Main Road Reconstruction Project, Rehabilitation and upgrade of the Danilovgrad – Podgorica road section

Critical Habitat Assessment (CHA)

Executive Summary

This document provides a Critical Habitat Assessment (CHA) for the proposed main road reconstruction project, rehabilitation and upgrade of the Danilovgrad-Podgorica road section (the Project). The CHA has been undertaken in line with Performance Requirement 6 of the European Bank for Reconstruction and Development's (EBRD) Environmental and Social Policy (2014).

The Project involves the upgrade of an existing road from single to dual carriageway as well as associated supporting infrastructure such as upgrades of bridges, roundabouts, and drainage. As a result, the majority of the land directly affected is modified urban and peri-urban habitats (this accounts for 17.9 ha or 63.5% of the land take) with a further 7.7ha (27.5%) made up of a mosaic of oriental hornbeam woods and eastern sub-Mediterranean dry grassland. These habitats have the potential to support notable species, but neither is considered to trigger either Critical Habitat or Priority Biodiversity Features on its own.

The scheme crosses 5 watercourses, and the remaining 2.5 ha of land affected includes more sensitive habitats primarily associated with these seasonal or permanent watercourses, as well as the seasonally wet grasslands and riparian woodland corridors associated with them. Those habitats in the southern part of the scheme closer to Podgorica are generally considered to be of the greatest ecological interest with the limestone massifs of Luznica hill and Zelnika hill and the wetland between them (including the Mareza Stream) of greatest note.

The proposed scheme does not affect any Natura 2000 or Candidate Emerald sites. It does however run through the fringes of the proposed Zeta Stream Key Biodiversity Area (KBA) and the proposed protected area of the "Mareza source with Sitnica and area of Velje Brdo". The KBA and protected area boundaries have yet to be established, however both are recognised for supporting a range of notable fish, invertebrates, amphibians and reptiles.

Overall the project area has the potential to support a number of notable species, including bats and potentially otter (*Lutra lutra)* and mink. One endangered amphibian (Albanian Water Frog *Pelophylax shqipericus*) and two endangered fish, the soft mouthed trout (*Salmo obtusirostris ssp zetensis* – EN) and the European eel (*Anguilla anguilla* CR) have also been reported from the Project Area but only the former has been recorded recently. Two restricted range snails have also been recorded nearby (*Plagigeyeria zetaprotogona* (IUCN EN) and *Saxurinator orthodoxus* (IUCN CR)).

whilst white-clawed crayfish (*Austropotamobius pallipes* EN) has also been recorded from the wider area.

The assessment has assessed the potential for the above habitats and species present to trigger Critical Habitat and/or Priority Biodiversity Features. As a result the following have been identified:

Criteria	Assessment	Status
Designated sites	The Mareza source with Sitnica and area of Velje Brdo could be affected and **is considered a PBF**	PBF
Habitats of significant importance to notable (rare, endemic or restricted range species)	Aquatic habitats are considered important to a range of notable species and the River Susica, Sitnica Matica and Mareza are all **considered as PBF**	PBF

Trigger	Species	Status
Notable Mammals	European Otter *Lutra Lutra* (NT) Bat roosts (all species)	PBF PBF
Amphibians	Albanian Water Frog *Pelophylax shqipericus* (EN):	CH
Fish	Soft mouthed trout *Salmo obtusirostris* (EN) European eel *Anguilla anguilla (CR)*	CH PBF
Invertebrates	*Valvata montenegrina (EN)* White-clawed crayfish *Austropotamobius pallipes* (EN)	CH PBF

Where CH/PBF are triggered, and if the Project is likely to have significant impacts on the conservation of associated species of habitats of note, the project is committed to developing and implementing a series of bespoke Biodiversity Action Plans (BAPs) to ensure "no net loss" (or in the case of CH "net gain") in line with EBRD requirements.

Based on this assessment the following BAPs are proposed:

1. Action plan for the "Mareza source with Sitnica and area of Velje Brdo" protected area. This will include specific actions with regards to the conservation of *Valvata montenegrina* (EN).
2. Action plan for the Rivers Susica, Sitnica Matica and Mareza. This will include specific actions with regards to the conservation of Soft mouthed trout, European eel and White-clawed crayfish and Albanian Water Frog and otters
3. Action plan for bats

These BAPs are provided as a stand-alone document which accompanies this CHA. Additional surveys will be conducted in the Summer of 2019 to understand if any additional mitigation measures are required.

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Abbreviations

AoI	Area of Influence
BAP	Biodiversity Action Plan
BMP	Biodiversity Management Plan
CHA	Critical Habitat Assessment
DMU	Discrete Management Unit
EBRD	European Bank for Reconstruction and Development
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESP	Environmental and Social Policy
EU	European Union
IFC	International Finance Corporation
IUCN	International Union for the Conservation of Nature
KBA	Key Biodiversity Area
Km	Kilometre
NGO	Non-Governmental Organisation
PBF	Priority Biodiversity Feature
PR6	EBRD's Performance Requirement 6
PS6	IFC's Performance Standard 6
ssp.	Sub-species

1. Introduction

1.1 Document Purpose

This document provides a Critical Habitat Assessment (CHA) for the proposed Danilovgrad-Podgorica Road Upgrade (see Project summary in ESIA). Whilst the Project will not affect any designated sites of European importance (and as such no Appropriate Assessment screening is required) the proposed project area does include a number of habitats that could support species that could be considered either "Critical Habitat" and/or "Priority Biodiversity Features" as defined by Performance Requirement 6 of the European Bank for Reconstruction and Development's (EBRD) Environmental and Social Policy (ESP) (2014). A **Critical Habitat Assessment** (CHA) of the proposed road scheme is therefore required as detailed in this Document.

1.2 Document Objectives

This CHA has been used to identify the potential for the Project to impact upon the specific species and habitats of conservation importance that could trigger Critical Habitat or Priority Biodiversity Features within the Project's affected area.

1.3 Associated Documents

The CHA document is part of a series of documents that have evaluated, and set out mitigation proposals for, the potential environmental and social impacts of the proposed project. As such the document builds on, and should be read alongside, the following Project Documents:

- **Regulatory Environmental Impact Assessment (EIA).** This document addresses potential environmental and social impacts of the project in the context of Montenegrin Law.

- A supplemental **Project Environmental and Social Impact Assessment (ESIA)** has been developed to enhance the EIA, which further describes baseline conditions within the project's affected area, outlines potential impacts of the scheme and details key mitigation to be included in design, construction and operation of the project.

- **Project Framework Environmental and Social Management Plan (ESMP):** this document (included as an Annex to the ESIA) focuses on the proposed project mitigation and includes specific project requirements to be implemented by the Contractor during final project design and construction. As an operational document, it will inform the Contractors' own Environmental and Social Management Plans which will be developed prior to the commencement of construction.

- **Project Biodiversity Action Plan (BAP).** Where the assessments reported in this CHA document have identified the potential for impacts on Critical Habitat, Priority Biodiversity Features or Designated or Internationally Recognised Sites, specific action plans have been developed to ensure "no net loss" to global biodiversity of the features/species identified, and in the case of CH, net gain of those features or species as described earlier. The BAPs include a set of actions that together can help ensure the conservation or enhancement of the affected habitats and species by building on the key mitigation and compensation measures developed as part of the Project ESIA process. In so doing, the BAPs will help the Project comply with both national legislation/policy requirements and international environmental requirements, including those of the EBRD.

It should be noted that BAPs are intended to focus on those species and habitats that need special management, rather than dealing with all of the biodiversity affected by the Project. The latter is covered through the specific Biodiversity Management elements of the Project Environmental and Social Management Plan (ESMP), and the associated Contractor-specific Biodiversity Management Plans (BMP), as explained in the Project ESIA.

- **Stakeholder Engagement Plan (SEP):** This provides additional details of the consultation work planned and undertaken to date (including consultations with ecological NGOs).

1.4 Project Description

The European Bank of Reconstruction and Development (EBRD) is considering providing a loan to the Transport Administration of Montenegro (TA) for the rehabilitation, upgrade and works supervision of the 51km 'Montenegro Main Roads Reconstruction Project'. The project is divided into three main sections as follows, of which this report deals with **Section 3:**

- Section 1: Rehabilitation of the Rozaje-Spiljani road section (approx. 20km);
- Section 2: Rehabilitation and upgrade of the Tivat-Jaz road section (approx. 16km); and
- **Section 3: Rehabilitation and upgrade of the Danilovgrad-Podgorica road section (approx. 15km).**

The expansion and upgrade of the Danilovgrad-Podgorica section of the existing M-18 road (the Project) is part of a wider programme of rehabilitation of twelve main road sections; a strategic goal of the Government of Montenegro. The Project is aligned with the Spatial Plan of Montenegro (SPM) (2020), which outlines the development of road infrastructure in Montenegro.

The Project has been assigned Category A by the Bank since the upgrade of this road section involves the widening of the road from 2 to 4 lanes over a more than 10 km continuous length and will require land acquisition, resulting in economic displacement and very limited physical displacement, and this road section is also located within a Key Biodiversity Area. Therefore, the Bank requires it to undergo a detailed Environmental and Social Impact Assessment (ESIA) process with the resulting reports available for a minimum 120 days public disclosure and consultation period.

