movement, adverse air quality impact from combustion emissions, elevated noise and vibration levels and facilitated access and in-migration.

Staff and Project contractors will adhere to a standard operating procedure for land clearance and stockpiling to minimise the loss of important mammal habitats to the extent practicable and the risk of injury or mortality to important mammals arising from accidental collision with machinery and vehicles. This will include the provision of a method statement for habitat clearance which will be prepared by an experienced ecologist. This will be communicated to all relevant personnel (i.e. staff and contractors) during the inductions. Key mitigation measures to be included in this statement are listed as follows:

- The footprint of the road alignment and the working width will be minimised to limit fauna habitat clearance to the extent practicable.
- Habitats to be cleared will be clearly delineated to minimise the risk of fauna habitat clearance outside of these areas.
- Environmentally sensitive areas for priority fauna will be clearly marked as 'No Go Areas'.
- Habitat clearance will be undertaken in a progressive and sensitive manner to enable fauna to move away from the area of works, disperse into surrounding habitats and to avoid fauna from being isolated in fragmented areas of habitat.
- An ecologist will be on hand to supervise the habitat clearance works and provide advice to the workforce.

The preparation and implementation of the Reinstatement and Landscaping Plan will ensure the progressive rehabilitation and restoration of habitats potentially used by important and indicator mammal species. The permanent loss of important mammal habitat will be offset in accordance with the Biodiversity Management Plan (RSK, 2020).

Staff and contractors will adhere to a Standard Operating Procedure for Emission and Dust Control, and Erosion and Suspended Sediment Control (Appendix 3). Staff and contractors will also adhere to a Standard Operating Procedure for Noise and Vibration Management (Appendix 3) throughout construction phases to minimise disturbance important and indicator mammal species. This includes the use of silencers and sound barriers (natural and artificial), and regular vehicle / machinery maintenance to minimise noise and vibration. It is understood that monitoring will be undertaken throughout the construction phase by the Project to ensure that Project generated noise, vibration and air quality emissions comply with legislative levels and meet international guidelines.

Project construction will not be undertaken at dusk, dawn and at night to avoid disturbance to nocturnal and crepuscular fauna from increased noise and vibration.

Impacts to birds caused by disturbance from artificial lighting during construction will be minimised using capped and directional lighting from ecologically sensitive habitats in the National Park.

Wildlife crossing points will be established at key sections of the road to facilitate the continued movement of larger ranging mammals (e.g. brown bears, grey wolves, roe deer, lynx, Chamois) across the road at night with reduced risk of vehicle collisions, which

in addition to killing or injuring wildlife may cause injury to people and vehicles. The wildlife crossing point will comprise the following components:

- Reduced speed limits will be signposted during operation along the length of the proposed road to minimise the risk of accidental injury and mortality to fauna arising from vehicle collision.
- Vehicle traffic will be slowed further at the wildlife crossing point. This reduction in speed limit will be signposted and rumble strips (or alert strips) or a suitable alternative will be installed on the approach to the wildlife crossing point.
- Signs will be installed to identify the wildlife crossing point to vehicle traffic.
- Streetlighting will not be installed along or near the wildlife crossing point to avoid causing disturbance from artificial lighting.
- Safety barriers, retaining walls and sidewalks will not be installed along or near the wildlife crossing point to facilitate fauna movement across the road.
- Strategic planting will be undertaken by the contractors along and near the wildlife crossing point to facilitate fauna movement. The planting scheme will be designed by an ecologist with experience of surveying and monitoring fauna.

The Project will work with the National Agency for Protected Areas and the Regional Agency of Protected Areas to minimise and monitor Project-related impacts on important and indicator mammal species arising from facilitated access and the influx of visitors to the National Park. This includes supporting the development of a Tourism Master Plan with the aim of promoting sustainable, low impact ecotourism initiatives within this designated site to mitigate any indirect impacts to wildlife and habitats arising from facilitated access.

With these mitigation measures in place there will be no adverse effects on the integrity of the Candidate Emerald Site from the loss or disturbance of important and indicator mammals and their habitats.

5.3.2.2 *Birds*

Likely significant effects to important and indicator bird species during construction were identified from habitat loss, adverse changes to surface water quality, disturbance caused by increased noise and vibration levels and disturbance from artificial light. Likely significant effects from operation were identified from elevated noise and vibration levels, facilitated access and in-migration.

Pre-clearance checks will be undertaken by an experienced ornithologist for ground and tree nesting birds within the working width prior to the commencement of the habitat clearance works to avoid causing disturbance or harm to important and indicator nesting birds and their young from collisions with machinery. A 'no-go area' comprising a 5 m radius will be demarcated around each active nest by the Project contractors with guidance from the ornithologist. Habitat clearance will be prohibited within these 'no-go areas' until the chicks have fledged. A method statement for this check and the management of active nesting sites will be prepared by an experienced ecologist. This method statement will be followed by the Project contractors and monitored by ADF.

The preparation and implementation of the Reinstatement and Landscaping Plan will ensure the progressive rehabilitation and restoration of habitats potentially used by

indicator and bird species. The permanent loss of forest habitats will be offset in accordance with the Biodiversity Management Plan (RSK, 2020).

Staff and contractors will adhere to a Standard Operating Procedure for Emission and Dust Control, Erosion and Suspended Sediment Control (Appendix 3). Staff and contractors will also adhere to a Standard Operating Procedure for Noise and Vibration Management throughout construction phases to minimise disturbance important and indicator bird species.

Impacts to birds caused by disturbance from artificial lighting during construction will be minimised using capped and directional lighting from ecologically sensitive habitats in the National Park such as forest habitats.

