

July 2020

**Main Road Reconstruction  
Project, Rehabilitation and  
upgrade of the Tivat-Jaz road  
section**

**FRAMEWORK BIODIVERSITY  
ACTION PLAN**

European Bank of Reconstruction and  
Development

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## 1. Executive Summary

This document is the Framework Biodiversity Action Plan (F-BAP) for the Tivat-Jaz Road Upgrade Project. The document has been informed by, and should be read alongside, the Project ESIA and Critical Habitat (CH) / Priority Biodiversity Features (PBF) Assessment (provided as an appendix to the ESIA). An Appropriate Assessment Screening for the project, as per the EU Habitats Directive, has also been undertaken and is provided as an Appendix to this document. Due to the absence of some requisite information at the time of writing (e.g. resulting from COVID restrictions), some additional work is required to turn this F-BAP into a detailed Biodiversity Action Plan (BAP). These aspects of the report are highlighted, along with commitments to their completion.

This F-BAP focuses on those species and habitats that have been identified during the CHA/PBF assessment process as being of particular concern from an ecological/conservation perspective and where specific efforts will be needed by the Project Developer (or on their behalf) to achieve biodiversity net gain (for CH) or no net loss (for PBF). These actions are intended to build on the general biodiversity mitigation measures that are included in the Project ESIA and associated (Framework) Environmental and Social Management Plans (ESMPs).

Based on the results of the CH/PBF assessment process, this F-BAP specifically focuses on the following habitats and species of conservation importance:

- Tivat Saline (CH): an internationally designated Ramsar site located downstream of the northern end of the Project and supporting a number of Natura 2000 habitats and PBF trigger species.
- European Eel (PBF): an IUCN Critically Endangered (CR) species that has been recorded in a number of the rivers and streams that cross the road.
- European Wildcat (PBF): an EU Habitats Directive Annex IV species (species in need of strict protection) that has been recorded near the road and within the Tivat Saline.
- Bats (PBF): All bat species are protected under EU legislation, including Annex IV species.
- Reptiles and Amphibians (PBF): A number of Annex IV species have been recorded or may be present<sup>1</sup>, although none are IUCN CR, Endangered (EN) or Vulnerable (VU) species.
- Freshwater Invertebrates: The area has the potential to support a number of endemic and rare species, some of which could trigger CH. Further work is required to determine which are actually present but a precautionary approach has been adopted.

The F-BAP builds on the use of the “Mitigation Hierarchy” in the ESIA whereby impact avoidance has prioritised, followed by reduction and mitigation, with measurable offsets (and/or additional conservation actions) as outlined here only applied as a last resort where residual impacts are unavoidable. To do this the F-BAP includes both objectives and management measures to address potential residual impacts as well as monitoring targets, responsible parties and time frames.

The F-BAP will be further developed into a BAP once additional information is available as a result of further studies to be undertaken once COVID restrictions are lifted and the detailed engineering design is better understood.

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<sup>1</sup> These include *Pseudopus apodus* (European glass lizard), *Algyroides nigropunctatus* (blue-throated keeled lizard), *Lacerta trilineata* (Balkan green lizard), *Podarcis muralis* (common wall lizard), *Natrix tessellata*, (dice snake) *Podarcis melisellensis* (Dalmatian wall lizard), *Hyla arborea* (European tree frog); *Rana graeca* (Greek stream frog) *Emys orbicularis* (European pond turtle) and *Testudo hermanni* (Hermann's tortoise)

## 2. Introduction

### 2.1 Document Purpose

This document is the Tivat-Jaz Road Upgrade Project **Framework Biodiversity Action Plan (F-BAP)**. It outlines the approach to be taken by the project to meet its obligations regarding the long-term conservation of both Critical Habitat (CH) and Priority Biodiversity Features (PBF) located in and around the Project's direct "Zone of Influence (ZoI)" or "Project Affected Area (PAA)". CH and PBF are considered habitats and species of particular conservation importance, as outlined in the Project Critical Habitat Assessment (CHA) included within the Project Environmental and Social Impact Assessment (ESIA).

### 2.2 Project Summary

The Transport Authority of Montenegro (TA) is seeking to rehabilitate and expand the Tivat to Jaz main road (the M-2) from approximately 100m before the entrance to Tivat Airport to the end of the existing intersection at Jaz, north of Budva. Work will involve widening the existing two-lane road to create a four-lane road (two 3.25m wide lanes in each direction) with a 2m wide central reservation, 2m wide sidewalks and a vegetated verge. Seven road bridges, four culverts and one footbridge will be (re) constructed, together with 11 new and 2 existing roundabout junctions. The total width of the upgraded road corridor will be around 19 m. Additional works include:

- a replacement underpass beneath the M-2 road for the Nikola Djurkovic Elementary school;
- bus stops in both directions at all local road junctions in the vicinity of settlements;
- pedestrian crossings principally at roundabouts and intersections;
- road lighting along the entire route; and
- an upgraded stormwater drainage system along the Budva-Tivat road section.

The road camber will also be improved and the road resurfaced. Given the extent of these works this will require the total reconstruction of the existing road.

### 2.3 Need for the F-BAP

The proposed Project is located in an area that supports a number of species and habitats of local or higher conservation importance. These include the following:

- Tivat Saline (CH): an internationally designated Ramsar site located downstream of the northern end of the Project and supporting a number of Natura 2000 habitats and PBF trigger species.
- European Eel (PBF): an IUCN Endangered (EN) species that has been recorded in a number of the rivers and streams that cross the road
- European Wildcat (PBF): an EU Habitats Directive Annex IV species (species in need of strict protection) that has been recorded near the road and within the Tivat Saline
- Reptiles and Amphibians (PBF): A number of Annex IV species have been recorded or may be present<sup>2</sup>, although none are IUCN Critically Endangered (CR), EN or Vulnerable (VU).
- Bats (PBF): All bat species are protected under EU legislation, including Annex IV species.
- Freshwater Invertebrates: The area has the potential to support a number of endemic and rare species, some of which could trigger CH. Further work is required to determine which are actually present but a precautionary approach has been adopted.

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<sup>2</sup> These include *Pseudopus apodus* (European glass lizard), *Algyroides nigropunctatus* (blue-throated keeled lizard), *Lacerta trilineata* (Balkan green lizard), *Podarcis muralis* (common wall lizard), *Natrix tessellata*, (dice snake) *Podarcis melisellensis* (Dalmatian wall lizard), *Hyla arborea* (European tree frog); *Rana graeca* (Greek stream frog) *Emys orbicularis* (European pond turtle) and *Testudo hermanni* (Hermann's tortoise)

A number of Framework Action Plans have been prepared to help the Project achieve net gain for the Tivat Saline site (CH) and freshwater invertebrates (potential CH) and “no net loss” for the others (PBF). These plans are to be developed further on behalf of the TA once additional information becomes available.

### 2.4 Legal Basis for the F-BAP

The Project ESIA provides a concise summary of the key regulatory and financing requirements that determine the Project’s obligations regarding biodiversity in general and this F-BAP in particular.

### 2.5 Document Objectives

The actions contained in the document are intended to support the long-term conservation of the habitats and species of conservation concern outlined above. The actions are intended to build on, but not duplicate, the impact avoidance and mitigation measures included within the Project ESIA and associated Framework Environmental and Social Management Plans (F-ESMPs)<sup>3</sup>. Each specific action plan includes information on objectives, management measures, resources and monitoring to support the Project in achieving no biodiversity net loss, or biodiversity net gain, as required.

The F-BAPs have been developed taking into account input from a range of stakeholders, including external experts, local/international conservation organisations and project-affected communities. They have also been developed taking into account good international practice as outlined in documents such as EBRD PR6 Guidance Note, the MFI Biodiversity Working Group’s “Good Practices for Biodiversity-Inclusive Impact Assessment and Management Planning” (2014) and the IPIECA (2005) guidance. The framework BAPs will be developed further into full BAPs following additional survey work as part of an adaptive management programme.

### 2.6 Data Input to the F-BAP

The BAP has been developed using data obtained through the following:

- A **desk-based assessment** of the Study Area (defined as a 10 km buffer around the Project) undertaken using publicly available data and satellite imagery, including input from the Integrated Biodiversity Assessment Tool (IBAT - <https://www.ibat-alliance.org/>). This work resulted in a list of designated sites and potential species that may be present, which was then refined by specialists based on the known distribution and ecological preferences of the species.
- **Species and Habitat Surveys.** These were carried out in summer 2019 to map habitats types present along the route (according to EUNIS classifications and mapped) and to confirm the presence of species. Surveys for both terrestrial and aquatic fauna were conducted using a range of methods such as camera traps, live capture and visual identification.

A precautionary approach has been taken when assessing the presence of notable habitats and species, which is important given the limited availability of data including seasonal baseline data. This F-BAP will be updated when the results of further studies become available.

### 2.7 Stakeholder Input to the F-BAP

Stakeholder consultation is an important element of the development of a BAP, both for information collection and to gather opinions on how to implement and coordinate actions. A number of national and international stakeholders (including biodiversity specialists and NGOs) have been consulted as part of the work reported in this document (and the ESIA). Further stakeholder consultation is also proposed as part

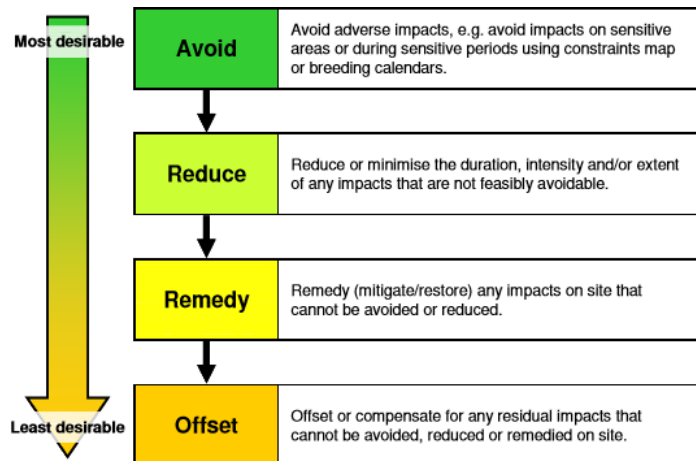
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<sup>3</sup> The ESMPs themselves will be implemented by the EPC and O&M Contractors- as outlined in the Project ESIA.

of this F-BAP to further develop proposed conservation actions and help establish long-term partnerships with the organisations that will implement the actions.

### 2.8 Application of the Mitigation Hierarchy

The ultimate objective of a BAP is to achieve **no net biodiversity loss or, if Critical Habitat is triggered, net biodiversity gain** as a result of the Project. To achieve this the “Mitigation Hierarchy” is applied to potential impacts identified during the ESIA screening and planning process as shown in the figure below. Using this approach avoidance has been prioritised, followed by reduction and mitigation, with measurable offsets only applied as a last resort where residual impacts are unavoidable, or as an additional conservation measure.



Project BAPs can include both short-term site-based mitigation measures linked to construction activities and mid to long-term biodiversity conservation actions. Whilst the F-ESMPs focus on short-term approaches to minimise impacts, this BAP focuses on longer-term measures which can have measurable outcomes during the life of the proposed EBRD Project loan.