This section of road is approx. 15km in length and runs in a south-northwest direction. The road passes through two municipalities, Danilovgrad and Podgorica, and connects 11 main settlements.

In summary, the works to be undertaken are as follows:

- Widening of the existing 7m wide road to comprise two-lanes in each direction. The expanded road will be 21m wide, plus a 2m safety zone on each side (25m in total);
- Reconstruction of 4 bridges, totalling 215 m in length, and one new underpass, totalling 18m in length;
- Establishment of new pavements/sidewalks along the edge of the road in Danilovgrad (1.5m wide) and Podgorica (2m wide)
- Construction of seven (7) new roundabouts;
- 3 new road junctions;
- 23 new bus stops;
- New lighting along the length of the road; and

- New pedestrian crossings established at road junctions and near roundabouts.
- Stormwater drainage construction for the treatment of road runoff

Commencement of works is planned for the end of 2019. According to the schedule provided in the Main Design, the works should be finalized in 24 months.

Further details of the Project are included in Chapter 2 of the ESIA.

1.5 Regulatory Context for the CHA

A description of the regulatory context for the ESIA is provided in Chapter 3 of the ESIA.

1.6 Stakeholder Input to this Document

Stakeholder consultation is an important element of the CHA and any subsequent BAP, both for information collection and to gather opinions on how to implement and coordinate actions. A number of local and international biodiversity specialists have been consulted as part of the development of this document and the ESIA.

Additional information on other consultations is provided in the Project Stakeholder Engagement Plan. Further stakeholder consultation is also proposed as part of the BAP development to further develop proposed conservation actions and help establish long-term partnerships with the organisations who will implement the actions. The BAP report will also be further circulated to key stakeholders for comment during the disclosure period.

2 The CH/PBF assessment Process

2.1 Definition of Critical Habitat and Priority Biodiversity Features

Critical Habitat (CH)

Critical habitat is considered to be the most significant and highest priority areas of the planet for biodiversity conservation. It takes into account both global and national priority setting systems and builds on the conservation biology principles of 'vulnerability' (degree of threat) and 'irreplaceability' (rarity or uniqueness). There is no universally accepted or automatic formula for making determinations on critical habitat and the involvement of external experts and project specific assessments is of utmost importance, especially when data are limited. EBRD PR6 (para 14) defines Critical Habitat as *"**the most sensitive** biodiversity features"* that typically comprises one or more of the following:

- *(i) highly threatened or unique ecosystems;*
- *(ii) habitats of significant importance to "endangered" or critically endangered species;*
- *(iii) habitats of significant importance to endemic or geographically restricted species;*
- *(iv) habitats supporting globally significant migratory or congregatory species;*
- *(iv) areas associated with key evolutionary processes; or*
- *(v) ecological functions that are vital to maintaining the viability of biodiversity features described in this paragraph."*

Further definition of Critical Habitat is usually based on quantitative thresholds of biodiversity priority based on precedents such as IUCN Red List criteria, (IUCN, 2012) , EU habitats and/or Birds Directives status and Key Biodiversity Area (KBA) thresholds. This is described further below.

Priority Biodiversity Features (PBF)

EBRD PR6 also uses the concepts of vulnerability and irreplaceability to define areas that, whilst not as globally important as Critical Habitat, are still of significant ecological importance often at a regional level. Such areas are referred to as **Priority Biodiversity Features (PBF)**. Priority Biodiversity Features are defined in EBRD PR6 paragraph 12 as "a subset of biodiversity that is particularly irreplaceable or vulnerable, but at a lower priority level than critical habitats". They may include areas that contain

(i)Threatened habitats

(ii)Vulnerable species

(iii)Significant biodiversity features identified by a broad set of stakeholders or governments

iv) Ecological structure and functions needed to maintain the viability of priority biodiversity features.

Whilst Critical Habitat and Priority Biodiversity Features should always be considered when evaluating a project, their presence does not necessarily prevent a project from going ahead. Instead specific measures may be required in areas with CH or PBF as described further below.

A comparison of CH and PBF criteria is also provided in the table below.

Comparison of EBRD CH and PBF Criteria (after Table 2 of the EBRD PR6 Guidance Note)

Critical habitat trigger as per EBRD PR6 (2014)	Priority biodiversity features trigger as per EBRD PR6 (2014)
(i) Highly threatened or unique ecosystems. Ecosystems that are at risk of significantly decreasing in area or quality; have a small spatial extent; and/or contain concentrations of biome restricted species. For example: i) Ecosystems listed as, or meeting criteria for, Endangered or Critically Endangered by the IUCN Red List of Ecosystems ii) Areas recognised as priorities in official regional or national plans, such as National Biodiversity Strategy and Action Plans iii) Areas determined to be of high priority/significance based on systematic conservation planning carried out by government bodies, recognised academic institutions and/or other relevant qualified organisations (including internationally-recognised NGOs).	**(i)Threatened habitats** Habitats considered under pressure by national, regional or international assessments. These include natural and priority habitats identified under the EU Habitats Directive (Annex I).
(ii)Habitats of significant importance to endangered or critically endangered species Areas supporting species at high risk of extinction (Critically Endangered or Endangered) on the IUCN Red List of Threatened species (or equivalent national/regional systems). For example: Alliance for Zero Extinction sites; Animal and plant species of community interest in need of strict protection as listed in EU Habitats Directive (Annex IV).	**(ii)Vulnerable species** Species listed by the International Union for Conservation of Nature (IUCN) or any other national/regional lists (such as national Red Lists) as Vulnerable (VU) or equivalent. These include animal and plant species of community interest identified under the EU Habitats Directive (Annex II).
(iii)Habitats of significant importance to endemic or geographically restricted species. Areas holding a **significant proportion** of the global range or population of species qualifying as **restricted-range** under Birdlife or IUCN criteria. For example: Alliance for Zero Extinction sites or **Global-level** Key Biodiversity Areas and Important Bird and Biodiversity Areas identified for **restricted-range** species.	**(iii)Significant biodiversity features identified by a broad set of stakeholders or governments:** Eg. Key Biodiversity Areas and Important Bird and Biodiversity Areas; nationally and internationally important species or sites for conservation of biodiversity; many areas meeting natural habitat definitions of other international financial institutions.
(iv) Habitats supporting globally significant (concentrations of) migratory or congregatory species Areas that support a significant proportion of a species' population, where that species cyclically and predictably moves from one geographical area to another (including within the same ecosystem), or areas that support large groups of a species' population that gather on a cyclical or otherwise regular and/or predictable basis. For example Global-level Key Biodiversity Areas and Important Bird and Biodiversity Areas identified for congregatory species Wetlands of International Importance designated under criteria 5 or 6 of the Ramsar Convention.	No Equivalent
(v) Areas associated with key evolutionary processes Areas with landscape features that might be associated with particular evolutionary processes or populations of species that are especially distinct and may be of special conservation concern given their distinct evolutionary history. For example Isolated lakes or mountaintops or Populations of species listed as priorities by the Edge of Existence programme.	No Equivalent
(vi) Ecological functions that are vital to maintaining the viability of biodiversity features described (as critical habitat features)	**(iv) Ecological structure and functions needed to maintain the viability of priority**

Ecological functions without which critical biodiversity features could not persist. For example Where essential for critical biodiversity features, riparian zones and rivers, dispersal or migration corridors, hydrological regimes, seasonal refuges or food sources, keystone or habitat-forming species.	**biodiversity features.** Where essential for priority biodiversity features, riparian zones and rivers, dispersal or migration corridors, hydrological regimes, seasonal refuges or food sources, keystone or habitat-forming species.

2.2 Implications of CH/PBF

Areas of CH/PBF should be considered throughout project design and delivery, but are considered of greatest importance if the project is expected to have a **residual significant impact** on the habitat or species for which the CH or PBF has been designated. In general the following approaches are expected to apply:

Critical Habitat

CH should not be further fragmented, converted or degraded to the extent that its ecological integrity or biodiversity importance is compromised. EBRD clients should not implement any project in areas of critical habitat **unless** it can be demonstrated that:

- the project does not lead to measurable adverse impacts on **those biodiversity features for which the critical habitat was designated**
- the project is designed to deliver **net gains for critical habitat impacted by the project**
- the project is not anticipated to lead to a net reduction in the population of any endangered or critically endangered species, over a reasonable time period
- A robust and appropriately designed, **long-term biodiversity monitoring and evaluation programme** aimed at assessing the status of critical habitat is integrated into the client's adaptive management programme.

Priority Biodiversity Features,

Where a project could have **significant, adverse and irreversible** impacts to priority biodiversity features, it should only go ahead if appropriate mitigation measures are put in place, in accordance with the mitigation hierarchy, **to ensure no net loss** and preferably a net gain of priority biodiversity features over the long term, to achieve measurable conservation outcomes.

2.3 The Critical Habitat Assessment Process.

Critical Habitat and Priority Biodiversity Feature Assessment (referred to here as CHA) is the process used to identify those areas of highest biodiversity value, which are considered particularly sensitive to impacts and where special attention must be paid.