The Project will work with the National Agency for Protected Areas and the Regional Agency of Protected Areas to minimise and monitor Project-related impacts on important and indicator bird species arising from facilitated access and the influx of visitors to the National Park as described in Section 5.3.2.1.

With these mitigation measures in place there will be no significant impacts on important and indicator bird species and their habitats and therefore no impacts on the integrity of the Candidate Emerald Site.

5.3.2.3 *Reptiles*

Likely significant effects to important and indicator reptiles were identified from habitat loss, barriers to movement and accidental vehicle / machinery collision.

The preparation and implementation of the Reinstatement and Landscaping Plan will ensure the progressive rehabilitation and restoration of potential reptile habitats. The permanent loss of habitats with potential to support reptiles will be offset in accordance with the Biodiversity Management Plan (RSK, 2020). Habitat clearance will be undertaken in a progressive and sensitive, in accordance with a standard operating procedure for land clearance and stockpiling, to minimise the risk of machinery collisions with important and indicator reptile species resulting in the injury or mortality of individuals. Furthermore, slow moving reptiles will be translocated to a designated receptor site during the clearance works.

Reduced speed limits will be enforced during construction and signposted during operation along the length of the road to minimise the risk of accidental injury and mortality to reptiles arising from vehicle collisions. Currently some culverts serve as potential fauna crossing points (ADF February, 2015). It is anticipated that these will be retained and repaired for the continued use by fauna (including reptiles) during operation to limit the road from forming a barrier to the movement of fauna species.

With these mitigation measures in place there will be no significant impacts on important and indicator reptile species and their habitats and therefore no impacts on the integrity of the Candidate Emerald site.

5.3.2.4 *Fish*

Likely significant effects to important and indicator fish species were identified from habitat loss and adverse changes in surface water quality and hydrology during construction; and adverse changes in surface water quality, facilitated access and in-migration during operation.

The implementation of a Reinstatement and Landscaping Plan will ensure the progressive rehabilitation and restoration of aquatic habitats within the PDA.

Mitigation measures to protect surface water quality during the Construction and Operation Phases are described in Appendix 3 and include:

- staff and contractors will adhere to SOP2: Emission and Dust Control, Erosion and Suspended Sediment Control
- install sediment control systems (i.e. traps and dams) where necessary
- use and maintenance of an effective draining system to minimise the risk of suspended sediment loading and runoff.

The Project will work with the National Agency for Protected Areas and the Regional Agency of Protected Areas to minimise and monitor Project-related impacts on important and indicator fish species arising from facilitated access and Project-related in-migration. This will include providing support for the management actions that promote sustainable and authorised use of fish stocks in the Candidate Emerald Site in accordance with the National Park's system of zonation. With these mitigation measures in place there will be no significant impacts on important and indicator fish species and their habitats and therefore no impacts on the integrity of the Candidate Emerald Site.

5.3.2.5 *Amphibians*

Likely significant effects to amphibians were identified from habitat loss, change in surface water quality and hydrology and accidental vehicle / machinery collision during construction and adverse changes in surface water quality, air quality impacts from elevated combustion emissions, accidental vehicle collision and barrier to movement to habitats located outside of the National Park during operation.

The Reinstatement and Landscaping Plan will ensure the progressive rehabilitation and restoration of potential amphibian habitats. Habitat clearance will be undertaken in a progressive and sensitive manner to minimise the risk of accidental vehicle / machinery collisions in accordance with a standard operating procedure for land clearance and stockpiling. Slow moving amphibians will be translocated to a designated receptor site during the clearance works. Furthermore, an ecologist will be on hand to supervise the habitat clearance works and provide advice to the workforce.

Mitigation measures to protect water quality are described in Appendix 3 and include the adherence to SOP2: Emission and Dust Control, Erosion and Suspended Sediment Control: the installation of sediment control systems (i.e. traps and dams) where necessary to minimise the risk of suspended sediment loading and runoff.

The road's surface water management infrastructure (e.g. cut-off / diversion drains, velocity dissipation devices, culverts) will be fit for purpose during operation following the proposed repair works and actively maintained during operation to minimise and control surface water flow across / under the road. This in combination with the propose bioengineering works will minimise the risk of sediment loading and surface water pollution.

Reduced speed limits will be enforced during construction and signposted during operation along the length of the road to minimise the risk of accidental injury and mortality to amphibians arising from vehicle collision. Currently some culverts serve as

potential fauna crossing points. It is anticipated that these will be repaired for the continued use by fauna (including amphibians) during operation to limit the road forming a barrier to the movement of fauna species.

With these mitigation measures in place there will be no significant impacts on important amphibians and their habitats and therefore no impacts on the integrity of the site.

5.3.2.6 *Invertebrates*

Likely significant effects to important invertebrates, the stag beetle and *Calliaeschna microstigma* were identified from minor habitat loss (dead wood and alpine streams and creeks) during construction.

Dead wood from within woodlands and forests located in the working width will be translocated to a suitable receptor site in the National Park to minimise the habitat loss for the stag beetle. A method statement for the translocation scheme will be prepared by an experienced ecologist prior to the commencement of works. The ecologist will also supervise the translocation works. The preparation and implementation of the Reinstatement and Landscaping Plan will ensure the progressive rehabilitation and restoration of forest and aquatic habitats potentially used by stag beetles and *C. microstigma*. The permanent loss of forest habitats will be offset in accordance with the Biodiversity Management Plan (RSK, 2020).

Likely significant effects during operation for stag beetles have been identified from facilitated access and in-migration resulting in habitat loss and degradation caused by the conversion of forest habitats to agro-pastoral land, and an increase in the rate and extent of timber harvesting and the collection of dead wood. Hence, the Project will work with the National Agency for Protected Areas and the Regional Agency of Protected Areas to minimise and monitor Project-related impacts on forest and NTFP resources usage. This will include providing support for their management actions relating to the development of forest related economic activities that promote sustainability and enforcement of authorised natural resource usage in accordance with the National Park's zonation.

