

Annex 3 – Appropriate Assessment

To ESIA Volume 2. Biodiversity

TABLE OF CONTENTS

1	INTRODUCTION.....	2
2	SCOPE OF THE APPROPRIATE ASSESSMENT	2
3	PROTECTED AREAS AND AREAS OF BIODIVERSITY IMPORTANCE.....	3
3.1	Emerald Network of Areas of Special Conservation Interest (ASCI).....	3
3.2	Other Protected Areas and Internationally Recognised Areas of Biodiversity Value	5
4	KEY HABITATS AND SPECIES.....	9
4.1	Habitats of Community Interest	9
4.2	Species of Community Interest	10
5	LIKELY SIGNIFICANT IMPACTS.....	16
5.1	Impacts of the Project on Habitats and Species on the EU Habitat and Birds Directive ..	16
5.2	Impacts of the Project on Candidate Emerald Network sites (ASCI).....	16
5.3	Impacts of the Project on Other Protected Areas and Internationally Recognized Areas of Biodiversity Value	17
6	MITIGATION MEASURES	19
7	CONCLUSIONS OF THE APPROPRIATE ASSESSMENT	22
8	CONSULTATIONS.....	23
	Appendix 1. Response of the RA MoE regarding the Project's interaction / overlap with the candidate Emerald Sites.....	26
	Appendix 2. Mapping of the Habitats Listed in Annex I of the Habitat Directive and Resolution 4 of the Bern Convention.....	27

LIST OF TABLES AND FIGURES

Table 1.	Synthetic Table of the Protected Areas and Areas of Biodiversity Importance Relative to the Project Area.....	2
Table 2.	Species Triggering IBA Status	7
Table 3.	List of Habitats of Community Interest Present in the Project Study Area	9
Table 4.	Species of Community Interest of the Zangezur Candidate Emerald site Concerned by the Road Project.....	11
Table 5.	List of Measures Proposed to Mitigate Project Impacts on habitats and species of community interest, and the integrity of the Zangezur ASCI	19
Figure 1.	Candidate Emerald Network Sites in the Vicinity of the Sisian – Kajaran Road Project	4
Figure 2.	Other Internationally Recognized Areas of Biodiversity Value Overlapping the Project	6

1 INTRODUCTION

This report (Annex 2 to ESIA Volume 2. Biodiversity) constitutes the **Appropriate Assessment** for the Project. The Appropriate Assessment is prepared following Article 6(3) and (4) of the Habitats Directive 92/43/33C.

The Appropriate Assessment has been completed with consideration of the *Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. Assessment of plans and projects significantly affecting Natura 2000 sites*¹.

NB: The photos in this report are taken by the Consultants unless indicated otherwise.

2 SCOPE OF THE APPROPRIATE ASSESSMENT

“According to Article 6(3) of the Habitats Directive 92/43/EEC, any project or plan within a Natura 2000 or Emerald Network site, or in its vicinity, requires an Appropriate Assessment, conducted by national authorities following European Commission guidance, to ensure that it will not have a significant impact on the integrity of the site. Projects that cannot show without reasonable scientific doubt that there will be no negative impact on the conservation objectives of the site, its integrity or the integrity of the Natura 2000 or Emerald Network as a whole will not be compliant with the Habitats Directive. In some instances, national authorities may derogate this requirement of the Habitats Directive for “imperative reasons of overriding public interest (IROPI)” under Article 6(4) of the Directive. As required by the Habitats Directive in these cases, compensatory measures must ensure that the overall coherence of the Natura 2000 (or Emerald) Network is protected.” (EBRD, PR6 Guidance Note, 2022).

The synthetic table of the areas of biodiversity importance in the vicinity of the project area is presented below as a reminder (refer to **ESIA Volume 2** for the whole list), but the next section focuses on the target of the appropriate assessment, which are the Emerald Network sites and Habitats and species listed in the EU habitats directive and EU birds directive ([Managing Natura 2000 sites. The provisions of Article 6 of the Habitats Directive 92/43/EEC \(2019/C 33/01\)](#)).

Table 1. Synthetic Table of the Protected Areas and Areas of Biodiversity Importance Relative to the Project Area

N°	Name of the Area	IUCN PA Category	Type	Overlap with the project area of influence
1	Arevik	II	National Park	No
2	Shikahogh	Ia	State Reserve	No
3	Zangezur Sanctuary	IV	Sanctuary	Part of the Project Sisian-Kajaran road – namely the tunnel - runs under Zangezur sanctuary through the Bargushat ridge (see Figure 1)
4	Khustup	-	Sanctuary	No
5	Plane Grove	IV	Sanctuary	No
6	Boghaqar	IV	Sanctuary	No
7	Sev Lich	IV	Sanctuary	No
8	Zangezur	-	IBA / KBA	Overlap (21.3ha, 0.09% of Zangezur)

¹ https://ec.europa.eu/environment/nature/natura2000/management/docs/art6/natura_2000_assess_en.pdf

N°	Name of the Area	IUCN PA Category	Type	Overlap with the project area of influence
				IBA/KBA)
9	Meghri (2002)	-	IBA / KBA	No
10	Meghri (2004)	-	KBA	Overlap (114.3ha, 0.13% of Meghri large KBA)
11	Gorhajk (AM0000013)	-	Emerald Network site ASCI.	No, and about 600m from the road project
12	Zangezur (AM0000015)	-	Emerald Network site ASCI.	Overlap. Part of the Project Sisian – Kajaran road – namely the tunnel - runs under Zangezur IBA/KBA through the Bargushat ridge (see Figure 1)
13	Tatev (AM0000016)	-	Emerald Network site ASCI.	No, and about 25m from the road project (bridge over the Loradzor river)

The Appropriate Assessment covers the Emerald Network sites and their associated habitats and species listed in the EU habitats directive and EU Birds Directive as indicated in Article 6(3) of the Habitats Directive 92/43/EEC. On request of the EBRD, the impact on *other* types of Areas of Biodiversity Importance overlapping with the Project area is presented in this assessment as well.

3 PROTECTED AREAS AND AREAS OF BIODIVERSITY IMPORTANCE

3.1 Emerald Network of Areas of Special Conservation Interest (ASCI)

Established under the 1979 Bern Convention on the Conservation of European Wildlife and Habitats², the Emerald Network of legally recognized and protected areas with high biodiversity seeks to ensure long-term conservation of wildlife and its natural habitats and promote sustainable interaction between people and nature³.

Armenia signed the Bern Convention in 2006 and ratified in 2008. Since then, the country has worked on establishing the Emerald Network and listed more than 110 species requiring protection and habitat conservation, according to the Bern Convention Resolutions №4 (1994) and №6 (1998).

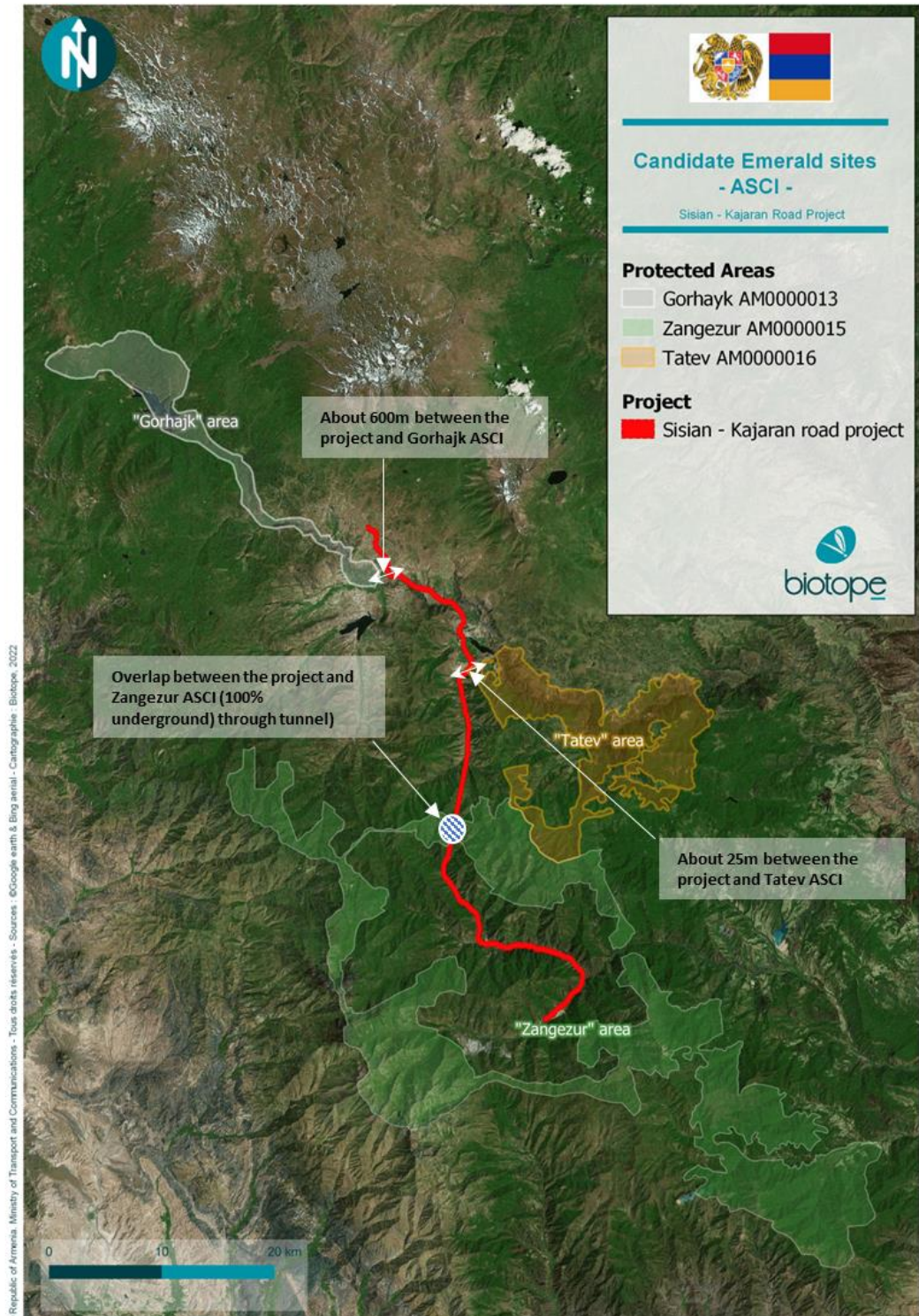
As of December 2022, Armenia had not officially adopted Emerald Network sites. However, 23 sites situated in the RA territory have been officially nominated as candidate Emerald Sites (42nd meeting of the Standing Committee of the Convention on the conservation of European wildlife and natural habitats. 2022)⁴. Of these, six are located in Syunik Province, of which three are in the vicinity of the Project (the others are scoped out):

² <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A21979A0919%2801%29>

³ <https://www.worldbank.org/en/country/armenia/brief/the-emerald-network-in-armenia-progress-challenges-and-the-future>

⁴ Updated list of officially nominated candidate Emerald Network sites (December 2022), 2022.CONVENTION ON THE CONSERVATION OF EUROPEAN WILDLIFE AND NATURAL HABITATS. <https://rm.coe.int/pa09e-2022-updated-list-officially-nominated-candidate-emerald-sites/1680a93c85>

- "Gorhajk" area (Site Code AM0000013) - 274,4 ha,
- "Zangezur" area (Site Code AM0000015) – 49,066.6 ha,



- "Tatev" area (Site Code AM0000016) – 14,873.1 ha,

Figure 1. Candidate Emerald Network Sites in the Vicinity of the Sisian – Kajaran Road Project

The road project runs along Gorhajak Area between the KM 3+000 and KM 5+000 at around 600m at the closest, and the Bargushat tunnel (length of 8,640m, between KM 27+130 and KM 35+770) passes under the Zangezur candidate Emerald Site. Finally, the Sisian-Shenatagh road section near Darbas settlement is adjacent to the candidate Tatev Emerald Site (about 25m away, see [Figure 2](#)).

As there are no management plans for these three different ASCI, their conservation objectives are those that are presented in their respective Standard Data Forms, namely:

- **Gorhajak ASCI:** Mainly for conservation of bird species and some habitats ([Emerald site AM0000013 SFD, 2022](#)),
- **Zangezur ASCI:** Conservation of meadow-steppe, subalpine and alpine ecosystems ([REPUBLIC OF ARMENIA, MINISTRY OF NATURE PROTECTION, 2014](#)), and to protect rare habitats and endangered plant and animal species ([Emerald site AM0000015 SFD, 2022](#)), and
- **Tatev ASCI:** To protect rare habitats and endangered plant and animal species ([Emerald site AM0000016 SFD, 2022](#)).