### 2.9 Associated Documents

This document builds on, and should be read alongside, the following Project Documents:

- **Project Environmental and Social Impact Assessment (ESIA) and CHA** which further describes baseline conditions within the project area, outlines potential impacts of the scheme and details key mitigation to be included in design, construction and operation.
- **Framework Environmental and Social Management Plan (F-ESMP)**: which focuses on proposed project mitigation including that to be implemented by the EPC Contractor during final project design and construction. This is intended to inform the EPC Contractors own Environmental and Social Management Plans, which will be developed prior to construction commencing.
- **Stakeholder Engagement Plan (SEP)**: This provides additional details of the consultation work undertaken to date as well as planned future consultation work.

### 3. Implementation of the F-BAP

#### 3.1 Overview

The Project will seek to avoid impacts to notable species and habitats through commitments to:

- Use the mitigation hierarchy to sequentially avoid, mitigate, restore and only if needed ultimately offset impacts.
- Avoid sensitive habitats wherever practical through careful design, including the use of the existing road and requirements to site laydown areas to avoid areas of natural habitat.
- Apply Good Industry Practice (GIP) during construction to further prevent or reduce impacts. This includes appropriate timings of works (e.g. works in or near water course being completed at the lowest levels or when dry; avoiding bird breeding or bat hibernating/nursing seasons).
- Apply the mitigation measures detailed in the project ESIA.
- Apply of the specific species and habitat F-BAPs included in this document.

Implementation of these approaches will be based around the use of the:

- **Owners Engineer (OE)** The OE Environmental Specialist (OEES) will monitor the works and will develop this F-BAP into a BAP. This will include developing and implementing an appropriate Biodiversity Monitoring and Evaluation Plan (BMEP) to help ensure that the BAP is correctly implemented.
- **EPC contractors:** The EPC will employ an Environmental/Biodiversity Specialist with responsibility for managing biodiversity avoidance and mitigation activities. Physical works undertaken by the Contractor will be under the supervision of the Specialist.

Where the need for additional studies has been identified these may be contracted to relevant universities, NGOs or specialised consultants, where appropriate under the guidance of the TA or OE.

#### 3.2 Obligations of the Owners Engineer

The OE is tasked with specific responsibilities regarding compliance of civil works with the EIA and F-BAP commitments. This includes a particular emphasis on the monitoring of implementation of Project ESMPs. The OE will retain the use of one or more Environmental/Biodiversity Specialist to help ensure that the Contractor is compliant with his environmental obligations. The OE's Environmental/Biodiversity Specialist will be responsible for preparing and implementing detailed environmental action plans. Unless otherwise agreed they will also:

- prepare and manage implementation of the Biodiversity Action Plan and Biodiversity Monitoring and Evaluation Plan (BMEP);
- organize any contracted organisations such as universities or NGOs in order to commission surveys to be completed for the BAP through the services of specialists;
- conduct environmental training and briefings to provide environmental awareness on EBRD safeguards and regulatory environmental requirements and standard operating procedures in conformity with project obligations;
- undertake baseline monitoring and reporting of Contractor's compliance with contractual environmental (and biodiversity) mitigation measures during the construction phase;
- review all documents and reports regarding the integration of environmental and biodiversity issues including contractor's environmental action plan; and

supervise the contractors' compliance with the EMP and prepare monthly compliance reports.



### Obligations of the EPC Contractor

The EPC Contractor will be responsible for the preparation of the project site Environmental and Social Management Plans (ESMPs). These will be fully compliant with the overall project F-BAP, F-ESMP and ESIA. The contractor ESMPs will be submitted to the Transport Authority a minimum of 30 days prior to commencement of works and will be approved before the start of the works. To do this, the EPC contractor will employ at least one Environmental/Biodiversity Specialist who will be ultimately responsible for avoidance and minimization of impacts during works in sensitive sites (e.g. protected areas), sensitive habitats (including e.g. effective control of silt near water) and where protected or notable species may be present in the working corridor. The key roles of the Specialist are therefore to:

- Build on the work undertaken to date to identify any specific areas of particular ecological sensitivity (e.g. supporting protected or notable habitats or species) that may need to be avoided, moved (e.g. plants/amphibians) or disturbed later in the year (e.g. if birds are nesting there).
- Translate mitigation requirements written in the ESMP and any sub-plans (including relevant elements of Biodiversity Action and Management and Monitoring Plans) into practical measures on the ground.
- Advise in a timely manner as to how best to address changeable and less predictable situations on the ground from an ecological perspective (e.g. should new species or populations be encountered).
- Ensure that all staff are fully aware of the environmental sensitivities of the site and their responsibilities, as outlined in the management plans (e.g. via practical toolbox talks ahead of the construction) and ensure they are appropriately trained in the requirements of the BAP BMEP.
- Take field notes and photographs to demonstrate compliance with the management plans.

The Specialist will undertake pre-construction/enabling surveys/site checks a couple of weeks ahead of the site clearance teams and produce hazard maps to show the location of particularly sensitive habitats and species that are to be avoided e.g. by changing timing of works, amendments to construction methods statements, etc. Responses to ecological concerns will be coordinated through the use of appropriate project reporting mechanisms to allow issues to be raised and resolved in an efficient manner. The Specialist will have at least 5 years of experience in the practical elements of protected species and habitats conservation (including handling of species that they may have to move) and recognitions. They should also have a working understanding of wider environmental issues and the construction/engineering process and will have a demonstrated knowledge of good international practices and Lenders biodiversity safeguards (namely EBRD PR6).

## 4. Action Plan for the Tivat Saline

### 4.1 Introduction

The Tivat Saline protected area is a wetland on Tivat Bay that is designated as a **Special Flora and Fauna Reserve** (national designation from 2007, and the first along the coast), a **Ramsar site**, **Important Bird Area (IBA)** and **Emerald site (Bern convention)**. It is located in the Tivat Municipality and is under the management of the Public Enterprise for Coastal Zone management and proactively supported by the national Centre for Protection and Research of Birds (CZIP) – an IUCN and Birdlife International Partner.

The dominant habitat of the site is Mediterranean salt meadow, a NATURA 2000 Habitat (1410), although a range of habitats are also present. The salt meadow habitat consists of shallow pools and channels, with complex halophyte vegetation present on sludge-clay ground, a vegetation type which has largely disappeared from the eastern coast of the Adriatic. Although this habitat is still found in a few other localities in Montenegro, Tivat Saline represents the best example in the country.



The site is an important resting and feeding area for a number of IUCN red list migratory bird species including Black-tailed Godwit *Limosa limosa*, Eurasian Curlew *Numenius arquata*, and Ferruginous Duck *Aythya nyroca*, and supports a regionally important breeding population of Pygmy Cormorant *Phalacrocorax pygmeus*. The Loggerhead Sea turtle *Caretta caretta* (IUCN Vulnerable) has been recorded in the coastal part of site.

### 4.2 Potential Project Impacts

The direct project footprint will not affect the Tivat Saline site as the road is located 300m away at its closest point. The site could be subject to indirect impacts during construction and operation, including those associated with noise and dust emissions. These risks will, however, be reduced through the application of Good International Practice, GIP during construction and should be considered in the context of the Tivat International Airport which is partly located between the site and the road. Of greater potential significance is that the Kolozun, Mocali, Vodoljeznica and Gradiosnica watercourses flow under the road into the saline. The engineering design includes improvements to the existing road-run-off treatment processes and this, combined with the application of GIP during construction, will minimise risks to the site during normal operation and construction. Risks remain however associated with spillages associated with accidents and emergencies (equally applicable to the airport). These potential impacts are of particular importance as the main issues faced by the Saline in recent years has been the low flow of freshwater from surrounding areas. This is thought to be due to a change in land management within the wider catchment area. One third of the site is now meadow instead of the wetland as it was a few years

ago. Changes in water flow and the quality of the water are therefore both very important for the maintenance of the conservation status of the site.

Given this risk, and the sites categorisation as Critical Habitat, a BAP is required to ensure net gain as a result of the proposed project.

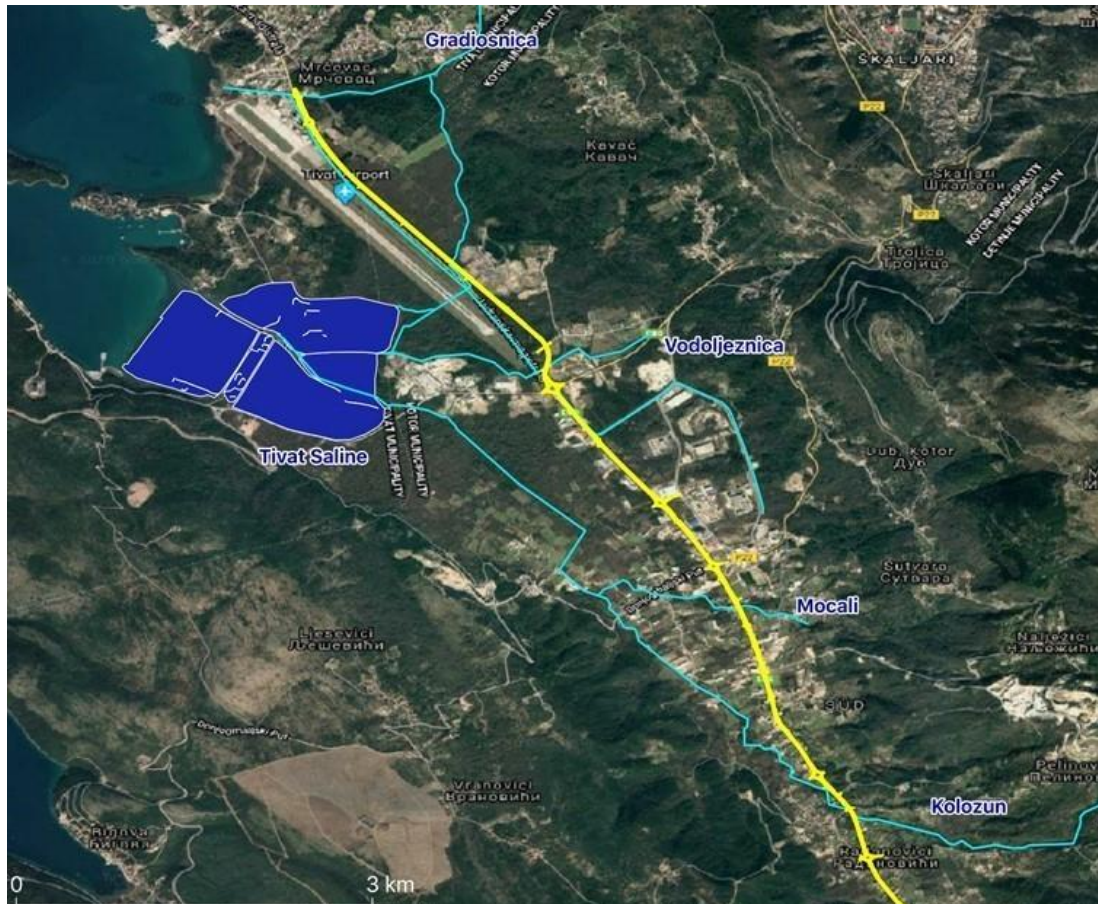


Figure 1 – The four waterways crossing the road that flow into the Tivat Saline (road alignment shown in yellow)

### 4.3 Objectives of the BAP

This action plan is designed to help the Project contribute positively to the long term conservation value of the Tivat Saline protected area and the species and habitats it supports (including Black-tailed Godwit, Curlew, Ferruginous Duck, Pygmy Cormorant, Loggerhead Turtle and potentially Albanian water frog amongst others).