With these measures in place there will be no significant impacts on these important invertebrate species and their habitats and therefore no impacts on the integrity of the Candidate Emerald Site.

5.3.3 **Objective 2: Development of livelihoods based on sustainable use of ecosystem services**

5.3.3.1 *The sustainable and permitted development of forest related economic activities*

Likely significant effects from the construction phase to sustainable and permitted development of forest related economic activities were identified from facilitated access and in-migration during the operation phase. The Project will work with the National Agency for Protected Areas and the Regional Agency of Protected Areas to minimise and monitor Project-related impacts on forest and NTFP resources arising from facilitated access and Project-related in-migration. This will include providing support for their management actions relating to the development of forest related economic activities that promote sustainability and enforcement of authorised natural resource usage in accordance with the National Park's zonation. With these measures in place there will be

no significant Project-related impacts on timber and NTFP in the National park and therefore no impacts on the integrity of the Candidate Emerald Site.

5.3.3.2 *The development of safe supplies of drinking water*

Likely significant effects from the construction phase to drinking water supplies identified from changes to surface water quality from sediment loading and pollution arising from accidental spills of hazardous substances and non-hazardous substances.

During the Construction Phase, staff and contractors will adhere to a Standard Operating Procedure for Emission and Dust Control, Erosion and Suspended Sediment Control. This includes the provision of measures to minimise the adverse impact to water resources from fugitive dust emissions, erosion and suspended sediments. For example, sediment control dams and traps will be installed in suitable locations, particularly along higher elevations above sensitive water resources to further minimise the risk of sediment loading impacts. Furthermore, dust control measures (i.e. watering, gravel application and wheel washes) will be utilised on unsealed access tracks and exposed surfaces heavily trafficked by machinery and vehicles (i.e. entry / exit points, vehicle routes and loading and unloading areas.) during the summer months when conditions are dry, when excessive dust generation is evident and during periods of high risk (e.g. dry and windy conditions). Dust suppression water will be taken from suitable recycled water sources where possible.

Emergency spill management procedures will be in place to minimise the risk of impacts to receiving waters. This will be communicated to all relevant staff and contractors during their induction.

Surface water management infrastructure (e.g. cut-off / diversion drains, velocity dissipation devices, culverts) will be in place in appropriate locations during operation and actively maintained to minimise and control surface water flow across / under the proposed road. This in combination with the propose bioengineering works will minimise the risk of sediment loading and surface pollution to waterbodies. With these measures in place there will be no significant impacts on water resources in the National Park and therefore no impacts on the integrity of the Candidate Emerald Site.

5.3.3.3 *Geological risks*

Likely significant effects to the geological stability during construction were identified from soil erosion due to earthworks and the poor-quality road drainage system. Staff and contractors will adhere to a Standard Operating Procedure for Emission and Dust Control, Erosion and Suspended Sediment Control to minimise impacts to the physical environment. This includes the use of drainage facilities and sediment control dams. There will be no adverse direct likely significant effects on the geological stability associated with the operating road in the National Park due to the repair works and upgrading of the road drainage system, and the construction of additional concrete retaining walls and bioengineering works to stabilise and protect escarpments. With these measures in place there will be no significant geological risks and as such, no impacts on the integrity of the Candidate Emerald Site.

5.4 Summary of Appropriate Assessment findings

Although likely significant effects were identified during the screening stage to the values of the Shebenik-Jabllanicë National Park and Candidate Emerald Site under each Management Objective, after the diligent application of avoidance and mitigation measures by the Project, none of these impacts will affect the integrity of the reserve.

The development and implementation of the Reinstatement and Landscaping Plan will ensure the reinstatement of the physical environment and the progressive rehabilitation and restoration of important habitats and important vascular plant species.

Some uncertainties remain regarding the exact area of land take and the changes in ambient noise, vibration and air quality condition during construction and operation. However, these changes will be defined following the finalisation of the road design and the development of the EIA or ESIA in late July 2020. It is anticipated that ADF will use this information to refine this Habitat Regulations Assessment for the Project.

Impacts from the movement of people into the area from improved access provided by the road has been qualified and where possible quantified. However, the magnitude of the impact is hard to assess at this stage in Project development. Additionally, mitigation required for these impacts relies not only on the Project team but partnership working with the National and Regional Protected Areas Agencies and municipalities. The success of the mitigation is hard to assess as it will fall outside of the remit of the Project.

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APPENDIX 1

WILDLIFE OF THE SHEBENIK-JABLLANICË NATIONAL PARK / CANDIDATE EMERALD SITE

Table 6.1: Indicator fauna Species of the Shebenik-Jabllanicë National Park

Key: NA = not assessed; DD = data deficient; LC = least concern; LR = low risk; NT = near threatened; VU = vulnerable; EN = endangered; CR= critically endangered



APPENDIX 2 STAKEHOLDER CONSULTATION QUESTIONNAIRE

APPENDIX 3

AVOIDANCE AND MITIGATION MEASURES

The proposed standard operating procedures for the Project are presented in Table 6.2-Table 6.5 and the proposed specific biodiversity mitigation and management measures are described below.

Avoidance Measures

Pre-clearance Checks for Wildlife

Habitat within close proximity to the road offers suitable habitats to support priority fauna (e.g. brown bears, grey wolves and Eurasian otters) and offers potentially suitable habitat to support badgers, bats and nesting birds. Nationally and globally rare and threatened plant species may also occur within the working width.