The project type, impacts and proposed mitigation are not considered relevant in the identification of CH/PBF. Both natural and modified habitats may contain areas that could qualify as CH/PBF.

The CHA process involves an initial Project screening to identify potential CH/PBF trigger habitats or species present within the project affected area. Where such triggers are present the following process should then be followed (as per EBRD guidance):

1. **Screening** (Section 3 of this report).

   The initial screening is undertaken as described above to determine trigger features for which the analysis is to be undertaken.

2. **Analysis and Verification:** (Section 4 and 5 of this report).

This involves two stages as follows:

(i) **Define the area of analysis** (or Designated Management Unit – see section 4) to be used for the assessment for those features which have been "screened in". The extent of this area will depend on the biodiversity features of interest and the ecological functions required to maintain them and may differ between triggers

(ii) **Undertake stakeholder consultation and desktop review** of available data (including that obtained during screening) to understand the biodiversity within the landscape from the perspective of all relevant stakeholders

Verification involves a further three stages, namely:

(iii) **Verify available information** within the area, to the extent practical, including by in-field data collection and via engagement of qualified specialists.

(iv) **Confirm biodiversity triggers** likely to meet CH/PBF criteria, as defined by PR6 and based on the importance of the study area(s) to each biodiversity feature (see detailed information on trigger thresholds).

(v) **Determine CH/PBF status** (of each area of analysis) based on analysis of all collected data.

Following this analysis, the potential for the project to affect any CH/PBF features must then be assessed and requirements for changes in project design and/or specific species or habitat action plans determined.

3 Step 1: Screening for CH/PBF

3.1 Overview

The CH/PBF screening process has involved a combination of initial consultations and desk-based study as reported in the Project ESIA. This included use of the IBAT[1] tool which covers a much wider area than just the project itself which was followed up by further studies and consultation to determine which CH/PBF "trigger" species or habitats were likely to be genuinely present in the proposed project area. As a result the following potential CH/PBF triggers were considered for further analysis:

- Designated sites and other nature conservation areas of recognised importance nationally or internationally, together with the ecological features and species that they support.
- Species and habitats of global, national and/or regional conservation importance including nationally rare, restricted-range and threatened species, globally Critically Endangered or Endangered species (IUCN Red List)
- Species included within Annex II and IV of the EU Habitats Directive and Annex I of the Birds Directive.
- Other species based on feedback provided by local and international biodiversity experts during the ESIA.

3.2 Screening of CH Triggers

Based on the ecological baseline assessment studies (as reported in the ESIA) the following potential CH Triggers are considered applicable for the Project (see Table 2 of EBRD PR6 Guidance Note):

	Critical habitat trigger	Potential Trigger Features/Species
Highly threatened or unique ecosystems	Ecosystems that are: • at risk of significantly decreasing in area or quality; • have a small spatial extent; and/or • contain concentrations of biome restricted species[2].	Ecosystems present within the project area are generally considered representative of the habitats found in lower lying areas of Montenegro and the surrounding countries. As such, and despite the karst nature of the surrounding hills, they are not considered to be of either small spatial extent nor at specific risk of significantly decreasing in area or quality. Biome restricted species are addressed further below.
	i) Ecosystems listed as, or meeting criteria for, Endangered or Critically Endangered by the IUCN Red List of Ecosystems	No ecosystems have been identified that are listed on the IUCN Red List of Ecosystems (Karst systems occur across 15-20% of the world) .
	ii) Areas recognised as priorities in official regional or national plans, such as National Biodiversity Strategy and Action Plans	**The Zeta Stream KBA and "Mareza source with Sitnica and area of Velje Brdois"** are in the process of being formally designated sites and are referenced in the National/Local Biodiversity Action Plans. These are discussed further in the following section as well as under the species triggers below
	iii) Areas determined to be of high priority/significance based on systematic conservation planning carried out by government bodies, recognised academic institutions and/or other relevant	

[1] Integrated Biodiversity Assessment Tool – see www.ibat-alliance.org

[2] Biome restricted species are considered to be those with distributions of greater than 50,000km^2 but whose distributions are largely or wholly confined to one biome. Terrestrial vertebrate species with an extent of occurrence (EOO) of 50,000km^2 or less are considered to be "restricted range" - see http://biodiversitya-z.org

	qualified organisations (including internationally-recognised NGOs).	
Habitats of significant importance to endangered or critically endangered species	IUCN Red List CR or EN Species; National Red List CR or EN Species	The following **species have been identified that may trigger these criteria** : • Saker falcon (*Falco cherrug* - EN) and Egyptian vulture (*Neophron percnopterus* – EN) have been recorded from the wider area but not from the AoA • European Mink (*Mustela lutreola* – CR) is also recorded in IBAT • Albanian Water Frog (*Pelophylax shqipericus)* has been recorded during field visits in wetlands here. • Soft mouthed trout (*Salmo obtusirostris ssp zetensis* – EN) and the European eel (*Anguilla anguilla* - CR) have been historically reported from the Project Area (but not recently). • Restricted range snails *Plagigeyeria zetaprotogona* (IUCN EN) and *Saxurinator orthodoxus* (IUCN CR) have been recorded nearby • White-clawed crayfish (*Austropotamobius pallipes* – EN) has been recorded from the broader area
	Alliance for Zero Extinction sites;	No AZE sites have been recorded here
	Animal and plant species of community interest in need of strict protection as listed in EU Habitats Directive (Annex IV).	The **following Annex IV species** have been recorded : • Eurasian Otter - *Lutra Lutra* (IUCN: NT HD II, IV) • European Tree Frog - *Hyla arborea* (IUCN: LC; HD IV). • European Pond Turtle - *Emys orbicularis* • Marsh Frog - *Pelophylax ridibundus* • Agile Frog - *Rana dalmatina* • Common Wall Lizard - *Podarcis muralis* • Dalmatian Wall Lizard - *Podarcis melisellensis* • Greater Horseshoe Bat - *Rhinolophus ferrumequinum* (NT) • Lesser Horseshoe Bat - *Rhinolphus hipposideros* (NT) • Soprano Pipistrelle - *Pipistrellus pygmaeus* • Nathusius' Pipistrelle - *Pipistrellus nathusii* • Whiskered Bat - *Myotis mystacinus* • Kuhl's Pipistrelle - *Pipistrellus kuhlii*
Habitats of significant importance to endemic or geographically restricted species.	Areas holding a **significant proportion** of the global range or population of species qualifying as **restricted-range** under Birdlife or IUCN criteria. For example: Alliance for Zero Extinction sites or **Global-level** Key Biodiversity Areas and Important Bird and Biodiversity Areas identified for **restricted-range** species.	The Albanian water frog, Dalmatian wall lizard and several invertebrate species (notably the snails) have restricted ranges.
Habitats supporting globally significant concentrations of migratory or congregatory species	Areas that support a significant proportion of a species' population, where that species cyclically and predictably moves from one geographical area to another (including within the same ecosystem), Areas that support large groups of a species' population that gather on a cyclical or otherwise regular and/or	The Zeta valley is recognised as a migratory flyway, but is not considered to support a significant proportion of any species population. The local rivers are reported to have supported migratory species including soft-mouthed trout (*Salmo obtusirostris ssp zetensis* – EN) and European eel (*Anguilla anguilla* - CR), although the species have not been recorded recently.

	predictable basis.	
	Global-level Key Biodiversity Areas and Important Bird and Biodiversity Areas identified for congregatory species	The area is not recognised as a KBA or IBA for congregatory species.
	Wetlands of International Importance designated under criteria 5 or 6 of the Ramsar Convention.	The area is not designated under the Ramsar Convention.
Areas associated with key evolutionary processes	Areas with landscape features that might be associated with particular evolutionary processes or populations of species that are especially distinct and may be of special conservation concern given their distinct evolutionary history. For example Isolated lakes or mountaintops or Populations of species listed as priorities by the Edge of Existence programme.	Karst cave systems can support species with a distinct evolutionary history. This is discussed further below in relation to the endangered snails. No populations have been identified that are included within the Edge of Existence programme.
Ecological functions that are vital to maintaining the viability of biodiversity features described (as critical habitat features)	Ecological functions without which critical biodiversity features could not persist. For example where essential for critical biodiversity features, riparian zones and rivers, dispersal or migration corridors, hydrological regimes, seasonal refuges or food sources, keystone or habitat-forming species.	Although the river corridors are identified as sensitive ecological resources, no ecological functions have been identified which are considered vital to maintaining the biodiversity features described above.