The consultation held with the RA Ministry of Environment (MoE) in May 2023 revealed the Ministry did not identify any overlaps between the Project (aboveground road) and the candidate Emerald sites (see [Section 8](#) and [Appendix 1](#)). Thus, no Appropriate Assessment is expected by the MoE to be conducted in relation to the proposed Project.

In 2017, the Comprehensive and Enhanced Partnership Agreement was signed between the European Union and the European Atomic Energy Community and their Member States, of the one part, and the Republic of Armenia, of the other part (JOIN/2017/037 final - 2017/0238 (NLE))⁵. Among its commitments stated in this Agreement, Armenia is to introduce the following provisions of the Council Directive 92/43/EC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora:

- Adoption of national legislation and designation of competent authority/ies;
- Preparation of inventory of sites, designation of these sites and establish priorities for their management (including completion of the inventory of potential Emerald sites and establishment of protection and management measures for these sites) (Article 4);
- Establishment of measures required for the conservation of such sites, including co-financing (Articles 6 and 8);

According to the June 2023 consultations with the MoE, Armenia works towards implementing these commitments by 2025.

3.2 Other Protected Areas and Internationally Recognised Areas of Biodiversity Value

In addition to the ASCI presented above, there are four areas of biodiversity importance including three with international designation and one with a local designation (see [Figure 2](#)):

- Zangezur Sanctuary (local designation);
- Zangezur Important Birds Area (IBA, AM017) and Key Biodiversity Area (KBA) (same delineation); and

⁵ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52017JC0037>

- Meghri (2004) KBA.

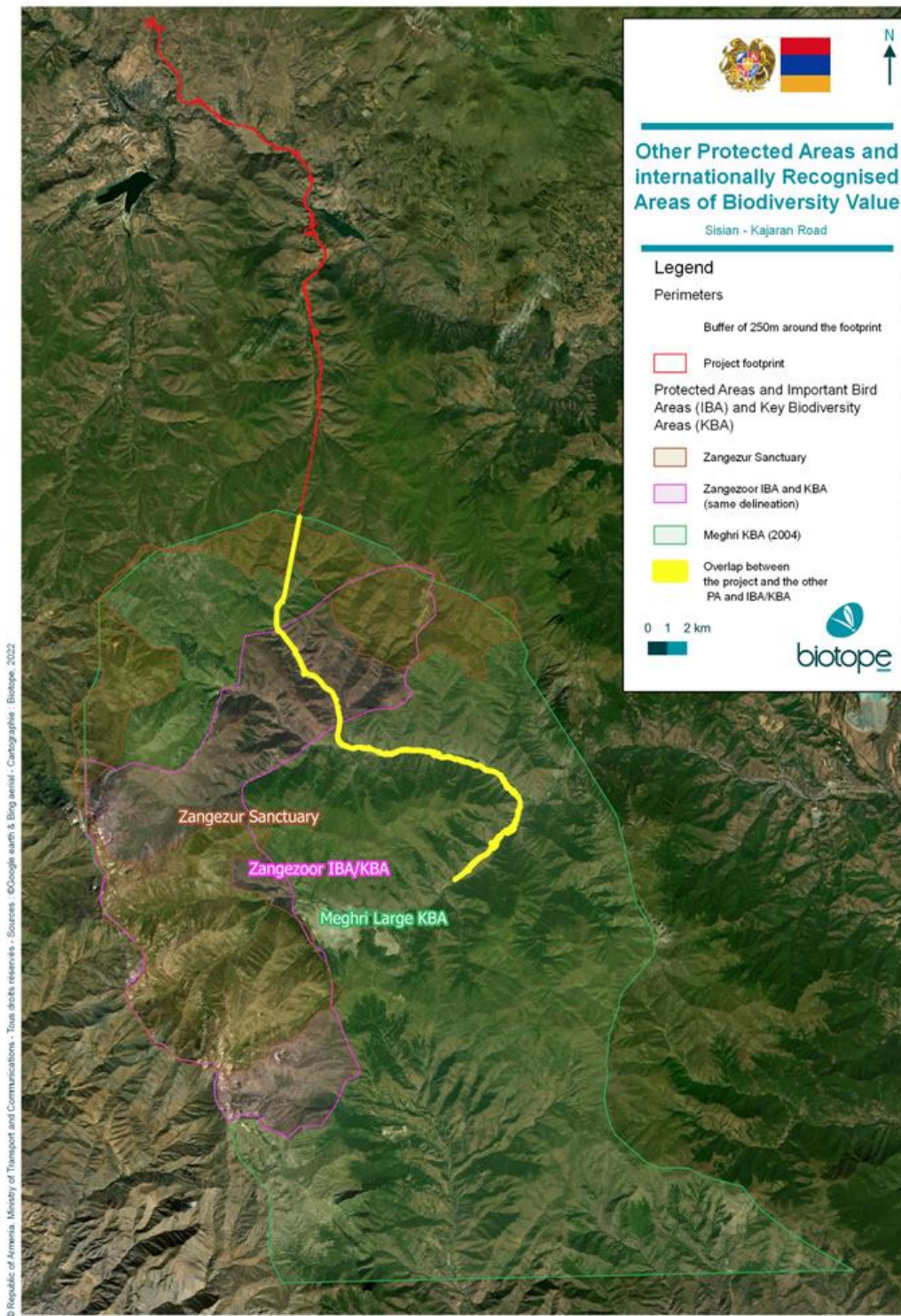


Figure 2. Other Internationally Recognized Areas of Biodiversity Value Overlapping the Project

They do not have management plans⁶ or other documents available to identify in detail their conservation goals, but the species having justified their designation are presented below.

3.2.1 Zangezur Sanctuary

The tunnel through the Bargushat ridge runs underneath the **Zangezur Sanctuary**, with the tunnel's entry and exit portals being located outside the Sanctuary (see **Figure 2**).

Zangezur Sanctuary (25,711.6ha) was designated for the Protection of the alpine, subalpine, and alpine-steppe ecosystems of the area and the Conservation of habitats of the species *Ovis gmelinii gmelinii*, Armenian Mouflon.

3.2.2 Zangezur IBA and KBA

The Qirs-Geghi section of the proposed road runs through **Zangezur IBA** (an overlap with the project footprint of 21.3ha). Zangezur IBA occupies 23,236 ha and is characterized by artificial/terrestrial, forest, grassland and rocky (e.g., inland cliffs, mountain peaks) habitats. The Zangezur IBA trigger species are given in **Table 2**.

Table 2. Species Triggering IBA Status

Species	Current IUCN Red List Category	Season	Population estimate	IBA Criteria Triggered*
Caspian Snowcock <i>Tetraogallus caspius</i>	LC	breeding	200-300 individuals	A3, B2
Caucasian Grouse <i>Lyrurus mlokosiewiczii</i>	NT	breeding	20-40 individuals	A2, A3, B2
Bearded Vulture <i>Gypaetus barbatus</i>	NT	breeding	1-2 breeding pairs	B2
Egyptian Vulture <i>Neophron percnopterus</i>	EN	breeding	3-5 breeding pairs	A1, B2
Golden Eagle <i>Aquila chrysaetos</i>	LC	breeding	2-4 breeding pairs	B2

* Global IBA criteria:

- A1: Globally threatened species
- A2: Restricted-range species (global range size <50,000 km²)
- A3: Bioregion-restricted assemblage (at least 95% of the global population should be confined to a single bioregion, according to the WWF biome-realm classification)

Regional IBA criteria: Species with most of their range restricted to a region.

Zangezur KBA⁷ exactly matches the Zangezur IBA (having the same area of 23,236 ha. The biodiversity elements triggering KBA criteria for Zangezur KBA are the same five bird species listed in **Table 2**.

⁶ A management plan for the Zangezur Biosphere Complex is in the early stage of development. Management plans have been developed only for very few protected areas in Armenia (see "Strategy and State Program of Conservation and Use of Specially Protected Nature Areas of the Republic of Armenia", RA Ministry of Nature Protection by the assistance of Transboundary Joint Secretariat financed by KfW (http://www.epiu.am/wp-content/uploads/2017/12/hatuk_pahpan_eng.pdf).

⁷ <http://www.keybiodiversityareas.org/site/factsheet/19768>. Year of assessment 2002.

3.2.3 Meghri KBA

The **Meghri KBA**⁸ assessed, for the last time, in 2004 (123,647 ha) encompasses Zangezur IBA/KBA almost fully, and a large part of Syunik Region, including 114.33ha of the Project footprint. The species triggering the *larger* Meghri KBA criteria are *Capra aegagrus*, *Lutra lutra*, *Ovis orientalis*, *Testudo graeca* and *Lyrurus mlokosiewiczii*. The larger Meghri KBA is described in the CEPF Ecosystem Profile of the Caucasus Biodiversity Hotspot (East lesser Caucasus Hotspot)⁹.

⁸ <http://www.keybiodiversityareas.org/site/factsheet/46744>. Year of assessment 2004.

⁹ https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwigktCwKL_wAhWSmRQKHTCYBpwQFjABegQIBBAD&url=https%3A%2F%2Fwww.cepf.net%2Fsites%2Fdefault%2Ffiles%2Ffinal.caucasus.ep_.pdf&usq=AOvVaw3RxW3qMFqtsiqpWnX-VHJa

4 KEY HABITATS AND SPECIES

The project will be implemented in an area of fragile ecosystems and associated fauna and flora species, of which many are listed in the EU Habitats Directive and Birds Directive, and in the Resolution 4 or 6 of Bern Convention. They are considered in this Appropriate Assessment.

4.1 Habitats of Community Interest¹⁰

The 250m buffer on each side of the planned road footprint (500m buffer) overlaps with the following habitat listed on the EU Habitat directive and the Resolution 4 of the Bern Convention in the Zangezur Candidate Emerald site (see Baseline report by Biogeotech (2022)). An atlas mapping the Habitats listed in the Annex I of EU Habitats Directive or Resolution 4 of Bern Convention along this buffer is presented in [Appendix 2](#).

Table 3. List of Habitats of Community Interest Present in the Project Study Area

EUNIS		EU Habitats Directive ¹¹		Area under the footprint ¹² (ha)	% of the footprint	Area in the SDAs (ha)	% of the SDAs	Area in the 250m buffer ¹³ (ha)	% in the 250m buffer
Code	Name of habitat	Code	Name of habitat						
C2.	Surface running waters	3240	Alpine rivers and their ligneous vegetation with <i>Salix elaeagnos</i>	/	/	/	/	1.32	0.05
E1.2	Perennial calcareous grassland and basic steppes	6190	Rupicolous pannonic grasslands (<i>Stipo-Festucetalia pallentis</i>)	72.41	27.3	22.3	18.51	632.6	24.44
		62A0	Eastern sub-mediterranean dry grasslands (<i>Scorzoneratalia villosae</i>)	1.43	0.5	/	/	7.61	0.29
E1.4	Mediterranean tall-grass and wormwood - Artemisia - steppes	6240*	Sub-Pannonic steppe grasslands	6.61	2.50	/	/	71.84	2.77
E4.	Alpine and	6170	Alpine and subalpine calcareous grasslands	15.72	5.9	/	/	9.77	0.38

¹⁰ Only the EU habitats being intersected by the 500m buffer around the road alignment are considered in this assessment (the habitats further away from the alignment have been scoped out as there are no potential impacts on them).