- Pre-clearance checks for badger setts will be undertaken by an experienced ecologist within the PDA prior to the commencement of the habitat clearance works to avoid causing injury or harm to badgers and the destruction of their setts.
- Pre-clearance checks will be undertaken by an experienced ornithologist for ground and tree nesting birds within the working width prior to the commencement of the habitat clearance works to avoid causing disturbance or harm to priority nesting birds and their young from collisions with machinery. A 'no-go area' comprising a 5 m radius will be demarcated around each active nest by the Project contractors with guidance from the ornithologist. Habitat clearance will be prohibited within these 'no-go areas' until the chicks have fledged. A method statement for this check and the management of active nesting sites will be prepared by an experienced ecologist. This method statement will be followed by the Project contractors and monitored by ADF.
- Preclearance checks for Eurasian otter holts will be undertaken by an experienced ecologist within the Project Development Area (PDA) prior to the commencement of the habitat clearance works to avoid causing injury or harm to otters and the destruction of their holts.
- Prior to the commencement of works, a bat ecologist will undertake pre-clearance checks of key potentially suitable trees within areas of oak and beech woodland in the PDA to avoid causing disturbance or injury to roosting bats.
- Preclearance checks will be undertaken for nationally endemic, rare and threatened plant species within the proposed areas of vegetation removal. The contractors will then translocate these species from within the PDA to a suitable receptor site to minimise the risk of causing mortality or injury to these individual species. A method statement for the preclearance checks and translocation scheme will be prepared by an experienced botanist prior to the commencement of works. The botanist will also supervise the translocation works.

Bushfire Controls

- Bushfire controls will be developed for the Project, including a Project ban on open-burning of waste, specific emergency response procedures developed for managing bushfires and the establishment of fire breaks where required.

Avoidance of key Habitats

- The Project will avoid the removal of any stands of native beech forests including Ancient and Primeval Beech Forests of the Carpathians and Other Regions as this is a habitat type of high conservation importance.

Avoidance of Mature Tree Removal

- Mature tree removal will be avoided where possible to avoid any impacts to potential bat roosts and to minimise habitat degradation.

Alien Invasive Species Prevention Measures

- An alien invasive species prevention protocol will be implemented to prevent the introduction and transfer of invasive plant species. This will include the avoidance of affected areas by staff and vehicles where possible and washdown procedures of Project vehicles where necessary. A record will be kept of all affected areas to avoid transfer of alien invasive plant species.

Avoidance of Night Working

- Project construction will not be undertaken at dusk, dawn and at night to avoid disturbance to nocturnal and crepuscular fauna (i.e. bats, grey wolves, badgers, roe deer, brown bears) from increased noise, vibration and artificial lighting.

Minimisation

Minimise Habitat Loss to the Extent Practicable

To minimise habitat loss to the extent practicable, areas scheduled for habitat and land clearance will be demarcated and mapped in advance and personnel informed that any activities outside the designated areas will be strictly forbidden except for entry and exit along designated access routes. These mapped areas will be incorporated into this Biodiversity Management Plan. This will minimise the risk of habitat clearance outside of these areas.

- Environmentally sensitive areas will be clearly marked and mapped as 'No Go Areas' (i.e. wooded areas, grassland and aquatic habitat) and access by staff and contractors will be strictly forbidden.
- The footprint of the road alignment and PDA will be minimised to limit fauna habitat clearance to the extent practicable.
- A land disturbance permit system will be established and managed by the contractors' Environment Team.
- Habitats clearance will be undertaken by the contractors in a progressive and sensitive manner to enable fauna to move away from the area of works, disperse into surrounding habitats and to avoid fauna from being isolated in fragmented areas of habitat.
- Herbicide and fire will not be permitted to clear vegetation to ensure a minimal impact footprint during habitat clearance and to reduce the risk of mortality and injury to wildlife.
- An ecologist will be on hand to supervise the habitat clearance works and provide advice to the workforce when required.

- Routine checks will be undertaken by the contractors Environmental Team to ensure vegetation clearance is confined to defined areas of disturbance and periodic checks will also be undertaken by ADF and a supervising engineer

Minimise habitat loss for the stag beetle (a PBF)

- Prior to vegetation clearance, dead wood from within woodlands and forests located in the working width will be translocated to a suitable receptor site in the Shebenik-Jabllanicë National Park to minimise the habitat loss for the stag beetle. A method statement for the translocation scheme will be prepared by an experienced ecologist prior to the commencement of works. The ecologist will also supervise the translocation works.

Minimise the risk of accidental injury or mortality to fauna arising from accidental vehicle and machinery collisions

- Habitat clearance will be undertaken in a progressive and sensitive manner to enable fauna to move away from the area of works, disperse into surrounding habitats and to avoid fauna from being isolated in fragmented areas of habitat.
- Slow moving fauna will be translocated to a designated receptor site during the clearance works.
- In the event that the presence of roosting bats are identified within trees amongst stands of oak or beech woodland in the PDA, a bat ecologist will either exclude the bats from their roost or translocate these bats to bat boxes prior to the commencement of works at a suitable time of year (i.e. spring and autumn as oppose to summer and winter) in accordance with a method statement prepared by the bat ecologist. These bat boxes will be located within suitable receptor sites.
- In the event that an active badger sett is identified, an experienced ecologist will prepare a method statement for the sett closure and the construction of a substitute artificial sett in a suitable location. These method statements will be followed by the contractors.
- In the event that an active otter holt is identified, an experienced ecologist will prepare a method statement for the minimisation of disturbance or holt closure and the construction of a substitute artificial holt in a suitable location.
- Reduced speed limits will be enforced during construction along the length of the road to minimise the risk of accidental injury and mortality to fauna arising from vehicle and machinery collisions.
- An Injured Wildlife Protocol will be also developed for the Project by an experienced ecologist and followed by staff and contractors in the event of an incident. This will include a mandatory reporting system which will enable an assessment of the incident to be undertaken and the requirements for any further actions or mitigation measures to be determined. Reports will include encounters of wildlife and observation of natural resource collection, illegal hunting and wildlife trade.
- Reduced speed limits will be signposted during operation along the section of road located adjacent to the western border of the Shebenik-Jabllanicë National Park.