3.3 Screening of PBF Triggers

The following potential PBF Triggers have been identified based on Table 2 of the EBRD PR6 Guidance Note:

	Priority biodiversity features trigger as per EBRD PR6 (2014)	
Threatened habitats	Habitats considered under pressure by national, regional or international assessments. These include natural and priority habitats identified under the EU Habitats Directive (Annex I).	No Habitats Directive Annex I habitats have been identified within the Areas of Assessment and no National Priority Habitats have been identified.
Vulnerable species	IUCN Red List VU Species National Red List VU Species 8.1	*The following VU species have bee recorded from the project affected area* • Aquatic Warbler - *Acrocephalus paludicola* • Common Pochard - *Aythya ferina* • Horned Grebe - *Podiceps auritus* • White-fronted Goose - *Anser erythropus* • Greater Spotted Eagle - *Aquila clanga* • Red-breasted Goose - *Branta ruficollis* • Turtle Dove - *Streptopelia turtur*
	Animal and plant species of community interest identified under the EU Habitats Directive	The following Annex II species have been identified: • Pipistrelle - *Pipistrellus pipistrellus* • Long-fingered Bat - *Myotis capaccinii* (NT)

	(Annex II).	• Daubentons Bat - *Myotis daubentonii* (NT) • Noctule Bat - *Nyctalus noctula* • Balkan Snow Vole - *Dinaromys bogdanovi* (VU) • Marbled Polecat - *Vormela peregusna* (VU) • Lizard - *Dinarolacerta mosorensis* (VU -IBAT) • Meadow Viper - *Vipera ursinii* (VU - IBAT)
Significant biodiversity features identified by a broad set of stakeholders or governments:	Eg. Key Biodiversity Areas and Important Bird and Biodiversity Areas; nationally and internationally important species or sites for conservation of biodiversity; many areas meeting natural habitat definitions of other international financial institutions.	The Zeta Stream is a KBA The "Mareza source with Sitnica and area of Velje Brdois" is a proposed site of national conservation value The rivers and streams are considered natural habitat of ecological value.
Ecological structure and functions needed to maintain the viability of priority biodiversity features.	Where essential for priority biodiversity features, riparian zones and rivers, dispersal or migration corridors, hydrological regimes, seasonal refuges or food sources, keystone or habitat-forming species.	The local rivers provide important corridors for otters and fish and refuges foe amphibians and invertebrates.

4. Analysis: Designated Sites and Notable Habitats

4.1 Introduction

Internationally recognized areas of high biodiversity value often support areas of critical habitat (IFC PS6 GN53) or Priority Biodiversity Features. This is particularly so for areas that meet the criteria of IUCN's Protected Area Management categories Ia, Ib and II and is also the case for the majority of Key Biodiversity Areas (KBAs).

EBRD PR6 recognises that "*Where the project occurs **within** or has the potential to adversely affect an area that is protected through legal or other effective means, and/or is internationally recognised,*[13] ***or proposed** for such status by national governments, the client **must identify and assess potential project-related impacts and apply the mitigation hierarchy so that impacts from the project will not compromise the integrity, conservation objectives and/or biodiversity importance of such an area**." (*PR6 para 19).

Whilst the KBA designation itself does not automatically mean that CH or PBF is present, it is considered to have greater **potential to contain areas of CH or PBF** and has therefore been subject to particular scrutiny during the CH/PBF assessment in line with the guidance outlined in EBRD PR6 Section 4.5.

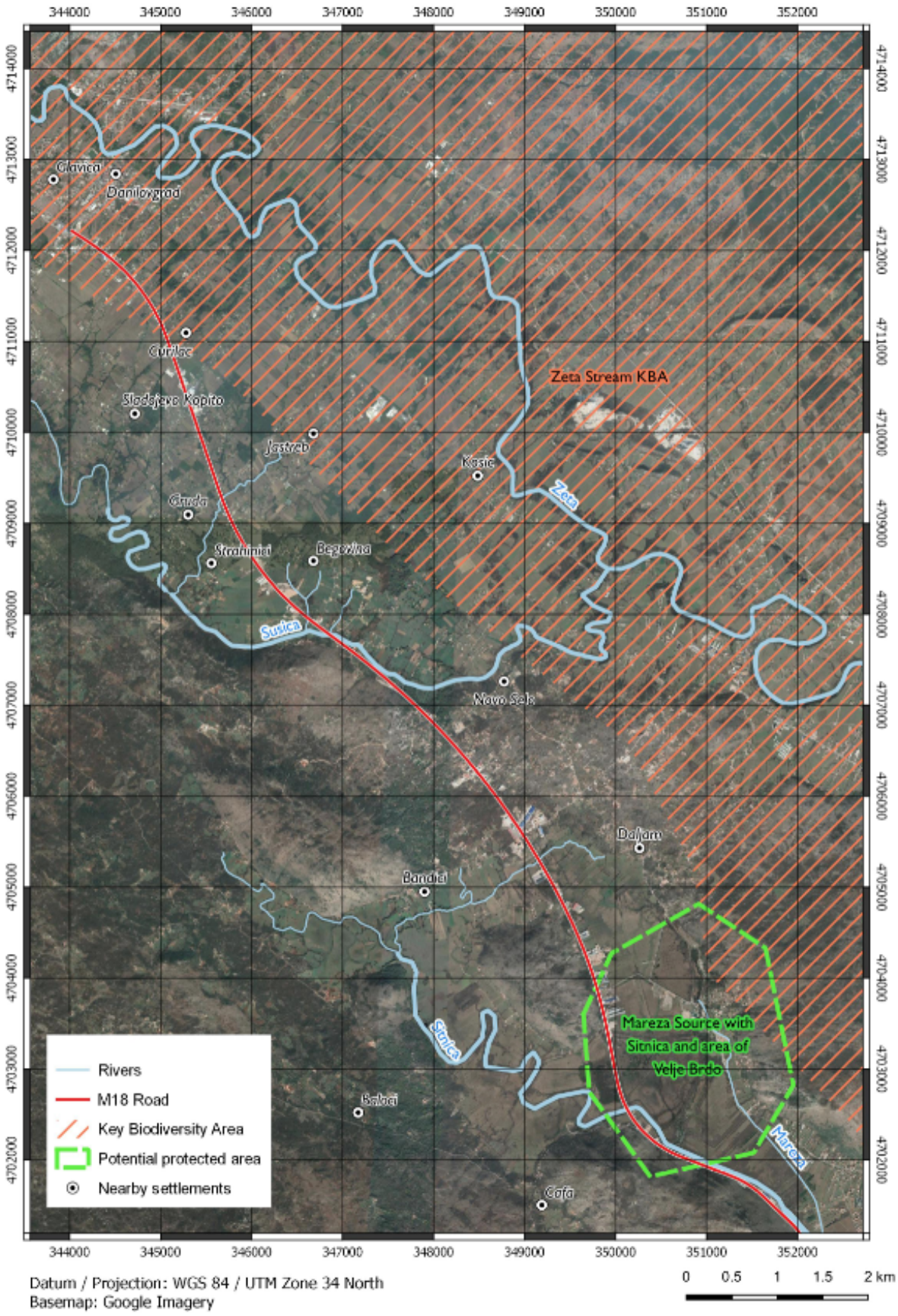
If the project has the potential to adversely impact "priority biodiversity features and/or critical habitat **within such legally protected areas or internationally recognised areas of biodiversity value**" the client should both i) seek to avoid such impacts in accordance with the relevant paragraphs of PR6 relating to PBF and CH and ii):

- *"demonstrate that any proposed development is legally permitted, which may have entailed that a specific assessment of the project related impacts on the protected area has been carried out as required under applicable law*
- *act in a manner consistent with any government recognised management plans for such areas*
- *consult protected area managers, relevant authorities, local communities and other stakeholders on the proposed project in accordance with PR 10*
- *implement additional programmes, as appropriate, to promote and enhance the conservation objectives of the protected area".*

4.2 The Zeta Stream KBA

Overview

The existing road near Danilovgrad runs through the north-western fringes of the proposed **Zeta Stream Key Biodiversity Area (KBA) and proposed protected area** (the site will be referred to as the "Valley of River Zeta-lower course"). Whilst the KBA/protected area designation process was only initiated in February 2019 and no boundary has yet been agreed for the site, an indicative map is shown in the figure below. Official field surveys of the area to support the designation process and delineation process are currently underway and the process is planned to be finalized later this year.



Datum / Projection: WGS 84 / UTM Zone 34 North
Basemap: Google Imagery

The KBA is noted for several species as outlined in the table below (also see notable "fauna" section).