¹¹ Codes with an « * » correspond to priority Habitats in the EU Habitat Directive

¹² Without considering the tunnels areas

¹³ Without considering the tunnels areas

EUNIS		EU Habitats Directive ¹¹		Area under the footprint ¹² (ha)	% of the footprint	Area in the SDAs (ha)	% of the SDAs	Area in the 250m buffer ¹³ (ha)	% in the 250m buffer
Code	Name of habitat	Code	Name of habitat						
	subalpine grasslands								
F3.1.	Temperate thickets and scrub	40A0*	Subcontinental peri-Pannonic scrub	20.72	7.80	/	/	204.09	7.88
G1.	Broadleaved deciduous woodland	9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the <i>Carpinion betuli</i>	15.63	5.9	/	/	241.41	9.32
G1.A	Meso- and eutrophic oak, hornbeam, ash, sycamore, lime, elm and related woodland	9170	Galio-Carpinetum oak-hornbeam forests	2.21	0.8	/	/	26.33	1.02
G1.11.	Riverine willow woodland	92A0	<i>Salix alba</i> and <i>Populus alba</i> galleries	3.27	1.2	/	/	149.7	5.78
G3.9.	Coniferous woodland dominated by Cupressaceae	5210	Arborescent matorral with <i>Juniperus spp.</i>	30.43	11.5	/	/	221.39	8.55
H3.2	Basic and ultra-basic inland cliffs	8210	Calcareous rocky slopes with chasmophytic vegetation	8.54	3.2	0.04	0.03	69.85	2.70
Habitats not listed in the Annex I of the Habitat Directive nor in the resolution 4 of Bern convention (URBAN, etc.)				88.60	33.4	98	81.46	952.96	36.81
TOTAL FOOTPRINT				265.56	100%	120.31	100%	2588.87	100%

4.2 Species of Community Interest¹⁴

The approximate numbers are estimated based on literature data and national experts specializing in the different relevant fields (including consultations with the staff of the Zangezur Sanctuary and WWF-Armenia).

¹⁴ The species of community interest are taken from the Standard Data Forms of the Emerald Site Zangezur.

Table 4. Species of Community Interest of the Zangezur Candidate Emerald site Concerned by the Road Project

English name	Scientific name	IUCN Red list	Armenia Red Book	EU Birds or Habitats Directive	Bern Convention	Use of the site	Approximate numbers on site
Terrestrial Mammals							
Marbled polecat	<i>Vormela peregusna</i>	VU	VU	Annex II, IV Habitat Directive	Resolution 6	Possibly resident	/
Eurasian Otter	<i>Lutra lutra</i>	NT	EN	Annex II, IV Habitat Directive	Resolution 6	Resident	6-10 individuals
Wild goat (Bezoar goat)	<i>Capra aegagrus</i>	VU	VU	Annex II, IV Habitat Directive	Resolution 6	Resident	100-150 individuals
Armenian mouflon	<i>Ovis gmelinii gmelinii</i>	NT	EN	Annex II Habitat Directive	-	Possibly resident	15-50 individuals
Brown Bear	<i>Ursus arctos</i>	LC	VU	Annex II, IV Habitat Directive	Resolution 6	Resident	5-10 individuals
Grey Wolf	<i>Canis lupus</i>	LC	NE	Annex II, IV Habitat Directive	Resolution 6	Resident	20-35 individuals
Wildcat	<i>Felis silvestris</i>	LC	VU	Annex IV Habitat Directive	-	Resident	2-7 individuals
Eurasian Lynx	<i>Lynx lynx</i>	LC	NE	Annex II, IV Habitat Directive	Resolution 6	Resident	5-8 individuals
Leopard	<i>Panthera pardus saxicolor</i>	VU (subspecies: EN ¹⁵)	CR	-	Resolution 6	Possibly migrant	1-2 individuals

¹⁵ Stein, 2020.

English name	Scientific name	IUCN Red list	Armenia Red Book	EU Birds or Habitats Directive	Bern Convention	Use of the site	Approximate numbers on site
Bats							
Schreiber's Bat	<i>Miniopterus schreibersii</i>	VU	VU	Annex II Habitat Directive	Resolution 6	Resident	/
Lesser Mouse-eared Myotis	<i>Myotis blythii</i>	LC	NE	Annex II Habitat Directive	Resolution 6	Resident	/
Geoffroy's Bat	<i>Myotis emarginatus</i>	LC	NE	Annex II Habitat Directive	Resolution 6	Foraging	/
Blasius' horseshoe bat	<i>Rhinolophus blasii</i>	LC	EN	Annex II Habitat Directive	Resolution 6	Resident	/
Mediterranean horseshoe bat	<i>Rhinolophus euryale</i>	NT	VU	Annex II Habitat Directive	Resolution 6	Resident	/
Greater Horseshoe Bat	<i>Rhinolophus ferrumequinum</i>	NT	NE	Annex II Habitat Directive	Resolution 6	Resident	/
Lesser Horseshoe Bat	<i>Rhinolophus hipposideros</i>	NT	NE	Annex II Habitat Directive	Resolution 6	Resident	/
Mehely's horseshoe bat	<i>Rhinolophus mehelyi</i>	VU	VU	Annex II Habitat Directive	Resolution 6	Foraging	/
Birds							
Bearded Vulture	<i>Gypaetus barbatus</i>	NT	VU	Annex I Birds Directive	Resolution 6	Foraging	1-2 individuals
Egyptian Vulture	<i>Neophron percnopterus</i>	EN	EN	Annex I Birds Directive	Resolution 6	Foraging	1-2 individuals
Black Vulture	<i>Aegypius monachus</i>	NT	EN	Annex I Birds Directive	Resolution 6	Foraging	1-3 individuals

English name	Scientific name	IUCN Red list	Armenia Red Book	EU Birds or Habitats Directive	Bern Convention	Use of the site	Approximate numbers on site
Griffon Vulture	<i>Gyps fulvus</i>	LC	VU	Annex I Birds Directive	Resolution 6	Foraging	1-6 individuals
Northern Goshawk	<i>Accipiter gentilis</i>	LC	VU	Annex I Birds Directive	-	Breeding	1-2 breeding pairs
Levant Sparrowhawk	<i>Accipiter brevipes</i>	LC	VU	Annex I Birds Directive	Resolution 6	Possibly migrating	1-5 individuals
Kingfisher	<i>Alcedo atthis</i>	LC	NE	Annex I Birds Directive	Resolution 6	Resident	8-16 breeding pairs
Tawny Pipit	<i>Anthus campestris</i>	LC	NE	Annex I Birds Directive	Resolution 6	Possibly migrating	10-100 individuals
Golden Eagle	<i>Aquila chrysaetos</i>	LC	VU	Annex I Birds Directive	Resolution 6	Foraging	2-3 individuals
Greater short-toed Lark	<i>Calandrella brachydactyla</i>	LC	NE	Annex I Birds Directive	Resolution 6	Migrating	50-100 individuals
Nightjar	<i>Caprimulgus europaeus</i>	LC	NE	Annex I Birds Directive	Resolution 6	Breeding	3-5 breeding pairs
Short-toed Snake-eagle	<i>Circaetus gallicus</i>	LC	VU	Annex I Birds Directive	Resolution 6	Breeding	1-2 breeding pairs
Lesser Spotted Eagle	<i>Clanga pomarina</i>	LC	VU	Annex I Birds Directive	Resolution 6	Breeding	1-2 breeding pairs
Hen Harrier	<i>Circus cyaneus</i>	LC	NE	Annex I Birds Directive	Resolution 6	Migrating	1-5 individuals
European Roller	<i>Coracias garrulus</i>	LC	VU	Annex I Birds Directive	Resolution 6	Breeding	2-6 breeding pairs
Black Stork	<i>Ciconia nigra</i>	LC	VU	Annex I Birds Directive	Resolution 6	Migrating	1-2 individuals
Syrian Woodpecker	<i>Dendrocopos syriacus</i>	LC	NE	Annex I Birds Directive	Resolution 6	Resident	20-30 breeding pairs
Middle Spotted Woodpecker	<i>Leipicus medius</i>	LC	NE	Annex I Birds Directive	Resolution 6	Resident	1-2 breeding pairs
Ortolan Bunting	<i>Emberiza hortulana</i>	LC	NE	Annex I Birds Directive	Resolution 6	Breeding	100-200 breeding pairs

English name	Scientific name	IUCN Red list	Armenia Red Book	EU Birds or Habitats Directive	Bern Convention	Use of the site	Approximate numbers on site
Red-breasted Flycatcher	<i>Ficedula parva</i>	LC	NE	Annex I Birds Directive	Resolution 6	Migrating	10-100 individuals
Semi-collared Flycatcher	<i>Ficedula semitorquata</i>	LC	VU	Annex I Birds Directive	Resolution 6	Migrating	10-100 individuals
Red-backed Shrike	<i>Lanius collurio</i>	LC	NE	Annex I Birds Directive	Resolution 6	Breeding	70-120 individuals
Lesser Grey Shrike	<i>Lanius minor</i>	LC	NE	Annex I Birds Directive	Resolution 6	Migrating	10-50 individuals
Woodlark	<i>Lullula arborea</i>	LC	NE	Annex I Birds Directive	Resolution 6	Breeding	50-110 breeding pairs
Bluethroat	<i>Luscinia svecica</i>	LC	NE	Annex I Birds Directive	Resolution 6	Breeding	20-35 breeding pairs
Calandra Lark	<i>Melanocorypha calandra</i>	LC	NE	Annex I Birds Directive	Resolution 6	Migrating	50-100 individuals
Red-billed Chough	<i>Pyrhacorax pyrrhacorax</i>	LC	NE	Annex I Birds Directive	Resolution 6	Breeding	5-10 breeding pairs
Barred Warbler	<i>Sylvia nisoria</i>	LC	NE	Annex I Birds Directive	Resolution 6	Migrating	10-30 individuals
Insects							
Jersey Tiger	<i>Euplagia quadripunctaria</i>	LC	NE	Annex II Habitats Directive	Resolution 6	Permanent (resident)	/
Apollo Butterfly	<i>Parnassius apollo</i>	NT	VU	Annex IV Habitats Directive	-	Permanent (resident)	100-300 individuals
Cerambyx Longicorn	<i>Cerambyx cerdo</i>	VU	VU	Annex II Habitats Directive	Resolution 6	Permanent (resident)	/
/	<i>Rpsalia alpina</i>	VU	EN	Annex II Habitats Directive	Resolution 6	Permanent (resident)	/
Reptiles							
Mediterranean turtle	<i>Testudo graeca</i>	VU	VU	Annex II, IV Habitat	Resolution 6	Resident	10-100

English name	Scientific name	IUCN Red list	Armenia Red Book	EU Birds or Habitats Directive	Bern Convention	Use of the site	Approximate numbers on site
				Directive			
European Pond Turtle	<i>Emys orbicularis</i>	NT	NE	Annex II, IV Habitat Directive	Resolution 6	Resident	10-100
Caspian Turtle	<i>Mauremys caspica</i>	LC	NE	Annex II, IV Habitat Directive	Resolution 6	Low possibility of occurrence	/
Fishes							
Golden Spined Loach	<i>Sabanejewia aurata</i>	LC	DD	Annex II Habitat Directive	Resolution 6	Low possibility of occurrence	/
Aral Asp	<i>Aspius aspius</i>	LC	VU	Annex II, V Habitat Directive	Resolution 6	Low possibility of occurrence	/
Bulatmai Barbel	<i>Luciobarbus capito</i>	LC	NE	Annex V Habitat Directive	Resolution 6	Low possibility of occurrence	/

5 LIKELY SIGNIFICANT IMPACTS

5.1 Impacts of the Project on Habitats and Species on the EU Habitat and Birds Directive

The impacts of the project on biodiversity will occur during:

- Construction phase,
- Operation & maintenance phase.

The impacts can be defined by their magnitude (on a 5-level scale from “high” to “no change” (see Volume 1 for methodology)), which integrates notably the reversibility, temporality (permanent/temporary), probability and extent of impact.

Potential impacts on biodiversity and ecosystem services (including PBF and CH triggers) are:

- Habitat loss,
- Degradation, fragmentation, and destruction of habitats (vegetation clearance, excavation, risk of soil and/or watercourse pollution, risk of acid rock drainage, etc.),
- Flora species destruction (vegetation clearance and excavation),
- Increased mortality of fauna species (collision, loss of species habitats and ecological connectivity, delay in migration patterns, increased poaching pressure, etc.),
- Loss of ecological connectivity for large mammal species (infrastructure crossing wildlife corridors acting as a barrier effect),
- Disturbance of fauna species by dust, noise, and light pollution (construction machinery, base camps, traffic, lighting of the infrastructure),
- Disturbance and damage of aquatic fauna species from water contamination (accidental events), sediment resuspension,
- Introduction and proliferation of invasive alien species,
- Edge effect, and
- Induced impacts by increase access to a previously remote natural area.