Minimise the risk of the road forming a barrier to the movement of PBF and CH-qualifying fauna

- Currently some culverts serve as potential fauna crossing points. It is anticipated that these will be repaired for the continued use by fauna during operation to limit the road from forming a barrier to the movement of fauna species, particularly reptiles, amphibians and small mammals.
- Streams that are considered to provide suitable habitat for foraging and commuting Eurasian otters will only be culverted where necessary. To enable otters to maintain access to their present habitats and to allow existing otter populations to expand and colonise new areas only culverts that are designed to accommodate commuting Eurasian otters should be installed. Box culverts designed to a 1:200 flood return period should be used as opposed to cylindrical culverts which fill rapidly so reducing the air space available and making swimming more difficult. Culverts must be as wide as possible and be large enough to allow the incorporation of a dry ledge that is accessible during high water levels. Mammal ledges can be made of solid concrete integral with the culvert or steel that is bolted onto the culvert using metal brackets although the latter is preferable as it will not impact on fish and freshwater invertebrate populations. Ledges must be at least 500mm wide and be accessible both from the bank and the water by the provision of ramps or groups of large boulders. Ledges must be sited at least 150mm above the appropriate high flood level, allowing 600mm headroom. These can be installed on both sides of the culvert although on very small watercourses where it may be more practicable to install only one ledge, otters must be guided to the crossing by planting dense scrub on the opposite bank to the ledge although where the route taken by an otter is known, this will be unnecessary as long as the ledge is on that side of the watercourse.
- Wildlife crossing points will be established at key sections of the road to facilitate the movement of larger ranging mammals (e.g. brown bears, grey wolves, roe deer, lynx, Chamois) across the road at night with reduced risk of vehicle collisions, which in addition to killing or injuring wildlife may cause injury to people and vehicles. The wildlife crossing point will comprise the following components:
 - Reduced speed limits will be signposted during operation along the length of the proposed road to minimise the risk of accidental injury and mortality to fauna arising from vehicle collision.
 - Vehicle traffic will be slowed further at the wildlife crossing point. This reduction in speed limit will be signposted and rumble strips (or alert strips) or a suitable alternative will be installed on the approach to the wildlife crossing point.
 - Signs will be installed to identify the wildlife crossing point to vehicle traffic.
 - Streetlighting will not be installed along or near the wildlife crossing point to avoid causing disturbance from artificial lighting.
 - Safety barriers, retaining walls and sidewalks will not be installed along or near the wildlife crossing point to facilitate fauna movement across the road.
 - Strategic planting will be undertaken by the contractors along and near the wildlife crossing point to facilitate fauna movement. The planting scheme will be designed by an ecologist with experience of surveying and monitoring fauna.

Minimise impacts to priority habitats and fauna from natural resource usage by the workforce

- Project staff and contractors will be banned from fishing, hunting and the collection of natural resources (including fresh water shellfish, timber and non-timber forest products) in the vicinity of the Project to minimise impacts to aquatic habitats and species. Environmental education and awareness programmes will be conducted for Project staff and contractors (e.g. through staff inductions) to emphasise the importance of conserving biodiversity for wildlife and communities.

Minimise indirect impacts to priority habitats and fauna arising from facilitated access, an influx of visitors to the National Park and Project-related in migration

The Project will work with the National Agency for Protected Areas, the Regional Agency of Protected Areas and Key relevant NGOs operating in the area (i.e. Protection and Preservation of Natural Environment in Albania (PPNEA)) to minimise any impacts on priority fauna and their habitats arising from facilitated access, project-related in-migration and the influx of visitors to the Shebenik-Jabllanicë National Park. This will entail:

- regularly meeting with the National Park managers including the Shebenik-Jabllanicë National Park Management Committee
- regularly meeting with key relevant NGOs operating in the area (e.g. PPNEA) such as PPNEA
- supporting the delivery of the Park's management actions relating to education and awareness raising through sharing technical ecological knowledge, baseline data and monitoring data regarding priority habitats and species
- sharing monitoring data (e.g. as part of the camera trapping programme and biodiversity offsetting) to inform the Park's development of adverted loss actions
- supporting the Shebenik-Jabllanicë National Park Management Committee (i.e. through sharing data and technical guidance) to develop a Tourism Development Tourism Master Plan with the aim of promoting sustainable local economy, low impact ecotourism initiatives within this designated site to mitigate any indirect impacts to wildlife and habitats arising from facilitated access
- undertake activities and co-ordinated stakeholder consultation to support environmental awareness, sustainable natural resource use, promote environmental preservation and conservation practices, capacity building and support policy dialogue.

Rehabilitation

A Reinstatement and Landscaping Plan for the Project will be prepared and implemented by the Contractor. ADF will approve and monitor the implementation of this Plan. This plan will provide a clear methodology for the reinstatement of the physical environment within the Project footprint, the working width, borrow pits, stockpiling areas and contractor facility area (i.e. arising from habitat clearance, grading etc) in addition to the progressive rehabilitation and restoration of habitats and vascular plant species within the Project Development Area (PDA). As part of this plan, the Project will develop a planting scheme using vascular plant species of local provenance. This will entail plug planting and seeding along the escarpments and embankments adjacent to the road alignment as part of the bioengineering works.