Group	Details
Fish	The Zeta River and some of its tributaries have been recorded as providing favourable freshwater habitat for salmonid fish including *Salmo trutta* (Brown trout), **IUCN LC**, *Salmo marmoratus* (Marble trout), **IUCN LC** and the endangered *Salmo obtusirostris* (Softmouth Trout), **IUCN (EN).** The latter is an endemic species specifically protected according to the Law on Nature Protection. It used to be locally abundant; but intense poaching means that their numbers have drastically declined, and some ichthyologists believe that the taxon may now actually be extinct[3]. Two other notable fish species have also been recorded from the river including ***Anguilla anguila*** **(European eel), IUCN CR** and **G*obio skadarensis* (Skadar gudgeon), IUCN EN** whilst the Southern barbel *Barbus meridionalis* is **IUCN NT.** The Zeta river itself will not be affected by the project, whilst its main tributary that is crossed, the Susica, is an ephemeral stream that dries out in summer and is not expected to support endangered fish species. Further details are provided under the rivers and fish sections of this document.
Freshwater Invertebrates	The majority of Zeta river invertebrate groups have not been well researched. However a number of endemic or endangered freshwater snails have been recorded. These are discussed further under fauna. Two specific species, ***Plagigeyeria zetaprotogona*** **(IUCN EN)** and ***Saxurinator orthodoxus*** **(IUCN CR),** have been recorded from the River Zeta near Tunjevo (several km north of Danilovgrad)[4] and the Rheocrenic springs of the Zeta valley[5] respectively but neither have been recorded from the Project Area..
Amphibians and Reptiles	A number of species of reptile and amphibian are commonly encountered within the KBA including LC species such as *Bufo bufo* (common toad), *Lissotriton vulgaris* (common newt) *Vipera ammodytes* (horned viper), *Podarcis melisellensis* (Dalmatian wall lizard), *Lacerta viridis* (European green lizard), as well as the IUCN NT *Testudo hermanni* (Hermann's tortoise).
Butterflies	Around 16% of all European butterfly species are also found in the Zeta-Skadar Plain.
Agro-biodiversity	The KBA supports key agrobiodiversity species such as domestic white corn (a large glass grain) and fine-grained white corn; domestic wheat and domestic hard wheat; as well as raspberries, blackberry, wild apples, wild pear, autochthonous figs, pomegranate, myrobalan and white plum and local grape varieties (rozaklija, krstac and petrovsko grape), as well as local varieties of potatoes, tomatoes, peppers, beans, green beans.

Overall some **53ha** of the KBA area as currently described may fall within the area affected by the Project (ie the buffer zone 150m either side of the road) but even this representing <0.3% the total 21,040 ha of the proposed KBA as shown in the figure. Of this 53ha less than 5% (around 2.5ha) is actually expected to be affected by the works and this is primarily heavily modified habitat in the outskirts of Danilovgrad as shown below.

[3] https://web2.mendelu.cz/af_291_projekty/files/11/11-prezeatce_salmo.pdf
4 https://www.iucnredlist.org/species/155795/4843793
5 https://www.iucnredlist.org/species/155491/4786450

The Zeta River is also the most important tributary of the Moraca River, which runs through Podgorica and is enriched by the waters from several karst springs as well as the Susica River. It is, however, also the main recipient of untreated wastewater and transporter of pollutants to the Moraca River and ultimately to Skadar Lake. High phosphate and nitrite contents have been recorded from the river as a result of pollution from both municipal wastewater and industrial wastewater (such as the pig farm in Zorski lug). Improperly constructed septic pits and domestic wastewater soakaways from households in the Bjelopavlicka Plain present additional pressure on the river.

The Susica River itself is to be crossed by a bridge in the middle of the scheme. An ephemeral river, it is recorded as under high anthropogenic pressure from agriculture, traffic, urbanization, pollution and habitat fragmentation. The river is discussed further below.

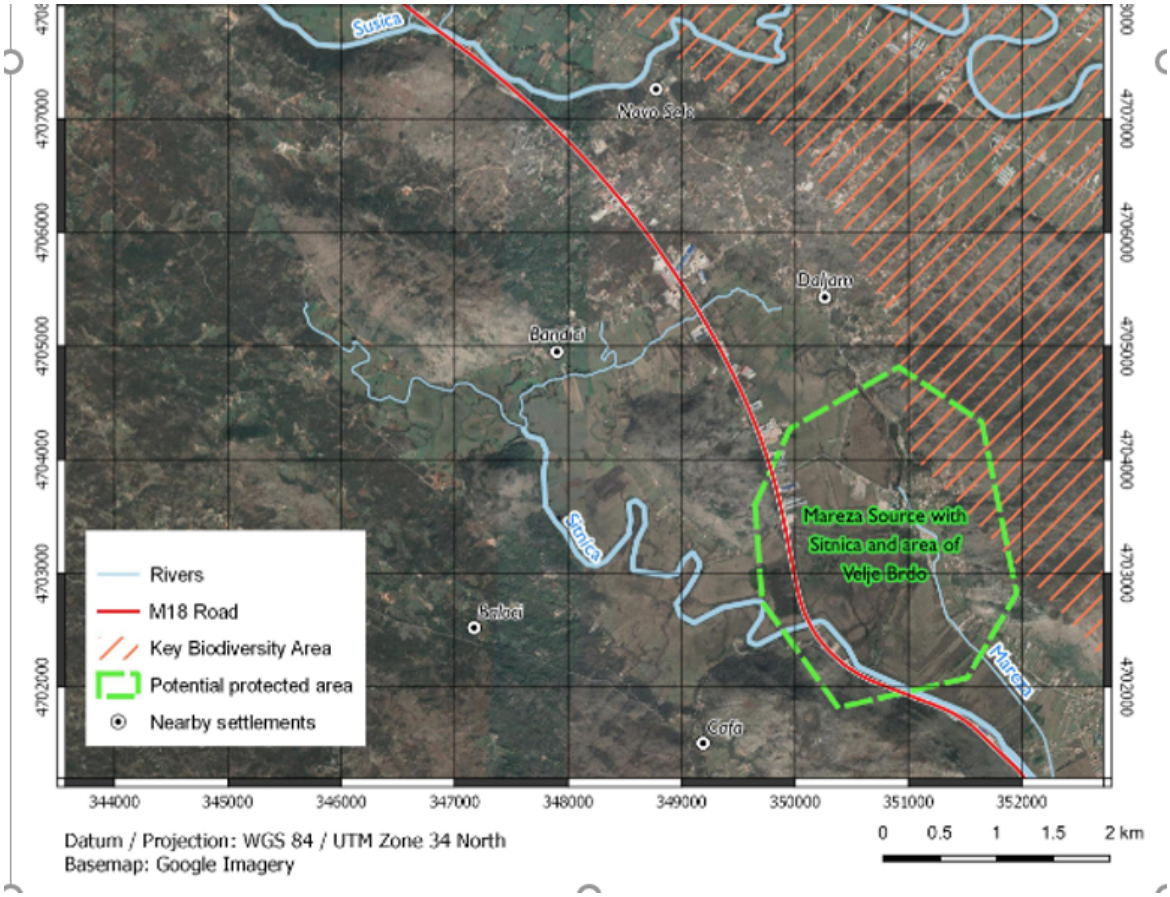
Potential for CH/PBF

The Project skirts the edge of the potential KBA protected site and has been designed to **avoid** potential impacts to these designated areas as far as practical. In particular work on bridges is to be conducted in the dry season to the extent practical to minimise impacts arising from watercourse pollution and disturbance. Whilst the nature of the KBA means that it does support species and habitats that could trigger CH/PBF (discussed further below) the entirety of the KBA itself is not considered to represent CH/PBF. There remains, however, the potential for areas within it to represent CH/PBF and these are discussed in further detail under the species critical habitat assessment in the following sections.

4.3 The Mareza source with Sitnica and area of Velje Brdo

The "Mareza source with Sitnica and area of Velje Brdo" is listed within Podgorica's Biodiversity Action Plan as a potentially protected area but there has not been any official ecological survey of the habitat and the procedure to formalise its status has yet to be initiated. The site represents a complex of freshwater, terrestrial and karst habitats and includes flooded and occasionally flooded meadows, canals, streams and springs which support various endemic or otherwise notable species, which are considered unique in the central region of Montenegro (Ikovic, 2017). No boundary has yet been established for the proposed protected area (the boundary provided in the figure below is

illustrative based on the current description) but the area is expected to include parts of the Rivers Sitnica and Mareza (as well as the existing road).



The following table outlines the extent of potential impacts on habitats located within 150m of the existing road crossing the proposed protected area of which some 10.2ha of natural habitat are expected to be affected by the works.

Eunis Classification	Description	Natura 2000 Classification	Total area in 150m riparian area of impact (ha)	Area to be affected by the scheme (ha)
C1.34	Rooted floating vegetation of eutrophic waterbodies	3150.00	0.59	0.00
C2.33	Mesotrophic vegetation of slow-flowing rivers	3260.00	0.32	0.02
C3.21	Phragmites beds		1.78	0.08
D5.1	Reedbeds normally without free-standing water		5.82	0.42
D5.11	Common reed (Phragmites) beds normally without free-standing water		3.83	0.10

D5.13	Reedmace (Typha) beds normally without free-standing water		3.65	0.27
E1.55	Eastern sub-Mediterranean dry grassland	62A0	6.93	0.72
E3	Seasonally wet and wet grasslands		15.21	0.21
E3.44	Flood swards and related communities		17.01	0.19
G1.1	Salix alba galleries		1.2	0.11
G1.33	Mediterranean riparian ash woods		5.84	0.45
G1.7C2	Oriental hornbeam woods	92A0	53.97	1.61
Mosaic G1.1, G1.3	Mediterranean riparian woodland		9.2	0.00
Mosaic G1.7C2, E1.55	Oriental hornbeam woods G1.7C2, Eastern sub-Mediterranean dry grassland	92A0	50.72	5.40
Mosaic J, E3	Constructed, industrial and other artificial habitats / seasonally wet and wet grasslands		14.34	0.00
X	Mosaic of strongly degraded wet habitats		3.96	0.61
J	Constructed, industrial and other artificial habitats		187.33	17.87
of which J1	Buildings of cities, towns and villages		141.03	10.69

These habitats are shown in the figure below.