### 4.4 Actions to Achieve No Net Loss

The project is not expected to have any adverse impacts on Tivat saline under normal construction and operating circumstances. It has been designed to avoid direct impacts to the site and any indirect impacts associated with water pollution during normal operating conditions have been addressed through incorporation of modern water pollution control technology into the design. Impacts from construction will be managed through GIP, including a commitment that any works in or around watercourses will occur when water levels are at their lowest or dry with appropriate measures to avoid adverse impacts downstream. The TA will also work closely with the regional authorities to put robust emergency and spill response processes in place to address the potential for impacts as a result of non-normal circumstances. Further details of specific mitigation to prevent degradation of watercourses is provided in the Water

Quality section of the ESIA (Section 8).

#### **4.5 Actions to Achieve of Net Gain**

Tivat Saline is considered to represent Critical Habitat and EBRD PR6 therefore requires that Net Biodiversity Gain should be achieved. As outlined above the site is considered to be threatened by poaching/hunting (allowed on the site), pollution, and pressure from tourism.

Given the works that the TA will be proposing in the vicinity of the site, the following activities are proposed to support net gain:

- The TA (or its advisors) will liaise with the key stakeholders engaged in the current management of the site (to include but not limited to Tivat Municipality, Public Enterprise for Coastal Zone Management, National Parks of Montenegro and CZIP. Together with these stakeholders they will review the status of any existing management plan(s) and identify opportunities for the following:
  - Provision of consulting support/input to write / update the management plan (MP) and/or data obtained by the Project ecological (and water monitoring) teams to support the MP
  - Support with the use of resources, equipment and/or workers (during road construction) to proactively assist with practical management actions needed in the reserve or the surrounding buffer areas
  - Support with awareness raising of the local community as to the ecological importance of the reserve, particularly upstream where changes in land management has affected water flows
  - Support with developing appropriate emergency/spill response plans to be put in place in the event of an accident which could affect the road.
  - Support with setting up (or joining any existing) steering group to help ensure the long term conservation of the ecological values on the site (to include the airport if practical).

#### **4.6 Additional Studies and Monitoring**

As part of the project the TA will put a range of monitoring programmes in place for the construction period and the first three years of operation. These will include regular monitoring of water quality in the watercourses that flow into the saline as well as monitoring of species and habitats in the vicinity of the road. The extent of these monitoring regimes will be discussed with the management of the Tivat Saline and the monitoring will be extended by joining agreement to include other areas (and potentially parameters) of value to the reserve.

#### 4.7 Summary

		Action Plan for the Tivat Saline Critical Habitat			
Approach		Avoid	Reduce	Restore	Offset
Objectives		No impacts on the size or quality of habitats within the Tivat Saline protected area, and no decrease in the population of any individual species residing in the site resulting from project impacts. <b>Net Gain</b> in the quality of habitats and population of designation species due to conservation measures supported by the project.			
Location		Within the Tivat Saline Nature Reserve and Ramsar Site and its buffer areas.			
Potential Impacts		Degradation of habitat due to decreased in water quality, primarily as a result of accidental spillage. Loss of notable habitat or species through changes in water quality.			
Summary of Approach		The project will primarily avoid impacts to this habitat, through following good international practise in project design and implementation as well as effective water quality monitoring (see ESIA section 8). Net Gain will be achieved through a package of support to the Tivat Saline Nature Reserve including support with data and management planning, and resources to support physical activities in and around the site.			
Monitoring		Watercourses entering the site will be monitored during construction and for 3 years after. Support will be provided to the Saline with monitoring of habitats and populations of key indicator species.			
Responsibility		The TA will be responsible for these activities but will deliver them with the support of third parties including consultants, engineers and contractors.			
Timing		The work will commence with initial discussions with the site management team to finalise the approach to be taken and agree the extent of TA involvement prior to construction commencing. This will allow conversion of this F-BAP to BAP in which more detailed timings can be provided.			

## 5. Action Plan for European Eel

### 5.1 Introduction

The European Eel is an IUCN Red List Critically Endangered (CR) species and is considered a Priority Biodiversity Feature for this project. It was recorded in three of the watercourses that cross the road in the summer 2019 survey (Kovacki, Lukavac and Kolozun) and locals suggest that it is also present in a fourth, Drenovstica. It is a highly migratory species, that spawns and is born at sea, and then migrates into inland waters to grow. There is very little data on the distribution and population of this species and no estimate of its population size either in Montenegro or globally. Although this species is critically endangered due to the steep population decline, it is still distributed across almost all of Europe. And occurs in most inland waters in Europe.



*Distribution of the European Eel from the IUCN red list website. Purple represents areas where eels have been reintroduced.*

### 5.2 Potential Project Impacts

The construction and operation of the project could result in eel habitat degradation from watercourse pollution during construction and operation. Given the migratory nature of the species it is also at risk from blockages in watercourses.

### 5.3 Objectives of the Plan

The action plan is intended to help ensure that the Project causes no net loss to European Eels, and in particular their ability to migrate upstream from Tivat saline.

### 5.4 Activities to be Undertaken

The key mitigation measure to prevent negative impacts on the European Eel is to avoid blockages in the watercourses during construction. Depending on in-channel works, this may involve digging bypass channels to allow water flow or installing temporary pools and fish ladders to allow continued passage on watercourses that have not fully dried up during the time of construction. A range of other mitigation measures should be followed to protect the aquatic habitat of waterways and thereby the European Eels that they support. These include the following:

- Minimisation of working areas near watercourses, and specific attention to be paid to pollution prevention and careful removal of habitat near these sensitive areas.

- Bridge works to be undertaken when water levels are at their lowest or dry with appropriate measures to avoid adverse impacts downstream. Provision of temporary site drainage channels to avoid erosion and environmental impacts.
- Wastewater treatment to be carried out via the system for additional treatment and drainage, which operates through the precipitator and separator.
- Avoid turbidity impacts through use of sedimentation or infiltration methods.
- Avoid accidental pollution of watercourses (spills of oil, lubricants or oil derivatives into the watercourses).
- Mitigation as per the Water Quality section of the ESIA (Section 8) to be strictly adhered to avoid negative impacts on habitat quality.

No specific actions are required for the operational phase, over and above maintenance of pollution control measures and the maintenance of drainage channels. The construction area near watercourses will be subject to rehabilitation to ensure that vegetation is restored to its original condition.

### **5.5 Additional Studies and Monitoring**

During construction and for a period of 3 years after completion of the road works, the Project will;

- Undertake additional monitoring for the species rivers crossed by the road.
- Monitor restoration of riverbank vegetation and aquatic habitats where necessary (if banks have been damaged/flows blocked during construction)
- Adopt an adaptive management approach and if numbers are found to decline, or fish mortality near the road is recorded, consult with specialists to determine if any additional mitigation is necessary.

	Action Plan for European Eel			
Approach	Avoid	Reduce	Restore	Offset
Objectives	No reduction in habitat or water quality in the rivers. No impacts on European Eel populations			
Location	Waterways crossed by the alignment			
Potential Impacts	Loss/deterioration of habitat and water pollution. Habitat fragmentation by blocking eel migration routes.			
Summary of Approach	The project will seek to avoid impacts to aquatic habitats and the animals they support (including fish). Works within the river will be managed carefully to avoid pollution and undertaken at less sensitive times of year. Monitoring will be used to inform an adaptive management approach to supporting local European Eel populations.			
Monitoring	Water quality will be monitored during construction and for 3 years post construction in all rivers crossed by the alignment. Riverbank habitat restoration and fish numbers will be monitored for 3 years post construction and will inform an adaptive management approach to any additional mitigation.			
Responsibility	Contractor Biodiversity specialist to supervise in-river and habitat restoration works. OE to agree timing of works and monitor contractor. TA (or delegated) to monitor for 3 years after.			
Timing	Throughout construction and for 3 years after.			

5.6 Summary



## 6. Action Plan for European Wildcat

### 6.1 Introduction

One terrestrial mammal species, the European Wild cat, has been identified as a Priority Biodiversity Feature. It is listed under Annex VI of the EU habitat directive as a 'species in need of strict protection'. European wildcats are primarily associated with forest and are found in highest numbers in broad-leaved or mixed forests with low population densities of humans. They are also found in Mediterranean maquis scrubland, riparian forest, marsh boundaries and along coasts (IUCN). This makes the local area, which consists of Maquis scrubland and some forest, attractive habitat for this species. Tivat Saline is likely to be most attractive, as it is a coastal marsh and is least disturbed by humans.



Figure 2 - A wildcat recorded by a camera trap near the Tivat Saline area.

### 6.2 Potential Project Impacts

The Project has the potential to result in a number of impacts, including:

- **Habitat Loss.** The project will result in the loss of a small area of terrestrial habitat, mainly Mediterranean maquis (shrubland) and some forest, which will be compensated for by replacement habitat in and around the scheme. The habitat to be lost is alongside the existing road and is not considered optimal habitat for wildcats as the species is shy and elusive. Impacts from habitat loss are therefore not considered significant.
- **Habitat Fragmentation** Increased traffic, as well as a wider road layout, will mean that the road poses a more significant barrier to wildcats looking to cross. This could increase the likelihood of isolation, which can result in inbreeding or unviable populations. Wildcats are considered particularly vulnerable to habitat fragmentation, as they occupy large ranges and individuals can easily be separated by linear infrastructure.
- **Direct Mortality** Terrestrial mammals are already subject to roadkill and this could be exacerbated by the increased width and speed of the road.

### 6.3 Objectives of the Plan

This plan is intended to ensure there is no net loss of the European Wild cat due to the project impacts. As well as avoiding direct affects, such as mortality or habitat fragmentation, this includes avoiding loss or degradation of habitat important for this species.

### 6.4 Activities to be Undertaken

The primary activity to be undertaken will be specific support with wildcat conservation in and around Tivat Saline as part of the Tivat Saline management plan. This will include support with monitoring the existing wildcat population using remote techniques such as camera traps, as well as searches for evidence of activity such as tracks and scat.

Specific attention will be paid to identifying any wildcat road-crossing points, and the following will be incorporated into the road design as per the ESIA commitments.

- Appropriately sized culverts will be installed to allow wildcats and other animals to cross under the road. Examples of designs are provided in the ESIA and locations will be determined in consultation

with national experts.

- Culverts and bridges for watercourses will incorporate ledges for mammal passages (see ESIA for recommended designs).
- Fencing will be installed in areas where animals are known to cross to direct them to these crossing points. Fencing will be designed to prevent both large mammals and smaller amphibians and reptiles (eg Herman’s tortoise) from accessing the road. Construction workers will not be allowed to hunt (also applicable to non-mammals).

### 6.5 Additional Studies and Monitoring

Further surveys will be completed before construction to better understand the likely wildcat population, the habitat it is present in and potential crossing points. The surveys should include or complement the requisite surveys for other large mammal surveys, particularly wild boar that if crossing the road could cause a serious risk of harm to the public. Construction workers will be required to report any encounters with large mammals to biodiversity specialist. Roadkill reports will be made during construction and for 3 years afterwards. Data will be analysed and an adaptive approach will be taken whereby if roadkill mortality is considered to be a significant impact for large mammals further mitigation and/or offset may be required. If a wildcat is killed it will trigger an offset approach.