5.2 Impacts of the Project on Candidate Emerald Network sites (ASCI)

The road project is planned in a region where several protected areas at different scales have been designated (see [Section 2](#)), including the following Candidate Emerald Network sites:

- Gorhajk Candidate Emerald Network Site (AM0000013 ASCI);
- [Zangezur Candidate Emerald Network site](#) (AM0000015 ASCI);
- Tatev Candidate Emerald Network Site (AM0000016 ASCI).

Gorhajk Candidate Emerald Network Site (AM0000013 ASCI)

Potential impacts on the integrity of the site:

The project and its different infrastructures do not overlap this site (see distances to the project in [Table 1](#) and [Figure 1](#)), **so there are no potential impacts on its habitats and on its integrity**, especially as the road project passes close to its eastern border, which is an urban area, so with poor ecological sensitivity. Nor are the core values of this area impacted as the planned road passes on the periphery of the site.

Zangezur Candidate Emerald Network site (AM0000015 ASCI)

Potential impacts on the integrity of the site:

The 2,200m overlap of the Project with the Zangezur ASCI will be 100% underground as the Bargushat tunnel portals are planned outside of the site, no ventilation shafts are planned on the top of the tunnel and no access roads are planned between the two portals on the Bargushat range, so **impacts on habitats of community interest are unlikely to occur.**

The closest surface sections of the proposed road will be about ca. 1,200m from the Zangezur Emerald site boundaries (on the southern portal side). **However, as §5.1 indicates, blasting activities during the construction of the tunnel might temporarily disturb fauna of community interest such as large mammals, lekking birds and bats, so mitigation measures have to be implemented (see the next section).**

Tatev Candidate Emerald Network Site (AM0000016 ASCI)

Potential impacts on the integrity of the site:

The project and its different infrastructures do not overlap this site (see distances to the project in [Table 1](#) and [Figure 1](#)), so **there are no potential direct impacts on its habitats and on its integrity. However, there are potential indirect impacts during construction works on the bridge over the Loradzor river and consequently its associated aquatic and semi-aquatic species of community interest such as the Eurasian Otter (*Lutra lutra*), the Golden Spined Loach (*Sabanejewia aurata*), the Aral asp (*Aspius aspius*), and the Bulatmai Barbel (*Luciobarbus capito*) through potential water pollution (accidental events), sediment resuspension, and/or disturbance through dust, noise and light pollution.** These four aquatic and semi-aquatic species of community interest highlighted are evaluated “rare” to “very rare” in Tatev ASCI, but they are considered as a precautionary principle, and mitigation measures have to be implemented such as setting-up of sediment traps.

5.3 Impacts of the Project on Other Protected Areas and Internationally Recognized Areas of Biodiversity Value

Zangezur Sanctuary

See section on Zangezur Candidate Emerald Network site above.

Zangezur IBA and KBA

Zangezur IBA was designated for the following five bird species: Caspian Snowcock *Tetraogallus caspius*, Caucasian Grouse *Lyrurus mlokosiewiczi*, Bearded Vulture *Gypaetus barbatus*, Egyptian Vulture *Neophron percnopterus* and Golden Eagle *Aquila chrysaetos*.

The Caspian Snowcock breeds in the mountains above Shenatagh village with quite a high density – three calling males in the area of about three km², which means the presence of 9-11 pairs within the EAAA 005¹⁶, located over the tunnel area, so the Project could have a high potential temporary negative impact on this species during construction due to blasting of the Bargushat tunnel (noise and vibrations)¹⁷, so mitigation measures for this species are needed. Same for the Caucasian Grouse, another lekking species which have been

¹⁶ For the descriptions of the EAAAs refer to Volume 2.

¹⁷ The appointed contractor will ultimately decide on the tunnel excavation method (whether it is TBM or drill-and-blast). In general, TBM is better in respect of environmental and social risks but it should be recognized that TBM may not be suitable for tunnelling through hard rock. The impact assessment assumes that the drill- and-blast can be used as a ‘worst case’ tunnel excavation method (see Volume 1 for details).

observed on the Geghi side in April 2021, when the birds are usually keeping close to lekking sites, so their breeding in this area is very likely.

Although a number of Red-listed raptors were observed, Bearded Vulture and Golden Eagle seem to be the only ones which use the Kitsk-Karut area regularly as the hunting and food searching ground. So, for these species it is considered that **there is a low impact** of the project on Zangezour IBA and KBA (that was designated for the same five bird species) as there are many alternative hunting habitats for these species in the area.

Meghri Large KBA (2004)

Finally, the road crosses the large Meghri KBA (2004) from about KM 31+000 until KM 60+000, fragmenting the two mountain chains on each side of the Geghi valley. As the surface covered by the project footprint corresponds to **only 0.13% of the site**, the impact on the habitats is negligible, so the main impact is on the mammals' ecological corridors between valleys for the *Capra aegagrus* (Bezoar Goat) and *Ovis orientalis* (Armenian Mouflon), so mitigation measures will have to be implemented to restore these corridors that will benefit for other large mammal species. The species *Lyrurus mlokosiewiczzi* (Caucasian Black Grouse) breeds in the study area but in altitudes where the road, if present, is going underground through the Bargushat tunnel. However, blasting activities during the construction of the tunnel could impact the species especially in breeding period, so measures have to be implemented to mitigate the impacts on this species.

As the presence of the *Lutra lutra* (Eurasian Otter) is mentioned in Geghi valley (pers. Com WWF Armenia and Buzzard et al, 2020¹⁸), there will be potential impacts during construction and operation, so mitigation measures will have to be implemented as well.

Finally, *Testudo graeca* was not observed and is assessed as low probability of occurrence (see **Table 3**), so there are no impacts on this species. Nevertheless, as a precautionary approach, if present, mitigation measures aiming at restoring corridors for medium and large fauna species will benefit this species too, along with the pre-construction biodiversity surveys that will consist in removing all sensitive fauna species before construction.

¹⁸ [Buzzard, P.J, Gyonjyan, A, Kaloyan, G and Aghasyan, L. \(2020\). Update on the Status of the Eurasian Otter *Lutra lutra* in Armenia IUCN Otter Spec. Group Bull. 37 \(4\): 196 - 204](#)

6 MITIGATION MEASURES

The mitigation measures presented below concerning habitats and species of community interest and the integrity of Zangezur and Tatev ASCI are extracted from the ESIA and BAP. Indeed, generic mitigation measures apply to these features.

Table 5. List of Measures Proposed to Mitigate Project Impacts on habitats and species of community interest, and the integrity of the Zangezur ASCI MITIGATION MEASURES – AVOIDANCE – REDUCTION – RESTORATION	
Design phase and Pre-construction (land clearance)	
AVOIDANCE (AV)	<p>AV01 – Prevent/avoid construction works and/or setting-up dumpsites or any other type of infrastructure inside the Zangezur ASCI (e.g. the portals have been relocated outside of the ASCI, and there will be no ventilation shafts daylighting in the reserve to avoid Annex I habitats loss in the PA).</p> <p>AV02 – Prevent/avoid construction, and/or establishing SDAs or other infrastructure in the transversal valleys between Kitsk and Kajaran in the identified no-go zones and prioritize the use of closed mining tailing south of the M2 between Kavchut and Lerdnazor for SDAs</p> <p>AV03 – Contain all activities within the project footprint and inform all operators on the strict necessity to respect project boundaries. Any clearance or other impacts outside the project footprint must be treated as an environmental incident and immediately restored/remediated. If the incident is in critical habitat, the habitat loss must be added to the offsetting needed to achieve net habitat gain.</p> <p>AV04 – Avoid creating new access routes for project activities and/or local community access. Prioritise existing tracks and access roads for use. Detailed maps of all existing tracks and access roads must be produced along with impact reduction measures (e.g. speed reduction, no hooting, etc. cf. RD02. Development of a Traffic Management Plan on construction Sites) (see ESAP Action 1.2, also the Project’s ESMP).</p> <p>AV05 – Avoid all activities including land clearance, cutting trees and blasting during breeding period and migration period for large mammals, especially from 15th of March to 10th of June and from 15th of October to 15th of November, to limit impacts of the project on large mammals, bats, avifauna, butterflies and reptiles.</p> <p>AV11 - Adapt the road alignment to preferentially use already degraded habitats and/or existing road instead of destroying natural habitats</p>
REDUCTION (RD)	<p>RD01 – Establish a 200 m buffer zone (100m on each side of the watercourse) on permanent rivers and streams, where activities will be prohibited (apart from where bridges are to be built).</p> <p>RD02 – Develop a Traffic Management Plan on construction Sites containing maps of access to construction sites, and implement training of all the employees to avoid traffic outside of the “off-track” and respect speed limits, for both human safety and to decrease the risk of wildlife disturbance and collision (< 30km/h).</p> <p>RD03 – Clearly delineate project boundaries, especially in critical habitats, with relevant signage to inform employees and local communities on biodiversity and potential risks.</p> <p>RD04 – Control access on tracks developed for the Project purpose to limit all access to natural areas and critical habitats, especially south of the Bargushat Tunnel</p> <p>RD05 – Minimise pesticide use, replacing it with biological methods of pest control and organic maintenance of the road and associated facilities</p> <p>RD06 – Minimise impacts by adjustments of the location of the annexes following Pre-Construction Biodiversity surveys to preferentially use already degraded habitats and/or existing road instead of destroying natural habitats</p> <p>RD07 - Design suitable wildlife crossings (preferably overpasses and/or road</p>

Table 5. List of Measures Proposed to Mitigate Project Impacts on habitats and species of community interest, and the integrity of the Zangezur ASCI MITIGATION MEASURES – AVOIDANCE – REDUCTION – RESTORATION	
	<p>passing on bridges for large mammals and amphibian tunnels when in the vicinity of conservation-worthy habitats) and establish them in locations to restore ecological continuity for large mammals where this could otherwise be impaired by the project (see the BAP).</p> <p>RD08 – Develop a Waste management plan (see ESAP Action 1.2, also the Project’s ESMP). Temporary organic waste storage must be kept dry and no water discharge allowed before treatment in conformity with International and national quality standards. Moreover, the pre-treatment of the waste rocks of the tunnels before disposal should be addressed, detailed, and implemented (risk of acid rock drainage due to the presence of sulphur oxides in the waste rock).</p> <p>RD09 – Develop an Erosion and Sediment Control plan and Spill Prevention Control and Countermeasures plan (see ESAP Action 1.2, also the Project’s ESMP) to limit erosion and sediment resuspension in watercourses (e.g. including installation of separators and treatment facilities to clean water runoff from sediments prior discharge into rivers, regularly inspect repair or maintain drainage structures to avoid sedimentation, etc.)</p> <p>RD10 – Develop an Invasive Alien Species Management Plan (see ESAP Action 1.2, also the Project’s ESMP) to prevent the spread of alien species through vehicle movement. Include dominant species that could also spread and degrade natural or critical habitats such as pseudo-steppes and grasslands (e.g. thistle species, etc.), into the plan.</p> <p>RD11 – Optimize cut to fill ratio to limit the area needed for storage of excavated material</p> <p>RD12 – Implement pre-construction biodiversity surveys (PCBS) in the final project footprint in areas with a high ecological value (from DK 28+000 till DK 60+000) prior to any type of construction for any type of infrastructure – even Annexes such as base camps, parking, SDAs, etc. and access roads (conducted by experts– e.g. flora, birds, mammals, reptiles) in order to check for the presence of CH triggering species and breeding sites (e.g. nests, dens, etc.), of endemic plant stations, of Alien Invasive Species (AIS), and so forth. Represent findings on maps and verify the no-go areas (presented in Volume 2 of the ESIA), if needed. Regarding flora AIS, maps of the exact location of the IAS should be prepared to either 1/remove it and dispose of it properly (AIS under the footprint) 2/delineate it to avoid touching it (if at the border of the footprint).</p>
RESTORATION (RE)	<p>RE01 – Develop a Restoration plan including restoration of temporary project Annexes (restoration of areas degraded by the project and no longer needed – ex. Base camps) and restoration/closure of dumping sites (see ESMP, ESAP Action 1.2.). Restoration must start as soon as possible and be progressively phased.</p>
Construction	
AVOIDING (AV)	<p>AV06 – Prevent contaminated effluent from entering watercourses and streams.</p> <p>AV07 – Protect trees (including their roots) from machinery damage along the right-of-way by marking and prohibiting machinery in the area under the tree crown.</p> <p>AV08 – If found later (for yet unknown locations of construction camps, SDAs), access to the caves (roosting sites for bats) must be prohibited. Install signs at sites close to roads and project facilities to raise awareness about the presence of caves hosting bat populations and necessary conservation measures.</p> <p>AV09 – Avoid lighting in the proximity of bat roosting sites and/or raptors nesting sites and prohibit direct night lighting of caves where the presence of bats and nesting raptors would be confirmed.</p> <p>AV10 – Prohibit hunting and natural resource harvesting (consumption of bushmeat by workforce or cutting trees for heating and cooking) within the project area and arrange sharing/capacity building program on the importance and values of priority biodiversity with local communities and employees.</p>