Detailed habitat maps are currently being generated and will be provided as an update to this CHA, along with additional data from further biodiversity surveys to be undertaken for the site later in 2019.

Potential for CH/PBF

Given that detailed ecological surveys have not yet been done for this site and its boundaries have not yet been determined, this CHA takes a precautionary approach and assumes that the wetland and mosaic habitats here represent PBF. Further work will be undertaken to refine this assumption. As with the KBA area however, the site itself is not expected to trigger CH given the nature of the habitats present. This is especially the case as the area is known to be disturbed (it is regularly used by local hunters for shooting) and the site visit indicated that the wetlands that are considered to be of greatest ecological value appear to be drying out, in part through colonisation of the area with Salix. The potential for it to be designated as PBF means that particular care needs to be paid to managing this resource. The potential for areas within it house species that of themselves could trigger CH/PBF is also discussed further in the following sections.

4.4 Other designated sites

The proposed project is also located within 5 km of the **Morača River KBA** and within 10 km of the following sites:

- **Cemovsko Field;**
- **Cijevna Canyon and Hum Orahovski;**
- **Kakaricka Gora and**
- **Lake Skadar KBAs** .

These are not expected to be affected by the project, but further details are provided in the ESIA.

4.5 Terrestrial Habitats

Detailed habitat maps are currently being finalised and will be provided as an update to this CHA. However habitats to be affected are summarised in the table overleaf and can be summarised as follows:

- Over 63% of the land to be lost to the proposed road expansion is **highly modified urban** and **peri-urban habitats (17.9 ha)**. This includes roads, gardens, pavements, drives etc
- A further 7.7ha (27.5 %) is made up of a mosaic of oriental hornbeam woods and eastern sub-Mediterranean dry grassland that is a locally very common habitat.

These habitats make up most of the habitat in the northern elements of the scheme near Danilovgrad. Whilst both of these habitats retain the potential to support notable species, neither is considered of itself likely to trigger either Critical Habitat or Priority Biodiversity Features.

Habitats in the southern part of the scheme closer to Podgorica are generally considered to be of greater ecological interest with the two limestone massifs of Luznica hill and Zelnika hill and the wetland between them of greatest note. The wetland is included within the "Mareza source with Sitnica and area of Velje Brdo" proposed protected area as described earlier.

The limestone massives are a common habitat across the region and are not of particular note for the vegetation that they support. They are, however, considered to be of potentially significant value for the fauna they support, particularly the potential for bat roosts. This is discussed further under the section on fauna. Less than 0.1ha of this habitat is however expected to be directly affected by the proposed scheme.

The other habitat of particular note is the freshwater ecosystems and adjacent woodland areas which form important areas of connectivity within the area. The local watercourses support a range of fish, amphibian and invertebrate species and are considered of high sensitivity. Some 2.5 ha of seasonally wet grasslands and riparian woodland corridors associated with seasonal or permanent watercourses is expected to be directly affected by the scheme which includes five areas of river crossings as detailed further below.

Habitats affected are summarized in the table overleaf and more detail on the above habitats and the species that they support is provided in the ESIA. The project includes specific commitments to avoid impacts on natural habitats through the proposed habitat restoration scheme which will involve restoration of habitats at a 3:1 ratio as outlined in the ESIA. Opportunities will also be taken for habitat enhancement (eg at the "Mareza source with Sitnica and area of Velje Brdo" site as outlined further in this document and the project Framework Biodiversity Action Plan (F-BAP).

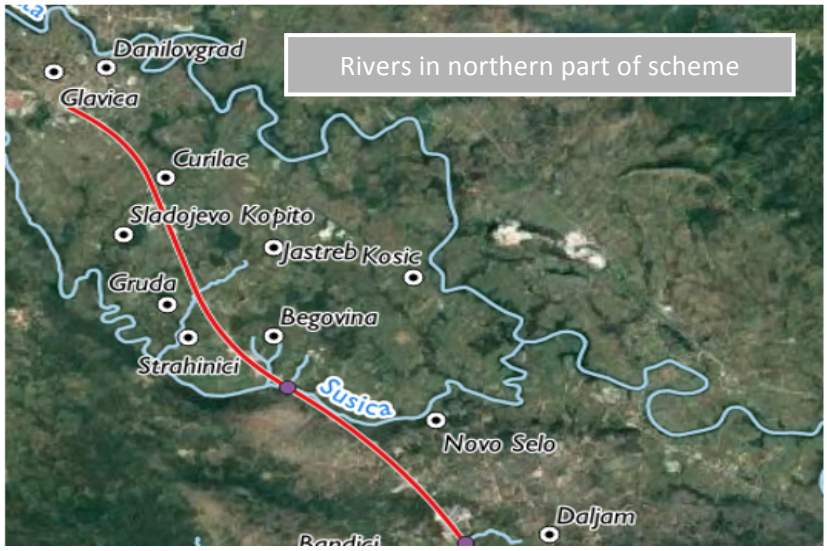
Habitats to be affected by the scheme.

Eunis Classification	Description	Natura 2000 Classification	Total area within 150m of RoW (ha)	% of total area within 150m of RoW	Area to be lost permanently	Area to be lost temporarily	Total area affected (ha)	% of total habitat lost
Other (J)	Constructed, industrial and other artificial habitats		46.3	12.1%	7.2	0.0	7.2	25.6%
J1	Buildings of cities, towns and villages		141.0	36.9%	10.5	0.2	10.7	38.0%
Mosaic G1.7C2, E1.55	Oriental hornbeam woods G1.7C2, Eastern sub-Mediterranean dry grassland		50.7	13.3%	5.4	0.0	5.4	19.2%
G1.7C2	Oriental hornbeam woods		54.0	14.1%	1.6	0.0	1.6	5.7%
E1.55	Eastern sub-Mediterranean dry grassland	62A0	6.9	1.8%	0.7	0.0	0.7	2.6%
N/A	Mosaic of strongly degraded wet habitats		4.0	1.0%	0.6	0.0	0.6	2.2%
G1.33	Mediterranean riparian ash woods	92A0	5.8	1.5%	0.5	0.0	0.5	1.6%
D5.1	Reedbeds normally without free-standing water		5.8	1.5%	0.4	0.0	0.4	1.5%
D5.13	Reedmace (Typha) beds normally without free-standing water		3.6	1.0%	0.3	0.0	0.3	1.0%

E3	Seasonally wet and wet grasslands		15.2	4.0%	0.2	0.0	0.2	0.7%
E3.44	Flood swards and related communities		17.0	4.5%	0.2	0.0	0.2	0.7%
G1.1	Salix alba galleries		1.2	0.3%	0.1	0.0	0.1	0.4%
D5.11	Common reed (Phragmites) beds normally without free-standing water		3.8	1.0%	0.1	0.0	0.1	0.4%
C3.21	Phragmites beds		1.8	0.5%	0.1	0.0	0.1	0.3%
C2.33	Mesotrophic vegetation of slow-flowing rivers	3260	0.3	0.1%	0.0	0.0	0.0	0.1%
C1.34	Rooted floating vegetation of eutrophic waterbodies	3150	0.6	0.2%	0.0	0.0	0.0	0.0%
Mosaic G1.1, G1.3	Mediterranean riparian woodland	92A0	9.2	2.4%	0.0	0.0	0.0	0.0%
Mosaic J, E3	Constructed, industrial and other artificial habitats / seasonally wet and wet grasslands		14.3	3.8%	0.0	0.0	0.0	0.0%
Total			381.5	1.0	27.9	0.2	28.1	100%

4.6 Rivers and Streams[6]

As outlined above, some 2.5ha of watercourses will be affected by the proposed project. Given the sensitivity of the watercourses in the area for a broad range of flora and fauna (including endemic species) all of the watercourses crossed by the scheme are considered as PBF habitat. The following sections provide a brief summary of the watercourses, with additional information provided within the main ESIA report.



The main watercourse that will be crossed in the northern part of the stream is the River Susica, and its tributaries. The Susica itself is the largest tributary of the River Zeta and arises from the karst springs at the foot of the Dubrava Mountain (including the Oraska cave) before following the approximate route of the M18 road from Bogetici to Podgorica for some 15 km. The river has highly variable flows and whilst its name "Susica" means "river that dries up", after periods of high rainfall (typically November - April) or snow melt (April -June) it can be the cause of extensive (albeit localised) flooding. During the summer, when the watercourse is predominantly dry some areas do retain pools which are of greater ecological value. During January and February the water can freeze if flow volumes are low enough. This river and its tributaries are crossed twice by the northern part of the scheme.

Crossing of the Susica and its tributaries

[6] Note neither the Zeta, nor the Morača, the main river that runs through Podgorica and into Lake Skadar will be directly affected by the scheme.