### 6.6 Summary

	Action Plan for Terrestrial Mammals			
Approach	Avoid	Reduce	Restore	Offset
Objectives	No loss of Wild Cat individuals. No loss of key habitats used by this species. Reduction in the likelihood of collisions with other large mammals.			
Location	Key crossing locations, important Wild cat habitat e.g. Tivat Saline (and other large mammals that could endanger drivers			
Potential Impacts	Mortality of Wild cat (and other species) via collision. Habitat fragmentation due to an increase in width and traffic density of the road.			
Summary of Approach	The project will seek to avoid severe habitat fragmentation to by installing culverts and designing bridges to allow animal passage. Fences will be placed tactically to both prevent animals crossing the road at key locations and instead guiding them to culverts. Further monitoring will be undertaken to assess key areas of use by wildcat.			
Monitoring	Further surveys will be undertaken for wildcat including remote monitoring and surveys for scat. Information will be fed into the BAP. Roadkill reports will be made during construction and for 3 years after. If a wildcat is killed it will trigger an offset approach.			
Responsibility	The TA and its advisors will be responsible for implementing the monitoring and the BAP. The contractors will be responsible for installing culverts and ledges during construction.			
Timing	Throughout construction and for 3 years after.			

## 7. Action plan for Bats

### 7.1 Introduction

All Montenegrin bat species are protected under the Eurobats Convention and under Annex IV of the Habitats Directive. The species below have been listed as Priority Biodiversity Features for this project:

- *Rhinolophus hipposideros*, Lesser horseshoe bat
- *Pipistrelus kuhlii*, Kuhl's pipistrelle
- *Pipistrellus pipistrellus*, Soprano pipistrelle
- *Myotis nattereri*, Natterer's Bat
- *Nyctalus noctula/leislerii*, Noctule/Lesser Noctule
- *Hypsugo savii* Savi's pipistrelle

Km 0-2 and 13-16 are considered the most important for bats, but specific details regarding numbers and locations of bats recorded during the baseline surveys are provided in the ESIA.

### 7.2 Potential Project Impacts

The project has the potential to impact on bat species in a number of ways including:

- **Habitat Loss.** The removal of trees and buildings may result in the loss of bat roosting, nursery or hibernating sites. The removal of trees, hedges and scrub also reduces available foraging habitat.
- **Habitat Fragmentation.** Roads are potential barriers to flight between roosts and foraging sites and between summer, mating and winter roosts and wider roads are a greater barrier. Bats have been shown to make major detours (with associated energy costs) to avoid roads or to find appropriate crossing points. This can also deny bats access to parts of their habitat which can reduce home range size and quality and restrict migration. Roads may interrupt existing linear flight lines, because some species are reluctant to cross open or lit area (road and vehicle lights). Roads may also fragment habitat, decreasing its area and quality. Impacts are however species specific. Small bats will tend to avoid crossing roads, whilst larger species will fly over at heights above 20 m, making them less susceptible to both barrier effects and collision mortality. Others may use underpasses.
- **Direct Mortality.** Bats that attempt to cross roads also risk collision, and hotspots for mortality have been found where roads cross favourable habitat for bats. Although agile and manoeuvrable in flight, most bat species fly at low speeds (< 20 km/h) and many fly close to the ground (0-4 m) particularly when crossing open spaces. These behavioural traits make bats highly vulnerable to moving vehicles when either foraging along roads or when attempting to cross roads on commuting flights. Being small, bats can probably be pulled easily into the slipstream of passing vehicles.
- **Light.** Lighting tends to deter many bat species, notably slow-flying, woodland-adapted species such as *Rhinolophus* and *Myotis*, from approaching roads and probably exacerbate habitat fragmentation. Both high-pressure sodium and white LED light deter woodland-adapted species, even at low intensity. As light intensity drops rapidly away from the source, effects of isolated sources are not likely to be far reaching, but large arrays of high intensity lights will have a significant effect. Light of short wavelength, especially containing UV radiation, can also attract some bat species, in particular open-air foragers such as *Nyctalus* and generalists like *Pipistrellus*, since short wavelength light attracts insect prey, concentrating them around lights and increasing bat foraging efficiency, although they may increase collision risk.
- **Noise.** Most insectivorous bats rely on echolocation calls to orientate, detect prey and communicate. Some also locate and capture prey by listening for sounds they generate. (e.g. wing

movements or mating calls). Traffic noise may mask all of these sounds and reduce the feeding efficiency of bats (eg *Myotis myotis*). It is likely that habitats adjacent to noisy roads would be unattractive as feeding areas for such species. Vehicle noise may also exacerbate the barrier effect, although noise effects are unlikely further than 60m away.

### 7.3 Objectives of the Plan

The plan is intended to help ensure no net loss of bats species or impacts on bat conservation by avoiding impacts to known bat roosts, nurseries and hibernaculae, improving understanding of the local bat population (size and distribution) and working with local NGOs and regulators to support local bat conservation. The work will involve a combination of additional studies, specifically to understand where roosts are located, avoidance of bat habitat where practical, and support for local research into bat populations. Any data obtained on bats will be shared with appropriate research/conservation organisations and regulatory bodies and used to inform regional conservation management strategies, including those for Tivat Saline. Monitoring is proposed for three years after construction commences and this BAP will be updated based on the results obtained to help ensure that conservation objectives are met.

### 7.4 Activities to be Undertaken

The Project ESIA includes a range of construction mitigation measures, which are to be implemented under the direction of the EPC Biodiversity Specialist to minimize impacts to bats. These include the following:

- **Precautionary Approach.** Assuming that any potentially suitable nursery, hibernating or roosting sites (caves, houses, mature trees, rock fissures, etc.) within the Project area are important for bats unless cleared by the Biodiversity specialist. If bats are found, the roost will be left undisturbed until vacated by bats.
- **Trees.** Any trees above 100mm in diameter must be checked by the Biodiversity specialist for the potential of roosting bats prior to removal. If bats are found, the roost will be left undisturbed until vacated by bats. All felled trees with potential to support bats (i.e. with suitable cavities) to be left in situ (on the ground) for 24 hours to allow any bats to move. Where practical, avoid felling trees between April-August.
- **Lighting.** Use of non-UV sources of lighting at working sites, deposits and permanent facilities where practical to avoid attracting nocturnal insects and the bats that feed on them, especially given the undeveloped nature of much of the project area.
- **Planting.** If key habitat corridors are found to be severed, the Biodiversity specialist will identify key locations for replanting to retain commuting routes and if appropriate raise the height of the planting so that crossings are above traffic. Appropriately sized native trees should be replanted along the sides of the roads particularly in key bat areas (such as km 0-2 and 13-16).

Operational mitigation included within the project design includes commitments to use down lighters where practical and install a minimum of 30 bat boxes at appropriate locations away from the road. Planting regimes will also be adapted near known bat commuting routes to support bat flight paths and reduce risk to bats.

### 7.5 Additional Studies and Monitoring

Further surveys will be undertaken to determine the extent to which species-specific BAPs are required, identify roost, hibernation and nursery sites and support plans to install bat boxes within appropriate

habitat. Seasonal monitoring surveys will be continued for 3 years after completion of construction to monitor populations, particularly at key crossing points. This work will be undertaken by a local ecologist.

### 7.6 Summary

Status	Action Plan for Bats			
Approach	Avoid	Reduce	Restore	Offset
Objectives	No net loss of bats by avoiding project impacts to known bat roosts, nurseries and hibernaculae, improving understanding of the local bat population (size and distribution) and working with local NGOs and regulators to support local bat conservation.			
Location	Along the route but particularly foraging areas near rivers, wet grasslands and along flight paths.			
Potential Impacts	Bats are vulnerable to a range of impacts from road construction and operation. This includes loss of roosting, hibernating and nursery sites as well as disturbance to flyway and feeding areas.			
Summary of Approach	Work will involve a combination of additional studies, avoidance of bat habitat, mitigation through design and installation of bat boxes. If the project is found to bisect a known bat commuting route, the habitat restoration design will be changed where practical, e.g. to raise the height of planting so that crossings are above traffic. In addition, any data obtained on bats will be shared with appropriate research/conservation organisations and regulatory bodies and used to inform regional conservation management strategies.			
Monitoring	Seasonal monitoring is proposed for three years after construction commences to confirm whether the mitigation measures have been effective or if any alterations and/or enhancements are necessary.			
Responsibility	The TA is responsible for resourcing and monitoring the work. Technical work to be contracted to an appropriate technical organisation.			
Timing	The initial work will be undertaken before construction and monitoring will continue until 3 years after project construction.			
Additional Information	There is considerable literature available on road scheme mitigation for bats (e.g. see <a href="http://www.bats.org.uk">www.bats.org.uk</a> )			

## 8. Action Plan for Reptiles and Amphibians

### 8.1 Introduction

The following reptiles and amphibians have been identified as triggering PBF criteria for this project.

- *Emys orbicularis*, European pond turtle
- *Testudo hermanni*, Hermann's tortoise
- *Pseudopus apodus*, European glass lizard
- *Algyroides nigropunctatus*, blue-throated keeled lizard
- *Lacerta trilineata*, Balkan green lizard
- *Podarcis muralis*, common wall lizard
- *Natrix tessellata*, dice snake
- *Podarcis melisellensis*, Dalmatian wall lizard
- *Hyla arborea*, European tree frog
- *Rana graeca*, Greek stream frog

The Albanian water frog *Pelophylax shqipericu*, an IUCN EN species has previously been recorded at the Tivat Saline but has not been recorded in recent years despite specific searches.

The Meadow Viper is recorded by IBAT as potentially present, and whilst not triggering PBF for this project may be present in low numbers. As a protected species (Annex II and IV of Habitats Directive) and as snakes are often subject to persecution, mitigation is included in this action plan to protect this species.

The European tree Frog and Greek Stream Frog were recorded in the Drenovstica stream, Kolozun waterway and Vodoljeznica waterway. The European Pond Turtle was also found in the Gradiosnica watercourse. Whilst PBF species were only found in these 4 watercourses, all watercourses hosted other amphibia and reptiles and it is possible for them to host these PBF species also. Impact assessment and mitigation measures will therefore apply to all seven waterways crossed by the alignment. As all three of the aquatic PBF species were also recorded in drainage channels alongside the road (see figure) these are also included. All seven watercourses also supported a greater diversity and abundance of terrestrial reptiles. For example, the Common wall lizard, Dalmation wall lizard, Blue-throated keeled lizard, Balkan green lizard and Hermann's tortoise were all found in the area around Kolozun watercourse.



### 8.2 Potential Project Impacts

The following potential project impacts have been identified:

- **Habitat Loss** Loss of drainage channels, which are known to support PBF amphibians and the European Pond Turtle.
- **Habitat degradation and direct toxicity** Degradation of aquatic habitats, for example waterways crossed by the alignment, due to run-off during construction and operation. Frog species are also particularly sensitive to aquatic pollution and may suffer direct mortality. Adult frogs have permeable skin that can absorb toxic compounds while frogspawn readily takes up pollutants as eggs absorb moisture during development.