The status of the planting scheme (i.e. plug planting and seeding), as specified in the Reinstatement and Landscaping Plan, will be closely monitored for the first 5 years following planting or until successful establishment has been achieved.

This will entail the establishment of permanent quadrats within key areas by the contractors. These quadrats will be inspected and photographed by the Project contractors on a regular basis as a means of recording plant health over time. The quadrats will serve as an indicator of success for the wider restored habitats. Regular walkover assessments will also be undertaken to assess establishment over time. A method statement will be prepared by a botanist or a professional landscape architect which will detail the approach.

In the event of dieback, areas of dead vascular plants will be replaced either through plug planting or seeding. This will be undertaken by contractors under supervision of supervising engineer in consultation with a botanist or a professional landscape architect.

Indicators:

- Changes in indicators of plant health (i.e. leaf colouration, wilting, early senescence etc)
- Changes in plant numbers
- Changes in coverage

Biodiversity Offsetting

Project development will result in the permanent loss of some natural habitat, potentially including habitats that support critical habitat-qualifying species. In accordance with best practice and EBRD's Performance Requirement 6, the Project should develop a Biodiversity Offset Strategy and implement a Biodiversity Offset Programme that will adequately offset this residual impact.

Biodiversity offsets are measurable positive conservation outcomes on priority biodiversity features that are attributed to Project activities, and whose magnitude outweighs that of the residual adverse biodiversity impacts arising from the Project development. Offsets require investments in conservation management protection where the results of these investments can be quantified. Offsetting is based on systematic biodiversity accounting based on the explicit calculation of biodiversity losses and gains at matched impact and offset sites.

The Project will apply the following principles based on those developed by the multi-stakeholder Business and Biodiversity Offsets Programme, Standard on Biodiversity Offsets (BBOP, 2012):

- adherence to the mitigation hierarchy: All appropriate avoidance, minimisation and on-site restoration measures will be implemented or explored and reasonably ruled out
- equivalence: Biodiversity gains from offsets must be 'like for like or better'
- limits to what can be offset: The Project will not cause or significantly contribute to species extinction as these impacts cannot be offset
- landscape context: Offsets will be designed accounting for connectivity across the landscape, avoiding fragmentation, and maintaining flows of ecosystem services
- additionality: Conservation gains will be clearly attributable to the Project's actions and will be demonstrably above and beyond results that would have occurred if the offset had not taken place
- precautionary approach: Estimates of gains and losses will be conservative and include a margin of safety proportional to the risks involved in offset delivery
- long-term outcomes: Biodiversity offsets will use an adaptive management approach, incorporating monitoring and evaluation to secure outcomes

- stakeholder participation: Offsets will be based upon appropriate and transparent stakeholder consultation
- transparency: The design, implementation and monitored outcomes of biodiversity offsets will be transparent and communicated in the public domain.

The Project recognises the four major technical principles of offset design to be Equivalence, Additionality, Limits and Long-term outcomes. The Project takes the thorough application of the mitigation hierarchy to be intrinsic to its environmental good practice principles.

Table 6.2: Standard Operating Procedure (SOP) 1: Habitat/ Land Clearance, Accidental Vehicle and Machinery Collisions with Fauna, Stockpiling and Alien Invasive Species Control

Action Number	Measures for habitat/ land clearance and stockpiling management	Project Phase	
		Pre-construction / Construction	Operation
Minimisation of Habitat Clearance Areas to The Extent Practicable:			
SOP1.1	Development and implementation of a method statement for habitat clearance (prepared by an experienced ecologist) which will be communicated to all relevant personnel (i.e. staff and contractors). This will include the following mitigation measures:	✓	
	<ul style="list-style-type: none"> To minimise habitat loss to the extent practicable, areas scheduled for habitat and land clearance will be demarcated and mapped in advance and personnel informed that any activities outside the designated areas will be strictly forbidden except for entry and exit along designated access routes. These mapped areas will be incorporated into the Biodiversity Management Plan. 		
	<ul style="list-style-type: none"> Environmentally sensitive areas will be clearly marked and mapped as ‘No Go Areas’ (i.e. Wooded areas, grasslands, aquatic habitats) and access by staff and contractors will be strictly forbidden. 		
	<ul style="list-style-type: none"> A land disturbance permit system will be established and any necessary habitat and land clearance permits to be obtained in advance from ADF’s Environment Department 		
	<ul style="list-style-type: none"> Habitats clearance will be undertaken in a progressive and sensitive manner to enable fauna to move away from the area of works, disperse into surrounding habitats and to avoid fauna from being isolated in fragmented areas of habitat. 		
	<ul style="list-style-type: none"> Slow moving fauna will be translocated to a designated receptor site during the clearance works. 		
	<ul style="list-style-type: none"> Herbicide and fire will not be permitted as a means to clear vegetation to ensure a minimal impact footprint during habitat clearance and to the reduce the risk of poisoning fauna and avifauna. 		
<ul style="list-style-type: none"> Salvage stripped topsoil and subsoil, where feasible, in stockpiles for future reuse 			