The Susica above Bogetici at high water times

4.7 Rivers and Streams (Southern Part of the Scheme

The **Matica** arises at Donji Zagarac, from a number of karst springs located near to the village of Bandici and the upper reaches of the river are also fed by a number of small tributaries . Flow volumes increase downstream until the confluence with the **River Sitnica**. The **river flows year round** and ***is crossed by the scheme near Daljam***. It is heavily wooded on both banks as shown in the figure below.

The **River Sitnica** is a tributary of the Morača and flows year round below the confluence with the Matica. ***This river is crossed by the scheme below Cafa and the road then runs alongside the river to Podgorica.***

Sampling at Komanski Most site, Sitnica River

The **Mareza** is a small canalised tributary of the Morača that is also ephemeral in nature. A number of endemic species are reported from the upper reaches of the watercourse including the water snail *Valvata montenegrina* (IUCN EN) which is endemic to Montenegro, and is only known from several closely located sites, namely the Mareza, Skadar lake (Podlum and Karuc spring) and Maol Brato (see fauna for further details). *The Mareza river is crossed by the scheme alongside the Sitnica at Podgorica.*

4.8 Summary of Analysis

Based on the above analysis the following CH/PBF Triggers have been identified:

Criteria	Assessment	Status
Designated sites	The Zeta Stream KBA will not be adversely affected by the project The Mareza source with Sitnica and area of Velje Brdo could be affected and **is considered a PBF**	N/A PBF
Habitats of significant importance to notable (rare, endemic or restricted range species)	Aquatic habitats are considered important to a range of notable species and the River Susica, Sitnica Matica and Mareza are all **considered as PBF** to which particular attention must be paid.	PBF

5. Analysis: Notable Species

5.1 Introduction

This section addresses the potential for notable species present within the project affected area to trigger CH/PBF. The approach taken has been based on IUCN guidance for designating Critical Habitat as outlined in the document "*A Global Standard for the Identification of Key Biodiversity Areas and Red List Categories and Criteria*". This includes numerical thresholds[7] for the first four critical habitat criteria (CHC) namely:

i) CR/EN species;
ii) endemic/restricted-range species;
iii) migratory/congregatory species; and
iv) threatened and unique ecosystems

For the other criteria (such as areas associated with key evolutionary processes and ecological functions that are vital to maintaining the viability of biodiversity features described) there are no numerical thresholds and best available scientific information and expert opinion should be used.

All species present listed as CR and EN on the IUCN Red List of Threatened Species should be considered potential CH triggers given their risk of extinction in the wild.

Thresholds for CH are:

a) areas that support globally-important concentrations of an IUCN Red-listed EN or CR species (0.5% of the global population AND 5 reproductive units of a CR or EN species);

b) Areas that support globally-important concentrations of an IUCN Red-listed VU species, the loss of which would result in the change of the IUCN Red List status to EN or CR and meet the thresholds in GN70(a).

c) As appropriate, areas containing nationally/regionally-important concentrations of an IUCN Red-listed EN or CR species.

The inclusion of **nationally/regionally CR or EN** species should be determined in consultation with competent professionals. For this project all nationally/regionally CR/EN species likely to be present within the DMU are considered as potential trigger species, and have been evaluated further to determine the potential for CH triggering in the context of the national/regional populations.

For restricted range/endemic species CH is considered as *areas that regularly hold ≥10% of the global population size AND ≥10 reproductive units of a species.*

An analysis of these and the other thresholds that could trigger CH/PBF with regards to Critically Endangered, Endangered and Vulnerable Species is in Section 5.3.

[7] The thresholds are considered **indicative** and the involvement of external experts and project specific assessments is still required.

5.2 Determination of Project DMUs for the CHA

CH/PBF is not defined by the project footprint, its project affected area, or its potential impacts.

Instead the CHA process assess the importance of areas "*within which the biological communities and/or management issues have more in common with each other than they do with those in adjacent areas"* (IFC PS6 2012 GN6, paragraph 65). These areas may be referred to as Discrete Management Units (DMUs)[8] and the size of the area typically depends on the specific species or biodiversity feature of concern. Thus the DMU for a rare plant species may be very small but this would not be an appropriate DMU for a wide-ranging large mammal species. For this specific project, most of the species of interest are invertebrates, reptiles, amphibians and fish. As a result the following DMU's have been applied:

- For aquatic migratory species the DMU is considered to be the reach of river from headwaters to confluence.
- For less mobile species the DMU has been determined on a species-specific basis for any species found within the Project affected area, taken to be an area of 150m either side of the centreline of the proposed road.

Note that IFC PS6 GN58-82 further guides that a project should identify an "ecologically appropriate area of analysis" to determine the presence of critical habitat for each **trigger species with regular occurrence** in the project's area of influence. The **area of analysis** should be used to **assess applicability of the critical habitat criteria and thresholds** in order to determine critical habitat for the species and/or ecosystems concerned. Critical habitat boundaries should be equivalent in scale to areas mapped for practical site-based conservation management activities.

For some wide-ranging species, critical habitat may be informed by areas of aggregation, recruitment, or other specific habitat features of importance to the species. In all cases, the critical habitat should consider the distribution and connectivity of such features in the landscape/seascape and the ecological processes that support them.

Where it can be shown that multiple values have largely overlapping ecological requirements and distributions, a common or aggregated area of critical habitat may be appropriate. The final area(s) of critical habitat against which project impacts will be assessed should be revised based on additional knowledge documented through field work and other assessment after the initial critical habitat assessment has been conducted.

5.3 CH/PBF Analysis for Notable Species.

The following table provides a CH/PBF Analysis for the notable species identified during the initial screening process.

[8] This has been updated in the IFC 2018 Guidance as "**ecologically appropriate areas of analysis**" (EcAoA) as follows. The DMU process has been retained for this project, but the outcomes are considered the same.

Potential Critical Habitat/PBF triggers: IUCN Endangered or Habitats IV[9] Species

Species Birds	Status within Broader Area of Analysis (DMU)	CH or PBF?
Egyptian vulture *Neophron percnopterus* (EN)	This globally declining species has been recorded from the wider project area (IBAT data), but has not been reported along the RoW. As such it is not considered to regularly occur and does not trigger CH/PBF.	No
Saker Falcon *Falco cherrug* (EN)	This species occurs in a wide range across the region but appears to be undergoing a very rapid decline. It is found in open grassy landscapes where it hunts close to the ground for mid-sized diurnal terrestrial rodents (especially ground squirrels). It uses copses or cliffs for nest sites occupying the old nests of other birds. It has been recorded in the wider area (IBAT) but not within the project area and does not trigger CH/PBF.	No
Mammals		
Mustela lutreola European mink- (CR)	IBAT records that mink has historically been present in the region, but IUCN data indicates that the species is now considered. As such CH/PBF is not considered triggered.	No
European Otter *Lutra Lutra* (NT)	A species that, whilst recovering in some parts of its range remains in decline in others, associated with loss of fish stocks, habitat destruction (removal of bankside vegetation), and persecution. Recorded from Lake Skadar and likely to travel up the rivers, although hard to detect.	Possible PBF
Notable Bat species	The karst habitats present are known to support roosting and hibernating colonies of a number of notable bat species including horseshoe bats. Whilst no such roosts have been identified to date in the project area, further work on these species is needed.	PBF
Reptiles & Amphibians		
Albanian Water Frog *Pelophylax shqipericus* (EN)	A lowland species restricted to western Albania and southern Montenegro at elevations below 500m asl. Recorded at several wetland locations within the project area. It is listed as Endangered by IUCN because its Extent of Occurrence less than 5,000 km2, its distribution is severely fragmented, and there is continuing decline in the extent and quality of its habitat. It is also locally subject to hunting pressures. Reported from heavily vegetated aquatic habitats including ditches, swamps, marshes, the edges of slow-flowing rivers and the shoreline of Lake Skadar. Breeding, and larval development, takes place in these wetland habitats.	CH

[9] Note that no GRL, IUCN EN, CR or VU plant species have yet been recorded within the Project area. Further work will be undertaken in Spring 2019 to specifically look for such species and should any such species be found they will be recorded and the CHA updated to reflect this fact.