Table 5. List of Measures Proposed to Mitigate Project Impacts on habitats and species of community interest, and the integrity of the Zangezur ASCI MITIGATION MEASURES – AVOIDANCE – REDUCTION – RESTORATION	
	Contractors must supply energy in the base camps to prevent wood collection. Prohibit pesticides for control of damage-causing animals, harvesting fish and bushmeat, harvesting animals for traditional medicine, poaching for wildlife products, etc.
REDUCING (RE)	<p>RD13 – Set up temporary culverts for stream crossings and rehabilitate after work is completed.</p> <p>RD14 – Strip topsoil to a depth of 10cm and store separately from remaining topsoil to retain a soil seed bank for use in restoration of natural habitats following suitable protocols to ensure the maintenance of a viable seedbank.</p> <p>RD15 – Monitor the presence of Armenian Mouflon and other large mammals in the vicinity of construction in key crossing areas, and during maintenance phases at the wildlife crossings by setting-up a network of Infra-red cameras that will continuously record (day and night) in real-time wildlife, cattle, and local communities. Monitor the sensitive isolated populations of the priority butterfly species as well, in order to track the potential impact of the road operation on these species, and if necessary, develop further mitigation.</p> <p>RD16 – Define and display clear rules forbidding hunting, poaching and plant collection, on construction sites and in the vicinity of the same.</p> <p>RD17 – Biodiversity specialists to be present at the beginning of construction in sections with high ecological value (from DK 28+000 till DK 60+000) in case of presence of PBF or CH species so that they can be removed prior to site preparation and in that eventuality, to record this data in a global biodiversity database at the scale of the whole alignment.</p> <p>RD18 – Water unpaved roads during construction. Adapt the frequency to the weather conditions, keeping in mind that regular light watering is better than less frequent, heavy watering.</p> <p>RD19 – Biodiversity specialists to review blasting plans for all tunnel areas and facilitate monitoring changes in bat behaviour and/or large mammal and lekking birds behaviour as a result of blasting in order to improve knowledge of the actual impacts on biodiversity. Any updates/changes to the blasting plan should be communicated to Biodiversity specialists of the RD/Project Implementation Unit & Support Consultant, Contractor, and Supervision Engineer as soon as possible.</p> <p>RD20 – Establish fencing of ca. 2m height (and 30-50 cm underground) all along the road or at least 1km before and after every type of crossing (e.g. wildlife, cattle, agricultural crossings) combined with jump-outs or exit ramps (in areas where the road is not on a bridge or in a tunnel or cut in a steep slope) (NB: safety guardrails on both sides of the road for the entire length of the road apart from tunnels are envisioned to be included in the updated detailed design, however these are not sufficient to prevent animals from entering the road).</p>
RESTORATION (RE)	<p>RE02 – Develop a tree nursery (and seed store), containing <i>Juniperus sp.</i> and endemic species impacted by the project, based on PCBS (or other species associated with the natural ecosystems observed in the project footprint) and ensure recovery of forest products from vegetation clearance and establish mechanisms to distribute them among the local population and use for site rehabilitation. The selection of trees (and seeds) and the location of replanting must be validated by a flora expert.</p> <p>RE03 – Implement passive restoration (as per the BAP). Demarcate “no go” areas (based on habitat quality/type) for employees, subcontractors, and communities, within the project area, favouring natural regeneration of plant species and supplement with regular control and monitoring activities to compare with assisted regeneration.</p>
Operations/Maintenance	
REDUCING (RD)	RD21 – Limit fixed-source lighting along the road only to critical areas representing a risk for human safety (e.g. interchanges, tunnels, or intersections if present). Maintain darkness for nocturnal species (such as large mammals,

Table 5. List of Measures Proposed to Mitigate Project Impacts on habitats and species of community interest, and the integrity of the Zangezur ASCI MITIGATION MEASURES – AVOIDANCE – REDUCTION – RESTORATION	
	bats and nocturnal birds) RD22 – Maintain fencing to limit the collision risk in association with wildlife crossings
RESTORATION (RE)	RE02; RE03

In addition to this mitigation, it is crucial to implement universal accompanying measures to ensure the efficiency of the mitigation, such as:

- **AC01:** Training and awareness raising of employees on biodiversity, to ensure they fully understand and respect the rules on the construction sites regarding biodiversity protection (speed limitation, strict respect of the limited project footprint, hunting prohibition, etc.);
- **AC02:** Consult protected area sponsors and managers, affected communities and other stakeholders, to ensure no unexpected impacts may occur;

All the mitigation measures contained in this Appropriate Assessment must be integrated and detailed to the Terms of Reference of the Construction Contractor and every relevant subcontractor and in their contractual documents. All the mitigation measures in this Appropriate Assessment are repeated in the BAP which will annexed to the tender documentation. The Supervision Engineer will monitor that the BAP recommendations are implemented and report in the delivery to the RD.

The Project Lenders will be kept updated about the progress with the implementation of the **BAP actions** via regular E&S Monitoring Reports (as stipulated in the ESAP).

7 CONCLUSIONS OF THE APPROPRIATE ASSESSMENT

Although **likely significant impacts** were identified on habitats and/or species of community interest of the Zangezur ASCI/Sanctuary, Zangezur IBA/KBA, Meghri KBA, and potentially on Tatev ASCI, after implementation of adequate mitigation measures, none of these impacts will undermine the conservation objectives or the integrity of the protected areas and Internationally Recognized Areas of Biodiversity Value. Given the proposed mitigation, of which particularly the avoidance of the Zangezur sanctuary and tentative Emerald site through the set-up of the road in a tunnel, residual impacts are expected to be minor.

8 CONSULTATIONS

Prior to the ESIA, biodiversity topics were considered and presented during the public hearings as part of the national EIA process held in 2017-2018. The national EIA received a positive conclusion of the State Environmental Review, Ministry of Environment (MoE) of Armenia, in March 2018.

Within this ESIA, consultations with regards to biodiversity issues started in April 2021 and continue to be held with the "Zangezur Biosphere Complex" SNCO (that is subordinate to the MoE and is in charge of Zangezur State Sanctuary and other six SPAs); environmental NGOs in Armenia, including WWF Armenia, Birds of Armenia (BoA); "Hayantar" (ArmForest) SNCO and "Sisian Forestry" and "Kapan Forestry" branches; and the MoE. During the ESIA scoping and disclosure stage, one workshop was held on biodiversity issues specifically (see Section 4 of Volume 4 or Table 1 of the Project's Stakeholder Engagement Plan (SEP)).

Overall, over 20 engagement events took place with the above stakeholders, as well as numerous calls and email exchanges to:

- discuss the Project road alignment,
- agree on information exchange and to share information (e.g., records of the movement of mouflons in the recent years; furthermore, agreements were signed by the ESIA Consultant, at the EBRD's permission, with the "Zangezur Biosphere Complex" SNCO and "Kapan Forestry" for the transfer and use of the Project-generated photo-material for their scientific and research purposes).
- verify the information (e.g., the meetings with the MoE and Head of "Zangezur Biosphere Complex" SNCO confirmed that the animal populations have been stable and that the ranger services have noted the positive trends with species abundancies),
- define study areas and coordinate each step in the baseline field work,
- agree the locations of camera traps and camera traps safety assurance / protection (e.g., the WWF-Armenia team have created a KMZ map with initial proposals about where to install camera trap to inform a dedicated meeting with ESIA biodiversity team on this specific question),
- discuss the results of camera traps findings and duration of keeping them in situ (e.g., in the discussion with Kapan Forest Enterprise and WWF Armenia, it was decided to extend the duration of maintaining the camera traps on sites,
- discuss the Project's and spoil disposal areas' possible overlap with the protected areas. The locations of some spoil disposal areas proposed in the detailed design were discussed and found to be unacceptable from the biodiversity point of view and these were suggested to be modified and/or excluded (see details in Volume 1). In addition, a possibility of using the abandoned tailing facilities for spoil disposal was put forward and this was also incorporated in the ESIA (see Volume 1),
- discuss biodiversity receptors and possible mitigation measures, as well as possible coordination and cooperation between the Project's mitigation measures and future plans / priorities of the management of the protected areas,
- collect feedback on the proposed locations of the passages for wild animals (the KMZ file with the tentatively proposed locations of such passages were shared with Head of "Zangezur Biosphere Complex" SNCO in April 2022, and provided feedback considered in the list of proposed wild animal passages – see Annex 4 to Volume 2),
- discuss the status and process of implementation of the commitments under the Comprehensive and Enhanced Partnership Agreement, etc.

In May 2023, the MoE was inquired about whether the MoE would provide any specific instructions to guide the Appropriate Assessment being completed for the candidate Emerald sites in the context of the Project. The MoE replied that no overlaps were identified

between the Project (aboveground road) and the candidate Emerald sites (see the response of the MoE in **Appendix 1**). Thus, no Appropriate Assessment is expected by the MoE to be conducted in relation to the proposed Project. As per the June 2023 consultations with the MoE, no significant impacts on the protected areas are expected from the planned road given that it runs via the Bargushat tunnel under the Zangezur Sanctuary.

All in all, biodiversity stakeholders are interested in the verified locations of the spoil disposal areas, mitigation measures, responsibilities over biodiversity monitoring and offsets implementation and maintenance after the project construction phase.

Stakeholder engagement on biodiversity topics will continue in parallel with ESIA information disclosure, with the aim of continuing the facilitation of meaningful consultation and provision of information on the Project and its E&S implications. The upcoming ESIA consultations and disclosure activities are detailed in the Project's SEP.

REPUBLIC OF ARMENIA MINISTRY OF NATURE PROTECTION, 2014. STRATEGY AND STATE PROGRAM OF CONSERVATION AND USE OF SPECIALLY PROTECTED NATURE AREAS OF THE REPUBLIC OF ARMENIA

APPENDIX 1

APPENDIX 1. RESPONSE OF THE RA MOE REGARDING THE PROJECT'S INTERACTION / OVERLAP WITH THE CANDIDATE EMERALD SITES



ՀԱՅԱՍՏԱՆԻ ՀԱՆՐԱՊԵՏՈՒԹՅԱՆ
ՇՐՋԱԿԱ ՄԻՋԱՎԱՅՐԻ ՆԱԽԱՐԱՐ
REPUBLIC OF ARMENIA
MINISTER OF ENVIRONMENT
РЕСПУБЛИКА АРМЕНИЯ
МИНИСТР ОКРУЖАЮЩЕЙ СРЕДЫ

№ 1/16.10/8654


« _____ » « _____ » 2023թ.
Տարածքային կառավարման և ենթակառուցվածքների նախարար
պարոն Գնեղ Մանույանին

Հարգելի պարոն Մանույան

Ի պատասխան Ձեր 2023 թվականի մայիսի 18-ի № ԳՍ/34/14335 գրության՝ հայտնում եմ, որ հաշվի առնելով տարածքային կառավարման և ենթակառուցվածքների նախարարության «Ճանապարհային դեպարտամենտ» հիմնադրամի պաշտոնական կայքում տեղադրված հյուսիս-հարավ ճանապարհային միջանցքի «Տրանշ-4»-ի Սիսիան-Քաջարան ճանապարհահատվածի ծրագիր» շրջակա միջավայրի վրա և սոցիալական ազդեցության գնահատում (ՇՄՄԱԳ)՝ նախնական գնահատման ամփոփագիրը՝ հյուսիս-հարավ ճանապարհային միջանցքի բաղկացուցիչ մաս հանդիսացող Սիսիան-Քաջարան ճանապարհահատվածը քարտեզագրական տեղեկատվության համադրման արդյունքում՝ ներկայումս վերանայման փուլում գտնվող՝ «Էմերալդ ցանց»-ի որևէ թեկնածու տարածքի հետ չի համընկնում:

Հարգանքով՝

Recoverable Signature

X 

ՀԱԿՈՐ ՍԻՄԻԴՅԱՆ

Signed by: SIMIDYAN HAKOB 3004840588

Հակոբ Սիմիդյան

Բնության հատուկ պահպանվող տարածքների և կենսաբազմազանության քաղաքականության վարչություն
Հ.Մարտիկյան 011 818 514

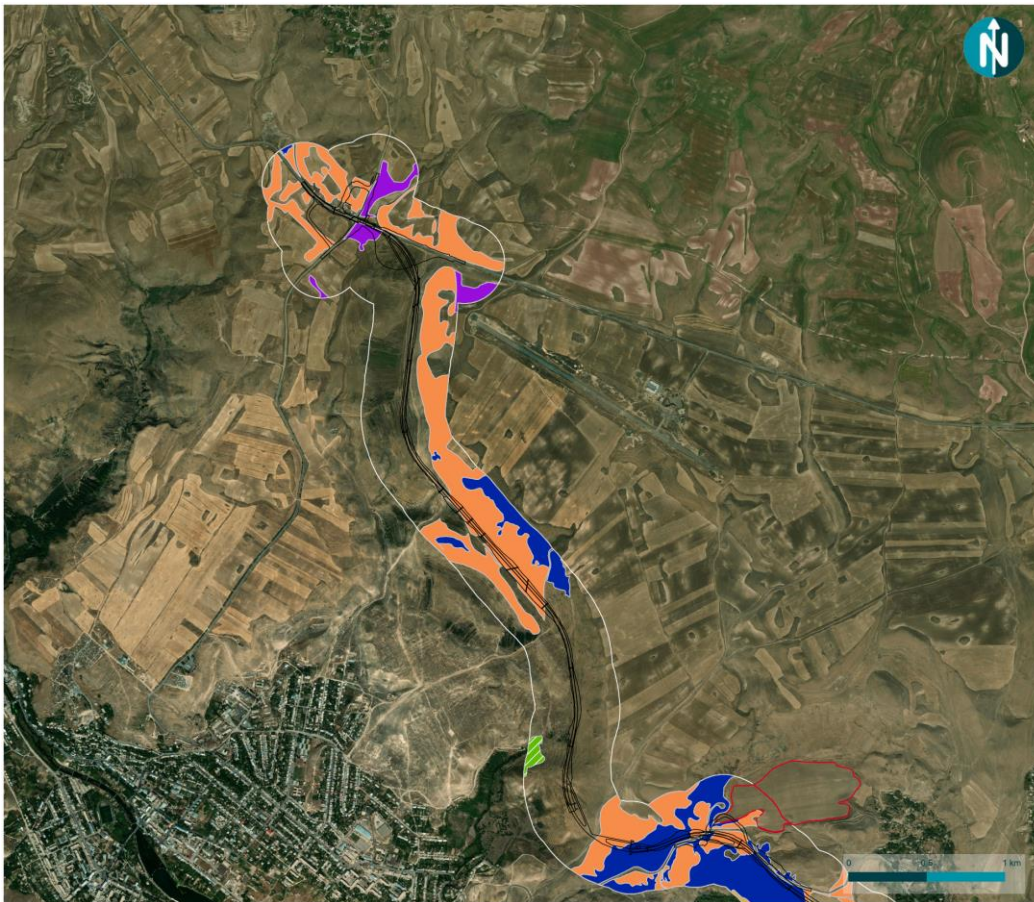




ՀԱՅԱՍՏԱՆԻ ՀԱՆՐԱՊԵՏՈՒԹՅԱՆ
ՇՐՋԱԿԱ ՄԻՋԱՎԱՅՐԻ
ՆԱԽԱՐԱՐՈՒԹՅՈՒՆ

0010, ք.Երևան, Հանրապետության հր., Կառավարական տուն 3
3 Government Bld., Republic Sq., Yerevan, Armenia, 0010
0010, Армения, г.Ереван, Пл. Республики, Дом Правительства 3
✉ 10010608@e-citizen.am | minenv@env.am | www.env.am
☎ +374 11 818 501 | 📠 +374 11 818 506



APPENDIX 2. MAPPING OF THE HABITATS LISTED IN ANNEX I OF THE HABITAT DIRECTIVE AND RESOLUTION 4 OF THE BERN CONVENTION











Natura 2000 habitats map
1 / 11

Sisian - Kajaran Road

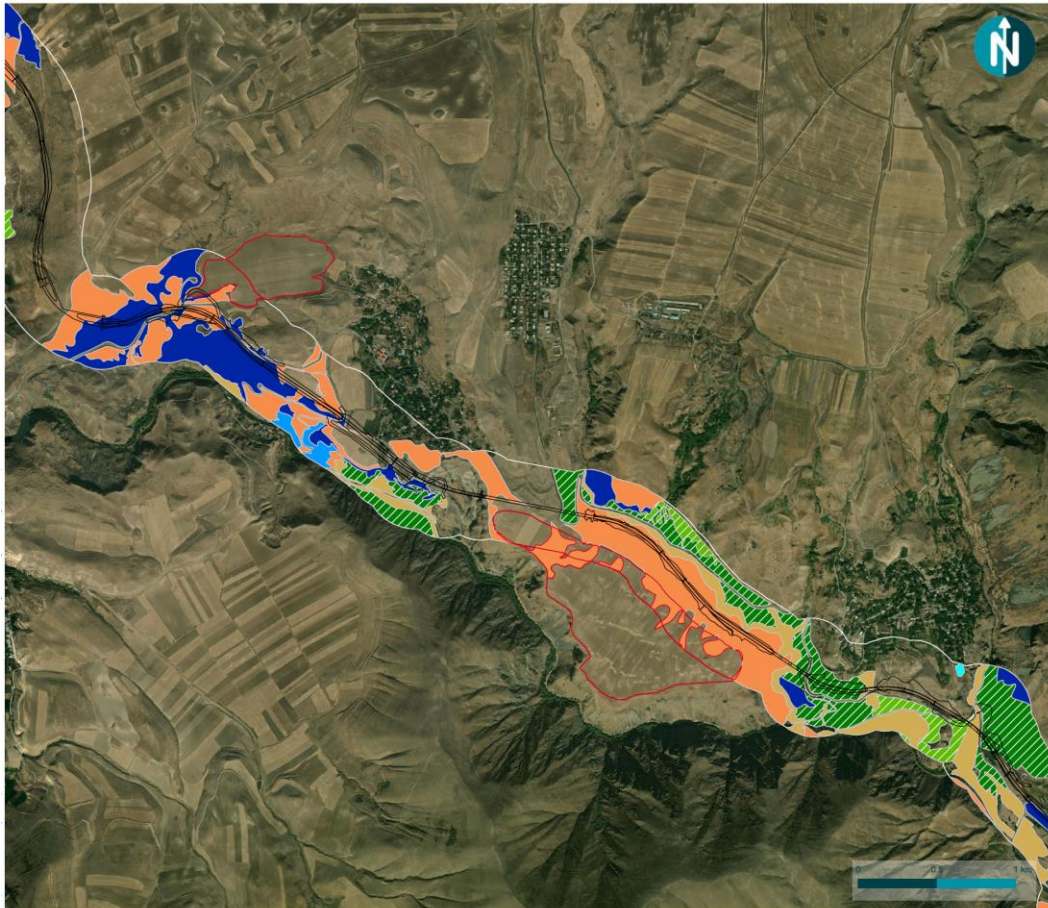
Perimeters



-  Buffer of 250m around the footprint
-  Project footprint
-  Spoil Disposal Areas

Habitats listed in Annex I of EU Habitats Directive or Resolution 4 of Bern Convention

-  40A0* Subcontinental peri-Pannonic scrub
-  6190 Rupicolous pannonic grasslands (Clipa-Festucetalia pallentis)
-  62A0 Eastern sub-mediterranean dry grasslands (Scorzonetalia villosae)
-  8210 Cretaceous rocky slopes with chasmophytic vegetation
-  92A0 Salix alba and Populus alba galleries





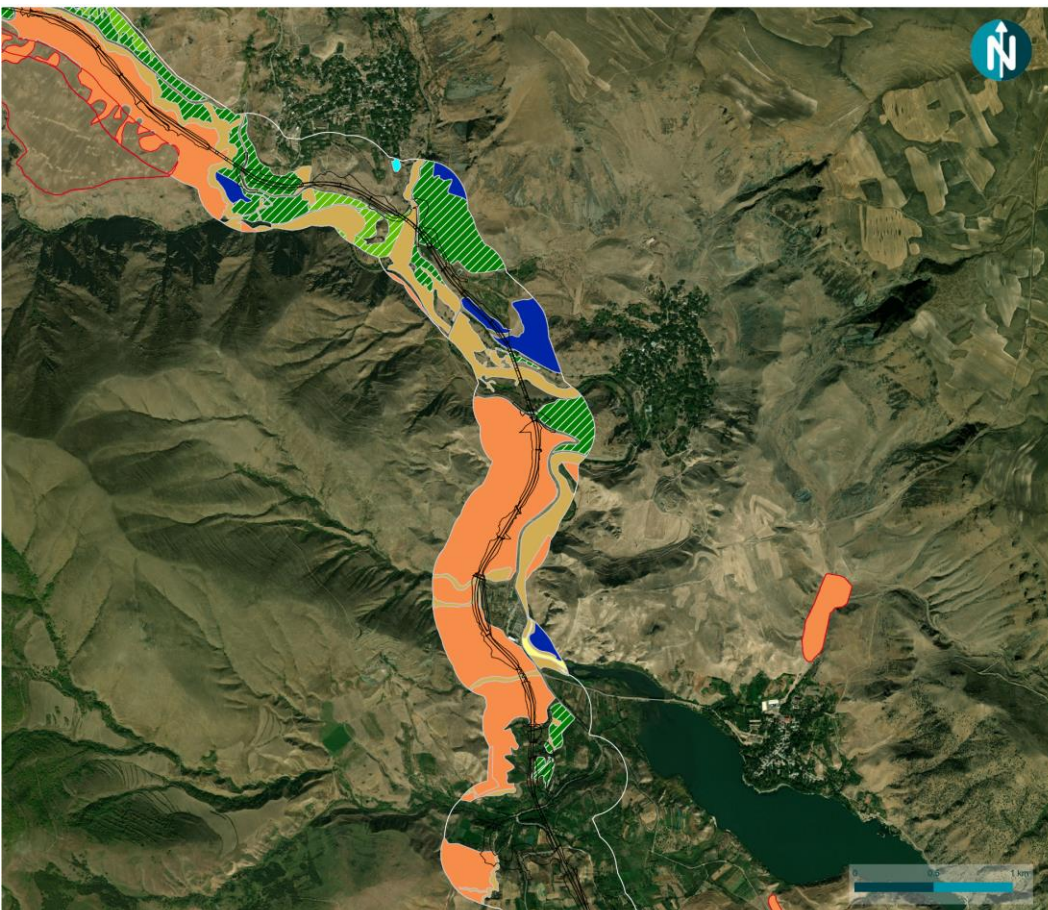
  N ↑

Natura 2000 habitats map
2 / 11
Sisian - Kajaran Road

Perimeters
Buffer of 250m around the footprint
Project footprint
Spoil Disposal Areas

Habitats listed in Annex 1 of EU Habitats Directive or Resolution 4 of Bern Convention

- 40A0* Subcontinental peri-Pannonic scrub
- 6190 Ripicolous pannonic grasslands (Stipo-Festucetalia pallentis)
- 6240* Sub-pannonic steppic grasslands
- 8210 Calcareous rocky slopes with chamaephytic vegetation
- 9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli
- 9170 Galio-Carpinetum oak-hornbeam forests
- 92A0 Salix alba and Populus alba galleries