	<ul style="list-style-type: none"> • Where possible, soil seed bank in the topsoil will be preserved for future rehabilitation, to maintain local genetic diversity • Storage areas will be located in areas away from existing trees, hedgerows and drainage • An ecologist will be on hand to supervise the habitat clearance works and provide advice to the workforce. • Routine checks will be undertaken to ensure vegetation clearance is confined to defined areas of disturbance; 		
SOP1.2	Pre-habitat clearance checks will be undertaken by an experienced botanist to identify the location of any rare, threatened or protected vascular plants within the areas designated for clearance.	✓	
Minimisation of Accidental Vehicle and Machinery Collisions with Fauna:			
SOP1.3	Habitat clearance will be undertaken in a progressive and sensitive manner to enable fauna to move away from the area of works, disperse into surrounding habitats and to avoid fauna from being isolated in fragmented areas of habitat.	✓	
SOP1.4	Slow moving fauna will be translocated to designated receptor sites (as identified by an ecologist) during the clearance works.	✓	
SOP1.5	Reduced speed limits of Project vehicles will be enforced in the construction site and all staff will adhere to the highway code to minimise the risk of accidental fauna collisions. To be communicated to all relevant personnel during staff inductions.	✓	
SOP1.6	Reduced speed limits will be signposted during operation to minimise the risk of accidental injury and mortality to fauna during operation.	✓	✓
	Where possible, habitat clearance will be undertaken outside of the breeding bird season. Where this is not possible, pre-clearances checks will be undertaken to identify active nesting sites. These will be retained until the young have fledged.	✓	
	Driver training will be provided	✓	
	Restricted access to Project roads (where appropriate) to authorised people only.	✓	

SOP1.7	An Injured Wildlife Protocol be also developed for the Project by an experienced ecologist which will be followed by staff and contractors in the event of an incident. This will include a mandatory reporting system which will enable an assessment of the incident to be undertaken and the requirements for any further actions or mitigation measures to be determined. Reports should include encounters of wildlife and observation of natural resource collection, illegal hunting and wildlife trade. The protocol will also include procedures for the safe management of injured and dead wildlife.	✓	
Stockpile Management:			
SOP1.8	Soil stockpiles will be constructed and managed following the below procedure, as appropriate:	✓	
	<ul style="list-style-type: none"> • Stockpiles will be located within designated soil stockpile areas where movement of vehicles and equipment are excluded and up-slope (at least 20 m away) from local waterways and flood inundation areas to minimise the risk of erosion and sediment run-off. 		
	<ul style="list-style-type: none"> • Stockpiles will be stabilised with matting or other appropriate controls if they are to remain bare for more than 3 months, particularly during the winter in the rainy season. 		
	<ul style="list-style-type: none"> • Slope ratios will be no more than 2:1 (horizontal/vertical). 		
	<ul style="list-style-type: none"> • Compaction of stockpiles will be avoided as this will hinder establishment of vegetation during rehabilitation / restoration 		
	<ul style="list-style-type: none"> • Location of soil stockpiles and batters will be geo-referenced and mapped in a GIS database with details on type of material and duration of stockpiling recorded. 		
	<ul style="list-style-type: none"> • Diversion structures will be installed up-slope of stockpiles and sediment controls (e.g. silt fence) located downslope, to minimise erosion and sediment loading (refer to SOP: Erosion and Sediment Control for further details). 		
Alien Invasive Species Control:			
SOP1.9	An alien invasive species protocol will be developed (by an experienced ecologist) and implemented to minimise the risk of transferring and introducing alien invasive species into the Project area. This will include:	✓	
	<ul style="list-style-type: none"> • A washdown procedure will be employed to prevent invasive weed spread and potential contamination of the Project area from the receiving environment. 		
	<ul style="list-style-type: none"> • Pre-clearance checks for alien invasive species of areas designated for clearance and the site access / egress routes will be undertaken prior to the commencement of site preparation works. 		

	• Uncontaminated soil will be used for construction, restoration and rehabilitation.		
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Table 6.3: SOP2: Emission and Dust Control, Erosion and Suspended Sediment Control

Action Number	Measures for the Management of Air Quality, Dust Control, Erosion and Suspended Sediment Control	Project Phase	
		Pre-construction / Construction	Operation
Air Quality Controls:			
SOP2.1	Fuel efficient vehicles, machinery and equipment used during Project construction and maintenance works will comply with industry standards.	✓	✓
SOP2.2	The Project will integrate energy efficiency principles in the road design where feasible e.g. optimised lighting system (i.e. solar powered or fluorescent lamps on timers).	✓	✓
SOP2.3	Ensure contractors comply with relevant measures for greenhouse gas management and energy conservation.	✓	✓
SOP2.4	Conduct awareness training on energy conservation and greenhouse gas reduction for staff and contractors.	✓	✓
Dust Controls:			
SOP2.5	Use dust control measures (i.e. watering, gravel application and wheel washes) on unsealed access tracks and exposed surfaces heavily trafficked by machinery and vehicles (i.e. entry/exit points, vehicle routes and loading and unloading areas.) during the summer months when conditions are dry, when excessive dust generation is evident and during periods of high risk (e.g. dry and windy conditions). Dust suppression water should be taken from suitable recycled water sources.	✓	
SOP2.6	Enforce speed restrictions of mobile plant on roads to minimise dust generation.	✓	
SOP2.7	Quickly stabilise exposed areas of soil and scree (i.e. cover with geotextiles), and progressively restore the habitats in accordance with the Project's rehabilitation and restoration plan.	✓	
SOP2.8	The following dust management measures will be employed for soil and gravel stockpiling:	✓	
	• Locate stockpiles in areas naturally sheltered from wind, if feasible.		
	• Install temporary wind fences, if required.		