- **Habitat Fragmentation** Increased traffic, as well as a wider road layout, will mean that the road poses a more significant barrier to amphibia and reptiles looking to cross, causing increased isolation of local populations with associated inbreeding risks. Hermann's tortoise is known to be particularly at risk from habitat fragmentation and road barriers also prevent individuals escaping from fires.
- **Direct Mortality** Amphibia and reptiles may be killed during habitat removal operations. Reptiles and amphibia are already killed on the existing road and the summer 2019 survey found multiple examples of roadkill, including PBF species such as Hermann's tortoise and the Balkan Green lizard. A wider alignment and greater volume of traffic increases the risk of collision with slow-moving species particularly vulnerable. Snakes are also often killed if found by construction workers.

### 8.3 Objectives of the Plan

This plan is intended to help ensure no-net loss for the identified reptiles and amphibians as a result of project construction and operation.

### 8.4 Activities to be Undertaken

A number of general protection measures will be applied for reptiles and amphibians (under the supervision of the biodiversity specialist) during construction. These include the following:

- **Culverts and crossings.** Culverts will be designed to enable passage for terrestrial animals and specific wildlife crossings will be provided for toads and other species in areas of high roadkill. These crossings will be made from 30x30cm polymer-concrete with small fences (30-50 cm high) to guide the amphibians and prevent them from accessing the road. Further details are provided in the ESIA.
- **Pollution Prevention.** Accidental pollution of aquatic habitats will be prevented in line with GIP as outlined in the EIA.
- **Footprint Minimisation.** Use of heavy machinery will be strictly limited to the Project right of way (RoW) to avoid additional fragmentation and degradation of habitats.
- **Temporary areas.** Temporary construction areas will be backfilled with soil as soon as possible (after checking for fauna) and open works will have ramps so animals can exit.
- **Vegetation Management.** Vegetation along the road will be managed to reduce its attractiveness to fauna.
- **Signage.** Traffic signs will be installed at locations that are important for reptile and amphibian crossings.
- For **Hermann's Tortoise, *Testudo hermanni*** (NT) in particular. Culverts and thick protection fences will be placed at locations roadkill has been recorded. The fence will have the following dimensions: 10 x 10 mm, 50 cm (height) and will be at least 10cm will be put into the ground. Fences will funnel to culverts which would allow escape in the event of a fire.

Underpasses for small animals such as amphibians and reptiles will consist of pipes or rectangular tunnels with a diameter/width of usually 0.4-2 m. The distance between two available passages will not exceed 200m in natural areas or 500m in agricultural areas according to expert judgment. Exact locations for culverts will be agreed with national specialists.

In addition to the above:

- Pre-clearance surveys will be conducted by the biodiversity specialist and if any PBF reptiles or amphibia are identified they will be safely captured and relocated to suitable habitat.
- Fences should be installed at key crossing areas (further surveys will determine these but they are likely to include sections 0-2 km, 5-7.7km and 13-16km). Fencing will be designed to prevent both small

amphibian species and large mammals from crossing onto the road.

- Any culverts with seasonal or permanent waterways passing through them, they will be designed with ledges to allow passage of terrestrial as well as aquatic species.
- During construction, amphibian fencing will be erected to form a barrier between the work site and any habitat, especially rivers, ditches, flood meadows and wet grassland, where reptiles, amphibians and small mammals could gain access. A 2-metre strip alongside the fence the vegetation will be trimmed very short to create an open and therefore unattractive habitat for these species, further deterring them from the work site. Bucket traps for translocation will be installed at specific locations determined by the specialist and these will be emptied very early every morning. In addition, a specialist will inspect suitable habitat prior to enabling works and set translocation traps in these areas.
- During periods of migration (including toads) a specialist will be on site with a watching brief and work may be curtailed during peak migration times (eg evenings) and animals helped across the road.

### 8.5 Habitat Creation

The project will cause habitat loss for reptiles and amphibians as drainage channels will be removed for expansion. To achieve no net loss suitable replacement habitats will be created to replace these. This may be within the new drainage channels, or as part of an agreed approach to management of the area in and around Tivat Saline. If this is not considered appropriate, then habitat creation, for example of local ponds for aquatic wildlife, or improvement of local aquatic habitat would be necessary.

### 8.6 Additional Studies and Monitoring

Further work will be carried out to supplement the information presented here. Populations of key species will be monitored prior to and for 3 years after construction. Roadkill and the condition of wildlife crossings will be regularly monitored during construction and operation of the road, and new underpasses created if needed.

### 8.7 Action Plan Summary

	Action Plan for Reptiles and Amphibians			
Approach	Avoid	Reduce	Restore	Offset
Objectives	Protection of reptile and amphibian habitat and notable species.			
Location	Rivers and drainage channels along the route. Crossing points with high mortalities.			
Potential Impacts	Loss/deterioration of aquatic habitat. Direct mortality of fauna and habitat fragmentation.			
Summary of Approach	Works within wetland and river areas will be managed carefully to avoid pollution and undertaken to avoid sensitive times of year. Underpasses will be included in scheme design and monitoring will be used to inform an adaptive management approach to road crossings by fauna.			
Monitoring	Habitat restoration and notable species population numbers will be monitored prior to and for 3 years post commencement of construction and an adaptive management approach taken for additional mitigation should it be required.			
Responsibility	Contractor biodiversity specialist to supervise works. OE to agree timing of works and monitor contractor. TA to be accountable for longer term management.			
Timing	Throughout construction and for 3 years after.			



## 9. Action Plan for Freshwater Invertebrates

### 9.1 Introduction

A number of threatened freshwater invertebrates have been identified that could be present in the PAA. Confirmation of species presence has been prevented by the COVID outbreak but they could include the following:

<p><b>Gastropoda</b></p> <ul style="list-style-type: none"> <li>• <i>Vinodolia hadouphylax</i> (CR IUCN)</li> <li>• <i>Plagigeyeria montenegrina</i> (CR IUCN)</li> <li>• <i>Saxurinator orthodoxus</i> (CR IUCN)</li> <li>• <i>Plagigeyeria tribunicae</i> (CR IUCN)</li> <li>• <i>Radomaniola elongate</i> (CR IUCN)</li> <li>• <i>Vinodolia matjasici</i> (CR IUCN)</li> <li>• <i>Radomaniola lacustris</i> (CR IUCN)</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Saxurinator labiatus</i> (CR IUCN)</li> <li>• <i>Gyraulus ioanis</i> (CR IUCN)</li> <li>• <i>Gyraulus shasi</i> (CR IUCN)</li> <li>• <i>Vinodolia fluviatilis</i> (EN IUCN)</li> <li>• <i>Vinodolia gluhodolica</i> (EN IUCN)</li> <li>• <i>Plagigeyeria zetaprotogona</i> (EN IUCN)</li> <li>• <i>Iglica bagliviaeformis</i> (EN IUCN)</li> <li>• <i>Narentiana vjetrenicae</i> (EN IUCN)</li> <li>• <i>Bracenicia spiridoni</i> (EN IUCN)</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Saxurinator sketi</i> (EN IUCN)</li> <li>• <i>Vinodolia scutarica</i> (EN IUCN)</li> <li>• <i>Saxurinator montenegrinus</i> (EN IUCN)</li> <li>• <i>Valvata montenegrina</i> (EN IUCN)</li> <li>• <i>Radix skutaris</i> (EN IUCN)</li> <li>• <i>Gyraulus meierbrooki</i> (EN IUCN)</li> <li>• <i>Bithynia skadarskii</i> (EN IUCN)</li> <li>• <i>Bithynia zeta</i> (EN IUCN)</li> </ul>
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### Bivalvia

*Congerina kusceri* (VU IUCN)

### Malacostraca

*Austropotamobius pallipes* – White-clawed Crayfish (EN IUCN); *Astacus* – Noble Crayfish (VU IUCN)

A precautionary approach has been adopted and it has been assumed that all species listed are potentially present, until further surveys are conducted.

### 9.2 Potential Project Impacts

The project may result in the following impacts:

- **Habitat Loss** Loss of drainage channels, which may support endangered freshwater invertebrate species.
- **Habitat degradation** Degradation of aquatic habitats, for example waterways crossed by the alignment, due to run-off during construction and operation. Freshwater invertebrates may be affected both directly due to pollutants and indirectly through habitat degradation.
- **Direct Mortality** Freshwater invertebrates could be killed during the removal of drainage channels which they are known to reside in. They also could be killed by machinery operation within watercourses during construction.

### 9.3 Objectives of the Plan

This plan is intended to help ensure no-net conservation loss for freshwater invertebrates as a result of project construction and operation.

### 9.4 Activities to be Undertaken

A number of general protection measures will be applied for freshwater invertebrates (under the supervision of the Biodiversity specialist) during construction. These include the following:

- Pre-clearance surveys will be conducted by a national expert, and if any notable freshwater invertebrates are identified guidance will be provided on their relocation.
- Minimisation of working areas near watercourses, and specific attention to be paid to pollution prevention near these sensitive areas.
- Bridge works to be undertaken when water levels are at their lowest or dry with appropriate measures to avoid adverse impacts downstream.
- Provision of temporary site drainage channels to avoid erosion and environmental impacts.
- Wastewater treatment should be carried out via the system for additional treatment and drainage, which operates through the precipitator and separator.
- Avoid turbidity impacts through use of sedimentation or infiltration methods.
- Avoid accidental pollution of watercourses (spills of oil, lubricants or oil derivatives into the watercourses).
- Following of all mitigation measures included in the EIA

### 9.5 Additional Studies and Monitoring

Once conditions are appropriate (post-Covid) a specific pre-construction survey will be undertaken for freshwater invertebrates by a national expert. The project will cause habitat loss for freshwater invertebrates (as drainage channels will be removed for expansion) but new drainage channels will also be created. The national expert will advise on any additional habitat measures to be considered to achieve no net loss of these species. Monitoring will occur pre construction and for 3 years after and an adaptive management approach will be adopted should this indicate reduced invertebrate populations.

### 9.6 Action Plan Summary

Action Plan for Freshwater invertebrates	
Approach	Avoid      Reduce      Restore      Offset
Objectives	No reduction in habitat or water quality in the rivers. No impacts on threatened freshwater invertebrate populations
Location	Waterways crossed by the alignment
Potential Impacts	Loss/deterioration of habitat and water pollution. Direct mortality.
Summary of Approach	The project will seek to avoid impacts to aquatic habitats and the animals they support. Preclearance surveys of drainage channels will be undertaken to prevent loss of these species and drainage channel habitat will be developed to create new habitat. Works within watercourses will be managed carefully to avoid pollution and undertaken at less sensitive times of year. Monitoring will be used to inform an adaptive management approach to supporting local freshwater invertebrate communities.
Monitoring	Water quality will be monitored during construction and for 3 years post construction in all watercourses crossed by the alignment. Habitat restoration and invertebrate numbers will be monitored prior to construction and for 3 years post construction and this will inform an adaptive management approach to any additional mitigation.
Responsibility	Contractor biodiversity specialist to supervise in-river and habitat restoration works. OE to agree timing of works and monitor contractor. TA (or delegated) to manage long term monitoring and adaptive management.
Timing	Throughout construction and for 3 years after.