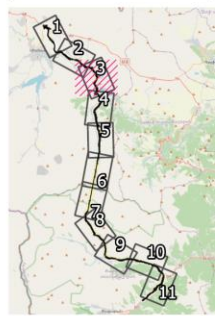
  N ↑

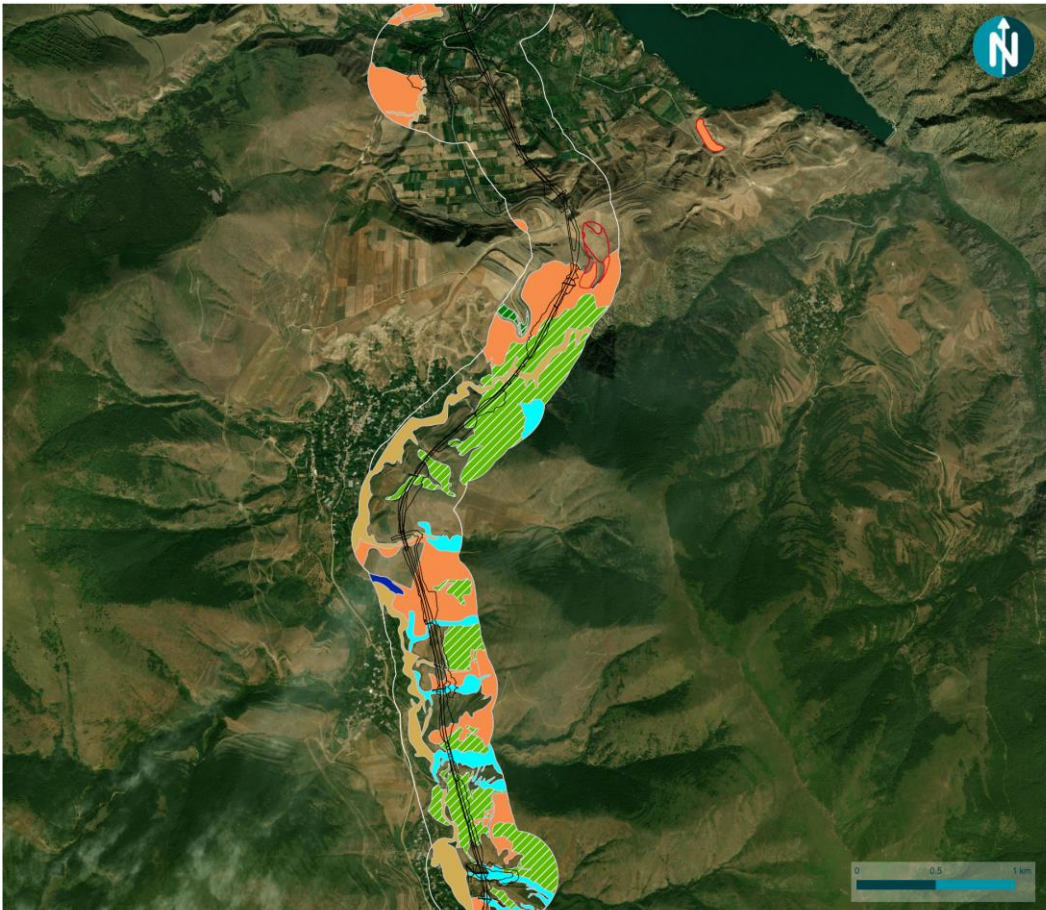
Natura 2000 habitats map
3 / 11
Sisian - Kajaran Road

Perimeters
Buffer of 250m around the footprint
Project footprint
Spoil Disposal Areas

Habitats listed in Annex 1 of EU Habitats Directive or Resolution 4 of Bern Convention

- 3240 Alpine rivers and their ligneous vegetation with Salix elaeagnos
- 40A0* Subcontinental peri-Pannonic scrub
- 6190 Ripicolous pannonic grasslands (Stipo-Festucetalia pallentis)
- 6240* Sub-pannonic steppic grasslands
- 8210 Calcareous rocky slopes with chamaephytic vegetation
- 9170 Galio-Carpinetum oak-hornbeam forests
- 92A0 Salix alba and Populus alba galleries





N
↑

Natura 2000 habitats map
4 / 11

Sisian - Kajaran Road

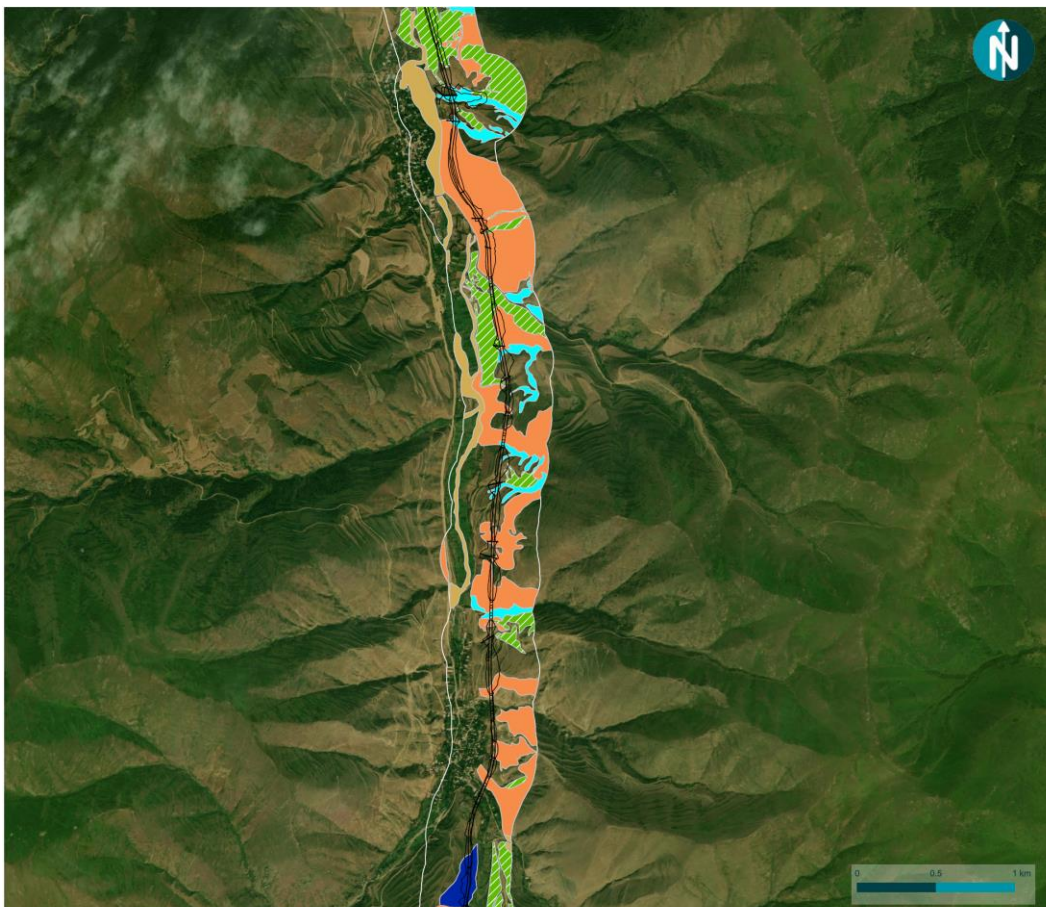
Perimeters

Buffer of 250m around the footprint

- Project footprint
- Spoil Disposal Areas

Habitats listed in Annex 1 of EU Habitats Directive or Resolution 4 of Bern Convention

- 40A0* Subcontinental peri-Pannonic scrub
- 6190 Ruginolous pannonic grasslands (Sipo-Festucetalia pallentis)
- 6240* Sub-pannonic steppic grasslands
- 8210 Calcareous rocky slopes with chasmophytic vegetation
- 9170 Galio-Carpinetum oak-hornbeam forests
- 92A0 Salix alba and Populus alba galleries



N
↑

Natura 2000 habitats map
5 / 11

Sisian - Kajaran Road

Perimeters

Buffer of 250m around the footprint


- Project footprint
- Spoil Disposal Areas

Habitats listed in Annex 1 of EU Habitats Directive or Resolution 4 of Bern Convention

- 40A0* Subcontinental peri-Pannonic scrub
- 6190 Ruginolous pannonic grasslands (Sipo-Festucetalia pallentis)
- 8210 Calcareous rocky slopes with chasmophytic vegetation
- 9170 Galio-Carpinetum oak-hornbeam forests
- 92A0 Salix alba and Populus alba galleries










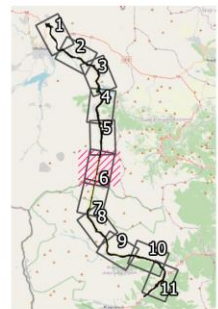
 N ↑


Natura 2000 habitats map
6 / 11
Sisian - Kajaran Road

Perimeters
Buffer of 250m around the footprint
Project footprint

Habitats listed in Annex 1 of EU Habitats Directive or Resolution 4 of Bern Convention

-  6140* Subcontinental peri-Pannonic scrub
-  6170 Alpine and subalpine calcareous grasslands
-  6190 Rupicolous pannonic grasslands (Stipo-Festucetalia pallentis)
-  6210 Calcareous rocky slopes with chasotrophic vegetation
-  92A0 Salix alba and Populus alba galleries



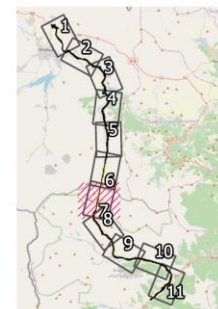
 N ↑

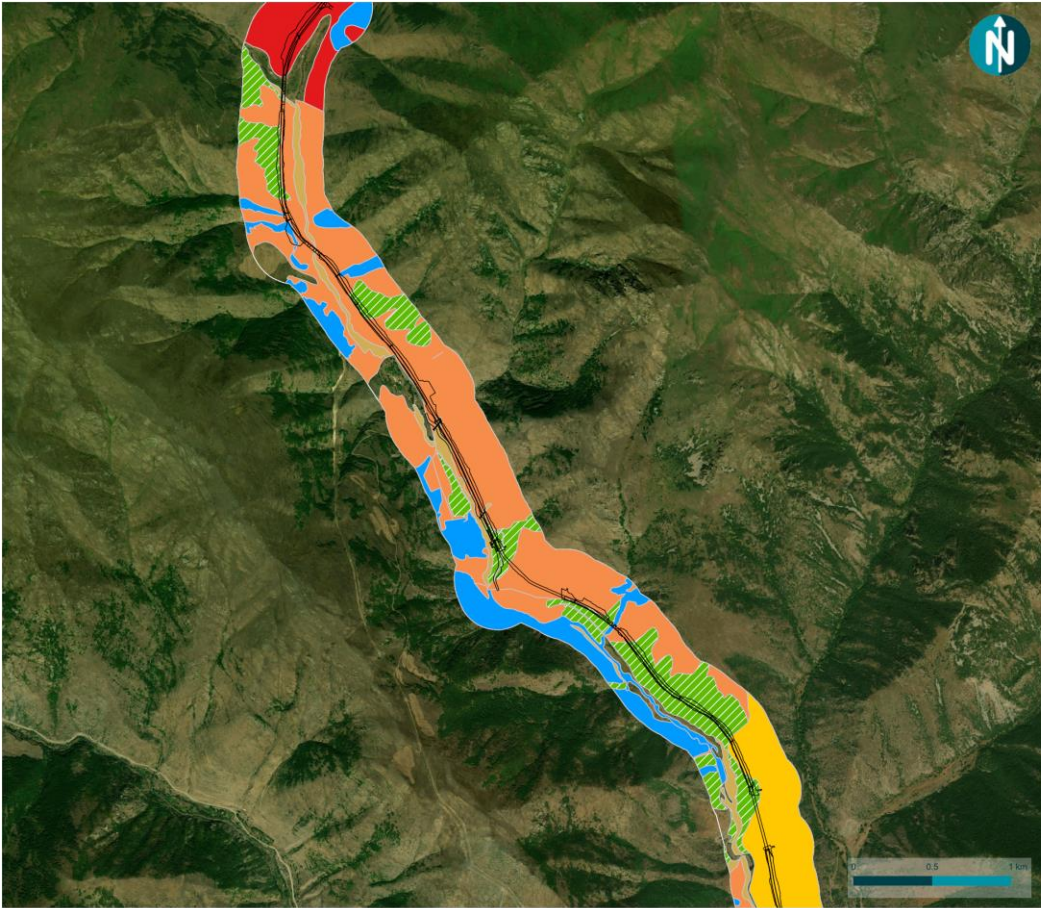
Natura 2000 habitats map
7 / 11
Sisian - Kajaran Road


Perimeters
Buffer of 250m around the footprint
Project footprint

Habitats listed in Annex 1 of EU Habitats Directive or Resolution 4 of Bern Convention

-  6140* Subcontinental peri-Pannonic scrub
-  6170 Alpine and subalpine calcareous grasslands
-  6190 Rupicolous pannonic grasslands (Stipo-Festucetalia pallentis)
-  9160 Sub-Atlantic and medio-European oak or oak-birch forests of the Carpinion betuli
-  92A0 Salix alba and Populus alba galleries