	<ul style="list-style-type: none"> • Stabilise long-term topsoil stockpiles (more than three months). 		
	<ul style="list-style-type: none"> • Spray water on stockpiles in the event of excessive fugitive dust emissions. 		
	<ul style="list-style-type: none"> • Stockpiles will be protected against vandalism 		
SOP2.9	Avoid undertaking primary dust generating activities during dry and windy conditions.	✓	
SOP2.10	Open-burning of general wastes and vegetation will be banned	✓	✓
Erosion and Suspended Sediment Control			
SOP2.11	Surface water management infrastructure (e.g. cut-off / diversion drains, velocity dissipation devices, culverts) will be constructed in appropriate locations to minimise and control surface water flow over disturbed areas and hard surfaces.	✓	✓
SOP2.12	Excavation and stockpiling will cease during prolonged periods of wet weather.	✓	
SOP2.13	Sediment control dams and traps will be mapped and installed in suitable locations, particularly along higher elevations above ecologically sensitive areas to further minimise the risk of sediment loading impacts.	✓	
SOP2.14	Preparatory works (i.e. habitat clearance, grading and stockpiling etc) will be undertaken during the dry season and periods of high intensity rainfall to minimise erosion and the generation of suspended sediments	✓	
SOP2.15	Measures will be employed to stabilise exposed soil and unstable surfaces (i.e. through bioengineering) where necessary	✓	✓
SOP2.16	Vegetation located on the steep slopes within the Project area will also be preserved where possible to minimise the risk of erosion.	✓	✓
SOP2.17	Habitat clearance will be minimised to the extent practicable;	✓	
SOP2.18	Preparatory works causing ground disturbance (i.e. habitat clearance, grubbing, grading etc) will be avoided within 50m of sensitive water bodies (i.e. the ponds, lakes, streams and other bodies of standing water)	✓	
SOP2.19	Schedule major earthworks and grading operations for early in the dry season. Avoid the wet / rainy season or periods of high intensity rainfall wherever possible;	✓	
SOP2.20	Project vehicles and machinery will be restricted to designated access / egress routes and excluded from operating in areas outside of construction and operation sites.	✓	✓

SOP2.20	The integrity of the road structure and associated drainage system will be maintained on a regular basis whilst the road is in operation to ensure that impacts to fauna and their habitats arising from suspended sediments and runoff continue to be minimised.		✓
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Table 6.4: SOP3: Noise and Vibration Control

Action Number	Measures for the Management of noise and vibration	Project Phase	
		Pre-construction / Construction	Operation
Minimisation of noise and vibration:			
SOP3.1	The use of noisy machinery and vehicles will be avoided at dusk, dawn and at night to minimise disturbance to nocturnal and crepuscular fauna from increased noise and vibration.	✓	
SOP3.2	Machinery (i.e. concrete batching facility, workers facilities, generators, plant equipment etc) which are sources of noise emissions will be situated away from sensitive habitats. Natural noise buffers (dense vegetation, rocky outcrops and mounds) will be retained to attenuate noise emissions	✓	
SOP3.3	All vehicles and plant will be fitted with effective exhaust silencers to minimise noise emissions.	✓	
SOP3.4	All Project-generated noise and vibration will be assessed and comply with relevant legislative requirements and noise and vibration guidelines including World Health Organisation Guidance.	✓	✓
SOP3.5	Plant, vehicles, equipment and machinery will comply with industry standards for operation.	✓	✓
SOP3.6	Plant, vehicles, equipment and machinery will be regularly checked and maintained to ensure that they are in good working order and within industry standards for noise and vibration emissions.	✓	✓
SOP3.7	Noise attenuation measures will be utilised (i.e. temporary noise enclosures or barriers) to minimise noise disturbance near sensitive habitats	✓	✓

SOP3.8	Piling/drilling methods will be used which have the lowest noise and vibration impact (i.e. lowering drop heights or impact levels for piling hammers and using piling shrouds or temporary barriers or hoardings).	✓	
SOP3.9	Noise reduction, sound insulation and absorption measures will be applied to different equipment where feasible (e.g. mufflers on engine exhausts and compressor components; impedance mufflers/silencers and vibration insulating on air compressors, blowers and fans; installing sound barriers around generators etc).	✓	
SOP3.10	Compressors will be fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use.	✓	
SOP3.11	All ancillary pneumatic tools will be fitted with suitable silencers.	✓	
SOP3.12	Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use.	✓	
SOP3.13	Any plant (i.e. generators or pumps) that is required to operate before and after legal working hours will be surrounded by acoustic enclosures or portable screening.	✓	
SOP3.14	Working hours during construction will be limited between 7am and 7pm to avoid disturbance to fauna at night.	✓	

Table 6.5: SOP4: Water Quality and Pollution Management

Action Number	Measures for the Management of Water Quality and Pollution events	Project Phase	
		Pre-construction / Construction	Operation
Pollution Controls:			
SOP4.1	Pollution controls will be put in place during the construction process. These will be fully defined by the Project prior to the construction	✓	
SOP4.2	Stockpiles of materials and hazardous compounds (including asphalt, oil, diesel and chemicals) will not be located near any surface watercourses and standing water bodies (i.e. lagoons, wetlands, ponds, creeks, tributaries etc) or near wells.	✓	

SOP4.3	Stockpiles will be located on a sealed surface and covered (i.e. with a canvas, sheets or more permanent casing) and surrounded by a bund to minimise the risk of impacts arising from accidental leakages and spills.	✓	
SOP4.4	Stockpiles will be protected against vandalism and theft that can lead to spills.	✓	
SOP4.5	Water discharge from facilities (i.e. wheel washes, vehicle washing points, equipment washing points etc) will be captured by a combination of drainage systems, settling tanks and oil interceptors. The waste will then be responsibly disposed.	✓	
SOP4.5	Clearly communicate to all employees and contractors that any dumping or discharging of potentially contaminated water (e.g. oily water, raw sewage, untreated waste water, etc.) into the receiving environment is strictly prohibited: through employee training, mandatory induction, specific contract requirements, and procedures in place.	✓	✓
SOP4.6	Emergency response procedures will be prepared for the Project which will include a protocol for responding to accidental spills and leakages of diesel fuel, non-hazardous waste and hazardous compounds.	✓	
SOP4.8	Only licenced operators will be used to clean-up solid waste.	✓	