## 10. Action Plan for Terrestrial Habitat Loss

### 10.1 Introduction

Preparation of the working corridor, and associated supporting infrastructure (construction camps, laydown areas etc) will result in clearance of some natural vegetation. Approximately 45% of the working corridor will be habitats that are already heavily modified habitat, but the remaining 55% will occur on areas that represent more natural habitat. The majority of vegetation loss will be temporary, for example, clearance for the working corridor, access tracks and laydown areas, and this will be restored on a like for like basis. However approximately 9.3 hectares of habitat will be permanently lost to the wider road layout. Table below shows an estimate of the permanent habitat loss for each habitat type present. No permanent or temporary habitat loss will be to habitat that of itself qualifies as PBF habitat.

*Estimated Habitat Losses*

Habitat type	Hectares lost
F5.213 Eastern Mediterranean high maquis	6.43
F3.22 Wet deciduous Mediterranean thickets	1.76
E1.3 Mediterranean xeric grassland	0.33
G1.3 Mediterranean riparian woodland	0.30
G1.73, Eastern Quercus pubescens woods	0.16
E3 Seasonally wet and wet grasslands	0.15
G3 Coniferous woodland	0.14
E3.11 Mediterranean tall humid grassland of lowlands	0
<b>Total Habitat Loss</b>	<b>9.27</b>

These habitats host a range of species, some of which may be PBF qualifying species (including potential nesting sites for birds, and potential roosts by bats). The Quercus Pubescens woodlands and Riparian Woodlands are considered particularly important habitats in this regard.

### 10.2 Activities to be Undertaken

Vegetation restoration after temporary clearance will comprise reseeding or replanting using locally collected and appropriate seed mixes and saplings under the guidance of the biodiversity specialist. Where restoration is not possible (approximately 9.3 ha) as a result of the widening of the paved road, these losses will be offset by restoration of identified important areas supporting priority biodiversity species in the PAA, specifically sections: 0 – 2km; 5 – 7.7km; and 13 – 16km of the road or with agreement in and around the Tivat Saline.

### 10.3 Monitoring

Restoration of habitat will be monitored for 3 years post construction as outlined in the EIA and any habitat that is found to be poorly restored will be replaced and monitored for a further 3 years as required.

#### 10.4 Summary

Status	<b>Action Plan for Terrestrial Habitats</b>			
Approach	Avoid	Reduce	Restore	Offset
Objectives	No net loss of terrestrial habitat			
Location	Along the route in areas where natural habitat is present			
Potential Impacts	Loss of habitat from vegetation removal.			
Summary of Approach	Where habitat loss is temporary this is to be replaced using local seeds and saplings as appropriate. Where habitat loss is permanent appropriate locations for habitat creation through offset will be agreed and implemented.			
Monitoring	Monitoring of restoration for three years after restoration is completed.			
Responsibility	The EPC is responsible for resourcing and monitoring the work.			
Timing	The initial work will be undertaken before construction and monitoring will continue until 3 years after project construction.			

### 11. Summary of Key Actions Table

Objectives	Location	Potential impacts	Summary approach	Monitoring	Responsibility	Timing
<b>Action Plan for the Tivat Saline Critical Habitat</b>						
No impacts on the size or quality of habitats within the Tivat Saline protected area, and no decrease in the population of any individual species residing in the site resulting from project impacts. <b>Net Gain</b> in the quality of habitats and population of designation species due to conservation measures supported by the project.	Within the Tivat Saline Nature Reserve and Ramsar Site and its buffer areas.	Degradation of habitat dues to decreased in water quality, primarily as a result of accidental spillage. Loss of notable habitat or species through changes in water quality.	The project will primarily avoid impacts to this habitat, through following good international practise in project design and implementation as well as effective water quality monitoring (see ESIA section 8). Net Gain will be achieved through a package of support to the Tivat Saline Nature Reserve including support with data and management planning, and resources to support physical activities in and around the site.	Watercourses entering the site will be monitored during construction and for 3 years after. Support will be provided to the Saline with monitoring of habitats and populations of key indicator species.	The TA will be responsible for these activities but will deliver them with the support of third parties including consultants, engineers and contractors.	The work will commence with initial discussions with the site management team to finalise the approach to be taken and agree the extent of TA involvement prior to construction commencing. This will allow conversion of this F-BAP to BAP in which more detailed timings can be provided.
<b>Action Plan for European Eel</b>						
No reduction in habitat or water quality in the	Waterways crossed by the	Loss/deterioration of habitat and water	The project will seek to avoid impacts to aquatic habitats and the animals they	Water quality will be monitored during	Contractor Biodiversity specialist to supervise	Throughout construction

Framework BAP

<p>rivers. No impacts on European Eel populations</p>	<p>alignment</p>	<p>pollution. Habitat fragmentation by blocking eel migration routes.</p>	<p>support (including fish). Works within the river will be managed carefully to avoid pollution and undertaken at less sensitive times of year. Monitoring will be used to inform an adaptive management approach to supporting local European Eel populations.</p>	<p>construction and for 3 years post construction in all rivers crossed by the alignment. Riverbank habitat restoration and fish numbers will be monitored for 3 years post construction and will inform an adaptive management approach to any additional mitigation.</p>	<p>in-river and habitat restoration works. OE to agree timing of works and monitor contractor. TA (or delegated) to monitor for 3 years after.</p>	<p>and for 3 years after.</p>
<p><b>Action Plan for Terrestrial Mammals</b></p>						
<p>No loss of Wild Cat individuals. No loss of key habitats used by this species. Reduction in the likelihood of collisions with other large mammals.</p>	<p>Key crossing locations, important Wild cat habitat e.g. Tivat Saline (and other large mammals that could endanger drivers</p>	<p>Mortality of Wild cat (and other species) via collision. Habitat fragmentation due to an increase in width and traffic density of the road.</p>	<p>The project will seek to avoid severe habitat fragmentation to by installing culverts and designing bridges to allow animal passage. Fences will be placed tactically to both prevent animals crossing the road at key locations and instead guiding them to culverts. Further monitoring will be undertaken to assess key areas of use by wildcat.</p>	<p>Further surveys will be undertaken for wildcat including remote monitoring and surveys for scat. Information will be fed into the BAP. Roadkill reports will be made during construction and for 3 years after. If a wildcat is killed it will trigger an offset approach.</p>	<p>The TA and its advisors will be responsible for implementing the monitoring and the BAP. The contractors will be responsible for installing culverts and ledges during construction.</p>	<p>Throughout construction and for 3 years after.</p>
<p>Throughout construction and for 3 years after.</p>						

Framework BAP

No net loss of bats by avoiding project impacts to known bat roosts, nurseries and hibernaculae, improving understanding of the local bat population (size and distribution) and working with local NGOs and regulators to support local bat conservation.	Along the route but particularly foraging areas near rivers, wet grasslands and along flight paths.	Bats are vulnerable to a range of impacts from road construction and operation. This includes loss of roosting, hibernating and nursery sites as well as disturbance to flyway and feeding areas.	Bats are vulnerable to a range of impacts from road construction and operation. This includes loss of roosting, hibernating and nursery sites as well as disturbance to flyway and feeding areas.	Seasonal monitoring is proposed for three years after construction commences to confirm whether the mitigation measures have been effective or if any alterations and/or enhancements are necessary.	The TA is responsible for resourcing and monitoring the work. Technical work to be contracted to an appropriate technical organisation.	The initial work will be undertaken before construction and monitoring will continue until 3 years after project construction.
<b>Action Plan for Reptiles and Amphibians</b>						
Protection of reptile and amphibian habitat and notable species.	Rivers and drainage channels along the route. Crossing points with high mortalities.	Loss/deterioration of aquatic habitat. Direct mortality of fauna and habitat fragmentation.	Works within wetland and river areas will be managed carefully to avoid pollution and undertaken to avoid sensitive times of year. Underpasses will be included in scheme design and monitoring will be used to inform an adaptive management approach to road crossings by fauna.	Habitat restoration and notable species population numbers will be monitored prior to and for 3 years post commencement of construction and an adaptive management approach taken for additional mitigation should it be required.	Contractor biodiversity specialist to supervise works. OE to agree timing of works and monitor contractor. TA to be accountable for longer term management.	Throughout construction and for 3 years after.
<b>Action Plan for Freshwater invertebrates</b>						
No reduction in habitat or water quality in the rivers. No impacts on	Waterways crossed by the alignment	Loss/deterioration of habitat and water pollution. Direct	The project will seek to avoid impacts to aquatic habitats and the animals they support. Preclearance surveys of	Water quality will be monitored during construction and for 3	Contractor biodiversity specialist to supervise in-river and habitat	Throughout construction and for 3 years

threatened freshwater invertebrate populations		mortality.	drainage channels will be undertaken to prevent loss of these species and drainage channel habitat will be developed to create new habitat. Works within watercourses will be managed carefully to avoid pollution and undertaken at less sensitive times of year. Monitoring will be used to inform an adaptive management approach to supporting local freshwater invertebrate communities.	years post construction in all watercourses crossed by the alignment. Habitat restoration and invertebrate numbers will be monitored prior to construction and for 3 years post construction and this will inform an adaptive management approach to any additional mitigation.	restoration works. OE to agree timing of works and monitor contractor. TA (or delegated) to manage long term monitoring and adaptive management.	after.
<b>Action Plan for Terrestrial Habitats</b>						
No net loss of terrestrial habitat	Along the route in areas where natural habitat is present	Loss of habitat from vegetation removal.	Where habitat loss is temporary this is to be replaced using local seeds and saplings as appropriate. Where habitat loss is permanent appropriate locations for habitat creation through offset will be agreed and implemented.	Monitoring of restoration for three years after restoration is completed.	The EPC is responsible for resourcing and monitoring the work.	The initial work will be undertaken before construction and monitoring will continue until 3 years after project construction.



## 12. Biodiversity Monitoring and Evaluation Programme

### 12.1 Aim and Objectives

A **Biodiversity Monitoring and Evaluation Programme (BMEP)** will be developed and implemented on behalf of the TA to confirm that this BAP has both:

1. been implemented by the responsible parties as expected; and
2. achieved the desired conservation outcomes.

The monitoring will also seek to confirm that no unexpected impacts are occurring to PBF species and habitats as a result of the project (including associated cumulative or induced impacts) for which an “adaptive management” approach may be required. The Owners Engineer will be responsible for writing and implementing the BMEP, which will build on the tasks previously outlined.

In addition, given that the Project will take place in close proximity to a protected area, Tivat Saline, which is also designated for its international conservation importance, EBRD PR6 requires that the project implements a series of programmes to promote and enhance the conservation objectives of the affected protected areas. Such **additional conservation actions (ACAs)** are to focus on those species/habitats associated with the protected area. This includes those species for which species-specific action plans have been developed but also a number of other species (such as Birds Directive Annex 1 species) for which the protected area is important but which are not expected to be affected by the Project (see ESIA for details).

One constraint to the management of the protected area is a lack of baseline data on key species and habitats. The Project will share relevant information obtained with the authorities to support the overall understanding of, and management design for, the protected area. The proposed approach will also help consolidate the results of the individual monitoring and survey tasks.