 N ↑

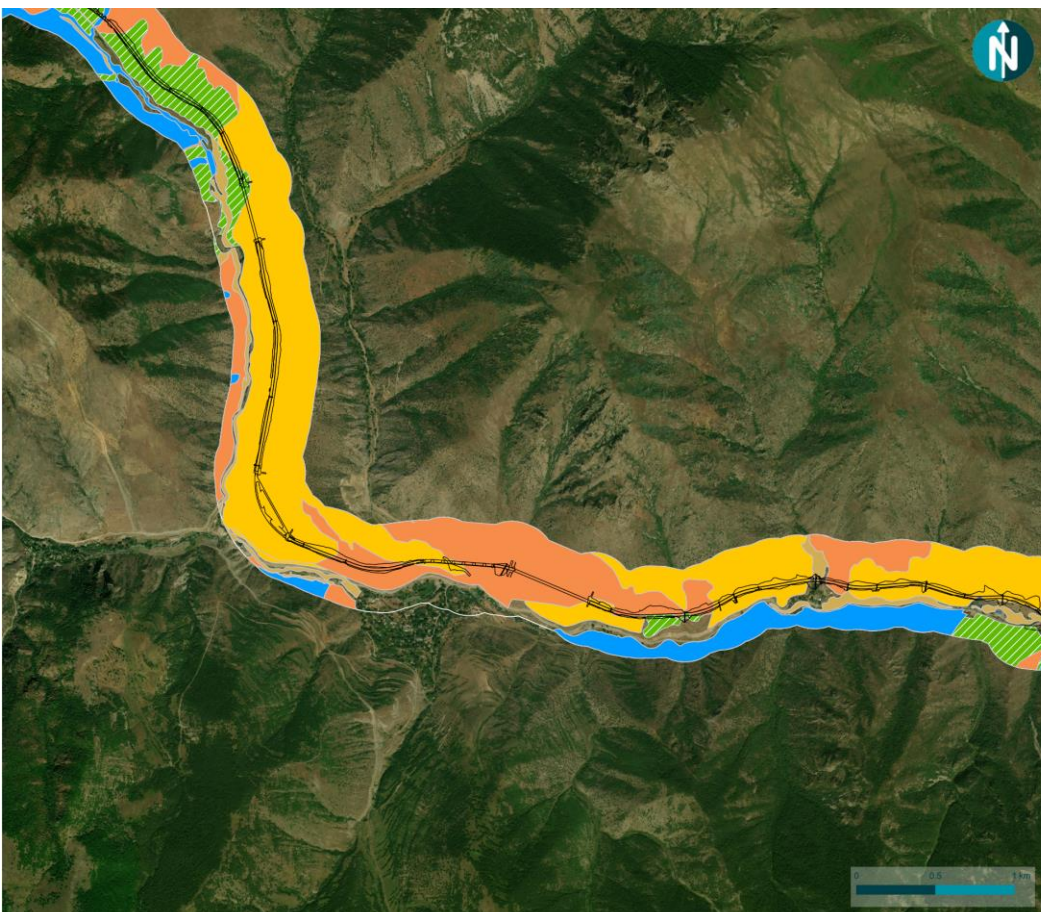
Natura 2000 habitats map
8 / 11

Sisian - Kajaran Road

Perimeters
Buffer of 250m around the footprint
Project footprint

Habitats listed in Annex 1 of EU Habitats Directive or Resolution 4 of Bern Convention

-  4040* Subcontinental peri-Pannonic scrub
-  5210 Arboreal matorral with Juniperus spp.
-  6170 Alpine and subalpine calcareous grasslands
-  6190 Rupicolous pannonic grasslands (Stipo-Festucetalia pallentis)
-  9160 Sub-Atlantic and medio-European oak or oakhornbeam forests of the Carpinion betuli
-  92A0 Salix alba and Populus alba galleries



 N ↑

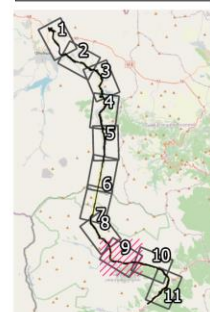
Natura 2000 habitats map
9 / 11

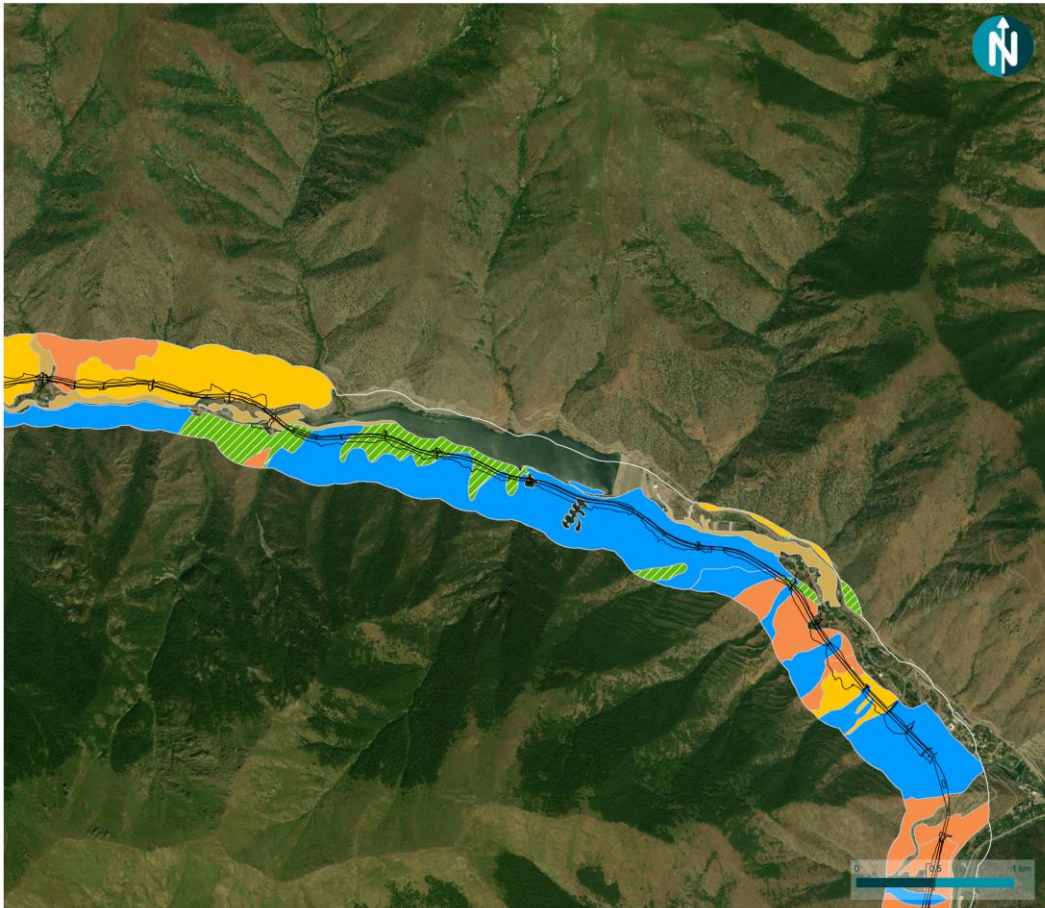
Sisian - Kajaran Road

Perimeters
Buffer of 250m around the footprint
Project footprint

Habitats listed in Annex 1 of EU Habitats Directive or Resolution 4 of Bern Convention

-  4040* Subcontinental peri-Pannonic scrub
-  5210 Arboreal matorral with Juniperus spp.
-  6190 Rupicolous pannonic grasslands (Stipo-Festucetalia pallentis)
-  9160 Sub-Atlantic and medio-European oak or oakhornbeam forests of the Carpinion betuli
-  92A0 Salix alba and Populus alba galleries



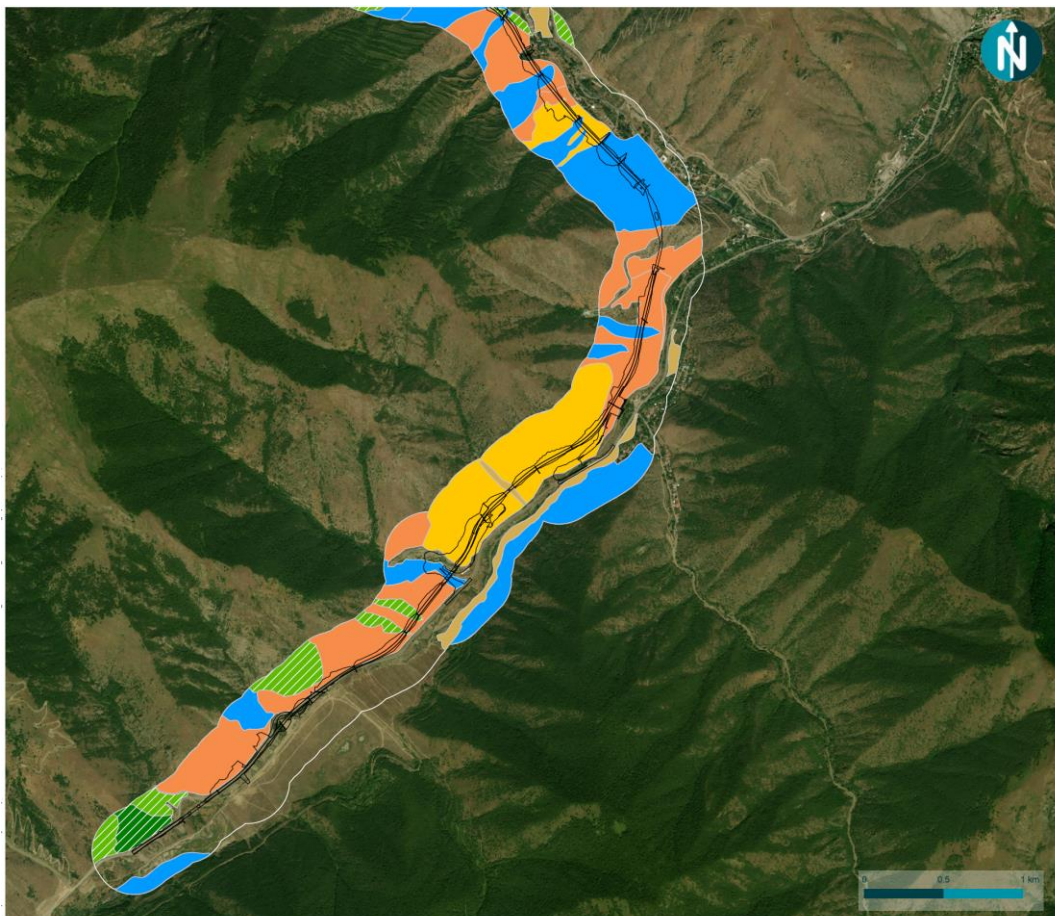
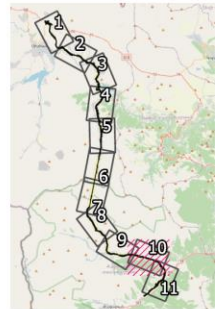


 **Natura 2000 habitats map**
10 / 11
Sisian - Kajaran Road

Perimeters
Buffer of 250m around the footprint
Project footprint

Habitats listed in Annex 1 of EU Habitats Directive or Resolution 4 of Bern Convention



-  40A0* Subcontinental peri-Pannonic scrub
-  5210 Arboreal matorral with Juniperus spp.
-  6190 Rupicolous pannonic grasslands (Stipo-Festucetalia pallentis)
-  9160 Sub-Atlantic and medio-European oak or oakhornbeam forests of the Carpinion betuli
-  92A0 Salix alba and Populus alba galleries



 **Natura 2000 habitats map**
11 / 11
Sisian - Kajaran Road

Perimeters
Buffer of 250m around the footprint
Project footprint

Habitats listed in Annex 1 of EU Habitats Directive or Resolution 4 of Bern Convention

-  40A0* Subcontinental peri-Pannonic scrub
-  5210 Arboreal matorral with Juniperus spp.
-  6190 Rupicolous pannonic grasslands (Stipo-Festucetalia pallentis)
-  6240* Sub-pannonic steppe grasslands
-  9160 Sub-Atlantic and medio-European oak or oakhornbeam forests of the Carpinion betuli
-  92A0 Salix alba and Populus alba galleries