Pelophylax ridibundus Marsh frog (LC)	An Annex IV species, but with a wide distribution, tolerance of a broad range of habitats, presumed large population, and unlikely to be declining fast enough to qualify for listing in a more threatened category	No
Emys orbicularis European pond turtle (NT)	A species that is continuing to decline in area, extent and/or quality of habitat but is still found across much of Europe. Habitats include ponds, lakes, brooks, streams, rivers and drainage canals	No
Rana dalmatina Agile frog (LC)	An Annex IV species, but with a wide distribution, tolerance of a broad range of habitats, presumed large population, and unlikely to be declining fast enough to qualify for listing in a more threatened category	No
Podarcis muralis Common wall lizard (LC)	An Annex IV species, but with a wide distribution, tolerance of a broad range of habitats, presumed large population, and unlikely to be declining fast enough to qualify for listing in a more threatened category	No
Podarcis melisellensis Dalmatian wall lizard (LC)	An Annex IV species, but with a wide distribution, tolerance of a broad range of habitats, presumed large population, and unlikely to be declining fast enough to qualify for listing in a more threatened category	No
European Tree Frog *Hyla arborea* (IUCN: LC)	An Annex IV species, but with a wide distribution, tolerance of a broad range of habitats, presumed large population, and unlikely to be declining fast enough to qualify for listing in a more threatened category	No
Fish		
Soft mouthed trout *Salmo obtusirostris* (EN)	Not recorded in the project area but restricted to Adriatic Rivers and only recorded in Montenegro: in Krka (very rare), Jadro, Neretva, and Zeta river basins. Threatened by overfishing (sportfishing and for food) and hybridisation with introduced trout. Area of occupancy (AOO) < 500 km². Not expected to be found in the rivers in the project affected area because of their ephemeral nature (with the possible exception of the Matica/Sitnica), but further surveys will be undertaken in 2019 to confirm this.	Possible CH
European eel *Anguilla anguilla* (CR)	Found across much of Europe, but since the early 1980s, a steady and almost continent wide decline of 90% has been observed in the recruitment of glass juvenile eels. Records indicate that this species has been present historically but has not been recorded in recent years. Not expected to be found in the rivers in the project affected area because of their ephemeral nature (with the possible exception of the Matica/Sitnica), but further surveys will be undertaken in 2019 to confirm this.	Possible PBF
Invertebrates		
Endemic freshwater snails	*Valvata montenegrina* and *Radix skutaris* are both IUCN EN freshwater snails which are endemic to Montenegro, and are only known from several closely located sites, namely the Mareza, Skadar lake (Podlum and Karuc spring) and Maol Brato. – A number of other endemic snails are also recorded from the rivers in the project area - see separate report appended to this document.	CH
Plagigeyeria zetaprotogona (IUCN EN)	Plagigeyeria zetaprotogona has 3 subspecies, and the total range for the species is still restricted to under 5 locations (springs) . The major threats to these springs are that the sources are captured; infiltration of waste water from the local industry in the upper part of the river Zeta and influence of hydro-power on the regulating water flow in middle and downstream part of the river.. None of the known habitats are, however, within the area expected to be affected by the project	No
Saxurinator orthodoxus	Only known from the type locality which has been captured to provide drinking water. In the upper part of River Zeta the problem is infiltration of waste water from local industry of Nikšić city; furthermore the water in upper part of the river Zeta is	No

(IUCN CR).	used for hydro-power "Perućica" (the most important one in Montenegro) which greatly changed the water level regime in the summer period, leading to declining quality of habitat since the species was first described. None of the known habitats are, however, within the area expected to be affected by the project	
White-clawed crayfish *Austropotamobius pallipes* (EN)	In the last ten years this species is suspected to have undergone a decline of somewhere between 50–80%. This is largely attributed to the introduced crayfish (e.g., Signal Crayfish and Red Swamp Crayfish) and crayfish plague Aphanomyces astaci, which are now found throughout this species entire range. The species has been recorded from the Zeta but it is not known if is not expected to be found in the rivers in the project area because of their ephemeral nature (with the possible exception of the Matica/Sitnica), but further surveys will be undertaken in 2019 to confirm this.	Possible PBF

Potential PBF triggers: IUCN VU or Habitats II[10] Species

Species	**Status within Broader Area of Analysis (DMU)**	**PBF**
Birds		
Acrocephalus paludicola Aquatic warbler	Recorded by IBAT as present in the wider area, but not recorded from the project area	No
Aythya ferina Common pochard		No
Podiceps auratus Horned grebe		No
White-fronted Goose *Anser erythropus*	Recorded as present in the Zeta KBA but not recorded from the Project area	No
Pochard Aythya ferina		No
Red-breasted Goose *Branta ruficollis*		No
Greater Spotted Eagle *Aquila clanga*		No
European Turtle-dove *Streptopelia turtur* (IUCN: VU)	A widespread migrant breeder across much of central and southern Europe, typically found in woodland areas often near human habitation. Recorded by IBAT in the study area, but no specific conservation requirements in the DMU.	No
Mammals		
Bats various	All Montenegrin bat species are protected under the Eurobats Convention and a number of species are likely to be present within the project affected area. In addition to the Habitats Directive Annex II species recorded the following have also been recorded: *Pipistrellus kuhlii* (Kuhl's pipistrelle); *Pipistrellus pipistrellus*; *Pipistrellus pygmaeus* (Soprano pipistrelle); *Pipistrellus nathusii* (Nathusius' pipistrelle); *Myotis mystacinus* (Whiskered bat); *Myotis capaccinii* (Long-fingered bat); *Myotis daubentoniid;* and *Nyctalus noctula*	PBF

[10] Note that no GRL, IUCN EN, CR or VU plant species have yet been recorded within the Project area. Further work will be undertaken in Spring 2019 to specifically look for such species and should any such species be found they will be recorded and the CHA updated to reflect this fact.

Dinaromys bogdanovi Balkan snow vole (VU)	Recorded on IBAT but is typically found over 1,500 m and rarely much lower. No records from the project area .	No
Vormela peregusna Marbled polecat (VU)	This species inhabits desert, semi-desert and steppe habitats, and is a specialised predator, feeding mainly on desert and steppe rodents such as gerbils, ground squirrels and birds. It has been recorded on IBAT as present in the wider area, but is unlikely to be present in the Project area.	No
Reptiles		
Lizard *Dinarolacerta mosorensis* (VU -IBAT)	Listed as Vulnerable because its area of occupancy is less than 2,000 km², its distribution is severely fragmented, and the extent and quality of its habitat are declining. This species is found in the southwestern Dinaric mountain range of southern coastal Croatia, southern Bosnia-Herzegovina and Montenegro. It occurs from 450 to 1,900 m asl and is unlikely to be present in the project area.	No
Meadow viper *Vipera ursinii* (VU - IBAT)	Listed as Vulnerable because its Area of Occupancy is believed to be less than 2,000 km2, its distribution is severely fragmented, and there is continuing decline in the extent and quality of its habitat. It has been recorded in the wider area and occurs up to about 2,700m asl, but has not been recorded from the area.	No
Other		
Terrestrial Invertebrates	A range of terrestrial invertebrates have been recorded from the wider project area by IBAT, but many are associated with woodland habitats and none have been specifically recorded from the Project area.	No

5.4 Summary

Based on the above analysis the following CH/PBF Triggers have been identified (using a precautionary approach anything analysed as "possible" is considered as "actual unless demonstrated otherwise):

Trigger	Species	Status
Notable Mammals	European Otter *Lutra Lutra* (NT) Bat roots (all species)	PBF PBF
Amphibians	Albanian Water Frog *Pelophylax shqipericus* (EN):	CH
Fish	Soft mouthed trout *Salmo obtusirostris* (EN) European eel *Anguilla anguilla (CR)*	CH PBF
Invertebrates	Endemic and Endangered snails -*see appended report* White-clawed crayfish *Austropotamobius pallipes* (EN)	CH PBF

6 Potential Impacts on CH/ PBF

Having determined the potential for CH or PBF to be present within the Project affected area, an assessment is then required of the potential for the road construction and operation to affect the proposed CH/PBF features. This in turn drives the need for any specific species or habitat action plans. During the analysis the following CH/PBF triggers have been identified:

Criteria	Assessment	Status
Designated sites	The Mareza source with Sitnica and area of Velje Brdo could be affected and **is considered a PBF.** Whilst the existing road runs through the site, some 10.2ha of natural habitat are expected to be affected by the scheme.	PBF
Habitats of significant importance to notable (rare, endemic or restricted range species)	Aquatic habitats are considered important to a range of notable species and the River Susica, Sitnica Matica and Mareza are all **considered as PBF.** Some 2.5ha are expected to be affected by the scheme.	PBF

Trigger	Species	Status
Notable Mammals	European Otter *Lutra Lutra* (NT) Bat roots (all species)	PBF PBF
Amphibians	Albanian Water Frog *Pelophylax shqipericus*(EN):	CH
Fish	Soft mouthed trout *Salmo obtusirostris* (EN) European eel *Anguilla anguilla (CR)*	CH PBF
Invertebrates	*Valvata montenegrina (EN)* White-clawed crayfish *Austropotamobius pallipes* (EN)	CH PBF

As construction and operation of the road has the potential to have a significant residual impact on each of these factors (as outlined in the ESIA) the following Biodiversity Action Plans must be prepared prior to construction:

- Action plan for the "Mareza source with Sitnica and area of Velje Brdo" protected area. This will include specific actions with regards the conservation of *Valvata montenegrina* (EN).
- Action plan for the Rivers Susica, Sitnica Matica and Mareza. This will include specific actions with regards the conservation of Soft mouthed trout, European eel and White-clawed crayfish and Albanian Water Frog and otters
- Action plan for bats

Further details of these BAPs are to be provided as a stand-alone BAP document. Additional studies are being undertaken in summer 2019 and will be outlined in the BAP. If required, this CHA document and the associated BAP document will be updated as a result of those studies. The BAP itself will ultimately be the responsibility of the Montenegran Roads Department, but will be delivered through a combination of activities to be undertaken under the supervision of the Project Engineer and Contractor as outlined further in the International ESIA document, and the BAP itself.