The BMEP and ACAs will be the responsibility of the Owners Engineer (reporting to the TA) but elements of it may be tendered out to suitable external organisation(s). As part of the BMEP the Project will monitor the nature, extent, quality and spatial configuration of notable habitats and species within both the direct project area, and the wider area. The studies will focus on the key biodiversity elements discussed in this BAP and associated sources of threats rather than trends in local biodiversity *per se*.

### 12.2 Monitoring Approach

The BMEP/ACAs will include monitoring targeted at the Species/Population Level. This will seek to provide further information on species distribution, population size and demographics for the BAP and notable species. Indicators will be developed in consultation with local experts as part of this F-BAP. Monitoring methodologies will be developed in conjunction with key specialists. For reptiles, the use of artificial refuge will be considered, as this method will collect more objective data on the population size, demographics and species distribution. An annual report will be prepared during the monitoring period to include all sets of data, analysis, conclusions and recommendations for management interventions. The monitoring will continue up until the end of the defect liability period. At that point, the Owner’s Engineer will make an assessment of the situation and provide recommendations if necessary.

### 12.3 Evaluation

This F-BAP and its monitoring, including that outlined above, will be periodically evaluated to determine its effectiveness in meeting its objectives and identifying any necessary remediation. The findings of the monitoring programme will be evaluated every year with the Project Lenders and the outcomes used to adapt the management and on-going mitigation measures. Management interventions will need to be identified when there is a negative trend in the areas of natural habitat and/or the connectivity of the

habitats. The threshold for interventions will be when the area of any natural habitat has decreased by more than 5%. The outcome of the evaluation and any management interventions required will be fed to the relevant managers and landowners.

#### **12.4 Dissemination**

This BMEP will contribute directly and significantly to the achievement of Tivat Saline Management Plan. The data and outcomes from this monitoring will be shared to enable local authorities and others in the region to use this information in planning. This may include academic institutions and NGOs in the region.

#### **12.5 Resources**

The Owner's Engineer will prepare the full terms of reference (ToR) for the BMEP/ACAs. Additional local capacity and resources may be received from other bodies as available. Staff and resources required to implement this plan will be assessed at the completion of the BMEP/ACAs ToR.

Involvement/engagement of local communities will be considered in the BMEP because:

- the plan will be more sustainable if communities are involved;
- local communities have useful information on the relationships between threats and effects; and
- stakeholder involvement can contribute to the development of a sense of ownership of the resource management regime and responsibility for biodiversity health.

The draft and final BMEP/ACAs will need to be approved by the EBRD.

## Appendix 1: Appropriate Assessment Screening Report

### 12.6 Introduction

This document sets out the results of the **Appropriate Assessment screening process** for the Tivat-Jaz Road Upgrade scheme, which details its potential to cause likely significant effects on European designated sites. It is based on currently available information about the sites and the design and operation of the proposed scheme.

### 12.7 Habitats Regulations Assessment Requirements

EU guidance states that 'any plan or project not directly connected with or necessary to the management of a Natura 2000 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'. As a non-EU country, Montenegro is not subject to the EU Habitats and Birds Directives and is not included in the Natura 2000 site network. However, the EBRD 'applies the spirit and principles of the EU EIA and Habitats Directive regardless of geographic location of the project'.

EBRD guidance note 6 states that the EU guidance should be followed regarding any protected or designated sites, and that the first step should entail *Screening - the process which identifies the likely impacts upon a 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*.

This report details this screening process. Should the results of the screening indicate that the project is expected to have significant residual impacts on a protected or designated site, a full appropriate assessment will be undertaken for the site in question in line with EU Habitat Directive guidance.

Protected or designated sites (henceforth "European sites") in this case include: **Nationally protected areas, Ramsar sites, International Bird Areas, Key Biodiversity areas and Emerald or candidate Emerald sites**. Montenegro is a member of the Council of Europe and a signatory of the Bern Convention on the Conservation of European Wildlife and Natural Habitats, and therefore is part of the Emerald Network of Areas of Special Conservation Interest. Currently, Montenegro only contains candidate Emerald sites, which have been officially nominated but not yet accepted into the Emerald Network. However, this report will take a precautionary approach, and treat candidate Emerald sites no differently than true Emerald sites, on the assumption that they will all be accepted into the Network. Hence they are included in the earlier list of 'European sites'.

### 12.8 Stages of Appropriate Assessment

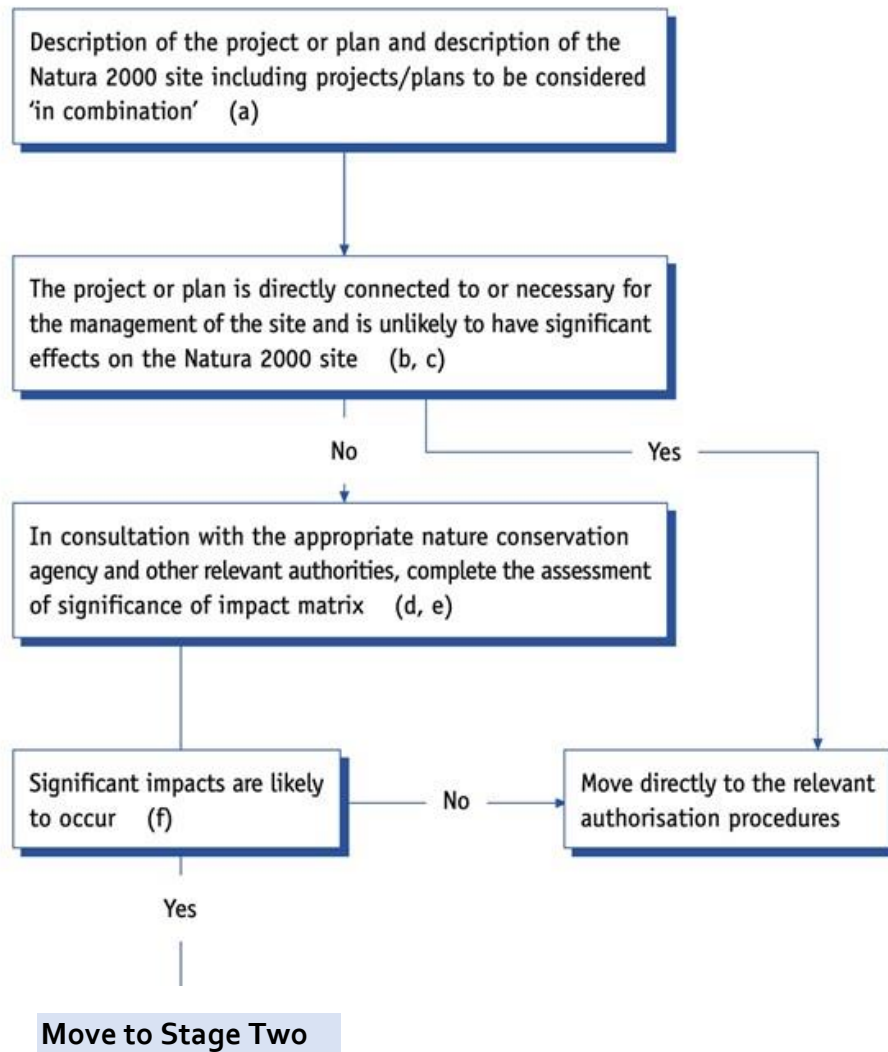
The EU habitat directive guidance states that the Appropriate Assessment process for European Sites should follow 5 steps:

- Screening — the process which identifies the likely impacts upon a 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.
- Appropriate assessment — the consideration of the impact on the integrity of the 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. In addition, where there are adverse impacts, an assessment of the potential mitigation of those impacts.
- Assessment of alternative solutions
- Assessment of compensatory measures

This report addresses the screening process and aims to identify whether the proposed Tivat-Jaz road upgrade scheme, either alone or in combination with other plans or projects, is likely to have a significant impact on a European site.

Figure 3 – Process for stage one: screening

### Stage One: Screening



## 12.9 Approach to Screening

The purpose of this stage is to:

- determine if the project should be exempted or excluded from full Appropriate Assessment because it is necessary to the management of a European site;
- identify if the project can be eliminated from a full Appropriate Assessment because it is obvious that it could not have any conceivable effect on any European site;
- identify all aspects of the project that would not be likely to have a significant effect on a European site, either alone or in combination, so they can be screened out from further assessment'; and
- identify those aspects that should be assessed because it is not possible to rule out the risk of significant effects on the European sites, particularly the qualifying features, either alone or in combination with other plans or projects and which, therefore, need to be considered in a full appropriate assessment.<sup>4</sup>

### Identifying sites which could be affected

Although the terrestrial PAA for this project is a 300m corridor centred on the road, representing the projects direct impacts on terrestrial habitats, this screening process requires a larger study area, as some species can move well outside of the designated sites in which they are found. To identify the sites relevant to this screening, a 30km buffer area around the proposed scheme was produced and all sites lying entirely or partly within the buffer were identified. A 30km buffer was selected to take account of the range for the more mobile species, such as bats and birds.

### Screening Conclusions

There are three possible outcomes:

1. The project will have no significant effect on the site at all and there are no residual effects, and no further assessment is required;
2. The project alone will have no significant effect on the site but may result in an impact that is of such a small magnitude that alone, its effects would not be significant but, when combined with other minor effects from other plans or projects, these 'residual effects' become significant; and
3. It cannot be ruled out that the project could or would have a significant effect on the site alone.

## 12.10 Project overview

The Project comprises the rehabilitation and expansion of the Tivat to Jaz main road (the M-2) from approximately 100m before the entrance to Tivat Airport to the end of the existing intersection at Jaz, north of Budva. The Project involves widening the existing two-lane road to create a four-lane road with two-lanes in each direction (each lane being 3.25 m wide). The upgraded road will include a 2m wide central reservation as well as 2m wide sidewalks and a vegetated verge. In addition, seven road bridges, four culverts and one footbridge will be (re) constructed, 11 new roundabout junctions will be constructed, and 2 existing roundabout junctions will be reconstructed. The total width of the upgraded road corridor will be around 19 m. Further details are provided at the start of this BAP.

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<sup>4</sup> Derived from: Tyldesley, D. and Chapman, C. (2013) The Habitats Regulations Handbook (January 2015 edition) UK DTA Publications Limited

### 12.11 Relevant European Sites

The following 5 sites have been identified as potentially relevant to the project:

- Tivat Saline candidate Emerald site and Ramsar site
- Lovcen National Park, candidate Emerald site and Key Biodiversity Area
- Kotor bay candidate Emerald site, UNESCO World Heritage Site and Key Biodiversity Area
- Platamuni candidate Emerald site and marine Key Biodiversity Area
- Spas Budvar/Brdo Spas candidate Emerald site



Figure 4 – Relevant European Sites. The Blue line is a rough approximation of the project road alignment

The following table provides further details of each of the sites.

Site	Description
Tivat Saline	Nationally designated as a Special Flora and Fauna Reserve, also a Ramsar site, and a candidate Emerald site (Bern convention). The dominant habitat of the site is Mediterranean salt meadow, a NATURA 2000 Habitat (1410). The area consists of shallow pools and channels, with complex types of halophyte vegetation growing on sludge-clay ground, a vegetation type which has largely disappeared, not just from Montenegro, but from the eastern coast of the Adriatic. Although this type of habitat is still found in a few other localities in Montenegro, Tivat Saline represents the best example in the country. It is an important resting and feeding area for migratory birds such as the Black-tailed Godwit <i>Limosa</i> , Eurasian Curlew <i>Numenius arquata</i> , and Ferruginous Duck <i>Aythya nyroca</i> , as well as the regional population of Pygmy Cormorant <i>Phalacrocorax pygmeus</i> . The Loggerhead Sea turtle <i>Caretta</i> , which is globally Vulnerable (IUCN), also uses the coastal part of site. The Albanian water frog <i>Pelophylax shqipericu</i> , which is globally Endangered (IUCN), has also been known to occur at this site. The site is designated as a Ramsar site due to criteria 1,2,3,4 and 6. It meets criterion 1 as, for its ecoregion, “the size of the saline [and] its explicit near-natural wetland type is exceptional and unique”. It meets criterion 2 as it hosts IUCN threatened species <i>Caretta</i> and <i>Pelophylax shqipericus</i> . It meets criteria 3 due to its ‘outstanding’ biodiversity, and criteria 4 as it is an important resting and feeding area for migrating birds, and an important winter habitat for several species of egret, primarily the great white egret and grey egret. Finally, criterion 6 is met as the site regularly supports

	1.7% of the regional population of the Pygmy Cormorant <i>Phalacrocorax pygmeus</i> , between November and February. The reason for this sites nomination as an Emerald site does not seem to be publicly available, so it is assumed to be the same as its Ramsar designation.
Lovcen National Park	A Key Biodiversity area and a candidate Emerald site. It covers the central and the highest part of the mountain Lovcen, with total area of 62.2 square kilometres, and was established (as a national park) in 1952. This site has been identified as a Key Biodiversity Area based on the presence of: 'Significant populations of endemic species known only to be found in a limited area'. These species are the Bosnian Pine <i>Pinus heldreichii</i> and the Meadow Viper <i>Vipera ursinii</i> , which is also globally Vulnerable (IUCN). The reason for this sites nomination as an Emerald site does not seem to be publicly available, so it is assumed to be the same as its Key Biodiversity Area designation.
Kotor Bay	A Unesco World Heritage site, as well as both a Key Biodiversity area (KBA) and a candidate Emerald site. Identified as a KBA based on the presence of 'significant populations of globally threatened species and significant populations of endemic species known only to be found in a limited area'. It is designated for just one species of mollusc, <i>Saxurinator montenegrinus</i> (IUCN EN) which meets both requirements above. The reason for Emerald site nomination is unclear.
Platamuni	Platamuni is a planned Marine Protected Area, as well as a Key Biodiversity Area, along the coast of west of Budva. It contains a large area of sea as well as part of the coast, including marine caves thought to be key fish nurseries and important for resting and breeding Mediterranean monk seals. They also host interesting communities of cave dwelling species. This site has been identified as a Key Biodiversity Area based on the presence of 'significant populations of globally threatened species'. These include 3 species of invertebrates, the Goldstreifiger <i>Buprestis splendens</i> (EN), the Mediterranean Pillow Coral <i>Cladocora caespitose</i> (EN) and the Common Spiny Lobster <i>Palinurus elephas</i> (EN), one species of mammal, the Mediterranean Monk Seal <i>Monachus</i> (EN), a fish, the Dusky Grouper <i>Epinephelus marginatus</i> (EN) and a plant, <i>Bory's Anacamptis boryi</i> (VU).
Spas Budvar	Little information on the site is available but it is designated for its <i>Euphorbia dendroides</i> formations, these are small spurge trees that grow in the semi-arid and Mediterranean climates.

### 12.12 Screening Assessment

Is the Project directly connected with or necessary to the management of the site?

The primary aim of the project is to increase traffic capacity in the region. The works are therefore not directly connected with or necessary to the management of any sites designated for biodiversity.

#### Likely impacts

The key potential impacts that could, individually or together, give rise to adverse effects on the qualifying criteria of the identified sites have been identified as:

- **habitat loss** through direct land take from the widening of the existing road and construction of other supporting infrastructure;
- **habitat fragmentation**, due to the increased width of the road and projected increase in traffic;
- changes in **hydrology**, for example –works within or close to water bodies that can cause pollution, sedimentation or changes in flow;
- changes in **air quality**, for example dust deposition during construction;
- increased direct and indirect **disturbance**, for example – noise and vibration associated with construction, as well as lighting and movement affects during both construction and operation.

The following section assesses the likelihood of the road upgrade resulting in direct or indirect<sup>5</sup> significant effects on the qualifying features of each designated site.

### Tivat Saline

The following table assesses the potential for impacts at Tivat Saline

Issue	Assessment
Habitat Loss and Fragmentation	Tivat Saline is, at its closest point, some 300m to the west of the northernmost point of the road. It is outside of the working corridor, and thus there is expected to be no permanent or temporary habitat loss within the site as a result of the project. As the road does not pass through the Tivat Saline, there is no direct fragmentation of the habitats within it. The project is also not anticipated to cause significant habitat fragmentation for the species that the site was designated for. The upgraded road will not pose a barrier for marine species such as the Loggerhead turtle, and neither will it pose a barrier for species restricted to the wetland habitats of the Tivat Saline such as the Albanian water frog. The key designation of the site is for waterbirds, and the upgraded road is not thought to pose a significant barrier for these species, which are usually restricted to wetlands sites except when migrating, and the upgraded road is not expected to pose a barrier to birds flying over the area in migration any more than the existing alignment. <b>Likely significant effects will be avoided and there will be no residual effects; consequently, there will be no need for further assessment of this impact.</b>
Changes in Levels of Disturbance (noise, light)	The Terrestrial Project Affected Area has been designated as a 300km corridor around the proposed alignment. The Tivat Saline is outside this zone and is thus not considered to be at any significant risk from noise or light disturbance from the new road. The Tivat Saline borders Tivat Airport (it is closer to this than the project road) and thus it is already subject to noise and light pollution, which is unlikely to increase noticeably due to the road upgrade. <b>Likely significant effects will be avoided and there will be no residual effects; consequently, there will be no need for further assessment of this impact.</b>
Changes in Hydrology	Although outside of the Project Affected Area for terrestrial impacts, the Tivat Saline is within the PAA for downstream impacts. An extended PAA of 2km downstream from the road, only along watercourses, was used to account for impacts related to run-off during construction and operation. Four watercourses crossed by the alignment run into the Tivat Saline, and two of these are crossed by the alignment less than 2km upstream of the site. Therefore, changes in the hydrology of these waterways due to the project has the potential to impact the Tivat Saline designated site. However, the following of best international practice around water quality control, as well as specific mitigation detailed in the ESIA, such as execution of works in watercourses in the dry period when the water level is low and some of the watercourses have dried up completely, will prevent any negative impacts on the Tivat Saline due to changes in Hydrology. <b>Likely significant effects will thus be avoided, and no residual effects are expected; consequently, there will be no need for further assessment of this impact.</b>

<sup>5</sup> Direct impacts occur through direct interaction between the project and the receptor and occur at the same time and place (e.g. land take during construction). Indirect impacts, which are also known as secondary or tertiary impacts, are produced away from the project as a result of an impact pathway, and are often observed later in time (e.g. the disturbance of species beyond the project boundary by increased noise disturbances).



Dust Deposition and air pollution	The Terrestrial Project Affected Area has been designated as a 300km corridor around the proposed alignment. The Tivat Saline is outside this zone and is thus not considered to be at any significant risk from dust deposition or air pollution. Furthermore, the adoption of best practice construction methods and any further mitigation present in the ESIA will mean that any effects from dust deposition or air pollution will be avoided or reduced to a level that will not be significant. <b>Likely significant effects will be avoided and there will be no residual effects; consequently, there will be no need for further assessment of this impact.</b>
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### Lovcen National Park

The project alignment is more than 2km from the Lovcen Park, KBA and candidate Emerald site at its closest point, and thus it is well outside of the PAA for terrestrial impacts. There will be no habitat loss within this designated site as a result of a project, nor will the habitat within the national park be fragmented. The species the site is designated for, a species of tree and the Meadow Viper, are not highly mobile, and thus populations within the park are very unlikely to interact with the project. The national park is upstream from the Project road and thus downstream impacts due to changes in hydrology can be discounted. **No significant effects on this site are expected and there will be no residual effects; consequently, there will be no need for further assessment of any impacts on the qualifying features of this European site.**

### Kotor Bay

The project alignment is more than 3km from Kotor Bay marine KBA and candidate Emerald site at its closest point. The designated area is also marine, and no impacts on marine habitats or species are anticipated as a result of this terrestrial road upgrade. There will be no habitat loss within the bay as a result of a project, nor will the habitat be fragmented. The site is much too far away from the project to be impacted by dust, noise or light pollution. None of the waterways crossed by the project road run into the Kotor Bay, and thus downstream impacts due to changes in hydrology can be discounted. **No significant effects on this site are expected and there will be no residual effects; consequently, there will be no need for further assessment of any impacts on the qualifying features of this European site.**

### Platamuni

The project alignment is more than 1km from Platamuni marine KBA and candidate Emerald site at its closest point. The designated area is also marine, and no impacts on marine habitats or species are anticipated as a result of this terrestrial road upgrade. There will be no habitat loss within this site as a result of a project, nor will the habitat be fragmented. The site is thought to be too far away from the project to be impacted by dust, noise or light pollution. None of the waterways crossed by the project road run into the Platamuni site, and thus downstream impacts due to changes in hydrology can be discounted. **No significant effects on this site are expected and there will be no residual effects; consequently, there will be no need for further assessment of any impacts on the qualifying features of this European site.**

### Spas Budvar/Brdo Spas

The project alignment is located around 800m from the Spas Budvar site at its closest point. The site is well outside of the PAA for terrestrial impacts. This means that there is not anticipated to be any habitat loss or habitat degradation within the site, and thus no significant impacts upon the *Euphorbia dendroides* formations, for which this site is designated, are expected. The site is not

downstream of the project road, and thus no adverse hydrological impacts due to downstream effects are forecasted. The alignment is separated from the site by built up areas of modified habitat. Although mobile species within the designated site may move outside of the site into the PAA, none of these species are globally threatened (IUCN) nor unique to the site. They already should have been considered in the Critical Habitat and Priority Biodiversity Feature screening processes. Forest fires are recognised as a key threat to this site. Best international practise regarding forest fire prevention will be employed by the project to mitigate any possible risks of wildfire.

No significant effects on this site are expected and there will be no residual effects; consequently, there will be no need for further assessment of any impacts on the qualifying features of this European site.

### 12.13 Summary

This document summarises the findings of the Appropriate Assessment screening for Tivat-Jaz road upgrade scheme. It identifies whether the project could lead to 'likely significant effects' alone or in combination with other plans or projects on five 'European sites'.

The five sites below are all candidate Emerald sites, although some have additional designations.

- Tivat Saline candidate Emerald site and Ramsar site
- Lovcen National Park, candidate Emerald site and Key Biodiversity Area
- Kotor bay candidate Emerald site, UNESCO World Heritage Site and Key Biodiversity Area
- Platamuni candidate Emerald site and marine Key Biodiversity Area
- Spas Budvar/Brdo Spas candidate Emerald site

**Based on the readily available public information reviewed, the assessment concluded that the project is not anticipated to have any significant residual impacts on the European Sites listed above. Therefore, a full Appropriate Assessment is not necessary for any of the sites listed above.**